**Preface**

**To:** The patient care Staff, PKMC & RI  

**Subject:** The Hospital Formulary, 2010 edition.

1. The PKMC & RI is committed to the ideal of providing the highest standard of patient care. Therapeutic effectiveness and safety are the key criteria in the drug products that are used at PKMC & RI.

2. A Formulary System is in effect at PKMC & RI since its inception in 2010. The Hospital formulary is a professional review of all drug requests for continuous stockage.

3. Drug products are stocked on the basis of generic equivalency. Substandard products due to formulation, manufacturing procedures, storage, or any other reason will not be tolerated.

4. This Formulary contains a listing of the drug items in stock by the Pharmacy. In addition there are stated information and procedures that will help you in obtaining Pharmacy Services.

5. The support of the Formulary System is an essential element in the "Cost Containment" efforts of this institution.
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I. GENERAL PHARMACY INFORMATION

1. THE PHARMACY DEPARTMENT
The Pharmacy Department consists of the Hospital Pharmacy which serves as Central stores and the Outpatient Dispensing Pharmacy.

The primary function of the Hospital Pharmacy is to support the drug therapy of hospitalized patients.
The Hospital Pharmacy is located on the ground floor of the Hospital block.
The outpatient pharmacy provides outpatient prescription services to ambulatory patients who receive their medical care at The PKMC & RI, students, employees and their immediate families.
The outpatient pharmacy is located on the ground floor adjacent to the Outpatient Center.

2. PHARMACY HOURS
The pharmacy is open from 8:30 a.m. to 4:00 p.m. on all days except Sundays and Public holidays.

3. PHONE NUMBERS
91-0413-2274552/2277 (College) Pharmacy Office phone no. awaited

4. DRUG INFORMATION
The PKMC & RI campus has two sources for Drug Information:

General Information for immediate use in patient care situations is available from the Hospital Pharmacy (Ext: ) for hospitalized patients and from the Outpatient Pharmacy (Ext: ) for outpatients.

5. HOSPITAL PHARMACY SECURITY
For the safety of the pharmacy staff and drug security, the Hospital Pharmacy is accessible only for the authorized personnel. A service window is available at the pharmacy which is accessible for public.
6. DISPENSING OUTPATIENT PRESCRIPTIONS
Outpatient prescriptions will be dispensed by the Outpatient Pharmacy. Prescriptions are limited to those written for PKMC & RI ambulatory patients, patients being discharged from PKMC & RI and for PKMC & RI employees or students and their immediate families.

The Emergency Room has a small supply and variety of medications with which to treat patients. Patients needing additional supplies for treatment will be given a prescription(s) for these quantities. Such prescriptions may be dispensed by the outpatient pharmacy during regular hours of operation or taken to a hospital pharmacy under the Government of Puducherry, nearest to the patient’s residence.

7. OUTPATIENT PRESCRIPTION BLANKS
Outpatient Prescription Blanks are supplied to all the OPDs and replenished when necessary during normal working hours and is accessible to be used only by authorized personnel. Authorized prescribers will write the identification of the patient i.e. OPD number, date, drug name, dosage, quantity and any other details as necessary and sign the same. Prescription blanks are not to be transferred from one area to another. This procedure is established to limit access and reduce any forged prescriptions.

8. ADVERSE DRUG REACTION (ADR) REPORTING PROCEDURE
An ADR is a noxious, unintended reaction, reasonably associated with the use of a drug, which occurs at doses normally used in human beings for the prophylaxis, diagnosis, or therapy of disease, or for the modification of physiological function.

Many of the ADRs are inevitable when potent drugs are used. ADRs could be avoided or lessened if better drug information is readily available.

**Reporting Procedure:**
All suspected adverse drug reactions shall be recorded in the Case notes and reported to the pharmacovigilance centre.

All professional personnel are responsible for reporting ADRs. Forms are supplied in all patient care areas to report the basic information on the reaction. The front of the card is to be completed and sent to the pharmacy from where it will be forwarded to the pharmacovigilance centre of the Department of Pharmacology.
II. THE FORMULARY

The Formulary is a listing of drugs, dosage forms, package sizes, and drug strengths stocked by the Hospital Pharmacy. It is published as a quick reference to assist the physician and nursing staffs.

The Formulary is divided into three general sections: the Introduction, a Therapeutic Index and the Drug Monographs.

The Therapeutic Index is a listing by therapeutic category of those drugs which are carried in one or more dosage forms, by the Pharmacy.

The Drug Monographs Section is a straight alphabetical listing of generic names. Each Complete monograph will contain the following information:

- Official, non-proprietary or generic name.
- Category: Therapeutic Classification which relates to the information in the Therapeutic Section of the Formulary.
- Dosage Form: This lists all the dosage forms which are available in the Pharmacy.
- Indications and dose: This lists the common indications along with adult and pediatric doses.
- Contraindications and adverse effects

**Note:** Information of special interest or of an unusual nature is indicated here. However, the absence of a cautionary note does not necessarily imply that a particular drug may be used without the necessary precaution or discretion.
III. Therapeutic Index

1. ALIMENTARY SYSTEM
   - Hyperacidity, Reflux, Ulcers
   - Antiemetics & Prokinetics
   - Laxatives, Purgatives & Lubricants
   - Drugs Acting on Colon & Rectum

2. CARDIOVASCULAR SYSTEM
   - Antihypertensives
   - Antianginals & coronary vasodilators
   - Antiarrhythmics
   - Vasoconstrictors
   - Anticoagulants, Antithrombotics, Fibrinolytics
   - Haemostatics / Antifibrinolytics
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3. CENTRAL NERVOUS SYSTEM
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4. PAIN & FEVER
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5. MUSCULOSKELETAL SYSTEM
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Rubefacients, Topical Analgesics & Topical NSAIDs
Neuromuscular Drugs

6. ENDOCRINE DISORDERS
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Corticosteroids
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   Oropharyngeal Preparations
   Aural Preparations

15. EYE
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   Ocular Antiinflammatory & Antiallergics
   Drugs for Glaucoma
   Mydriatics & Cycloplegics
16. SKIN

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   Antiinfective preparations
   Psoriasis, Seborrhoea, Ichthyosis
   Acne
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17. IMMUNOSUPPRESSANTS / CYTOTOXICS

18. POISONING AND DRUG DEPENDENCE

19. SURGICAL

   Anaesthetics – Local & General
   Neuromuscular Blockers, Other Premedication Drugs
   Infusion Fluids, Hospital Fluids, Plasma Expanders
   Surgical Miscellaneous Preparations

20. DIAGNOSTIC AGENTS

   Contrast Media
1. ALIMENTARY SYSTEM

HYPERACIDITY, REFLUX, PEPTIC ULCERS

Activated Dimethicone (Anti foaming Agent)
Tablet: 40mg
**Indications & Dose:** Flatulence, hiccups, Peptic ulcer, bed sores, GERD: 4 or more times daily. Additional doses may be required up to once an hr.
CI: Hypophosphataemia: undiagnosed GI or rectal bleeding: appendicitis: porphyria, severe renal impairment.
ADR: Headache, fatigue, myalgia, constipation.

Antacid (Aluminium hydroxide + Magnesium hydroxide)
Tablet: dried aluminium hydroxide 250mg+ Magnesium hydroxide 250mg;
Oral suspension: aluminium hydroxide 250mg+ Magnesium hydroxide 250mg per 5ml
**Indications & Dosage:** ORAL: Dyspepsia, GERD: AD: 1–2 tablets chewed 4 times daily and at bedtime or 5–10 ml suspension 4 times daily between meals and at bedtime; CH: 6–12 yrs 5 ml up to 3 times daily.
CI: Hypophosphataemia; undiagnosed GI or rectal bleeding; appendicitis; porphyria, severe renal impairment
ADR: Due to Al: Hypophosphataemia with increased bone resorption, hypercalciuria and risk of osteomalacia (patients on low phosphate diet or prolonged therapy); hyperaluminaemia—resulting in osteomalacia, encephalopathy, dementia, microcytic anaemia (in chronic renal failure treated with aluminium hydroxide as phosphate-binding agent).
Due to Mg: in renal impairment—hypermagnesaemia resulting in loss of deep tendon reflexes and respiratory depression, nausea, vomiting, flushing of skin, thirst, hypotension, drowsiness, confusion, muscle weakness, bradycardia, coma and cardiac arrest

Anti H-Pylori Kit (Omeprazole 20mg + Amoxycillin 750mg + Tinidazole 500mg (each 2 Tabs pack)
**Indications & Dosage:** ORAL: _H pylori infection:_ 1 kit to be taken daily in two doses for 14 days
CI & ADR: Omeprazole, amoxycillin: Refer individual drugs.
Tinidazole
CI: History of blood dyscrasias. Patients with active organic neurological disorders. 1st trimester of pregnancy & lactation; HSR
ADR: Metallic taste, nausea, headache, vomiting, rash (rare). Thrombophlebitis at inj site; leucopaenia.
**Famotidine (H₂ receptor antagonist)**

Tablet: 20mg; Injection

**Indications & Dosage:**

**ORAL:**
- **Benign gastric & duodenal ulceration:** AD: 40mg daily at bedtime for 4–8 wks or 20mg bid. Maintenance dose 20mg bid. **GERD:** AD: 20mg bid for 6 to 12 wks or up to 40mg bid if necessary. Maintenance dose 20mg bid. **ZE syndrome:** AD: Initially, 20mg every 6 hrs, increased to 80mg daily if needed.
- **Relief of short term symptomatic heartburn or non ulcer dyspepsia:** AD: 10mg bid. IV: **Benign gastric, duodenal ulcer:** AD: 20 mg IV every 12 hrs. Reduce dose to 50% in patients with renal impairment (CrCl < 10 ml/min).

**CI:**
- HSR, gastric malignancy, lactation

**ADR:**
- Headache, dizziness, constipation, diarrhoea, nausea, rash, GI discomfort, fatigue, gynaecomastia, impotence.
- Rapid IV administration may cause bradycardia and hypotension.

**Omeprazole (Proton pump Inhibitor)**

Tablets: 10mg, 20mg

**Indications & Dosage:**

**ORAL:**
- **GERD:** AD: For severe oesophagitis: 40 mg once daily for 4 wks, extended for another 4 wks if necessary. Without severe oesophagitis: 20 mg daily. **Peptic ulcer:** AD: 20 mg bid for 7 days or 40 mg once daily for 10 days given alone or as a triple therapy with Amoxycillin and Clarithromycin. Maximum dose for patients with severe hepatic impairment is 20 mg.

**CI:**
- HSR

**ADR:**

**Pantoprazole (Proton Pump Inhibitor)**

Injection: 40mg vial; Tablet

**Indications & Dosage:**

**ORAL:**
- **GERD:** AD: 20 – 40mg once daily in the morning for 4 wks, increased to 8 wks if necessary. Maintenance dose 20 – 40mg daily. **Peptic ulcer:** AD: 40mg once daily in the morning for 2 – 4 wks for **duodenal ulceration** or 4 – 8 wks for **benign gastric ulceration**. **Eradication of H.pilori infection:** AD: Triple therapy: 40mg bid combined with clarithromycin 500mg bid and either amoxycillin 1 g bid or metronidazole 400 mg bid. Reduce dose in patients with severe hepatic impairment or give only on alternate days. Max dose: 20 mg daily or 40 mg on alternate days.

**CI:**
- HSR, children < 12yrs, lactation.

**ADR:** Refer Omeprazole

**Ranitidine (H₂ Receptor Antagonist)**

Injection (solution for injection): 50mg/2ml amp; Tablets; Oral suspension

**Indications & Dosage:**

**ORAL:**
- **Benign gastric & duodenal ulceration:** AD: Initially, 300 mg as a single daily dose at bedtime or 150 mg bid in morning and at bedtime given for at least 4 wks. Maintenance: 150 mg daily at bedtime.
CH: 2-4 mg/kg bid. Max dose: CH: 300 mg in 24 hrs. **Eradication of H.pylori infection:** AD: 300 mg once daily or 150 mg bid in combination with amoxicillin 750 mg tid and metronidazole 500 mg tid given for 2 wks. **GERD:** AD: 150 mg bid or 300 mg at bedtime for up to 8 wks increased to 150 mg qid for 12 wks in severe cases. **ZE syndrome:** AD: Initially, 150 mg bid/tid increased to 6 g daily if necessary. **Management of acid aspiration during GA:** AD: 150 mg given 2 hrs before induction of anaesthesia or on the previous evening. **Chronic episodic dyspepsia:** AD: 150 mg bid for 6 wks. **Relief of short-term symptomatic dyspepsia:** AD: 75 mg repeated if necessary up to 4 doses given only for 2 wks.

**IV: ZE:** AD: Initially, 1mg/kg/hr IV infusion, increased by increments of 0.5 mg/kg/hr starting after 4 hrs if necessary. **Management of stress ulceration:** AD: 50 mg by slow IV inj as priming dose followed by 125-250 mcg/kg / hr as continuous IV infusion then transfer to oral dose of 150 mg bid once feeding is resumed.

**PARENTERAL:** **Management of acid aspiration during GA:** AD: 50 mg IV/IM given 45-60 min before the induction of anaesthesia. Adjust dose in patients with renal impairment: 150 mg/day orally or 25 mg for parenteral administration.

**CI:** HSR; children <8 yrs. Porphyria

**ADR:** Headache, dizziness, agitation, confusion, depression, fatigue, insomnia, malaise, motor disturbances; vertigo; abdominal discomfort, constipation, diarrhea, nausea, vomiting, pancreatitis. Rarely hepatitis, thrombocytopenia, leukopaenia, agranulocytosis, autoimmune hemolytic or aplastic anemia, HSR; gynaecomastia, impotence, somnolence, hallucinations; AV block; bradycardia; cardiac arrhythmias; premature ventricular beats.

**ANTIEMETICS & PROKINETICS**

**Cinnarizine (CCB)**
Tablets: 25mg

**Indications & Dose:** **ORAL:** **Peripheral vascular disorders:** AD: 75 mg bid or tid. **Motion sickness:** AD: 30 mg taken 2 hrs before travel and 15 mg every 8 hrs during the journey if necessary. CH: 5-12 yrs: ½ adult dose.

**Cerebrovascular disorders:** AD: 75 mg 1-3 times daily. **Vertigo and other vestibular disturbances, vomiting in Meniere's disease:** AD: 30 mg tid. CH: 5-12 yrs: half of adult dose.

**CI:** Proven HSR to the drug. Parkinson's disease. Children < 5yrs and neonates.

**ADR:** Extrapyramidal symptoms sometimes associated with severe depression. Drowsiness, headache, GI upsets, unsteadiness, headache; rarely skin and HSR, dry mouth, thickened respiratory depression, blurred vision, urinary difficulty or retention, constipation and increased gastric reflux, fatigue. Hypolipidaemic effect.

**Metoclopramide (Prokinetic)**
Tablets: 10mg; Injection 10mg/2ml amp

**Indications & Dose:** **AD:** PO: **Diabetic gastric stasis:** 10 mg 4 times/day. Usual duration: 2-8 wk. **Nausea and vomiting associated with cancer chemotherapy or radiotherapy:** 2 mg/kg 1 hr before start of treatment. Repeat dose 3 times at 2-hrly intervals. May repeat 2 additional doses at 3-hrly intervals if needed. Max: 12 mg/kg/day.
Gastro-oesophageal reflux disease 10-15 mg up to 4 times/day, depending on severity of symptoms. Delayed emesis following chemotherapy 20-40 mg 2-4 times/day for 3-4 days. IV Nausea and vomiting associated w/ cancer chemotherapy: Highly emetogenic regimens: 2 mg/kg 30 mins before start of treatment. Repeat twice at 2-hrly intervals. Less emetogenic regimens: 1 mg/kg. If vomiting is not well-controlled, 3 additional doses at 2 mg/kg/dose 3-hrly. If vomiting is well-controlled with the 1st 3 doses, may reduce dose to 1 mg/kg 3-hrly for 3 additional doses. Intubation of the small intestine; Premed for radiologic examination of the upper GI tract: 10 mg as a single direct inj. IV/IM Diabetic gastric stasis 10 mg 4 times/day. Convert to PO when possible. Usual duration: 2-8 wk. IM: Post-op nausea and vomiting: 10 mg near the end of the procedure. Repeat 4-6 hrly when needed. 

CI: GI haemorrhage, mechanical obstruction and perforation; phaeochromocytoma; history of seizures. 

ADR: Extrapyramidal symptoms, restlessness, drowsiness, anxiety, diarrhoea, hypotension, hypertension, headache, depression, blood disorders (e.g. aganulocytosis, methaemoglobinaemia), hypersensitivity reactions (e.g. bronchospasm, rash), galactorrhoea or related disorders, transient increase in plasma aldosterone levels. Potentially Fatal: Neuroleptic malignant syndrome; cardiac conduction disorders may occur with IV dosage form.

Domperidone (Dopamine Receptor Blocker) 
Tablets: 10mg; Syrup, suspension & DPS 
Indications & Dose: Acute treatment of nausea & vomiting: ORAL: AD: 10 – 20 mg every 4 – 8 hrs, continued for max of 12 wks in parkinsonian patients. CH: 200 – 400 mcg/kg every 4 – 8 hrs. RECTAL: AD & CH: 30 – 60 mg every 4 – 8 hrs, continued for max of 12 wks in parkinsonian patients. Max dose: CH: 35.5 – 45 kg: 120 mg daily; 25.5 – 35 kg: 90 mg daily; 15.5 – 25 kg: 60 mg daily; 10 – 15 kg: 30 mg daily. Symptomatic treatment of non-ulcer dyspepsia: ORAL: AD: 10–20 mg tid before meals and at night, given according to response for up to 12 wks. Use in chldrn is restricted to nausea and vomiting following cytotoxics or radiotherapy. 

CI: HSR, GI haemorrhage, mechanical obstruction or perforation. Prolactin-releasing pituitary tumour or chronic administration or for prophylaxis of postoperative nausea and vomiting. 

ADR: Drowsiness, extrapyramidal reactions (lower incidence than metoclopramide), galactorrhoea, gynaecomastia; constipation or diarrhoea, lassitude, decreased libido, skin rash, pruritus

Ondansetron (5 – HT3 Receptor Antagonist) 
Tablets: 4mg; Injection: 8mg/4ml 
Indications & Dose: Postoperative nausea and vomiting: ORAL: AD: 16 mg taken 1 hr before anaesthesia or 8 mg given 1 hr before anaesthesia followed by doses of 8 mg at 8-hr intervals. PARENTERAL: Postoperative nausea & vomiting: AD: 4 mg IM or slow IV inj at induction of anaesthesia. CH: ≥ 2 yrs: 0.1 mg/kg by slow IV inj. Max dose: CH: 4mg. Nausea & vomiting associated with cancer chemotherapy: PARENTERAL: AD: 8mg given as IM or slow IV inj immediately before treatment, alternatively 8mg IM or slow IV inj given before treatment followed by continuous IV
infusion of 1 mg/hr for up to 24 hrs or by a further 2 doses of 8 mg at intervals of 2 – 4 hrs. IV: 32 mg given by IV infusion immediately before treatment given over at least 15 min immediately. **Management of nausea & vomiting for highly emetogenic chemotherapy:** RECTAL: AD: As suppository: 16 mg given 1-2 hrs before treatment.

**CI:** HSR

**ADR:** Constipation, sensation of warmth or flushing in the epigastrium. Rare allergic reactions eg, rash, anaphylaxis, bronchospasm, breathlessness, angioedema, urticaria, chest pain, hypotension, tachycardia, bradycardia, dizziness, headache and transient blurred vision. Transient elevations of transaminase levels.

**LAXATIVES, PURGATIVES & LUBRICANTS**

**Bisacodyl (Stimulant Laxative)**

EC Tablet: 5mg; Suppository: 5mg, 10mg

**Indications & Dosage:**
- **Constipation:**
  - ORAL: AD: 5 – 10mg enteric coated tablets swallowed whole daily at night.
  - CH: > 4 yrs: 5mg at night time.
  - RECTAL: AD: 10mg suppository / enema administered in the morning. CH: < 10yrs: 5mg in morning.

- **Evacuation of Bowel:**
  - ANY ROUTE: AD: Initially, 10- 20 mg enteric coated tab taken orally followed by 10mg suppository administered rectally the next morning. CH: > 10yrs: Same as adult dose. < 10yrs: 5 mg enteric coated tab taken orally, night before & 5mg suppository administered rectally the morning of the procedure.

**CI:** Acute surgical abdomen or Intestinal obstruction, severe dehydration, long – term use.

**ADR:** Abdominal discomfort (colic, cramps). Suppositories may cause irritation & proctitis; Palpitations, Dizziness, fainting.

**Lactulose (Osmotic Laxative)**

Syrup 3.325 g/ 5 ml

**Indication:**
- Constipation, hepatic encephalopathy: AD: **Constipation:** 10-20 g (15-30 mL)/day. (Max: 45 mL);
- Hepatic encephalopathy: 60-100 g (90-150 mL)/day in 3 divided doses;

**CI:** Galactosaemia, intestinal obstruction. Patients on low galactose diet.

**ADR:** Diarrhoea (dose-related), nausea, vomiting, hypokalaemia, bloating and abdominal cramps. Dehydration, hypernatremia on aggressive treatment.

**Liquid paraffin (Stool Softener)**

5 Ltr pack

**Indication & Dosage:**
- AD: **Constipation** PO Up to 45 mL/day. Max duration: 1 wk. Rectal As enema: Usual: 120 mL/day may range from 60-150 mL/day. Ophth Dry eye Apply at night when needed. Topical Hydrate and soften skin Apply when needed, esp after bath.

**CI:** Abdominal pain, nausea and vomiting is present; children <3 yr.
**ADR:** Anal irritation (excessive dose) and seepage. Foreign-body granulomatous reactions; vasospasm; lipoid pneumonia; interference with absorption of fat-soluble vitamins. When applied ophthalmically, may cause temporary visual disturbance.

**DRUGS ACTING ON COLON & RECTUM**

**Sulfasalazine (Sulfapyridine + 5 Aminosalicylicacid) (Anti-inflammatory)**

Enteric-coated tablets: 100mg, 500mg; Suppositories, Retention enema

**Indications & Dosage:**

**ORAL:**

**Inflammatory bowel disease:**

AD: Initially, 1-2 g qid until remission occurs. Maintenance: 20-30 mg/kg/day in divided doses. CH: ≥2 yrs: 40-60 mg/kg/day in divided doses. CH: ≥2 yrs: 30-50 mg/kg/day in 2 divided doses. Begin treatment with 1/4 to 2/3 of expected maintenance dose and increase wkly. Max dose: AD: 3 g/day in 2-4 divided doses. CH: 2 g/day in divided doses. Dosing interval in renal impairment: CrCl 10-30 ml/min: Administer twice daily; <10 ml/min: Administer once daily.

**Management of RA & juvenile RA:**

As enteric-coated tablet: AD: Initially, 500 mg daily for the 1st wk, increased by 500 mg every wk. CH: ≥6 yrs: 30-50 mg/kg/day in 2 divided doses. Begin treatment with 1/4 to 2/3 of expected maintenance dose and increase wkly. Max dose: AD: 3 g/day in 2-4 divided doses. CH: 2 g/day in divided doses.

CI: HSR to salicylates or sulfonamides; acute intermittent porphyria; child under 2 years; intestinal or urinary obstruction; SLE, blood dyscrasias. Pregnancy.

**ADR:** Nausea, anorexia, vomiting; headache, arthralgia, myalgia; oligospermia, folate deficiency. HSR to Sulfapyridine (rarely to 5-ASA) can lead to fever, exfoliative dermatitis, pancreatitis, pneumonitis, pericarditis, hepatitis, hemolytic anemia.

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**2. CARDIOVASCULAR SYSTEM**

**ANTIHYpertensives**

**Amlodipine (CCB)**

Tablets: 5mg

**Indications & dosage:**

**ORAL:**

As besylate: **Management of HTN:** AD: Initially, 5 mg once daily increased to 10 mg once daily if necessary. **Management of HTN & angina pectoris, Stable angina & Prinzmetal’s angina:** AD: Initially, 5mg once daily increased to 10mg once daily if necessary.

**CI:** Known HSR to dihydropyridines. Pregnancy.

**ADR:** Headache, peripheral oedema, fatigue, somnolence, nausea, abdominal pain, flushing, dyspepsia, palpitation, dizziness. Rarely pruritus, rash, dyspnoea, asthenia, muscle cramps.
**Atenolol (β₂ Blocker)**

Tablet: 25mg.

**Indications & dosage:**
- **ORAL:** Management of HTN: AD: 50-100 mg daily as a single dose given for 1-2 wks.
- Management of angina: AD: 50-100 mg daily given as single or divided doses. Max dose: 200 mg daily.
- **IV:** Emergency treatment of cardiac arrhythmias: AD: 2.5 mg injected at a rate of 1 mg/min repeated every 5 min if necessary or 150 mcg/kg infusion administered over 20 min, repeated every 12 hrs as needed followed by usual doses given by mouth for maintenance. Max dose: 10 mg IV inj. Early management of acute MI: AD: 5 mg injected slowly at a rate of 1 mg/min, followed by oral doses of 50 mg after 15 min or repeated after 10 min followed by 50 mg by mouth after a further 10 min, and 12 hrs thereafter with a subsequent dosage of 100 mg daily by mouth, maintained for another 12 hrs. Renal impairment: CrCl: 15-35 ml/min: 50 mg daily by mouth or 10 mg once every 2 days IV; <15 ml/min: 25 mg daily by mouth or 10 mg once every 4 days IV.

**CI:** HSR. Sinus bradycardia, sinus node dysfunction, heart block >1st degree, compensated cardiac failure, cardiogenic shock, bronchospastic diseases, peripheral vascular diseases. Pregnancy.

**ADR:** Bronchospasm; cold extremities, fatigue, dizziness, insomnia, lethargy, confusion, headache, depression, nightmares, nausea, diarrhoea, constipation, impotence and paraesthesia.

**Carvedilol (α + β Blocker)**

Tablets: 6.25mg, 12.5mg

**Indications & Dose:**
- **ORAL:** Management of HTN: AD: Initially, 12.5 mg once daily increased to 25 mg once daily after 2 days. Alternatively, initial dose of 6.25 mg bid increased to 12.5 mg bid after 1-2 wks, increased further if necessary to 50 mg once daily or in divided doses. EL: 12.5 mg once daily. Management of angina pectoris: AD: Initially, 12.5 mg bid increased to 25 mg bid after 2 days. Management of HF: AD: Initially, 3.125 mg bid taken with food, doubled to 6.25 mg bid after 2 wks if tolerated, then gradually increased to the max dose the patient can tolerate at intervals of not <2 wks. Max dose: >85 kg : 50 mg bid; <85 kg : 25 mg bid.

**CI:** HSR; severe chronic heart failure, bronchial asthma or related bronchospastic conditions; severe hepatic impairment. Patients with NYHA class IV cardiac failure requiring IV Inotropic therapy, 2nd or 3rd degree AV block, sick sinus syndrome (unless a permanent pacemaker is in place), cardiogenic shock or severe bradycardia. Lactation.

**ADR:** Hypotension, bradycardia, syncope, angina pectoris, AV block, cerebrovascular accident, fluid overload, hypertension, palpitation, postural hypotension; dizziness, fatigue, asthenia, headache, depression, insomnia, malaise, paresthesia, somnolence, vertigo; purpura; blurred vision; pharyngitis; Diarrhea, nausea, vomiting, melena, periodontitis; albuminuria, hematuria, impotence, renal insufficiency, UTI, urinary incontinence; Anemia, thrombocytopenia, aplastic anemia, leukopenia; SGOT and SGPT increased; Hyperglycemia /hypoglycemia, glycosuria, weight gain, peripheral edema, hypercholesterolemia, hyperkalemia, hypertriglyceridemia, hyperuricemia, hypervolemia, hyponatremia; Arthralgia, back pain, muscle cramps; Upper respiratory tract infection, sinusitis, cough, bronchitis, dyspnea, interstitial pneumonitis.
**Diltiazem (CCB)**
Tablets, SR tablets, ER capsules: 30mg

**Indications & dosages:** As hydrochloride: ORAL: **Management of angina pectoris:** AD: Initially, 60mg tid, increased to 360 mg daily or up to 480mg daily, if necessary. **Management of HTN:** AD: Initially, 60 – 120 mg bid increased if needed. Max dose: 360 mg daily.

**IV:** **Management of cardiac arrhythmias:** AD: Initially, 250 mcg/kg daily by bolus IV inj over 2 min, further increased to 350 mcg/kg after 15 min if necessary. **Atrial fibrillation or flutter:** 5 – 10 mg/hr infusion, increased in increments of 5mg/hr up to a rate of 15 mg/hr continued for 24 hrs.

**CI:** Sick – sinus syndrome; 2nd or 3rd degree AV block; porphyria. Severe congestive cardiac failure; marked bradycardia. Pregnancy and lactation.

**ADR:** Headache, ankle oedema, hypotension, dizziness, fatigue, flushing, nausea, GI discomfort, gingival hyperplasia, rashes, erythema multiforme, exfoliative dermatitis, photosensitivity, occasionally hepatitis, gynaecomastia. Hyperactivity sometimes with associated psychiatric symptoms.

**Enalapril (ACE Inhibitor)**
Tablet: 5mg

**Indications & Dose:** As maleate: **HTN:** ORAL: AD: Initially, 5 mg at bedtime to avoid precipitous fall in BP. Maintenance: 10-20 mg once daily increased up to 40 mg as divided doses in severe HTN. EL: Initially, 2.5 mg. IV: AD: 1.25 mg by slow inj over 5 min repeated every 6 hrs if needed. Renal impairment: Initially, 2.5 mg daily by mouth. CrCl: <30 ml/min: ½ the initial dose given as slow IV inj. **Management of HF:** AD: Initially, 2.5 mg daily. Maintenance: 20 mg daily as a single or in 2 divided doses, up to 40 mg daily in 2 divided doses.

**CI:** HSR to ACE inhibitors. History of angioedema due to previous treatment with ACE inhibitors; bilateral renal artery stenosis. Pregnancy, children.

**ADR:** Initial hypotension may be severe and prolonged. Dizziness, headache, fatigue, persistent dry cough, abnormal taste, lassitude, rash, neutropaenia, renal impairment or failure.

**Furosemide (Diuretic)**
Refer Diuretics.

**Hydrochlorothiazide (Diuretic)**
Refer Diuretics.

**Losartan (Angiotensin II Receptor Antagonist)**
Tablets: 25mg

**Indications & Dose:** ORAL: **Management of HTN:** As potassium: AD: 50 mg once daily dose, increased to 100 mg daily as a single dose or in 2 divided doses if needed. EL: > 75 yrs: Initially, 25 mg once daily. **Patients with moderate**
to severe renal impairment (CrCl < 20 ml/min) or intravascular fluid depletion: Initially, 25 mg once daily. Reduced dose in hepatic impairment.

**CI:** HSR. Pregnancy (2nd and 3rd trimesters), lactation. Avoid concomitant potassium supplements.

**ADR:** Headache, dizziness, first-dose hypotension; back pain, myalgia, asthenia/ fatigue; rash; neutropenia; GI disturbances; transient elevation of liver enzymes; taste disturbances and hyperkalaemia. Cough, angioedema less than ACEIs

**Magnesium sulphate (for eclampsia)**

**Indications & dosage:** **AD:** To control seizure & reduce BP in toxemia of pregnancy: IV bolus 2-4 g over 10-20 min followed by 1 g / hr iv infusion

**ADR:** Cardiac arrhythmias, muscular paralysis, CNS & respiratory depression in mother as well as neonate.

**Methyldopa (Central α Agonist)**

**Tablets:** 250mg; Injection

**Indications & Dose:** **Management of HTN:** ORAL: **AD:** Initially, 250 mg bid – tid for 2 days adjusted according to response; not more than every 2 days. Maintenance: 0.5 – 2 g daily. CH: Initially, 10 mg/kg in 2 – 4 divided doses increased as necessary. EL: Initially, 125 mg bid gradually increased according to response. Max dose: CH: 65 mg/kg or 3 g daily, whichever is less. EL: 2 g daily. IV: As hydrochloride: **AD:** 250 – 500 mg in 100 ml of 5% glucose injected over 30 – 60 min every 6 hrs. CH: 5 – 10 mg/kg every 6 hrs. Max dose: CH: 1 g every 6 hrs. CH: 5 mg/kg or 3 g daily, whichever is less.

**CI:** HSR. Hepatitis, cirrhosis, pheochromocytoma, depression, active liver disease. Preexisting postural hypotension.

**ADR:** Dizziness, headache, nightmare, depression, weakness, bradycardia, postural hypotension; nasal stuffiness, vertigo; oedema, wt gain; disorders of sexual function, breast enlargement, galactorrhoea, salivary gland inflammation; gi upset, arthralgia, myalgia; drug fever, rarely hepatitis, aggravation of angina pectoris; eczematous rashes, lichenoid and granulomatous skin eruptions; thrombocytopenia, leucopaenia, granulocytopenia, hemolytic anemia.

**Metolazone (Diuretic)**

Refer Diuretics

**Metoprolol (β Blocker)**

**Tablets:** 100mg; Injection

**Indications & Dose:** As tartrate: **ORAL:** **Mnagement of HTN:** **AD:** Initially, 100 mg daily, taken with or immediately after meals, increased to 400 mg once or twice daily according to patient’s response. Maintenance: 100-200 mg daily. **Management of angina pectoris:** **AD:** 50-100 mg bid-tid. **Cardiac arrhythmias:** **AD:** 50 mg bid-tid increased to 300 mg daily in divided doses if needed. **Adjunct in the early management of acute MI:** **AD:** 5 mg IV at 2-min intervals to
a total of 15 mg, if tolerated, followed after 15 min by the initiation of an oral therapy of 50 mg every 6 hrs for 2 days. Maintenance: 100 mg bid by mouth. **Adjunct in the treatment of hyperthyroidism**: AD: 50 mg qid. **Prophylaxis of migraine**: AD: 100-200 mg daily in divided doses.

**IV**: **Emergency treatment of cardiac arrhythmias**: AD: Initially, 5 mg administered at a rate of 1-2 mg/min repeated at 5-min intervals, if needed, up to a total of 10-15 mg; followed by oral doses of 50 mg tid 4-6 hrs after IV regimen.

**Prevention or control of arrhythmias on induction of anaesthesia**: AD: 2-4 mg as slow inj repeated as necessary. Max dose: 10 mg.

**CI**: Known HSR to the drug and related derivatives. Atrioventricular block of 2\textsuperscript{nd} or 3\textsuperscript{rd} degree. Sick sinus syndrome; decompensated HF; clinically relevant sinus bradycardia. Severe peripheral arterial circulatory disorders. Cardiogenic shock. Asthma. Abrupt withdrawal from therapy. Pregnancy (2\textsuperscript{nd} and 3\textsuperscript{rd} trimesters).

**ADR**: Nausea, diarrhoea or constipation, stomach discomfort, palpitation, oedema, bronchospasm, insomnia. Bradycardia; lassitude, cold extremities. GI and sleep disturbances; skin rashes and dry eyes (discontinue therapy). Significant rise in triglycerides and VLDL, reduction in HDL and ratio of HDL to LDL.

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**Labetalol (α + β Blocker)**

Tablet: 100mg; Injection: 20mg/4ml amp/vial

**Indications & dosage**: AD: PO: **HTN** Initial: 100 mg twice daily, up to 200-400 mg twice daily. Max: 2.4 g/day in 2-4 divided doses. IV: **Emergency treatment of HTN** 50 mg, repeat at 5-min intervals if needed, up to a total dose of 200 mg. **HTN in pregnancy** Initial: 20 mg/hr, double dose every 30 mins until a favourable response or a dose of 160 mg/hr is reached. **HTN after MI** Initial: 15 mg/hr, may increase slowly until a favourable response or a dose of 120 mg/hr is achieved. **Hypotensive anesth** Initial: 10-20 mg, may increase slowly if satisfactory hypotension is not reached after 5 mins

**CI**: 2nd and 3rd degree heart block, cardiogenic shock, obstructive airway disease e.g. bronchial asthma, uncompensated heart failure, severe bradycardia, sick sinus syndrome, Prinzmetal's angina, severe peripheral arterial disease.

**ADR**: Orthostatic hypotension, dizziness, fatigue, vertigo, paraesthesia, headache, nasal stuffiness, dyspnoea, diarrhoea, abdominal pain, sexual dysfunction, dyspepsia, nausea, vomiting, scalp tingling, rash, increased transaminases, nightmares, worsening of intermittent claudication.

**Potentially Fatal**: Hepatic injury

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**Nifedipine (CCB)**

SR Tablets: 10mg

**Indications & Dose**: ORAL: **HTN**: AD: As long-acting preparation: 10-40 mg bid or 20-90 mg once daily. **Management of angina pectoris**: AD: As a long-acting preparation: 10-40 mg bid or 30-90 mg once daily. **Management of**
Raynaud’s syndrome: AD: As a long-acting preparation: 30mg/day. Reduce dose in elderly and hepatic impairment.

CI: HSR. Acute MI, hypotension, cardiogenic shock, acute unstable angina.

ADR: Peripheral oedema, hypotension, palpitation, tachycardia, flushing, dizziness, lightheadedness, headache, nausea, increased micturition frequency, lethargy, eye pain, mental depression, gingival hyperplasia, myalgia, tremor, impotence, fever, weakness. Exacerbation of angina, HF, muscle cramps, nasal congestion, rash.

Prazosin (α-Blocker)
Tablets: 1mg

Indications & Dose: ORAL: Management of HTN: AD: As hydrochloride: Initially, 500 mcg bid – tid for 3 – 7 days, increased to 1 mg bid – tid for the next 3 – 7 days if tolerated, and gradually increased thereafter according to patient’s response. Max dose: 20 mg daily in divided doses. HF: AD: As hydrochloride: Initially, 500 mcg bid – qid, gradually increased according to response. Maintenance: 4 – 20 mg daily. BPH; Reynaud’s syndrome: AD: Initially, 500 mcg bid, increased to a maintenance dose ≤ 2 mg bid.

CI: CHF due to mechanical obstruction. HSR. Pregnancy.

ADR: Postural hypotension, syncope, palpitations, lack of energy, nausea, oedema, chest pain, dyspnoea, constipation, diarrhoea, vomiting, depression, nervousness, sleep disturbances, headache, lassitude, drowsiness, hallucinations, dry mouth, loss of consciousness, dizziness, vertigo, paraesthesia, nasal congestion, epistaxis, urinary frequency and incontinence, pruritus, rash.

Propranolol (β Blocker)
Tablets: 40mg.

Indications & Dosage: As hydrochloride: ORAL: Management of HTN: AD: Initially, 40-80 mg bid increased to 160-320 mg daily, but up to 640 mg daily may be required in some patients. CH: Initially, 1 mg/kg daily in divided doses increased to 2-4 mg/kg daily in divided doses. Pheochromocytoma: AD: 60mg daily given on 3 preoperative days in association with alpha blockade. If inoperable, a prolonged treatment of 30 mg daily may be given. CH: 250-500 mcg/kg tid-qid. Management of MI: AD: 40 mg qid for 2-3 days followed by 80 mg bid or 180-240 mg daily in divided doses. Long-term management of cardiac arrhythmias: AD: 30-160 mg daily in divided doses. CH: 250-500 mcg/kg tid-qid. Management of hypertrophic subaortic stenosis: AD: 10-40 mg tid-qid. Prophylaxis of migraine: AD: Initially, 40 mg bid-tid increased to 160 mg daily. CH: < 12 yrs: 20 mg bid-tid. Management of portal HTN: AD: Initially, 40 mg bid increased up to 160 mg bid.

IV: Emergency treatment of cardiac arrhythmias: AD: 1 mg injected over a period of 1 min repeated every 2 min, if needed. CH: 25-50 mcg/kg injected slowly, repeated tid-qid. Max dose: conscious patients: 10 mg, patients under anaesthesia: 5 mg.

CI: HTN. Sinus bradycardia, heart blocks > 1st degree, cardiogenic shock, pulmonary oedema, severe hyperactive airway disease, compensated cardiac failure, Raynaud’s disease, hypoglycaemia. Pregnancy (2nd and 3rd trimesters).
**ADR**: Cold extremities, insomnia, fatigue, dizziness, vivid dreams, lassitude, nausea, constipation or diarrhoea, vomiting, anorexia, stomach discomfort, impotence, weakness, paraesthesia, wheezing, pharyngitis, bronchospasm. CNS disturbances in higher doses (240 mg/day) and mood alterations.

**Sodium nitroprusside (Vasodilator)**
Injection: 50mg vial

**Indications & Dosage**: IV: **HTN crisis**: AD: Initially 0.3 mcg/kg/min, then adjusted; usual range 0.5 – 0.6 mcg/kg/min (20 – 400 mcg/min). EL: Lower doses for patients already being treated with other antihypertensives and in the elderly. Max dose: 8 mcg/kg/min (if response, give for only few hours to avoid cyanide toxicity); lower doses for patients already being treated with other antihypertensives and in the elderly. **Controlled hypotension during anesthesia & surgery**: Max dose: 1.5 mcg/kg/min. CHF: AD: Initially, 10 – 15 mcg/min increased every 5 – 10 min as necessary; usual range 10 – 200 mcg/min. Max dose: 280 mcg/min (4 mcg/kg/min).

**CI**: HSR. HTN due to coarctation of aorta or AV shunt. Severe hepatic dysfunction, Vit B₁₂ deficiency, Leber’s optic atrophy, compensatory HTN.

**ADR**: Nausea, retching, apprehension, headache, restlessness, muscle twitching, retrosternal discomfort; palpitation, dizziness, abdominal discomfort. Cyanosis and hypothyroidism (rare).

**Terazosin (α. Blocker)**
Tablets: 2mg

**Indications & Dosage**: As hydrochloride: ORAL: **Management of HTN**: AD: Initially, 1 mg at bedtime, gradually increased at 7-day intervals according to patient’s response. Maintenance: 2 – 10 mg once daily. Max dose: 20 mg daily in a single or 2 divided doses. **BPH**: AD: 1 mg at bedtime gradually increased at 7-day intervals according to patient’s response. Maintenance: 5 – 10 mg once daily.

**CI**: HSR to quinazoline.

**ADR**: Orthostatic hypotension, syncope, dizziness, lack of energy, somnolence, oedema, headache, nasal congestion, nausea, blurred vision, postural hypotension.

**Verapamil (CCB)**
Refer Antiarrhythmics

**ANTIANGINAL & CORONARY VASODILATORS**

**Amlodipine (CCB)**
Refer Antihypertensives
Atenolol (β₁ - Blocker)
Refer Antihypertensives

Diltiazem (CCB)
Refer Antihypertensives

Isosorbide dinitrate (Vasodilator)
Tablets, SL-tablet: 10mg
CI: HSR. Concurrent use of phosphodiesterase (PDE-5) inhibitors, angle-closure glaucoma. Acute MI when shock is present, severe anaemia, cerebral haemorrhage, hypotension. Obstructive hypertrophic cardiomyopathy, low cardiac output secondary to hypovolaemia, inferior MI with right ventricular involvement, cardiac tamponade.

Isosorbide mononitrate (Vasodilator)
Tablets: 10mg
Indications & Dosage: AD: ORAL: Long-term management of angina pectoris & HF: AD: 20 mg bid-tid or 20-120 mg daily titrated according to patient’s needs.
CI: HSR. Concurrent use with phosphodiesterase-5 (PDE-5) inhibitors, angle closure glaucoma, head trauma. Acute MI when shock is present, severe anaemia. Cerebral haemorrhage. Hypotension. Low cardiac output due to hypovolaemia, obstructive hypertrophic cardiomyopathy, hypothyroidism, malnutrition, increased intracranial tension.

Glyceryl trinitrate/Nitroglycerine (Vasodilator)
Injection 25mg/ml amp
Indications & Dosage: AD: PO: Stable angina: Extended release Up to 12.8 mg 3 times/day. IV Unstable angina Initial: 5-10 mcg/min. Usual: 10-200 mcg/min. Heart failure: Initial: 5-25 mcg/min. Acute MI; Induction of hypotension or control of HTN during surgery Initial: 5-25 mcg/min. Usual: 10-200 mcg/min. Max: 400 mcg/min. Rectal: Anal fissure As 0.4% oint: Apply 1.5 mg 12 hrly up to 8 wk. Topical: Stable angina As 2% oint: Apply 0.5-2
inches 3-4 times/day. Sublingual: **Acute angina** 300-600 mcg, repeat if needed. Seek medical help if pain persists after a total of 3 doses within 15 mins. As aerosol spray: 1-2 sprays of 400 mcg each. No more than 3 metered doses to be taken at any one time and minimum of 15 min interval between consecutive treatments. Buccal: **Acute angina**: 2-5 mg 3 times/day, increased if needed. **Heart failure**: 5 mg, repeat until symptoms are controlled. Transdermal: **Stable angina**: Per patch releases 2.5-20 mg/24 hr: 1 patch 24 hrly. Rotate site of application everyday. Max: 20 mg/day. **Prophylactic treatment of phlebitis and extravasation secondary to venous cannulation** Apply one 5-mg patch distal to the IV site, replace patch at a different site either daily or after 3-4 days depending on the patch. Use for as long as IV infusion is maintained.

**CI:** Hypersensitivity. Severe hypotension, heart failure, marked anaemia, hypertrophic obstructive cardiomyopathy, cerebral haemorrhage or head trauma, low cardiac output secondary to hypovolaemia, inferior MI with right ventricular involvement, raised intracranial pressure. Concomitant use with phosphodiesterase -5 inhibitors.

**ADR:** Facial flushing, dizziness, tachycardia, throbbing headache and tolerance. Large doses can cause vomiting, restlessness, hypotension, syncope, rarely cyanosis and methaemoglobinemia, impaired respiration, bradycardia. IV admin: IV preparation contains substantial quantities of alcohol and alcohol intoxication can occur. Sublingual Tabs/Spray: Dry mouth, localised burning sensation. Topical: Contact dermatitis, erythema, local irritation. Transdermal patches: Contact dermatitis, metal-containing patches should be removed before cardioversion, defibrillation, diathermy. Buccal tablets: Delayed dissolution, may be swallowed by mistake. Potentially Fatal: Hypotension, paradoxical bradycardia, impaired respiration, syncope and collapse

**Metoprolol (β₁ - Blocker)**
Refer Antihypertensives

**Nifedipine (CCB)**
Refer Antihypertensives

**Propranolol (β - Blocker)**
Refer Antihypertensives

**Verapamil (CCB)**
Refer Antiarrhythmics
ANTIARRHYTHMIC DRUGS

Adenosine (For PSVT)
Injection: 6mg/2ml - 2ml amp

Indications & Dosage: PARENTERAL: Paroxysmal supraventricular tachycardia; differential diagnosis of supraventricular tachycardias: AD: Initially, 3 mg by rapid IV inj over 2 sec with cardiac monitoring; 6 mg may be given after 1 – 2 min if necessary, then 12 mg after a further 1 – 2 min. CH: Initially, 50 – 100 mcg/kg; if necessary, may increase dose by 50 – 100 mcg/kg increments at 1 – 2 min intervals or until arrythmia is controlled. Max dose: CH: 300 mcg/kg. Myocardial imaging: AD: 140 mcg/kg/min by IV infusion for 6 min. Inject radionuclide 3 min after infusion.

CI: 2nd or 3rd degree AV block (except in patients with a functioning artificial pacemaker). Sick sinus syndrome (except in patients w/ a functioning artificial pacemaker). Asthma.


Amiodarone (Class III)
Tablets: 100mg, 200mg; Injection: 50mg/ml - 3ml ampules

Indications & Dosage: Control of ventricular & supraventricular arrhythmias including those associated with wolff-parkinson-white sydrome: As hydrochloride: ORAL: AD: Initially, 200 mg tid for 1 wk. Decreased to 200 mg bid for the next wk. Maintenance: ≤ 200 mg daily depending on patient’s response. IV: AD: 5 mg/kg in 250 ml 5% glucose, infused over 20 min – 2 hrs. Max dose: 1.2 g in 500 ml of 5% glucose. PARENTERAL (For Emergency Control): AD: 150–300 mg in 10 – 20 ml of glucose by slow inj over a period of ≤ 3 min with at least 15min intervals.

CI: HSR, bradycardia, sino-atrial block, severe hypotension, severe sinus node dysfunction, 2nd and 3rd degree heart block, atrioventricular block, thyroid disease, pregnancy, lactation, previous toxic effect of amiodarone.

ADR: Blue-grey discolouration of skin, photosensitivity, peripheral neuropathy, paraesthesia, myopathy, ataxia, tremor, nausea, vomiting, metallic taste, hypothyroidism, hyperthyroidism, alopecia, sleep disturbances, hot flushes, corneal microdeposits, sweating. Heart block, bradycardia, sinus arrest in patients with existing sinus or AV node disease. Pulmonary fibrosis, hepatotoxicity.
Atenolol (Class II, β₁ - Blocker)
Refer Antihypertensives

Diltiazem (Class IV, CCB)
Refer Antihypertensives

Ligocaine (Class I)
Refer Local Anaesthetics

Metoprolol (Class II, β Blocker)
Refer Antihypertensives

Phenytoin (Class I)
Refer Anticonvulsants

Propranolol (Class II)
Refer Antihypertensives

Verapamil (Class IV, CCB)
Tablets, SR tablets: 40mg; Injection: 5mg/2ml- 2ml amps

Indications & Dose: Control of supraventricular arrhythmias: As hydrochloride: ORAL: AD: 120 - 480 mg daily in 3–4 divided doses according to the severity of the condition and response. CH: ≥ 2 yrs: 40–120 mg bid/tid, according to response; ≤ 2 yrs: 20 mg bid/tid. IV: AD: 5 – 10 mg injected over 2–3 min, a further 5 mg is injected 5–10 min after the 1st dose, if needed. CH: 1–15 yrs: 100 – 300 mcg/kg over ≥2 min, repeated after 30 min, if necessary; ≤1 yr: 100–200 mcg/kg over ≥2 min, repeated after 30 min, if needed. Max dose: CH: 1-15 yrs: 5 mg.

ORAL: Management of angina pectoris: AD: As hydrochloride: 120 mg tid or 80 mg bid in patients with angina of efforts. As modified – release: Up to 480 mg daily. Management of HTN: AD: As hydrochloride or as modified – release preparation: 160mg bid or 240 – 480 mg daily. CH: As hydrochloride: 10 mg/kg daily in divided doses.

Management of MI: AD: As hydrochloride or as modified – release preparation: 360 mg daily in divided doses, start at least 1 wk after acute infarction.

CI: Hypotension, bradycardia, second- and third-degree atrioventricular block, sinoatrial block, sick sinus syndrome; cardiogenic shock; history of HF or significantly impaired left ventricular function (even if controlled by therapy); atrial flutter or fibrillation complicating Wolff-Parkinson-White syndrome; porphyria

ADR: Bradycardia, depression of atrioventricular or sinoatrial nodal function, atrioventricular block, hypotension, headache, dizziness, palpitation, flushing worsening HF, transient asystole; nausea, constipation; rashes, arthralgia.
**VASOCONSTRICTORS**

**Mephentermine**
Injection: 30mg/ml, 10ml Vial

**Indications & Dosage:** AD: IV **Maintenance of BP in hypotensive states** 30-45 mg as single dose, repeated as necessary or followed by IV infusion of 0.1% mephentermine in 5% dextrose, rate and duration of administration will depend on patient's response. **Hypotension secondary to spinal anesth in obstetric patients** 15 mg as a single dose, repeat if needed.

**CI:** Hypotension caused by phenothiazines. Hypertension. Phaeochromocytoma

**ADR:** Drowsiness, incoherence, hallucinations, convulsions, tachycardia. Fear, anxiety, restlessness, tremor, insomnia, confusion, irritability and psychosis. Nausea, vomiting, reduced appetite, urinary retention, dyspnoea, weakness,. AV block, CNS stimulation. Cerebral haemorrhage and pulmonary oedema, ventricular arrhythmias.

**Noradrenaline**
Injection: 4mg/2ml amp

**Indications & Dosage:** AD: IV **Acute hypotensive states:** Initial: 8-12 mcg/min, up to 8-30 mcg/min in refractory shock. Adjust according to BP response. Maintenance: 2-4 mcg/min. Injection **Upper GI haemorrhage** Instill 8 mg in 100 mL of 0.9% sodium chloride soln through a nasogastric tube hrly for 6-8 hr, then 2 hrly for 4-6 hr. Withdraw drug gradually.

**CI:** Hypertension. Pregnancy. Patients with peripheral or mesenteric vascular thrombosis unless necessary as a life-saving procedure.

**ADR:** Hypertension, headache, peripheral ischaemia, bradycardia, arrhythmias, anxiety, skin necrosis (with extravasation), dyspnoea, respiratory difficulty.

**Phenylepherine**
Eye drops: 10% 5ml bottle; Injection: 10mg/ml amp

**Indications & Dosage:** AD: PO **Nasal congestion:** As HCl: 10 mg 4 hrly. Max: 60 mg/day. IV **Hypotensive states** As 0.1% HCl soln: 100-500 mcg via inj, repeat as needed after at least 15 mins. **Severe hypotension:** Infuse 10 mg at initial rate of ≤180 mcg/min, then reduce to 30-60 mcg/min according to response. **Paroxysmal supraventricular tachycardia:** As 0.1% HCl soln: Initial max: 500 mcg, may increase subsequent doses by 100-200 mcg, up to 1 mg if needed. IM/SC. **Hypotensive states:** As 0.1% HCl soln: Initial: 2-5 mg with further doses of 1-10 mg if needed. **Rectal Haemorrhoids:** As cream/ointment: Apply ≤4 times/day. As supp: Insert 1 supp ≤4 times/day. **Ophth Mydriasis** As HCl: ≤10% soln: Instill 1 drop, may repeat in 10-60 mins as needed. **Conjunctival decongestant:** As HCl: Usually 0.12% soln: Instill 1-2 drops ≤4 times/day for ≤72 hr. **Nasal congestion:** As 0.25-1% soln: Instill/spray 4 hrly as needed
**CI:** Hypertension, ventricular tachycardia. Oral: use with or within 14 days of MAOI therapy. Ophthalmic: narrow-angle glaucoma.

**ADR:** Anxiety, reflex bradycardia, tachycardia, arrhythmias, headache, cold extremities/gangrene, hypertension, nausea, vomiting, sweating, weakness, fear, restlessness, insomnia, confusion, irritability, psychotic states, dyspnoea, anorexia, palpitations, extravasation causing tissue necrosis and sloughing, mydriasis, difficulty in micturition and urinary retention, piloerection, increased salivation, hyperglycaemia, lactic acidosis. Ophthalmic solutions may liberate pigment granules from the iris, corneal clouding/damage. Potentially Fatal: Increase in cardiac contractility, which may lead to angina or cardiac arrest; severe hypertension leading to cerebral haemorrhage or pulmonary oedema.

**ANTICOAGULANTS , ANTITHROMBOTICS & FIBRINOLYTICS**

**Acetylsalicylic acid /Aspirin (Antiplatelet)**
Refer Analgesics & Antipyretics

**Clopidogrel (Platelet Aggregation Inhibitor; Anticoagulant)**
Tablets: 75mg
**Indications & Dosage:** ORAL: Prophylaxis in thromboembolic disorders including MI, peripheral arterial disease & stroke: AD: As bisulfate: 75 mg once daily.
**CI:** HSR, active pathological bleeding e.g. peptic ulcer or intracranial haemorrhage. Administration within 7 days after MI and ischaemic stroke, coagulation disorders. Lactation.
**ADR:** Dyspepsia, abdominal pain, nausea, vomiting, flatulence, constipation, diarrhoea, gastritis, gastric and duodenal ulcers; paraesthesia, vertigo, headache, dizziness; eosinophilia, pruritis, rashes. Serious events include bleeding and GI haemorrhage. Rarely leucopaenia.

**Enoxaparin (Low Molecular Weight Heparin; Anticoagulant)**
Injection: 20mg/0.2ml (2000 Anti-Xa IU), 40mg/0.4ml (2000 Anti-Xa IU)
**Indications & Dosage:** SC: Prophylaxis of venous thromboembolism during surgical procedures: AD: Low to moderate risk: 20mg (2000 units) once daily for 7–10 days. Give the 1st dose approximately 2 hrs pre-operatively. Hight-risk: 40 mg (4000 units) once daily. Give the 1st dose approximately 12 hrs pre-operatively. Post-operation: 30 mg (3000 units) bid starting within 12–24 hrs after the operation. Deep-vein thrombosis: AD: 1 mg (100 units)/kg every 12hrs for 5 days. Prevention of clotting in the extracorporeal circulation during haemodialysis: AD: 1mg (100 units)/kg into the arterial line of the circuit at the beginning of the dialysis session. Give a further dose of 0.5–1 mg
Management of unstable angina: AD: 1mg (100 units)/kg every 12 hrs for 2–8 days with concomitant low-dose aspirin. Reduce dose in patients at high risk of haemorrhage.

CI: HSR, acute bacterial endocarditis, major bleeding disorders, haemorrhagic stroke, drug-induced thrombocytopenia

ADR: Thrombocytopenia, mild bleeding, inj. site irritation, pain and ecchymoses, HSR and erythema.

**Heparin (Anticoagulant)**

Injection: 25,000 IU/5ml - 5ml vial.

**Indications & Dosage:**

**IV:** Management of unstable angina; venous thromboembolism; acute peripheral arterial embolism: AD: 5000-10,000 units IV loading dose followed by 1000-2000 units/hr continuous infusion of 5000-10,000 units IV inj every 4-6 hrs. CH: Administer a lower loading dose. Maintenance: 15-25 units/kg/hr continuous infusion.

**SC:** Venous thromboembolism: AD: 15,000 units injected every 12 hrs. CH: 250 units/kg every 12 hrs. Prophylaxis of postoperative venous thromboembolism including pregnancy with a history of deep-vein thrombosis or pulmonary embolism: AD: 5000 units given 2 hrs before surgery, then every 8-12 hrs for 7 days or until the patient is ambulant; increased to 10,000 units every 12 hrs during the 3rd trimester of pregnancy. Prevention of mural thrombosis: AD: 12,500 units every 12 hrs for at least 10 days.

PARENTERAL: Prevention of re-occlusion of the coronary arteries following thrombolytic therapy in MI: AD: 2000 units IV followed by 12,500 units SC every 12 hrs after streptokinase or 5000 units IV followed by 1000 units/hr IV after alteplase.

CI: Patients predisposed to active bleeding including thrombocytopenia, peptic ulcer disease, cerebrovascular disorders, haemorrhagic blood disorders, bacterial endocarditis, active tuberculosis, severe HTN, oesophageal varices and patients who have recently undergone surgery. Severe renal & hepatic impairment. Cerebral or subarachnoid haemorrhage, abdominal or thoracic bleeding into closed space, severe traumatic bleed, hepatic, renal, splenic or arterial injury, recent liver or renal biopsy, recent cerebrospinal surgery, recent eye surgery, severe haemostatic defect, arterial thrombosis with heparin-associated thrombocytopenia. IM administration.

ADR: Bleeding, slight fever, headache, chills, nausea, vomiting, constipation, epistaxis, bruising, slight haematuria, skin necrosis (SC inj), osteoporosis, alopecia. HSR include urticaria, conjunctivitis, rhinitis, asthma, angioedema and anaphylactic shock. Priapism.

**Streptokinase (Thrombolytic/Plasminogen activator)**

Injection: 1.5 million IU (Powder for solution for injection)

**Indications & Dose:**

**IV INFUSION:** Thrombosis: AD: 250 000 units over 30 minutes, followed by 100 000 units every hour for 12–72 hrs according to condition with monitoring of clotting parameters. MI: AD: 1 500 000 units over 60 minutes. Thrombosed arteriovenous shunts: consult manufacturer’s literature

CI: Recent haemorrhage, surgery (including dental), parturition, trauma; heavy vaginal bleeding: haemorrhagic stroke, history of cerebrovascular disease (especially recent or if residual disability); coma; severe HTN; coagulation defects; bleeding diatheses, aortic dissection; risk of GI bleeding such as recent history of peptic ulcer, oesophageal varices,
ulcerative colitis; acute pancreatitis; severe liver disease; acute pulmonary disease with cavitation; previous allergic reactions

**ADR:** Nausea and vomiting; bleeding, usually limited to site of inj but internal bleeding including intracranial haemorrhage may occur (if serious bleeding occurs, discontinue infusion—coagulation factors may be required); hypotension, arrhythmias (particularly in MI); allergic reactions including rash, flushing, uveitis, anaphylaxis; fever, chills, back or abdominal pain; Guillain-Barré syndrome reported rarely

**Warfarin (Anticoagulant)**

**Tablets:** 5mg

**Indications & Dose:** **ORAL:** Prophylaxis & treatment of thromboembolic disorders: AD: Usual induction dose is 10 mg daily for 2 days, according to the individual patient; the subsequent dose depends upon the prothrombin time; usual daily maintenance dose is 3–9 mg taken at the same time each day

**CI:** Pregnancy; peptic ulcer, severe HTN, bacterial endocarditis

**ADR:** Haemorrhage; HSR, rash, alopecia, diarrhoea, unexplained drop in haematocrit, ‘purple toes’, skin necrosis, jaundice, hepatic dysfunction, nausea, vomiting and pancreatitis

**HAEMOSTATICS / ANTIHAEMORRHAGICS**

**Aprotinin (Antifibrinolytic)**

**Injection:** 5, 00,000 KIU amps/ vial

**Indications & dose:** **IV:** Haemorrhage: AD: 5,00,000-10,00,000 KIU by slow inj or infusion at a max rate of 1,00,000 KIU/min with the patient in supine position, followed by 2,00,000 KIU every hr until haemorrhage is controlled.

**Management of haemorrhage in open-heart surgery:** AD: 2,00,000 KIU loading dose after induction of anaesthesia but before incision or reopening of wound.

**CI:** HSR.

**ADR:** Administration through peripheral line may cause local thrombophlebitis, bronchospasm, GI disturbances. HSR or pseudo-allergic reactions may occur after first dose or thereafter e.g. skin rashes and eruptions, tachycardia, pallor or cyanosis, dyspnoea, nausea and anaphylactic shock.

**Tranexamic acid (Antifibrinolytic)**

**Injection:** 100mg vial; Tablets

**Indications & Dose:** **ORAL:** Short – term management of haemorrhage: AD: 1–1.5 g or 15–25 mg/kg bid–qid. CH: 25 mg/kg bid or tid. **Long – term management of hereditary angioedema:** AD: 1 – 1.5 g bid or tid.

**IV:** Short–term management of haemorrhage: AD: 0.5–1 g or 10–15 mg/kg tid or 25–50 mg/kg daily infusion rate. CH: 10 mg/kg bid / tid. **Renal impairment:** short-term management of haemorrhage: CrCl: > 500 micromol/L: 12.5 mg/kg once daily oral dose or 5 mg/kg IV once daily; 250–500 micromol/L: 25 mg/kg bid orally or 10 mg IV once daily; 120–250 micromol/L: 25 mg/kg bid oral dose or 10 mg/kg IV bid.
CI: Severe renal failure, thromboembolic disease, massive upper urinary tract hemorrhage; pronounced thrombotic tendency or colour vision disorders, thrombophlebitis. Impaired liver function; subarachnoid bleeding. Lactation.

ADR: Diarrhoea, nausea, vomiting, disturbances in color vision, giddiness, hypotension, thromboembolism and thrombosis.

**INOTROPIC AGENTS**

**Digoxin** (Cardiac Glycoside)

Tablets: 0.25mg; Oral solution; Injection: 0.5mg/2ml-2ml amps

**Indications & Dose:** Management of supraventricular arrhythmias, atrial fibrillation & HF:

- **ORAL:** AD: Rapid digitalisation: 0.75-1.5 mg during the first 24-hr period. Less urgent digitalisation: 250 mcg once or twice daily. Maintenance: Usually, 125-250 mcg daily but may also range from 62.5-500 mcg daily. High doses should be given in divided doses. EL: Lower doses are given. **Emergency cases:** IV: AD: 0.5-1 mg by IV infusion over at least 2 hrs or in divided doses, each given over 10-20 min.

CI: Hypertrophic obstructive cardiomyopathy; Wolff-Parkinson-White syndrome or other accessory pathway, particularly if accompanied by atrial fibrillation; intermittent complete heart block; 2nd degree atrioventricular block

ADR: Usually associated with excessive dosage and include anorexia, nausea, vomiting, diarrhoea, abdominal pain; visual disturbances, headache, fatigue, drowsiness, confusion, delirium, hallucinations, depression; arrhythmias, heart block; rarely rash, intestinal ischaemia; gynaecomastia on long-term use; thrombocytopenia reported

**Dobutamine** (Sympathomimetic Agent; Inotrope)

Injection: 250mg/5ml amps/ vials

**Indications & Dosage:** IV: As hydrochloride. **Management of acute HF:** AD: 0.25–5 mg/ml in 5% glucose or 0.9% NaCl at a usual rate of 2.5–10 mcg/kg up to 0.5–40 mcg/kg according to heart rate, cardiac output, BP and urine output.

CI: HSR; idiopathic hypertrophic subaortic stenosis (IHSS); cardiac arrhythmias, constrictive pericarditis, low-filling pressure, conditions affecting left ventricular filling or emptying eg, aortic stenosis, mitral stenosis, hypertrophic obstructive cardiomyopathy.

Dopamine  (Sympathomimetic Agent )
Injection: 200mg/5ml amps.

Indications & Dosage: IV: As hydrochloride Acute HF & MI: AD: Initially, 1-5 mcg/kg increased gradually to 5-10 mcg/kg/min in seriously ill patients.
CI: Tachyarrhythmia, ventricular fibrillation; ischaemic heart disease; phaeochromocytoma; hyperthyroidism; HSR.
ADR: Nausea and vomiting; peripheral vasoconstriction; hypotension with dizziness, fainting, flushing; tachycardia, ectopic beats, palpitations, anginal pain; headache, dyspnoea; HTN particularly in overdosage

DIURETICS

Acetazolamide  (Carbonic Anhydrase Inhibitor)
Tablets: 250mg

Indications & Dose: ORAL: Induction of diuresis: AD: 250-375 mg daily or on alternate days. Open-angle glaucoma; preoperative management of angle-closure glaucoma: AD: 250-1000 mg daily in divided doses.
Prophylaxis of high-altitude disorders: AD: 500-1000 mg daily.
CI: HSR to sulphonamides; sodium or potassium depletion, hepatic insufficiency; hepatic cirrhosis; hyperchloraemic acidosis; severe renal impairment; severe pulmonary obstruction; chronic noncongestive angle-closure glaucoma; adrenocortical insufficiency. Pregnancy, lactation.
ADR: Drowsiness, paraesthesia, ataxia, dizziness, thirst, anorexia, headache, confusion, malaise, depression; nausea, vomiting, diarrhoea; metabolic acidosis, polyuria, hyperuricaemia, renal calculi, nephrotoxicity, hepatic dysfunction. Rarely severe reactions to sulfonamides including Stevens-Johnson syndrome, toxic epidermal necrolysis, fulminant hepatic necrosis, agranulocytosis, aplastic anemia and other blood dyscrasias

Furosemide  (Loop diuretic)
Tablets: 40mg; Injection: 20mg/2ml amps

Indications & Dose: HTN: ORAL: AD: 40-80 mg daily, alone or in conjunction with other antihypertensives. Oedema associated with HF: ORAL: AD: Initially, 20 mg daily or 40 mg every other day for mild cases, or 40 mg once daily adjusted according to response; 80 mg or more daily or intermittently as a single dose in 2 divided doses for up to 600 mg daily in severe cases. CH: 1-3 mg/kg body wt daily. Max dose: CH: 40 mg daily. IV: AD: 20-25 mg IM or slow IV inj increased by 20-mg increments every 2 hrs. Doses > 50 mg must be given as IV infusion. CH: 0.5-1.5 mg/kg body wt daily. Max dose: CH: 20 mg daily.
CI: Severe sodium & water depletion, HSR to sulphonamides and furosemide, hypokalaemia, hyponatraemia, precomatose states associated with liver cirrhosis, anuria or renal failure. Addison's disease.
**Hydrochlorothiazide (Thiazide Diuretic)**

*Tablet: 25mg*

**Indications & Dosage:** ORAL: **HTN**: AD: Initially, 12.5 mg. Usual dose: 25-50 mg daily, alone or in conjunction with other antihypertensives, up to 100 mg, if necessary. **Oedema associated with HF**: AD: Initially, 25-100 mg daily in the morning, reduced to 25-50 mg daily or intermittently, up to 200 mg daily in severe cases. **Nephrogenic diabetes insipidus**: AD: Initially, dose up to 100 mg daily. CH: Initially, 1-2 mg/kg daily in divided doses; <6 months: 3 mg/kg daily.

**CI:** Severe renal or severe hepatic impairment; Addison disease, preexisting hypercalcaemia, anuria, sulphonamide allergy. Pregnancy and lactation.

**ADR:** Volume depletion and electrolyte imbalance including hypokalemia, dry mouth, thirst, lethargy, drowsiness, muscle pain and cramps, fatigue, weakness, dizziness, hypotension; hyperuricemia, may precipitate an attack of gout; impotence, hyperglycaemia; raised calcium concentration; HSR eg, rashes, photosensitivity, thrombocytopenia, jaundice, pancreatitis; anorexia, gastric irritation, nausea, vomiting, constipation, diarrhoea, sialadenitis

**Metolazone (Thiazide like Diuretic)**

*Tablets: 10mg*

**Indications & Dose:** ORAL: **HTN**: AD: Initially, 1.25mg daily, adjusted after 3 – 4 wks according to response. Usual dose: 2.5 – 5 mg daily, either alone or in conjunction with other antihypertensives. Maintenance dose: 5 mg on alternate days. Formulations with enhanced bioavailability: 0.5 mg once daily, usually in the morning, increased to 1 mg once daily if necessary. **Oedema**: AD: 5 –10 mg daily, increased if necessary to 20 mg daily

**CI:** HSR to metolazone, other thiazides and sulfonamide derivatives; anuria; hepatic coma; severe renal and hepatic dysfunction, refractory hypokalaemia, hyperonatraemia, hypercalcaemia; symptomatic hyperuricaemia; addision's disease. Pregnancy.

**ADR:** Postural hypotension, palpitations, chest pain, chills; hypokalaemia, hypomagnesaemia, hyperonatraemia, hypochloraemic alkalosis, hypercalcaemia; hyperuricaemia, gout; hyperglycaemia; impotence; Nausea, anorexia, pancreatitis; HSR, rashes, photosensitivity; intrahepatic cholestasis.

**Spironolactone (Aldosterone antagonist )**

*Tablet: 25mg*

**Indications & Dosage:** ORAL: **Refractory oedema**: AD: Initially, 100 mg daily, CH:Initially, 1.5-3 mg/kg daily in divided doses. Max dose: 400 mg/day. **Hepatic cirrhosis with acites and oedema**: AD:Patients with urinary sodium/potassium ratio >1; Initially, 100 mg daily; <1: Initially, 200-400 mg daily. CH: Initially, 1.5-3 mg/kg daily in divided doses. **Diagnosis of primary hyperaldosteronism**: AD: 400 mg daily. CH:Initially, 1.5-3 mg/kg body wt daily in
divided doses. **Preoperative management of hyperaldosteronism:** AD: 100-400 mg daily. Maintenance in the absence of surgery: Lowest effective dose. CH: Initially, 1.5-3 mg/kg body wt daily in divided doses. 

**CI:** Anuria, hyperkalaemia, acute or progressive renal insufficiency, severe hepatic impairment; Addison disease, HSR

**ADR:** Fluid or electrolyte imbalance, hyperkalaemia, hyponatraemia, tachycardia, hypotension, oliguria, renal failure; Gastric bleeding, ulceration, gastritis, diarrhea and cramping, nausea, vomiting, drowsiness, headache, confusion, weakness, paraesthesia; gynaecomastia, loss of libido and impotence, hirsutism, menstrual irregularities; agranulocytosis; HSR

### LIPID LOWERING AGENTS

**Atorvastatin** (HMG – CoA Reductase Inhibitor)

Tablets: 10mg

**Indications & Dosage:** ORAL: As calcium. **Hypercholesterolaemia:** AD: Initially, 10 mg daily increased at 4-wk intervals. Max dose: 80 mg/day.

**CI:** HSR; active liver disease or unexplained persistent elevations of serum transaminase; pregnancy, lactation.

**ADR:** Headache, asthenia, dizziness, insomnia; flatulence, diarrhoea, nausea, vomiting, anorexia, xerostomia; angioedema, myalgia, arthralgia, rhabdomyolysis; albuminuria, hematuria, UTI; HSR rash/ pruritus, including SJS, TEN, chest pain

### OTHER CARDIOVASCULAR DRUGS

**Atropine** (Antimuscarinic)

Refer other premedication drugs

### 3. CENTRAL NERVOUS SYSTEM

### ANTIPSYCHOTICS

**Chlorpromazine** (Antipsychotic)

Tablets: 50mg, 100mg; Injection: 50mg/2ml amps

**Indications & Dosage:** As hydrochloride: **Management of psychiatric conditions:** ORAL: AD: 25 mg tid increased if necessary to 75 mg daily as a single dose at night. Maintrmance: 25-100 mg tid increased to ≥ 1 g daily as required in
psychotic patients. CH: >5 yrs: 1/3-1/2 of the adult dose. Max dose: childn >5 yrs: 75 mg; 1-5 yrs: 40 mg. IM: AD: 25-50 mg repeated every 6-8 hrs if necessary. RECTAL: AD: As suppository: 100 mg. Max dose: 4 suppositories in 24 hrs. Initially, 1/3-1/2 the normal adult dose gradually increased in elderly or debilitated patients. **Alleviate intractable hiccup:** ORAL: AD: 25-50 mg tid/qid for 2-3 days. CH: 1-12 yrs: 500 mcg/kg every 4-6 hrs. Max dose: Childn >5 yrs: 75 mg; 1-5 yrs: 40 mg.

**CI:** HSR; preexisting CNS depression, coma, bone marrow suppression; phaeochromocytoma; lactation.

**ADR:** Tardive dyskinesia (on long-term therapy) characterized by rhythmic involuntary movements of tongue, face, mouth or jaw. Involuntary movements of extremities may also occur. Dry mouth, constipation, urinary retention, mydriasis, agitation, insomnia, depression and convulsion, ECG changes. Allergic skin reaction, amenorrhoea, gynaecomastia, weight gain. Hyperglycaemia and raised serum cholesterol.

**Clozapine (Antipsychotic - Atypical)**

Tablets: 25mg, 100mg

**Indications & dosage:** AD: PO Schizophrenia 12.5 mg 1-2 times on day 1, followed by 25 mg 1-2 times on day 2. Increase gradually according to response. Usual range: 200-450 mg/day. Max: 900 mg/day. **Psychoses in Parkinson's disease** Initial: 12.5 mg/day at night, increase gradually. Usual range: 25-37.5 mg/day. Max: 100 mg/day

**CI:** History of bone marrow disorders including agranulocytosis, circulatory collapse, alcoholic or toxic psychosis, drug intoxication, uncontrolled epilepsy, severe renal, hepatic or cardiac disease; paralytic ileus. Pregnancy and lactation

**ADR:** Drowsiness, dizziness, headache; nausea, vomiting, constipation; anxiety, confusion, fatigue, transient fever. Rarely, dysphagia, acute pancreatitis, cholestatic jaundice; orthostatic hypotension, tachycardia; seizures; hypersalivation.**Potentially Fatal:** Rarely, thromboembolism. Reversible neutropenia which may progress to a potentially fatal agranulocytosis. Fatal myocarditis.

**Divalproate (GABA Enhancer)**

Refer Anticonvulsant drugs.

**Fluphenazine (Antipsychotic)**

Injection: 25mg/ml amps

**Indications & Dosage:** Psychoses; mania; schizophrenia: ORAL: AD: Initially, 2.5 – 10 mg daily in 2 – 3 divided doses, increased according to response. Maintenance: 1-5 mg daily. Max dose: AD: 20 mg/day. EL: 10 mg/day.

IM: AD: As hydrochloride: Initially, 1.25 mg adjusted according to response. Maintenance: 2.5 – 10 mg in divided doses every 6–8 hrs. As decanoate or enanthate: Initially, 12.5 mg adjusted according to response. Maintenance: 12.5–100 mg at intervals of 2–6 wks. EL: 6.25 mg adjusted according to response. **Short-term adjunctive management of severe anxiety or behavioral disturbances:** ORAL: AD: As hydrochloride: 1 mg bid increased to 2 mg bid if necessary.

**CI:** HSR; comatose or severely depressed states; blood dyscrasias; liver disease; pregnancy (3rd trimester), lactation.
**Haloperidol (Antipsychotic)**

Tablets: 5mg; Injection: 5mg/ml-1ml amps

**Indications & Dosage:**

- **Psychoses:** ORAL: AD: 0.5-5 mg bid/tid reduced gradually according to patient’s response, increased up to 100mg daily in severe or resistant cases. Maintenance: 3-10 mg daily. CH: Initially, 25-50 mcg/kg daily in 2 divided doses, increased gradually if necessary. Max dose: CH: 10 mg. IM: AD: 2 – 10 mg with subsequent doses given every hr or at intervals of 4 – 8 hrs, until symptoms are controlled. Max dose: 30 mg. **Management of tourette’s syndrome; severe tics:** ORAL: AD: Initially, 0.5 – 1.5 mg tid. Max dose: 10 mg daily. **Short-term adjunctive management of severe anxiety or behavioral disturbances:** ORAL: AD: 0.5 mg bid. **Restlessness & confusion:** ORAL: AD: 1-3 mg every 8 hrs. SC: AD: 5 – 15 mg given over 24 hrs. **Alleviate intractable hiccup:** ORAL: AD: 1.5 mg tid adjusted according to response. PARENTERAL: AD: 3 – 15 mg IM/IV daily in divided doses. **Management of nausea and vomiting:** ORAL: ADULT: 0.5 – 2 mg daily. SC: AD: 1.5 mg once or twice daily. PARENTERAL: AD: 0.5 – 2 mg daily. **Emergency control of severely disturbed patients:** PARENTERAL: AD: 30 mg IV/IM.

**CI:** HSR; angle-closure glaucoma; lactation.

**ADR:** Tardive dyskinesia; extrapyramidal reactions. Anxiety, drowsiness, depression, anorexia, transient tachycardia, postural hypotension, leukopaenia; anticholinergic side effects.

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**Olanzapine (Antipsychotic - Atypical)**

Tablets: 10mg

**Indications & Dosage:**

**Management of schizophrenia:** ORAL: AD: Initially, 10 mg daily as a single dose adjusted to 5 mg daily according to response at intervals of not < 1 wk. Maintenance: 5 – 20 mg daily provided that doses > 15 mg is given only after clinical reassessment. IM: AD: Initially, 5 – 10 mg followed by further 5 – 10 mg, as required, after 2 hrs. Max dose: 20 mg daily. **Acute manic episodes:** ORAL: AD: Initially, 10 – 15 mg daily adjusted to 5 mg daily at intervals of not < 24 hrs if necessary. Maintenance: 5 – 20 mg daily for 3 – 4 wks. Initial oral and IM dose is 5 mg daily for patients with renal and hepatic impairment. Reduce IM dose to half in the elderly.

**CI:** HSR; angle-closure glaucoma; lactation.

**ADR:** Postural hypotension; constipation; dizziness; wt gain; agitation, insomnia, akathisia, tremor, personality disorders; oedema; somnolence; increased appetite.

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**Risperidone (Antipsychotic)**

Tablets: 2mg
Indications & Dosage: AD: PO Schizophrenia Initial: 2 mg/day, up to 4 mg/day on the 2nd day if needed. May further adjust doses at wkly intervals. Maintenance: 4-6 mg/day. Max: 16 mg/day. Acute manic episodes of bipolar disorder Initial: 2-3 mg once daily. May increase slowly if needed. Max: 6 mg/day. IM Schizophrenia Give oral risperidone for a few days to assess tolerability before IM inj. For patients not stabilised on oral risperidone or patients stabilised on oral risperidone for ≥2 wk in doses ≤4 mg/day: 25 mg 2 wkly. For patients stabilised on oral risperidone for ≥2 wk in doses >4 mg/day: 37.5 mg 2 wkly. Continue oral risperidone for the 1st 3 wk after the 1st inj.

SP: Pre-existing CV diseases; discontinue use if signs and symptoms of tardive dyskinesia occur; renal and hepatic impairment, elderly, epilepsy, parkinsonism; pregnancy. May cause drowsiness and orthostatic hypotension. Gradual withdrawal is recommended. Monitor blood glucose in diabetics and patients at risk of developing diabetes.

ADR: Agitation, anxiety, dizziness, headache, somnolence; orthostatic hypotension; constipation, dyspepsia, nausea, vomiting, abdominal pain, blurred vision, erectile dysfunction, priapism, rhinitis, rash and allergy, galactorrhoea, gynaecomastia, menstrual disorders, extrapyramidal symptoms (rarely). weight gain, oedema, tardive dyskinesia. Potentially Fatal: Neuroleptic malignant syndrome may occur rarely; seizures. May cause increased mortality in elderly with dementia-related psychosis.

ANXIOLYTICS & SEDATIVES

Alprazolam (Antianxiety)
Tablets: 0.5mg

Indications & Dosage: ORAL: Short-term treatment of anxiety disorders: AD: 0.25-0.5 mg 3 times daily, may be increased to 3-4 mg daily if necessary. EL: Initially, 0.25 mg bid/tid. Panic disorders: AD: 10 mg daily. Initial dose for short-term management of anxiety disorders in debilitated patients and those with advanced liver disease is 0.25 mg bid/tid.

CI: HSR to benzodiazepines. Acute narrow-angle glaucoma, preexisting CNS depression or coma, acute pulmonary insufficiency or sleep apnoea; severe hepatic impairment; pregnancy and lactation.

ADR: Psychological and physical dependence, withdrawal syndrome; drowsiness, sedation, vertigo, headache, visual disturbances, GI disturbances, jaundice; fatigue, muscle weakness, ataxia, dizziness, confusion and depression.

Clobazam (Antianxiety)
Tablets: 10mg

Indications & Dose: ORAL: Short-term treatment of anxiety disorders; adjunctive therapy in the management of epilepsy: AD: 20-30 mg as a single dose at night or as daily divided doses, increased to 60 mg/day in severe conditions. CH: ≥3 yrs: Not more than half of the adult dose. EL: 10-20 mg daily. Debilitated patients: 10-20 mg daily.

CI: HSR; history of drug dependence; myasthenia gravis; 1st trimester of pregnancy, lactation; serious liver damage; sleep apnoea syndrome; impaired respiratory function.
ADR: Constipation, anorexia, nausea; dizziness, fine tremors; worsening of respiratory symptoms in predisposed individuals; ataxia, drowsiness, headache, confusion; loss of libido, motor dysfunction; dependence; visual disturbances & wt gain.

**Diazepam (Antianxiety)**
Tablets: 5mg; Injectable: 10mg-2ml amps; Rectal solution

**Indications & Dose:** Short-term treatment of anxiety disorders: ORAL: AD: 2 mg tid. Max dose: 30 mg daily. PARENTERAL: AD: 10 mg IM/IV repeated if necessary after 4 hrs. RECTAL: AD: As solution: 500 mcg/kg, repeated after 12 hrs if necessary. As suppository: 10-30 mg. **Insomnia associated with anxiety:** ORAL: AD: 5-15 mg at bedtime. **Control of sleepwalking; night terrors:** ORAL: CH: 1-5 mg at bedtime. **Premedication for surgery:** ORAL: AD: 5-20 mg given before GA. IV: AD: 100-200 mcg/kg. RECTAL: AD: As rectal solution: 10 mg. **Adjunct in the management of seizures:** ORAL: AD: 2-60 mg daily in divided doses. RECTAL: AD: As solution: 200-500 mcg/kg, repeated after 4-12 hrs if necessary. **Relief of muscle spasms:** ORAL: AD: 2-15 mg daily in divided doses, increased up to 60 mg daily in severe spastic disorders eg, cerebral plasy. CH: 2-15 mg daily in divided doses, increased to 40 mg daily in severe spastic disorders. PARENTERAL: AD: 10 mg IM/IV repeated if necessary after 4 hrs. **Control of acute symptoms of alcohol withdrawal:** ORAL: AD: 5-20 mg repeated after 2-4 hrs if necessary. Alternatively, 10 mg tid/qid on the 1st day reduced to 5 mg tid/qid as required. PARENTERAL: AD: 10-20 mg IM/IV if symptoms are severe and if delirium tremens has developed. **Relief of muscle spasm associated with tetanus:** PARENTERAL: AD & CH: 100-300 mcg/kg given every 1-4 hrs by IV inj. Alternatively, 3-10 mcg/kg is given over 24 hrs by continuous IV infusion or by nasoduodenal tube using a suitable liquid oral dose preparation. RECTAL: AD & CH >10 kg: As solution: 500 mcg/kg repeated every 12 hrs if necessary. Max dose for elderly and debilitated patients is half the adult dose. Reduce dose in patients with liver or kidney dysfunction.

**CI:** HSR; preexisting CNS depression or coma, respiratory depression; acute pulmonary insufficiency or sleep apnoea; severe hepatic impairment; pregnancy and lactation.

**ADR:** Drowsiness and lightheadedness the next day; confusion and ataxia (especially in the elderly); amnesia; dependence; paradoxical increase in aggression; muscle weakness; occasionally headache, vertigo, salivation changes, GI disturbances, visual disturbances, dysarthria, tremor, changes in libido, incontinence, urinary retention; blood disorders and jaundice; skin reactions; raised liver enzymes

**Lorazepam (Antianxiety)**
Tablets: 1mg, 2mg

**Indications & Dose:** Anxiety: ORAL: AD: 1–6 mg daily in 2 or 3 divided doses, largest dose taken at night. Max dose: 10 mg daily. PARENTERAL: AD: 25–30 mcg/kg given by inj every 6 hrs. **Insomnia associated with anxiety:** ORAL: AD: 1–4 mg as a single dose given at bedtime. **Premedication before surgery:** ORAL: AD: 2–3 mg given the night before the operation followed by a smaller dose if necessary, the next morning. Alternatively, 2 – 4 mg is given 1–2 hrs before the operation. PARENTERAL: AD: 50 mcg/kg IV administered 30–45 min before the operation or 1–1.5 hrs if
CI: Sleep apnoea, severe Resp insufficiency. Pregnancy, lactation. HSR to benzodiazepines. Severe hepatic impairment; acute narrow-angle glaucoma. 
ADR: Daytime drowsiness, dizziness, muscle weakness, ataxia, confusion, depression, appetite changes, headache, sleep disturbance, agitation, dermatological symptoms, libido changes, decreased alertness, numbed emotions, eye function disturbance, GI symptoms, blood dyscrasias, elevated liver enzymes. Paradoxical reactions e.g. stimulation & rage (rare). Hypotension.

Zolpidem (Non Benzodiazepine Hypnotic) 
Film-coated tablets: 10mg 
Indications & Dose: ORAL: Short-term treatment of insomnia: AD: As tartrate: 10 mg immediately before bedtime. Elderly or debilitated patients may be sensitive to the effects. Patients with hepatic insufficiency 5 mg. Total dose should not exceed 10 mg. Long-term use is not recommended & treatment should not exceed 4 wks. 
CI: HSR to zolpidem, severe resp & hepatic insufficiency, sleep apnoea syndrome. CH <15 yr, in association with alcohol, breastfeeding, myasthenia. Congenital galactosemia, glucose & galactose malabsorption or lactase deficiency. 
ADR: Confusion, paradoxical & psychiatric reaction, dizziness, equilibrium disturbances, giddiness, ataxia, headaches, drowsiness during daytime, impaired alertness, muscle weakness, diplopia.

ANTIDEPRESSANTS

Amitriptyline (NA + 5-HT Reuptake Inhibitor) 
Tablets: 25mg 
Indications & Dose: ORAL: As hydrochloride: Depression: AD: Initially, 75 mg daily in divided doses or as a single dose at night, increased gradually, if necessary to 150 mg daily given in the late afternoon or evening. Alternatively, 50 – 100 mg as a single dose at bedtime, increased by 25 – 50 mg. CH: Adolescents: 30 – 75 mg daily or in divided doses, preferably at bedtime. EL: 30 – 75 mg daily or in divided doses, preferably at bedtime. Max dose: AD: 150 mg daily. Nocturnal enuresis: CH: >11 yrs: 25 – 50 mg at bedtime; 6 – 10 yrs: 10 – 20 mg at bedtime; <6 yrs: not recommended. Treatment should not continue > 3 months. Severe depression: AD: 200 – 300 mg daily. Max dose: 300 mg daily. 
CI: Recent MI, arrhythmias (especially heart block); manic phase in bipolar disorders; severe liver disease; children; porphyria 
ADR: Sedation, dry mouth, blurred vision (disturbance of accommodation, increased IOP), constipation, nausea, difficulty in micturition; cardiovascular adverse effects particularly with high dosage including ECG changes, arrhythmias, postural hypotension, tachycardia, syncope; sweating, tremor, rash & HSR (urticaria, photosensitivity); behavioural disturbances; hypomania or mania, confusion (particularly in elderly), interference with sexual function,
blood sugar changes; increased appetite & wt gain (occasional weight loss); endocrine adverse effects such as testicular enlargement, gynaecomastia & galactorrhoea; convulsions, movement disorders & dyskinesias, fever, agranulocytosis, leukopenia, eosinophilia, purpura, thrombocytopenia, hyponatraemia (may be due to inappropriate antidiuretic hormone secretion); abnormal liver function test. In overdose, excitement, restlessness, marked anticholinergic effects; severe symptoms including unconsciousness, convulsions, myoclonus, hyperreflexia, hypotension, acidosis, respiratory and cardiac depression with arrhythmias

**Duloxetine (Selective NE Reuptake Inhibitor)**

Tablets/Cap: 20mg

**Indications & dosage:** Depression: AD: 20-30 mg bid or 60 mg once daily. Max: 60 mg daily. Diabetic neuropathy: AD: 60 mg once daily. Max: 120 mg daily. Moderate to severe stress urinary incontinence in women: AD: 40 mg bid.

CI: Uncontrolled narrow-angle glaucoma. Concomitant use or within 2 wk of MAOIs. Renal and hepatic impairment. ADR: Nausea, dry mouth, constipation, decreased appetite, somnolence, fatigue, increased sweating

**Escitalopram (Selective Serotonin Reuptake Inhibitor)**

Film-coated tab: 5mg

**Indications & Dose:** ORAL: Major depressive episodes: AD: 10 mg once daily; may be increased to max 20 mg daily. CH & adolescent < 18 yrs: not recommended. EL: Half the adult dose. Max dose: Adult: 20 mg daily. Panic disorder with or without agoraphobia: AD: Initially, 5 mg daily, for the 1st wk, thereafter increased to 10 mg daily after 7 days. May be further increased up to max 20 mg daily, dependent on individual patient response. CH & adolescent <18 yrs: not recommended. Max dose: Adult: 20 mg daily.

CI: Concomitant use with MAOIs; HSR; childn & adolescents <18 yrs; treatment of depressive illness. ADR: Diarrhoea, nausea, increased sweating, insomnia, ejaculation disorder, fatigue, somnolence; postural hypotension, sinusitis, taste disturbances.

**Fluoxetine (Selective Serotonin Reuptake Inhibitor)**

Capsules & tablet: 20mg

**Indications & Dose:** ORAL: Depression: AD: 20 mg/day orally. Bulimia nervosa: AD: 60 mg/day. Obsessive compulsive disorder: AD: Initially, 20 mg daily increased up to 60 mg daily after several wks if unresponsive. Premenstrual dysphoric disorder (PMDD): AD: 20 mg/day & may be continued for 6 months.

CI: Severe renal or hepatic failure; HSR; concomitant MAOIs therapy, lactation. ADR: Anxiety, nervousness, insomnia, drowsiness, dizziness, fatigue, asthenia, tremor, seizures; nausea, diarrhea, headache, anorexia, wt loss, dyspepsia; dyspnoea; decreased libido, sexual dysfunction.
Fluvoxamine (Selective Serotonin Reuptake Inhibitor)
Tablets: 50mg
**Indications & dosage:** AD: PO Depression Initial: 50-100 mg/day, up to 300 mg/day if needed. Obsessive compulsive disorder 50 mg once daily, may increase slowly. Max: 300 mg/day. Social anxiety disorder Extended release Initial: 100 mg once daily. Max: 300 mg/day.

**CI:** Hypersensitivity. Not to be used with thioridazine, pimozide, aloestron, tizanidine. Lactation

**ADR:** Headache, asthenia, tremor, palpitations; nausea, diarrhoea, constipation, anorexia, vomiting, flatulence; somnolence, insomnia, dry mouth, nervousness, dizziness, tremor, anxiety, agitation, decreased libido, depression, CNS stimulation, dyspnœa, yawn, sweating; abnormal ejaculation, urinary frequency, anorgasmia, urinary retention.

Lithium carbonate (Mood Stabilizer)
Tablets: 300mg
**Indications & Dose:** ORAL: Acute mania; hypomania; prophylaxis against recurrent manic depressive psychosis: AD: Initially, 600 – 800 mg/day in divided doses until a blood level of 1 – 1.55 mEq/L is achieved. Maintenance: A level of 0.7 – 1 mEq/L. CH: Not recommended. EL: Reduced dosage with careful observation for signs of toxicity. Renal disease: Preferable to avoid lithium.

**CI:** Renal and cardiac disease. Addison's disease; disturbed electrolyte balance; hypothyroidism; major surgery.

**ADR:** Arrhythmias, hypotension, bradycardia, peripheral circulatory collapse; tremor, muscle hyperirritability, headache, fatigue, ataxia, dizziness, psychomotor retardation, confusion, dystonia, hallucinations, seizures, pseudotumor cerebi, drowsiness, poor memory and intellectual function, muscular weakness, slurred speech; drying or thinning hair, dry skin, pruritus, exacerbation of psoriasis, acne; Blurred vision, tinnitus; anorexia, nausea, vomiting, diarrhea, sialorrhea, dry mouth, parotitis; urinary urgency, stress incontinence, polyuria, albuminuria, sexual dysfunction, symptoms of nephrogenic diabetes, decreased CrCl; leukocytosis, leukemia; hypothyroidism/hyperparathyroidism, hypercalcaemia, hyponatremia, dehydration; weight gain, taste distortion, fever, swollen joints.

Mirtazapine (Antidepressant)
Film-coated tab: 15mg
**Indications & Dose:** ORAL: Depression: AD: Initially, 15 mg daily. Dose may be increased gradually according to clinical response. Change dose at intervals of at least 1 – 2wks. Usual effective dose: 15 – 45 mg daily, may be given as single dose, preferably at bedtime or in 2 equally divided doses.

**CI:** HSR; lactation.

**ADR:** Somnolence, nausea, increased appetite, wt gain, dry mouth, dysphagia, constipation; dizziness, malaise, tremor, confusion, headache, apathy, depression, agitation, anxiety, amnesia, apathy, restless legs syndrome; dyspnœa, hypoventilation; oedema, chest pain, palpitations, tachycardia, postural hypotension; blurred vision, miosis, glaucoma; hyperacusis, vertigo, partial transitory deafness, otitis media, parosmia; dysmenorrhoea, breast
engorgement and enlargement, leucorrhoea, menorrhagia, enhanced libido. Rare: HSR, seizures, bone marrow suppression

**Sertraline (Selective Serotonin Reuptake Inhibitor)**

Film-coated tab: 50mg

**Indications & Dose:** ORAL: Depression: AD: Initially, 50 mg daily increased by 50- mg increments if necessary at intervals of at least 1 wk. Max dose: 200 gm daily. Management of obsessive-compulsive disorders: AD: Initially, 50 mg daily. CH: > 12 yrs: 50 mg once daily; 6 – 12 yrs: Initially, 25 mg once daily. Panic disorder with or without agoraphobia; posttraumatic stress disorder: AD: Initially, 25 mg daily increased to 50 mg daily after 1 wk, further increased if necessary by 50- mg increments at intervals of at ≥ 1 wk. Max dose; 200 mg daily. Hepatic/renal impairment: Either lower dose or less frequent dosage is preferred.

**CI:** HSR; concomitant use with monoamine oxidase inhibitor (MAOIs). Children < 18 yrs.

**ADR:** Nausea, anorexia, dyspepsia, constipation, diarrhoea, dry mouth, flatulence, vomiting; ejaculation failure, decreased libido, increased sweating; agitation, insomnia, headache, dizziness, fatigue, anxiety, nervousness, tremor, paraesthesia, rash, hot flushes, blurred vision.

**Prochlorperazine (Antipsychotic)**

Tablets: 5mg; Injection: 12.5mg/ml amps

**Indications & Dose:** Nausea & vomiting: IM: AD: As mesylate: 12.5 mg by deep IM. If required, followed 6 hrs later by oral dose. AD: Oral/rectal: As mesylate or maleate: 5 –10mg bid/tid.

**CI:** CNS depression, comatose patients. Bone marrow depression, HSR. Childn < 2 yrs. Pregnancy and lactation.

**ADR:** Cholestatic jaundice, cardiac arrhythmias, orthostatic hypotension, leucopaenia, thrombocytopaenia, dry mouth, blurring of vision, glaucoma, urinary retention, constipation, galactorrhoea, gynaecomastia, amenorrhoea & impotence. Buccal: Transient numbness of gum & tongue.

**Promethazine (H1 Antihistaminics)**

Injection: 50mg/2ml amps; Elixir/ syrup: 5mg/5ml; Tablets: 25mg

**Indications & Dosage:** Allergic conditions: As hydrochloride: ORAL: AD: 25 mg at night increased to 25 mg bid, if needed; alternatively, 10 – 20 mg bid or tid. CH: 5 – 10 yrs: 10 – 25 mg daily in 1 or 2 divided doses; 2 – 5 yrs: 5 – 15 mg daily in 1 or 2 divided doses. PARENTERAL: AD: 25 – 50 mg/ml IM or slow IV inj of a 25 mg/ml concentration diluted to 2.5 mg/ml or infused at a rate of not more than 25 mg/ml. CH: 5 – 10 yrs: 6.25 – 12.5 mg by deep IM inj. Max dose: AD: 100 mg.

PARENTERAL: As hydrochloride: Short – term management & prevention of insomnia & motion sickness: AD: 25 – 50 mg as a solution of 25 or 50 mg/ml or slow IV inj or infusion at a rate ≤ 25 mg/min. CH: 5 – 10 yrs: 6.25 – 12.5 mg deep IM. Max dose: AD: 100 mg. Nausea & vomiting: AD: 12.5 – 25 mg repeated at intervals of not < 4 hrs. CH: 6.25 – 12.5 mg by deep IM inj. Max dose: AD: 100 mg/day.
ANY ROUTE: **Prevention & treatment of nausea & vomiting associated with labyrinthitis:** As theoclolate: AD: 25 mg at night increased to 50 or 75 mg at night or to 25 mg bid/tid oral or rectal, if necessary. CH: 12-5-37.5 mg daily by mouth or a suppository. Max dose: AD: 100 mg daily. **Prevention of motion sickness:** AD: Oral/rectal suppository: As hydrochloride: 20 or 25 mg at the night before travelling followed by a similar dose in the morning if necessary. As theoclolate: 25 mg at night or 25 mg 1-2 hrs before travelling. CH: Oral/rectal suppository: As hydrochloride: 5-10 yrs: 10 mg; 2-5 yrs: 5 mg; doses are given at night before traveling, repeated the following morning if necessary. As theoclolate: 5-10 yrs: 12.5 mg daily starting either on the night before long journey or 1-2 hrs before short journeys. **Short-term management of insomnia:** As hydrochloride: AD: 20-50 mg at night by mouth or as suppository. CH: 5-10 yrs: 20-25 mg at night by mouth or as suppository; 2-5 yrs: 15-20 mg.

**ANTICONVULSANTS**

**Carbamazepine** (Antiepileptic)

Tablets: 200mg

**Indications & Dosage:**

- **Epilepsy:** ORAL: AD: Initially, 100-200 mg once or twice daily gradually increased by increments of 100-200 mg every 2 wks. Maintenance: 0.8-1.2 g daily in divided doses. CH: 10-15 yrs: 0.6-1 g daily; 5-10 yrs: 400-600 mg daily; 1-5 yrs: 200-400 mg daily; ≤1 yr: 100-200 mg daily. Alternatively, 10-20 mg/kg body wt daily in divided doses. Max dose: AD: 2 g daily. RECTAL: AD: 250 mg every 6 hrs for patients incapable of oral treatment.

- **Prophylaxis of bipolar disorder:** ORAL: AD: Initially, 400 mg daily in divided doses gradually increased if necessary. Maintenance: 400-600 mg daily. Max dose: 1.6 g daily.

**CI:** HSR; bone marrow depression; porphyria, pregnancy.

**ADR:** Dizziness, drowsiness, headache, ataxia, blurred vision, diplopia (may be associated with high plasma levels); GI intolerance including nausea & vomiting, anorexia, abdominal pain, dry mouth, diarrhoea or constipation; commonly, mild transient generalized erythematous rash (withdraw if worsens or is accompanied by other symptoms); leukopenia & other blood disorders (including thrombocytopenia, agranulocytosis & aplastic anaemia); cholestatic jaundice, hepatitis, acute renal failure, SJS, toxic epidermal necrolysis, alopecia, thromboembolism, arthralgia, fever, proteinuria, lymph node enlargement, arrhythmias, heart block & HF, dyskinesias, paraesthesia, depression, impotence, male infertility, gynaecomastia, galactorrhoea, aggression, activation of psychosis, photosensitivity, pulmonary HSR, hyponatraemia, oedema, disturbances of bone metabolism with osteomalacia; confusion & agitation in elderly

**Clobazam** (Benzodiazepine)

Refer Anxiolytics

**Clonazepam** (Benzodiazepine)

Tablets: 0.5mg
**Indications & Dosage:** ORAL: **Epilepsy:** AD: Initially 1 mg at night for 4 nights, increased gradually over 2–4 wks to a usual maintenance dose of 4–8 mg daily in 3-4 divided doses; EL (or debilitated patients): Initial dose 500 mcg increased as above; CH up to 1 yr: Initially 250 mcg increased as above to 0.5–1 mg daily in divided doses; 1–5 yrs initially 250 mcg increased to 1–3 mg daily in divided doses; 5–12 yrs initially 500 mcg increased to 3–6 mg daily in divided doses. **Panic disorders:** AD: Initially, 250 mcg bid, increased after 3 days up to 1 mg daily. Max dose: 4 mg daily. IV: **Emergency management of status epilepticus:** AD: 1 mg as inj or infusion given over 30 sec, repeated if necessary. CH & infants: 500 mcg.

**CI:** Respiratory depression; acute pulmonary insufficiency; myasthenia gravis, HSR to benzodiazepines.

**ADR:** Drowsiness, lethargy, ataxia, paradoxical aggression, irritability & mental changes; rarely blood disorders, abnormal hepatic function tests, excessive salivation

**Divalproate (GABA Activator)**

SR Tablet: 500mg.

**Indications & Dosage:** ORAL: **Primary generalized seizures eg, absence & myoclonic seizures; partial seizures:** AD: Initially 15 mg/kg body wt/day in 2-4 divided doses, increase at 1-wk interval by 5-10 mg/kg/day until seizures are controlled or side effects preclude further increases. Max: 30 mg/kg/day.

**CI:** Hepatic disease or severe hepatic impairment; porphyria. Pregnancy.

**ADR:** Nausea, vomiting, indigestion, diarrhea, abdominal cramps, anorexia; sedation, headache, nystagmus, dizziness, erythema multiforme, skin rash, weakness.

**Gabapentin (GABA Analogue)**

Capsules, tablets: 300mg

**Indications & Dosage:** ORAL: **Epilepsy** (partial seizures with or without secondary generalization): AD: Initially, 300 mg on the 1st day, 300 mg bid on the 2nd day and 300 mg tid on the 3rd day. Thereafter, dose may be increased until effective antiepileptic control is achieved. Maintenance: 0.9-1.2 g daily. CH: 6-12 yrs: Initially, 10 mg/kg on the 1st day, 20 mg/kg on the 2nd day and 25-35 mg/kg on the 3rd day. Maintenance: 37-50 kg: 1200 mg daily; 26-36 kg: 900 mg daily. Max dose: 2.4 g daily. Total daily dose should be taken in 3 divided doses and the max dosage interval is 12 hrs.

**Neuropathic pain:** AD: Titrate dose to a max of 1.8 g daily in 3 divided doses. **Renal impairment:** CrCl of 50-79 ml/min: 600-1800 mg daily; 30-49 ml/min: 300-900 mg daily; 15-29 ml/min: 150 mg daily (or 300mg every other day) to 600 mg daily; < 15 ml/min: 150 mg daily (or 300 mg every other day) to 300 mg daily. To be given in 3 divided doses. Recommended loading dose for **patients undergoing haemodialysis** who have never received gabapentin: 300-400 mg, followed by 200-300 mg after each 4 hrs of haemodialysis.

**CI:** HSR. Lactation.

**ADR:** Somnolence, dizziness, ataxia, weakness, paraesthesia, fatigue, headache; nystagmus, diplopia; nausea, vomiting, wt gain, dyspepsia; rhinitis; tremor; leucopenia; altered liver function tests; SJS.
Lamotrigine (Antiepileptic)
Tablets: 25mg

Indications & Dosage: ORAL: Adjunctive therapy in simple partial seizures, complex partial seizures & secondarily generalized tonic-clonic seizures: As monotherapy: AD: Initially, 25 mg once daily for 2 wks, increased by 50-100 mg every 1-2 wks. Maintenance: 100-200 mg daily as a single dose or in 2 divided doses. CH: >12 yrs: Same as adult dose; < 12 yrs: Not recommended. Max dose: AD: 500 mg daily. Adjunctive therapy with valproate: AD: Initially, 25 mg on alternate days for 2wks followed by 25 mg once daily for 2 wks, increased by 25-50 mg every 1-2 wks. Maintenance: 100-200 mg daily as a single dose or in 2 divided doses. CH: Initially, 0.15 mg/kg once daily for 2wks followed by 0.3 mg/kg once daily for 2wks increased by 0.3 mg/kg every 1-2wks. Maintenance: 1-5 mg/kg once daily or in 2 divided doses. Adjunctive therapy with enzyme-inducing antiepileptics without valproate: AD: 50 mg once daily for 2 wks, followed by 50 mg bid for further 2 wks, increased by 100 mg every 1-2 wks, Maintenance: 200-400 mg/day in 2 divided doses. CH: 2-12 yrs: Initially, 0.6 mg/kg daily in 2 divided doses for 2 wks followed by 1.2 mg/kg every 1-2 wks. Maintenance: 5-15 mg/kg in 2 divided doses. Max dose: AD: 700 mg daily. Reduce dose by 50% in moderate hepatic impairment and 75% in severe hepatic impairment.

CI: HSR; abrupt withdrawal; avoid alcohol.

ADR: Skin eruptions usually maculopapular in nature, nausea, headache, dizziness, ataxia, irritability/aggression, tremor, agitation, confusion, diplopia, blurred vision. Haematological abnormalities have also been reported, including leucopaenia & thrombocytopaenia. Rarely, angioedema & SJS.

Phenobarbital (Barbiturate Antiepileptic)
Tablets: 30mg, 60mg; Injection: 200mg/ml-1ml amp; Elixir/Syrup: 20mg/5ml

Indications & Dosage: As sodium: ORAL: Generalized tonic-clonic seizures, partial seizures: AD: 60–180 mg at night; CH up to 8 mg/kg daily. Febrile convulsions: CH: Up to 8 mg/kg daily IV(dilute inj 1 in 10 with water for inj): Neonatal seizures: Neonate 5–10 mg/kg every 20–30 minutes up to plasma concentration of 40 mg/litre. Status epilepticus: AD: 10 mg/kg at a rate of not more than 100 mg/minute (up to maximum total dose of 1 g); CH: 5–10 mg/kg at a rate of not more than 30 mg/minute. PARENTERAL: Emergency management of acute seizures or status epilepticus: AD: 200 mg IM/SC repeated after 6 hrs if necessary. CH: 15 mg/kg IM followed by 5 mg/kg daily by mouth in divided doses.

CI: HSR; severe renal and hepatic disorders.

ADR: Sedation, mental depression, ataxia, nystagmus; allergic skin reactions including rarely, exfoliative dermatitis, toxic epidermal necrolysis, SJS; paradoxical excitement, restlessness & confusion in the elderly; irritability & hyperactivity in children; megaloblastic anaemia (may be treated with folic acid); osteomalacia; status epilepticus (on treatment withdrawal); hypotension, shock, laryngospasm & apnoea (with IV inj)
Phenytoin  (Antiepileptic)
Tablets: 100mg; Suspension 25mg/ml; Injection

**Indications & Dosage:**
**ORAL:** Generalized tonic-clonic seizures, partial seizures: AD: Initially 3–4 mg/kg daily (as a single dose or in 2 divided doses), increased gradually at intervals of 2 wks as necessary (with plasma-phenytoin concentration monitoring); usual dose 200–500 mg daily; CH: Initially 5 mg/kg daily in 2 divided doses; usual dose range 4–8 mg/kg daily (maximum 300 mg). IV: Status epilepticus: AD: 15 mg/kg at a rate of not more than 50 mg/minute, as a loading dose; maintenance doses of about 100 mg by mouth or by slow IV inj should be given thereafter at intervals of 6–8 hrs, monitored by measurement of plasma concentrations; rates and dose reduced according to wt; CH: 15 mg/kg as a loading dose at rate of 1 mg/kg/minute (not exceeding 50 mg/minute); NEONATE: 15–20 mg/kg as a loading dose at rate of 1–3 mg/kg/min

**CI:** Porphyria; avoid parenteral use in sinus bradycardia, sino-atrial block, 2nd & 3rd degree heart block, Stokes-Adams syndrome

**ADR:** Gastric intolerance, headache, sleeplessness, agitation (during initial phase); sedation, confusion, blurred vision, ataxia, nystagmus, diplopia, slurred speech, behavioural disorders, hallucinations, hyperglycaemia (may be signs of overdosage); gingival hyperplasia, acne, coarse facies, hirsutism, fever, hepatitis, neurological changes (peripheral neuropathy, choreiform movements, impaired cognition, increased seizure frequency); osteomalacia, rickets (associated with reduced plasma calcium levels); lymph-node enlargement; rashes (discontinue; if mild re-introduce cautiously, but discontinue if recurrence); very rarely, SJS, systemic lupus erythematosus, toxic epidermal necrolysis; rarely blood disorders including megaloblastic anaemia (may be treated with folic acid), leukopenia, thrombocytopenia, agranulocytosis with or without bone marrow depression; IV administration—cardiovascular and CNS depression (particularly if administered too rapidly) with arrhythmias, hypotension and cardiovascular collapse, alterations in respiratory function (including respiratory collapse)

Sodium Valproate  (Antiepileptic)
EC-Tablet: 50mg, 200mg; Injection: 1gm vial; Syrup

**Indications & Dosage:**
**ORAL:** Myoclonic seizures; partial seizures; petit-mal seizures; tonic-clonic seizures: AD: Initially, 15 mg/kg/day in 2-4 divided doses increase at 1-wk intervals by 5-10 mg/kg/day. Max dose: 30 mg/kg/day. Prophylaxis of migraine: AD: As semisodium: 250 mg bid up to 1 g daily in some patients.

**CI:** Preexisting hepatic dysfunction, active liver disease; porphyria. Pregnancy.

**ADR:** Anorexia, nausea, vomiting, diarrhoea, increased appetite, wt gain; nystagmus, diplopia, blurred vision, ataxia, tremors, drowsiness, fatigue; alopecia; bleeding and bruising (rare). Thrombocytopenia, neutropenia, agranulocytosis, aplastic anemia; hepatotoxicity
**ANTIPARKINSONIAN DRUGS**

**Levodopa**  (Antiparkinson Agent)
Tablets: 100mg

**Indications & Dose:**
- **ORAL:**  *Parkinson’s disease:* AD: Without peripheral dopa – decarboxylase inhibitor: Initially, 125 mg bid gradually increased every 3 – 7 days according to response. Max dose: up to 8 g daily in divided doses.
- **Parkinsonism in conjunction with benserazide:** AD: For patients not previously treated with levodopa: initially, 50 mg tid / qid increased gradually by 100 mg increments given once or twice wkly.

For patients previously treated with levodopa: 10 – 15 % of the usual dose previously taken. Maintenance: Fot patients not previously treated with levodopa: 400 – 800 mg daily in divided doses. EL: Initially, 50 mg once or twice daily increased by 50 mg every 3rd or 4th day increased to 100 mg tid in advanced stages. Parkinsonism in conjunction with carbidopa: AD: For patients not previously treated with levodopa: Initially, 25 mg carbidopa with 100 mg levodopa tid, increased gradually in increments of 12. 5 mg carbidopa with 50 mg levodopa or 25 mg carbidopa with 100 mg levodopa every day or on alternate days. For patients previously treated with levodopa: 20 – 25 % of the dose previously taken tid or qid. Maintenance: For patients not previously treated with levodopa: 75 – 200 mg carbidopa with 0.75 – 2g levodopa daily in divided doses. Max dose: For patients not previously treated with levodopa: 200 mg carbidopa daily.

**CI:** Angle – closure glaucoma; melanoma; psychosis; severely decompensated endocrine, renal, hepatic disorders.

Avoid alcohol, pregnancy and lactation

**ADR:** GI disturbances eg, nausea, vomiting, anorexia. GI bleeding in peptic ulcer patients. Orthostatic hypotension, cardiac arrythmias. Psychiatric symptoms (elderly), depression with or without suicide tendency. Abnormal involuntary movements or dyskinesias, delirium, hallucinations. Slight elevation of liver enzymes, leucopaenia and thrombocytopaenia.

**Levodopa + Carbidopa**  (Antiparkinson Agent)
Tablets: Levodopa 200mg + Carbidopa 50mg

**Indications & Dosage:**
- **ORAL:**  *Parkinson’s disease; postencephalitic parkinsonism; idiopathic:* AD: Start treatment with l-dopa 100 mg + carbidopa 25 mg given tid. Increased by 1 tab/day every 1-2 days upto a max. of 8 tabs/day. Other combinations may be used providing these amounts of l-dopa and carbidopa in a day. If the patient has been taking l-dopa alone, the combination should be started after a gap of at least 8 hrs after stopping l-dopa.

**CI & ADR:** Refer Levodopa
4. PAIN, FEVER

ANALGESIC & ANTIPYRETIC

Acetylsalicylic acid (Platelet Inhibitor; NSAID)
Tablets & EC-tablet: 75mg, 100mg, 300mg

Indications & Dosage:
- **ORAL:** Secondary prophylaxis of vascular events: AD: 75–100 mg once daily. Immediate suppression of platelet aggregation: AD: 150-300 mg loading dose followed by 150 mg daily for the 1st month then 75 mg daily thereafter. Juvenile Idiopathic arthritis (JIA): CH: 80–100 mg/kg body wt daily in 5 or 6 divided doses. Max dose: 130 mg/kg daily in acute exacerbations if necessary. Relief of mild to moderate pain & fever: AD: 300–900 mg every 4–6 hours if necessary; maximum 4 g daily. RECTAL: 600–900 mg inserted every 4 hours if necessary; maximum 3.6 g daily. Management of acute rheumatoid disorders e.g., RA or osteoarthritis: AD: 4–8 g daily in divided doses. Max dose: 5.4 g daily in divided doses in chronic conditions.
- **CI:** HSR (including asthma, angioedema, urticaria or rhinitis) to acetylsalicylic acid or any other NSAID; children & adolescents under 16 yrs, except for JIA (Reye syndrome); Gl ulceration; haemophilia & other bleeding disorders; not for treatment of gout; pregnancy (3rd trimester); severe renal or hepatic impairment; lactation.
- **ADR:** GI ulceration, dyspepsia, Gl haemorrhage, anemia, prolonged bleeding time; HSR including rhinitis, urticaria, angioedema, anaphylactic shock; salicylism, tinnitus; bronchospasm.

Ketorolac (Pyrrolidine Carboxylic Acid – NSAID)
Injection: 30mg/ml amps; Eye drops: 0.5%; Tablets

Indications & dose:
- As trometamol: Short – term management of moderate to severe postoperative pain: ORAL: AD: 10mg every 4–6 hrs. EL: 10 mg every 6–8 hrs. Max dose: AD: 40mg for 7 days. PARENTERAL: AD: 10 mg IM/IV followed by 10–30mg every 4–6 hrs if necessary. EL: 60 mg/day. Max dose: >50 kg: 90mg/day. <50 kg: 60mg/day.
- OPHTHALMIC: Relief of ocular itching associated with seasonal allergic conjunctivitis: AD: Instill 1 drop of a 0.5% solution qid into the affected eye/s. Prevention & relief of postoperative eye inflammation: AD: Instill 1 drop of a 0.5% solution qid into the appropriate eye/s 24 hrs after surgery continued for 2 wks. Prevention of cystoid macular oedema: AD: Instill 1–2 drops of a 0.5% solution into the appropriate eye/s every 6–8 hrs starting 24 hrs before surgery continued for 3 – 4 wks. Active treatment of chronic aphakic or pseudoaphakic cystoid macular oedema: AD: Instill 1–2 drops of a 0.5% solution qid into affected eye/s for 2–3 months. Reduction of ocular pain & photophobia in patients undergoing incisional refractive surgery: AD: Instill 1 drop of a 0.5% solution qid into operated eye continued for 3 days after surgery. Renal impairment: Max dose: Parenteral administration: 60 mg/day.
- **CI:** HSR, asthma, hypovolaemia; should not be given postoperatively to patients with high risk of haemorrhage; history of peptic ulcer or coagulation disorders. Patients with nasal polyps; angioedema, bronchospasm; labour; moderate to severe renal impairment; GI bleeding, cerebrovascular bleeding; as prophylactic analgesic before surgery; pregnancy and lactation.
ADR: Gastric irritation, ulcer, bleeding and perforation, anemia.; nausea, drowsiness, diziness, nervousness; fluid retention; increased SGOT and SGPT; rash, bronchospasm, dry mouth, fever; bradycardia, chest pain; dizziness, headache, sweating, oedema
Ocular: Transient stinging and local irritation.

Mefenamic acid (NSAID)
Refer NSAIDs, Antirheumatoid Drugs.

Mefenamic acid + Dicyclomine HCl (NSAID)
Refer NSAIDs

Morphine (Opioid Analgesic)
Tablets 10 mg
Indications & dose: AD: PO Pain relief 5-20 mg 4 hrly. Intractable cough associated w/ lung cancer As oral soln: Initial: 5 mg 4 hrly. IV Pain associated w/ MI 10 mg, then a further dose of 5-10 mg if needed. Acute pulmonary oedema 5-10 mg. Unstable angina unresponsive to anti-ischaemic therapy 2-5 mg repeated every 5-30 mins as needed. Acute pain Initial: 2.5 mg 4 hrly, adjust according to response. IM/SC Acute pain 10 mg 4 hrly, adjust according to response. Premed in surgical procedures Up to 10 mg 60-90 mins pre-op. Analgesia during labour 10 mg. Intrathecal Moderate to severe pain 0.2-1 mg on a single occasion. Intraspinal Moderate to severe pain Initial: 5 mg epidural inj; after 1 hr, additional doses of 1-2 mg may be given if needed. Total dose: 10 mg/24 hr. Rectal Chronic pain As supp: 15-30 mg 4 hrly. Adjust according to response.
CI: Respiratory depression, acute or severe asthma; paralytic ileus; obstructive airway disease; acute liver disease; comatose patients; increased intracranial pressure; acute alcoholism. Pulmonary oedema resulting from a chemical respiratory irritant.
ADR: Sedation, euphoria, dysphoria; nausea, vomiting, raised intracranial tension, bradycardia, postural hypotension accentuated by hypovolumia; constipation, urinary retention; miosis; pruritus, truncal rigidity, biliary muscle spasm; dependence. Potentially Fatal: CNS depression including respiratory depression, coma, circulatory failure, hypotension

Naproxen
Tablets 250mg
Indications & Dosage: AD: PO Rheumatic disorders 0.5-1 g in 1-2 divided doses, up to 6 mth if needed. Up to 1.5 g/day in patients who can tolerate lower doses. Acute musculoskeletal disorders; Dysmenorrhoea: Initial: 500 mg, then 250 mg 6-8 hrly. Max: 1.25 g on the 1st day and 1 g thereafter. Acute gout: Initial: 750 mg, then 250 mg 8 hrly. Acute migraine attacks 750 mg at the onset of attack, followed after at least 30 mins by further doses of 250-500 mg. Max: 1,250 mg/day.

ADR: Gastric irritation, ulcer, bleeding and perforation, anemia.; nausea, drowsiness, diziness, nervousness; fluid retention; increased SGOT and SGPT; rash, bronchospasm, dry mouth, fever; bradycardia, chest pain; dizziness, headache, sweating, oedema

Paracetamol (NSAID)
Tablets: 500mg, 650mg; Syrup: 125mg/5ml; Suppositories: 250mg; Injection: 300mg/2ml
Indications & dose: ORAL: Mild to moderate pain, pyrexia: AD: 0.5–1 g every 4–6 hrs, maximum 4 g daily; CH: <3 months: 10 mg/kg; 3 months–1yr: 60–125 mg; 1–5 yrs: 120–250 mg; 6–12 yrs: 250–500 mg, these doses may be repeated every 4–6 hrs if necessary (Max dose: Adult: 4 g daily. Childn: 4 doses in 24 hrs). Post-immunization pyrexia: INFANT 2–3 months: 60 mg followed by a 2nd dose, if necessary, 4–6 hrs later; warn to seek medical advice if pyrexia persists after 2nd dose. Reduce dose in jaundice children <3 months to 5 mg/kg.

CI: HSR.
ADR: Nausea, allergic reactions, skin rashes; acute renal tubular necrosis. Hepatotoxicity in overdose.

Pentazocine (Opioid Analgesic)
Injection: 30mg/ml amp
Indications & Dose: Moderate to severe pain: As lactate: PARENTERAL: AD: 30 – 60 mg IM, SC, IV, may repeat 3-4 hrly. Max total daily dose: 360 mg. RECTAL: AD: 50 mg suppository up to qid.

CI: HSR; head injury; narcotic dependence; respiratory depression; raised intracranial pressure; MI; HF; arterial or pulmonary HTN; porphyria; pregnancy (prolonged use or high doses at term).

ADR: Abuse potential lower than morphine. May precipitate a severe withdrawal syndrome in a person with opioid dependence. Also refer Morphine

Pethidine (Opioid Analgesic)
Injection 50mg/ml amp
Indications & Dose: AD: PO Moderate to severe acute pain 50-150 mg 4 hrly. IV Adjunct to anesth 10-25 mg. IV/IM/SC Moderate to severe acute pain 25-100 mg IM/SC inj or 25-50 mg by slow IV inj repeated after 4 hr. IM/SC Obstetric analgesia 50-100 mg as soon as contractions occur at regular intervals; repeat after 1-3 hr if needed. Max: 400 mg/24 hr. Pre-op medication 25-100 mg 1 hr pre-op. Post-op pain 25-100 mg 2-3 hrly if needed.

SP: May impair ability to drive or operate machinery. Hypovolaemia, CV disease; adrenal insufficiency; biliary tract disorder; CNS depression or coma; history of drug abuse or acute alcoholism; head injury, intracranial lesions, elevated intracranial pressure; hepatic or renal impairment; morbidly obese; prostatic hyperplasia; toxic psychoses; pre-existing respiratory compromise (hypoxia and/or hypercapnia), COPD or other obstructive airway disease; sickle-
cell disease; supraventricular tachycardia; thyroid dysfunction. Elderly and debilitated patients. Withdraw gradually. Pregnancy (avoid prolonged use or high doses at term) and lactation.

**ADR:** Seizures, tachycardia. Also refer Morphine

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**Tramadol (Centrally acting Analgesic)**

Capsules, tablet: 50mg; Injection: 50mg/ml amps

**Indications & Dosage:** **Moderate to severe pain:** As hydrochloride: ORAL: AD: As modified-release preparation: 50-100 mg every 4-6 hrs once or twice daily. Max dose: 400 mg daily. IV: AD: 50-100 mg given every 4-6 hrs by inj over 2-3 min or by infusion. RECTAL: AD: 100 mg suppository up to qid. **Postoperative pain:** IV: ADULT: As hydrochloride: Initially, 100 mg followed by 50 mg every 10-20 min if necessary up to 250 mg for the 1st hr. Maintenance: 50-100 mg every 4-6 hrs. Max dose: 600 mg daily. A dosage interval of 12 hrs is recommended in severe hepatic impairment.

**CI:** Respiratory depression; acute alcoholism; head injuries; raised intracranial injuries; severe renal impairment; lactation.

**ADR:** Sweating, dizziness, nausea, constipation, dry mouth, vomiting; facial flush, headache, vertigo; tachycardia, palpitations, orthostatic hypotension; decreased libido or potency; miosis; hypothermia; fatigue, confusion, restlessness, change in mood, hallucinations, lowering of seizure threshold.

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**Fentanyl citrate (Opioid Analgesic)**

Injection: 0.1 mg/2ml amps

**Indications & Dosage:** **Moderate to severe pain:** AD: Initially, 200 mcg over 15 minutes for an episode of breakthrough pain; may repeat once after 15 minutes if needed. Not more than 4 unit doses/day orally.

Initial: 50-200 mcg, w/ supplements of 50 mcg. Patients w/ assisted ventilation: Initial: 300-3,500 mcg (up to 50 mcg/kg), w/ supplements of 100-200 mcg depending on response through IV with adjunct to general anesthetic agents. Patients w/ spontaneous respiration can be given 50-100 mcg 30-60 mins before induction of anesthesia through IM.

**CI:** Hypersensitivity.

**ADR:** Nausea, vomiting, bradycardia, oedema, CNS depression, confusion, dizziness, drowsiness, headache, sedation, transient hypotension, peripheral vasodilation, increased intracranial pressure, high IV dose may cause chest wall rigidity, respiratory depression, trunk rigidity, laryngospasm, bronchoconstriction.

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**ANTIMIGRAINE DRUGS**

**Divalproate (GABA Activator)**

Refer Anticonvulsant drugs

**Flunarizine (CCB)**
Tablets & Capsules: 5mg

Indications & dose: ORAL: Prophylaxis of migraine; prophylaxis of vertigo & vestibular disorders; prophylaxis of peripheral & cerebrovascular disorders: AD: As hydrochloride: 5 – 10 mg daily at bed time to minimize drowsiness.

CI: Pregnancy, lactation, GI or urinary tract obstruction, acute porphyrias.

ADR: Drowsiness, constipation, rarely wt gain, gastric pain, dry mouth; headache, depression; hypotension, flushing; extrapyramidal reactions; galactorrhoea.

Propranolol (β Blocker)

Refer Antihypertensive drugs.
5. MUSCULOSKELETAL SYSTEM

NSAIDs & ANTIRHEUMATIC DRUGS

Aceclofenac
Tablets: 100mg

Indications & Dosage: Rheumatoid arthritis, Ankylosing spondylitis, Osteoarthritis:
AD: 100 mg bid.
CI: Hypersensitivity to aspirin or NSAIDs; moderate to severe renal impairment; pregnancy (3rd trimester); history of peptic ulceration or GI bleed; patients with infections
ADR: Diarrhoea, nausea, dyspepsia, abdominal pain, GI bleeding, dizziness, rashes, increased LFTs, nephrotoxicity; blood dyscrasias

Chloroquine
Refer Antimalarials

Hydroxychloroquine
Tablets: 200mg

Indications & Dosage: AD: PO Rheumatoid arthritis; SLE Initial: 400 mg/day in divided doses. Maintenance: 200-400 mg/day. Max: 6.5 mg/kg/day or 400 mg/day whichever is lower. Malaria prophylaxis 400 mg every 7 days, start 2 wk before exposure, continue during exposure and for 4-6 wk after leaving the endemic area. Acute malaria: Initial: 800 mg, then 400 mg 6-8 hr later, then a further 400 mg on each of the 2 succeeding days.
CI: Retinal or visual field changes, known hypersensitivity. Long-term use in children.
ADR: Hair loss, bleaching of hair pigment, bluish-black pigmentation of the mucous membranes and skin, pruritus, urticaria photosensitivity; Retinopathy, difficulty in visual accommodation; tinnitus, myopathy (long-term therapy). Psychosis, seizures, leucopenia and rarely aplastic anaemia; hepatitis, GI upsets; dizziness, hypokalaemia, headache, tinnitus, reduced hearing, nerve deafness, neuromyopathy, and myopathy, including cardiomyopathy.

Diclofenac (NSAID)
Tablets: 50mg; Injection: 75mg/3ml amps; Suppository: 50mg; Gel: 1%

Indications & Dosage: Bursitis; sprains; strains; tendinitis; relief of pain & inflammation associated with musculoskeletal & joint disorders eg, RA, osteoarthritis, ankylosing spondylitis; dysmenorrhoea; acute gout:
As sodium: ORAL: AD: 75-150 mg daily in divided doses. IM: AD: 75 mg injected once daily into the gluteal muscle, increased to 75 mg bid if necessary in severe conditions. Migraine: ORAL: AD: As potassium: Initially, 50 mg taken at the first signs of an attack, additional dose of 50 mg may be taken after 2 hrs if symptoms persist. Postoperative pain: As sodium: IV: AD: 75 mg infusion in 5% glucose or 0.9% sodium chloride given over 30-120 min, repeated after
Flurbiprofen (NSAID)

Indications & Dose: ORAL: Musculoskeletal & joint disorders e.g., ankylosing osteoarthritis & RA: 150 mg - 200 mg daily in divided doses, increased to 300 mg daily in acute or severe conditions if necessary.

OPHTHALMIC: Prevention of miosis during ocular surgery: AD: As sodium: Instill 1 drop of a 0.3% solution into the eye every 30 min starting within 2 hrs up to not less than 30 min before surgery. Max dose: Max 4 drops.

Postoperative ocular inflammation: AD: Instill 1 drop of a 0.3% solution into the eye qid for 1 – 3 wks starting at 24 hrs after surgery.

TOPOICAL / CUTANEOUS: Acute & chronic musculoskeletal conditions & rheumatic diseases: AD: Apply sufficient quantity of 5% gel over the affected area tid / qid and gently massage.

ANY ROUTE: Relief of mild to moderate pain in patients with dysmenorrhoea: AD: Initially, 100 mg given orally or as a suppository followed by 50 – 100 mg every 4 – 6 hrs. Max dose: 300 mg daily

CI: Peptic ulcer, GI haemorrhage, asthma, bronchospasm, rhinitis, angioedema, HSR; aspirin intolerance; pregnancy (3rd trimester); lactation.
ADR: GI bleeding, peptic ulceration; fluid retention, oedema; allergic nephritis, allergic reactions; dizziness, tinnitus, blurring of vision. **Ophthalmic:** local irritation, transient burning and stinging, fibrosis, miosis, mydriasis. Increased bleeding tendency of ocular tissues in conjunction with ocular surgery has also been reported.

**Glucosamine**
Refer Minerals, Related Drugs & Other Nutritional Supplements

**Ibuprofen (NSAID)**
Sugar/film coated Tablet: 200mg, 400mg; Suspension: 100mg/5ml

**Indications & Dosage:**
**ORAL:** *Management of mild to moderate painful conditions & inflammation:* AD: 1.2-1.8 g daily in divided doses. Maintenance: 0.6-1.2 g daily. Max dose: 2.4 g daily. *Treatment of juvenile idiopathic arthritis:* CH: Up to 40 mg/kg daily. **Fever & pain in children:** CH: 20-30 mg/kg daily in divided doses. Alternatively, 8-12 yrs: 600-800 mg; 3-7 yrs: 300-400 mg; 1-2 yrs: 150-200 mg; 6-12 months: 150 mg. **Reduction of fever:** AD: 200-400 mg every 4-6 hrs. Max dose: 1.2 g daily.

**TOPICAL/CUTANEOUS:** *Management of mild to moderate pain in musculoskeletal & joint disorders:* AD: Apply a 5% cream/foam/spray or 10% gel onto affected area. Dose reduction in renal and hepatic impairment. Patients who developed severe mucositis during the 1st course of therapy: Reduce the 2nd course dose to 25%.

**CI:** HSR (including asthma, angioedema, urticaria or rhinitis) to acetylsalicylic acid or any other NSAID; active peptic ulceration; neonates.

**ADR:** GI disturbances including nausea, diarrhoea, dyspepsia, GI haemorrhage; HSR including rash, angioedema, bronchospasm; headache, dizziness, nervousness, depression, drowsiness, insomnia, vertigo, tinnitus, renal failure, rarely hepatic damage; very rarely exfoliative dermatitis, purpura;

**Indomethacin (Indole Derivative; NSAID)**
Capsule: 25mg, 75mg.

**Indications & Dosage:**
**ORAL:** *Management of chronic musculoskeletal & joint disorders:* AD: Initially, 25 mg bid-tid, increased if necessary by 25-50 mg daily at wkly intervals to 150-200 mg daily. **Acute gout:** AD: 150-200 mg daily in divided doses until signs and symptoms disappear. **Relief of mild to moderate pain in patients with dysmenorrhoea:** AD: 75 mg daily. **Alleviation of mild to moderate pain in patients with dysmenorrhoea:** AD: 75 mg daily. **OPHTHALMIC:** *Prevention of cystoid macular oedema:* AD: Instill 0.5 or 1% solution qid foe 10-12 wks. **Prevention of miosis during ocular surgery:** AD: Instill 1 drop of a 0.5 or 1% solution qid 24 hrs before surgery and 1 drop 45 min before surgery.

**ANY ROUTE:** **Alleviation of night pain & morning stiffness:** AD: 100 mg given by mouth or as a suppository at bedtime or up to 100 mg rectally in the morning and at night. Max dose: 200 mg (combined dose of oral and rectal).

**CI:** Active peptic ulcer; pregnancy (3rd trimester), HSR to aspirin & other NSAIDs; rectal administration in patients with prosititis & haemorrhoids; neonates with ntreated ifections, infants who are bleeding; severe renal impairment.
ADR: Peptic ulceration and GI haemorrhage; headache, dizziness, tinnitus, lightheadedness, depression, insomnia, psychiatric disturbances, peripheral neuropathy, blurred vision, confusion, hyperglycaemia, hyperkalaemia, leucopenia, agranulocytosis.

**Mefenamic acid (NSAID / Analgesic)**

Tablet: 500mg

**Indications & Dosage:** ORAL: Relief of mild to moderate pain; dental pain; postoperative pain; dysmenorrhoea; osteoarthritis and RA; menorrhagia: AD: 500 mg tid. CH: >6 months: 25 mg/kg daily in divided doses. Juvenile idiopathic arthritis; fever: CH: 9-12yrs: 200 mg tid; 5-8yrs: 150 mg tid; 2-4yrs: 100 mg tid; 6months-1yr: 50 mg tid.

CI: Inflammatory bowel disease; peptic ulcer, neonates; pregnancy (3rd trimester), lactation.

ADR: GI disturbances including nausea, diarrhoea, dyspepsia, GI haemorrhage; bronchospasm, headache, dizziness, drowsiness, insomnia; urticaria, rash; Rarely hemolytic anemia, thrombocytopaenia, aplastic anaemia, agranulocytosis.

**Mefenamic acid + Dicyclomine (NSAID / Analgesic)**

Tablets: Mefenamic acid 250mg+ Dicyclomine 10mg

**Indications & Dosage:** Symptomatic relief of pain due to spasm of smooth muscles in GIT: 1-2 tab tid-qid.

CI: Closed-angle glaucoma; urinary or GI obstruction, intestinal atony, paralytic ileus, asthma, myasthenia gravis, ulcerative colitis, hiatal hernia, serious hepatic or renal disease.

ADR: Increased IOP, cycloplegia, mydriasis, dry mouth, blurred vision, flushing, urinary hesitancy & retention, tachycardia, palpitation. See also Mefenamic acid.

**MUSCLE RELAXANTS**

**Baclofen (Central skeletal muscle relaxant)**

Tablets: 10mg

**Indications & Dose:** ORAL: Symptomatic relief of severe chronic spasticity associated with a variety of conditions:

AD: Initially, 5 mg tid for 3 days increased to 10 mg tid for 3 days, then in similar increments and intervals until either 20 mg tid is reached or until desired effect is obtained. Doses should be taken with or after food or milk. CH: > 10 yrs: Initially, 2.5 mg qid increased gradually every 3 days until desired effect is obtained. <10 yrs: 0.75-2 mg/kg daily. Maintenance: 6-10 yrs: 30-60 mg daily; 2-6 yrs: 20-30 mg daily; 12 months-2 yrs: 10-20 mg daily. EL: Administer lower initial dose. Max dose: AD: 100 mg daily or 150 mg daily in carefully monitored patients. CH: > 10 yrs: 2.5 mg/kg daily. Administer 5 mg to patients with renal impairment.

CI: HSR. Active peptic ulcer disease.

ADR: Drowsiness, sedation, ataxia, dizziness, headache, confusion, hallucinations; respiratory depression and coma in high doses; skin reactions; GI symptoms; enuresis, transient increase in serum transaminases, sudden withdrawal can precipitate hallucinations, tachycardia and seizures
**Tizanidine (Central skeletal muscle relaxant)**

Tablets: 2mg

**Indications & Dose:** ORAL: As hydrochloride: Symptomatic relief of spasticity associated with multiple sclerosis or with spinal cord injury or disease: AD: Initially, 2 mg once daily increased according to response by 2-mg increments at intervals of at least 3-4 days up to 24 mg daily in 3-4 divided doses. Max dose: 36 mg daily. Symptomatic treatment of painful muscle spasm associated with musculoskeletal conditions: AD: 2-4 mg tid. Patients with renal impairment: Initially, 2 mg once daily, gradually increasing the dose before increasing the frequency of administration.

**CI:** HSR. Severe hepatic dysfunctions. Along with clonidine

**ADR:** Drowsiness, fatigue, dizziness, insomnia, headache, anxiety; dry mouth, nausea, GI disturbances; mild hypotension, bradycardia; muscle pain and weakness. Occasionally: Transient increase in serum transaminases.

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**ANTI-GOUT DRUGS**

**Allopurinol (Xanthine Oxidase Inhibitor)**

Tablets: 100mg, 300mg

**Indications & Dose:** Hyperuricaemia; gout: ORAL: AD: Initially, 100 mg daily increased according to response until the concentration of rate is reduced to ≤ 6 mg/100 ml. Maintenance: 100-300 mg daily for mild to moderate gout; 600 mg daily for moderately severe tophaceous gout. Max dose: 900 mg daily. IV: AD: As sodium: 200-400 mg/m² body surface daily given as IV infusion in 0.9% NaCl or 5% glucose. Max dose: 600 mg daily. ORAL: Prevention of uric acid nephropathy in patients receiving high doses of antineoplastic drugs (secondary gout): AD: 600-800 mg daily for 2 or 3 days and starting before the cancer therapy. Treatment of hyperuricaemia associated with cancer chemotherapy or with enzyme disorders: CH: <15 yrs: 10-20 mg/kg daily. Max dose: 400 mg daily. Reduce dose in patients with renal impairment.

**CI:** HSR to the drug; acute attack of gout.

**ADR:** HSR, rash including SJS, alopecia; myalgia, arthralgia; taste disturbances, nausea, vomiting, abdominal pain, diarrhoea; paraesthesia, peripheral neuropathy, vertigo, headache, drowsiness; cataract; hepatic necrosis, peripheral neuritis; bone marrow suppression.

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**TOPICAL ANALGESICS & TOPICAL NSAIDS**

**Diclofenac**

Refer NSAIDs
Flurbiprofen  
Refer NSAIDs

Ibuprofen  
Refer NSAIDs

**NEUROMUSCULAR DRUGS**

**Neostigmine** *(Cholinesterase Inhibitor)*  
Tablets: 15mg; Injection: 0.5mg/ml -1ml amps  
**Indications & Dosage:** *Myasthenia gravis:* ORAL: As bromide: 15 mg daily; up to a total daily dose of 75-300 mg in divided doses. CH: Total daily dose: 15-90 mg. Max dose: AD: 180 mg/day. PARENTERAL: AD: As metilsulfate: 0.5-2.5 mg IM/SC at intervals up to a total daily dose of 5-20 mg. CH: 200-500 mcg as single daily dose.  
**Paralytic ileus and postoperative urinary retention:** ORAL: AD: As bromide: 15-30 mg daily. PARENTERAL: AD: As metilsulfate: 0.5 mg IM/SC inj.  
**Neonatal myasthenia gravis:** ORAL: CH: Neonate: As bromide: 1-5 mg given every 4 hrs. PARENTERAL: CH: As metilsulfate: 50-250 mcg IM/SC inj.  
**Reversal of neuromuscular blockade:** IV: AD: 50-70 mcg/kg given over 60 sec.  
**CI:** HSR. History of previous bromide reaction if the preparation is of a bromide salt; peritonitis, intestinal or urinary tract obstruction.  
**ADR:** Increased salivation, nausea, vomiting, abdominal cramps, diarrhoea; signs of overdosage include bronchoconstriction, increased bronchial secretions, lacrimation, excessive sweating, involuntary defecation & micturition, miosis, nystagmus, bradycardia, heart block, arrhythmias, hypotension, agitation, excessive dreaming, weakness leading to fasciculation and paralysis; thrombophlebitis reported; rash associated with bromide salt

**Pyridostigmine**  
Tablets: 60mg  
**Indications & Dose:** AD: PO *Myasthenia gravis* 0.3-1.2 g/day in divided doses.  
**Paralytic ileus and post-op urinary retention:** Doses of 60-240 mg. IV Reversal of neuromuscular blockade 10-20 mg with or preceded by atropine sulfate to counteract any muscarinic effects  
**CI:** GI or urinary obstruction  
**ADR:** Muscarinic side effects e.g. nausea, vomiting, diarrhoea, abdominal cramps, increased peristalsis, increased salivation, increased bronchial secretions, miosis and diaphoresis. Nicotinic side effects include muscle cramps, fasciculation and weakness
6. ENDOCRINE DISORDERS

GONADAL HORMONES & RELATED DRUGS

Danazol (Attenuated androgen)
Tablets & Capsules: 50mg

Indications & Dose: ORAL: Endometriosis: AD: 200 – 800 mg daily in 2 divided doses adjusted according to response, for 3-6 months or if necessary, up to 9 months. Benign breast disorders: AD: Initially, 100 – 400 mg daily in 2 divided doses adjusted according to response and continued for 3-6 months.

Gynaecomastia: AD: Male: Initially, 400 mg daily; usually up to 6 months. CH: Male adolescents: Initially, 200 mg daily increased to 400 mg after 2 months if no response occurs. Treatment usually up to 6 months. Management of hereditary angioedema: AD: Initially, 200 mg bid – tid reduced thereafter according to patient’s response.

Preoperative thinning of the endometrium: AD: 400 – 800 mg daily for 3-6 wks.

CI: HSR, pregnancy, lactation, porphyria, renal or cardiac, thromboembolic disorders; undiagonised genital bleeding, hepatic dysfunction.

ADR: Oedema, wt gain, sweating, acne, hirsutism, flushing, oily skin or hair, deepening of the voice, clitoral hypertrophy, amenorrhoea, hepatic dysfunction, CNS or GI disturbances, benign intracranial HTN, reduction in breast size, visual disturbances, elevated liver function test values.

Hydroxyprogesterone (Progestogen)
Injection: 250 mg or 500 mg Amp

Indications & Dose: IM: Management of recurrent miscarriage: AD: 250–500 mg wkly during the 1st half of pregnancy.

CI: Undiagnosed vaginal bleeding, breast cancer, pregnancy, lactation.

ADR: Headache, rise in body temperature; esophageal reflux, increased appetite, wt gain, oedema, acne, allergic skin rashes, urticaria, mental depression, breast engorgement; irregular bleeding and amenorrhoea (if given continuously) cough, dyspnoea; circulatory disturbances; Increased risk of breast cancer, hyperglycemia, on long term use. Masculinisation of female fetus and other congenital anomalies if used in early pregnancy. Pain at site of inj.

Medroxyprogesterone (Progestogen)
Tablets: 10mg; Injection

Indications & Dose: As acetate: ORAL: Menorrhagia; secondary amenorrhoea: AD: 2.5-10 mg daily for 5-10 days starting on the 16th–21st day of the menstrual cycle. Mild to moderate endometriosis: AD: 10 mg tid or 50 mg wkly. As progesterone component in menopausal HRT: AD: 2.5 or 5 mg daily; 5 or 10 mg daily for 12-14 days of a 28-day cycle; 20 mg daily for 14 days of a 91-day cycle. Breast cancer: AD: 0.4-1.5 g daily. Palliative treatment of endometrial and renal carcinoma; palliative treatment of prostatic carcinoma: AD: 100-500 mg daily.

IM: Palliative treatment of prostatic carcinoma: AD: 0.5 g once or twice wkly. Reduce dose in alcoholic cirrhosis.
**CI:** HSR, thrombophlebitis; cerebral apoplexy; severe hepatic dysfunction; undiagnosed vaginal bleeding, incomplete abortion, hormone-dependent carcinoma, pregnancy.

**ADR:** Refer to Hydroxyprogesterone
Progestogen (Micronized) (Progestogen)

Tablet/Capsule: 200mg; Injection: 200mg vials

Indications & Dose: ORAL: Prevention of endometrial hyperplasia in postmenopausal women: AD: 200 mg daily as a single daily dose at night for 12 successive days per 28-day cycle. Amenorrhoea; dysfunctional uterine bleeding: AD: 400 mg daily for 10 days. Dysfunctional uterine bleeding; amenorrhoea: IM: AD: 5-10 mg daily for 5 – 10 days until 2 days prior to expected onset of menstruation. VAGINAL: AD: 45 mg every other day from the 15th – 25th day of the cycle. Management of recurrent miscarriage with progesterone deficiency: IV: AD: 25 – 100 mg bid from the 15th day of pregnancy to 8- to 8-16 wks.

INTRAUTERINE: Contraception: AD: Female: Insert the device (38mg) into the uterine cavity; effectiveness is retained for 1 yr.

CI: HSR; thrombophaebitis; cerebral apoplexy; severe hepatic impairment; undiagnosed vaginal bleeding, incomplete abortion, hormone-dependent carcinoma, as a diagnostic test for pregnancy; pregnancy.

ADR: Refer to Hydroxyprogesterone

Testosterone (Androgenic)

Oily injection (Solution for injection)


CI: Breast cancer in men, prostate cancer, hypercalcaemia, pregnancy, breastfeeding, nephrosis, history of primary liver tumours

ADR: Androgenic effects such as hirsutism, male-pattern baldness, seborrhoea, acne, priapism, precocious sexual development & premature closure of epiphyses in prepubertal males, virilism in females, and suppression of spermatogenesis in men; prostate abnormalities & prostate cancer, changes in libido, gynaecomastia; headache, depression, anxiety, asthenia, generalized paraesthesia; polycythaemia; electrolyte disturbances including sodium retention with oedema and hypercalcaemia; increased bone growth; cholestatic jaundice

Tibolone (Estrogenic; Progestogenic)

Tablets: 2.5mg

Indications & Dose: ORAL: Menopausal vasomotor symptoms and prevention of postmenopausal osteoporosis: AD: 2.5 mg daily for at least 3 months.

CI: Hormone dependent tumours in women, undiagnosed vaginal bleeding, severe liver disease, cardiovascular or cerebrovascular disorders, pregnancy and lactation, premenopausal women.

ADR: Wt gain; dizziness; skin reactions; headache; GI symptoms; facial hair growth; pretibial oedema; depression; arthralgia or myalgia; vaginal bleeding.
Ethinylestradiol + levonorgestrel (Oestrogen + Progesterone)
Refer Oral Contraceptives

Flutamide (Antiandrogen)
Tablets/cap: 250mg
Indications: Treatment of advanced prostatic carcinoma in which suppression of testosterone effects is indicated:
initial treatment in combination with an LHRH agonist; as adjunctive therapy in patients already receiving an LHRH agonist; in surgically castrated patients; in the treatment of patients nonresponsive or intolerant to other forms of hormonal manipulation. For the management, in combination with LHRH agonists, of locally confined B2-C2 (T2b-T4) prostate carcinoma as initial therapy, bulky primary tumours confined to the prostate (stage B2 or T2b) or extending beyond the capsule (stage C or T3-T4), w/ or w/o pelvic node involvement.
Dose: For male patients only. AD: 250 mg 8 hrly. Initially treatment w/ an LHRH agonist for the management of locally confined prostatic carcinoma. Flutamide administration should start at least 3 days before LHRH agonist administration. Administration of flutamide & the LHRH agonist should start 8 wk before radiation therapy course for a total of about 16 wk.
CI: Hepatic impairment.
ADR: Gynaecomastia, breast tenderness, galactorrhoea. Hepatic dysfunction (discontinue). Less frequently, Increase in appetite, diarrhoea, insomnia, nausea, fatigue, vomiting, transient abnormal liver function, hepatitis. Rarely, anorexia, anxiety, chest pain, constipation, depression, dizziness, ecchymoses, headache, heartburn, herpes zoster, libido decline, lupus-like syndrome, lymphoedema, malaise, oedema, pruritus, blurring of vision, weakness, decreased sperm count.

Letrozole (Aromatase Inhibitor)
Film-coated tab: 2.5mg
Indications: Adjuvant treatment of postmenopausal women with hormone receptor +ve early breast cancer. Extended treatment of early breast cancer in postmenopausal women who have received prior standard adjuvant tamoxifen therapy. 1st-line treatment in postmenopausal women with hormone-dependent advanced breast cancer. Advanced breast cancer in women with natural or artificially-induced postmenopausal status, who have previously been treated with antiestrogens.
Dose: 2.5 mg once daily.
ADR: Hot flushes, nausea, vomiting, dyspepsia, constipation, diarrhoea, anorexia; fatigue, myalgia, arthralgia, bone pain, arthritis, osteoporosis, bone fractures; peripheral oedema, headache, dizziness; alopecia, increased sweating, rash, wt gain, hypercholesterolemia, depression.
Tamoxifen (SERM)
Tablets: 10mg
Indications & Dosage: Adjuvant treatment of estrogen-receptor-positive breast cancer; metastatic breast
Cancer. Breast cancer: 10 or 20 mg bid.
CI: Pregnancy & breastfeeding.
ADR: Hot flushes; endometrial changes including increased risk for carcinoma (symptoms such as vaginal bleeding &
other menstrual irregularities, vaginal discharge, pelvic pain require immediate investigation); increased pain &
hypercalcaemia with bony metastases; tumour flare; nausea & vomiting; liver enzyme changes (rarely cholestasis,
hepatitis, hepatic necrosis); hypertriglyceridaemia (sometimes with pancreatitis); thromboembolic events; decreased
platelet count; oedema; alopecia; rash; headache; visual disturbances including corneal changes, cataracts,
retinopathy; rarely interstitial pneumonitis, HSR including angioedema, SJS, bullous pemphigoid

CORTICOSTEROIDS

Betamethasone (Glucocorticoid)
Tablets; Injection: 4mg/ml amps/vials
Indications & Dose: ORAL: Suppression of inflammatory & allergic disorders, congenital adrenal hyperplasia,
cerebral edema, bronchial asthma control: AD: 0.5 – 5 mg daily.
PARENTERAL: Suppression of acute inflammatory & allergic disorders: AD: As sodium phosphate: 4 - 20 mg IV
inj/infusion or IM inj. CH: 6 – 12 yrs: 4 mg; 1 – 5 yrs: 2 mg; ≤ 1 yr: 1 mg. Doses should be administered by slow IV inj
tid/qid depending on the condition to be treated.
OPHTHALMIC: Local treatment of eye infections: AD: As sodium phosphate: Apply a 0.1% solution every 1-2 hrs
until symptoms are controlled or a 0.1% oint bid-qid or at night in conjunction with the eye drops into the affected eye/s.
Allergic & inflammatory conditions of the eye: AD: Apply 0.1% eye drops or oint into the affected eye/s.
TOPICAL / CUTANEOUS: Skin disorders: AD: As dipropionate: Apply 0.05% into affected area. As valerate: Apply
0.025 or 0.1% into affected area.
INJECTION: Soft tissue inflammation: AD: 4 – 8 mg into soft tissues. Adjustments may be necessary in patients with
liver failure.
CI: HSR; systemic fungal or acute infections.
ADR: On long-term use: Sodium & fluid retention, potassium & calcium depletion. Muscle wasting, weakness,
osteoporosis, aseptic necrosis of bone & joint damage.. GI ulceration & bleeding, increased appetite, delayed wound
healing; hirsutism, bruising, striae, acne; raised intracranial pressure, headache, depression, psychosis; menstrual
irregularities. Cataract, glaucoma, Hyperglycaemia, diabetes mellitus; Hypertension, Suppression of pituitary-
Topical use: dermal atrophy, local irritation, folliculitis, hypertrichosis. Inhalation: hoarseness, candidiasis of mouth &
throat. Topical application to the eye: corneal ulcers, raised IOP & reduced visual acuity. Intradermal injection:
Local hypopigmentation of deeply pigmented skin. **Intra-articular injection:** joint damage, fibrosis, especially in load bearing joints.

**Dexamethasone (Glucocorticoid)**

Tablets; Injection: 8mg/2ml vials

**Indications & Dosage:**
- **ORAL:** Antiemetic: AD: 4-10 mg 1-2 times a day for 2-4 days reducing dose gradually.
- **IV:** Adisonian shock: AD: As sodium phosphate: 4-10 mg daily as a single dose repeated if necessary. Unresponsive shock: AD: As sodium phosphate: initially, 40 mg or 1-6 mg/kg as a single dose repeated every 2-6 hrs. Bacterial meningitis: CH: >2 months and infants: As sodium phosphate: 0.6 mg/kg daily in 4 divided doses every 6 hrs for the first 4 days of treatment.
- **PARENTERAL:** Cerebral oedema caused by malignancy: AD: As sodium phosphate: 10 mg IV followed by 4 mg IM every 6 hrs until response is achieved, usually after 12-24 hrs. Dosage may be reduced after 2-4 days then gradually discontinued over 5-7 days.
- **OPHTHALMIC:** Ophthalmic disorders: AD: As base or phosphate: Apply 0.05-0.1% eye drops or ointment into the affected eye/s. Local treatment of eye inflammation: AD: Instill 0.1% of the solution 4-6 times daily or every 30-60 min for severe conditions. Reduce dose gradually once symptoms are controlled. Anti-inflammatory: AD: As ointment: Apply a thin coating into conjunctival sac tid-qid, discontinue gradually. As suspension: Instil 2 drops into conjunctival sac every hr during the day and every other hr at night. Reduced gradually every 3-4 hrs then tid-qid.
- **TOPICAL/CUTANEOUS:** Treatment of skin disorders: AD: Apply 0.1% ointment onto affected area. Anti-inflammatory: AD: 1-4 times daily. Discontinue use when control is achieved.
- **INTRALESIONAL:** Anti-inflammatory: AD: As acetate: 0.8-1.6 mg daily.
- **INTRA-ARTICULAR:** Anti-inflammatory: AD: As acetate: 4-16 mg; mau be repeated after 1-3 wks.
- **ANY ROUTE:** Anti-inflammatory: AD: 0.75-9 mg daily given orally, IM or IV (as sodium phosphate inj) in divided doses every 6-12 hrs. CH: 0.08-0.3 mg daily given orally, IM or IV (as sodium phosphate inj) in divided doses every 6-12 hrs. Prophylaxis in emesis: AD: 10-20 mg given orally or as IV inj 15-30 min before treatment or 10 mg orally or as IV infusion every 12 hrs of each treatment. Mild emetogenic therapy: AD: 4 mg daily given orally, IM or IV every 4-6 hrs. Physiological replacement: AD & CH: 0.03-0.15 mg/kg daily or 0.6-0.75 mg/m² BSA daily given orally, IM/IV in divided doses every 6-12 hrs. Extubation of airway oedema: CH: 0.5-2 mg/kg daily given orally, IM or IV (as sodium phosphate inj) in divided doses every 6 hrs starting 24 hrs prior to extubation & continuing for 4-6 doses after.
- **CI:** HSR; active untreated infections; ophthalmic use in viral, fungal/TB disease of the eye.
- **ADR:** Refer to Betamethasone

**Hydrocortisone (Corticosteroid)**

Injection: as acetate/succinate: 100mg/3ml; Cream/Ointment; Suppositories, Retention enema; Tablets

**Indications & Dose:**
- **ORAL:** Replacement therapy in adrenocortical insufficiency: AD: 20-30 mg daily in divided doses (usually 20 mg in the morning and 10 mg in early evening); CH: 10–30 mg.
IV: As supplement in adrenal insufficiency during minor surgery under GA: AD: As succinate: 25-50 mg at induction followed by oral corticosteroid. As supplement in adrenal insufficiency during moderate or major surgery: AD: Usual oral corticosteroid plus 25-50 mg at induction, followed by similar doses of hydrocortisone tid for 24 hrs (moderate surgery) or 48-72 hrs (major surgery). Oral corticosteroid is resumed after inj are stopped. Emergency treatment for acute adrenocortical insufficiency caused by addisonian or post-adrenocortical crisis, abrupt withdrawal of corticosteroid therapy, adrenal insufficiency, anaphylaxis, acute severe asthma, shock: AD: 100-500 mg slow infusion or inj tid-qid according to the severity of the condition and patient response. CH: 6-12 yrs: 100 mg; 1-5 yrs: 50 mg; ≤1 yr: 25 mg.

OPHTHALMIC: Soft tissue inflammation: AD: As phosphate or succinate: 100-200 mg.

TOPICAL / CUTANEOUS: Skin disorders: AD: Apply a 0.1-2.5% cream/ointment/lotion onto affected area.

INTRA-ARTICULAR: Joint inflammations: AD: As acetate: 5-50 mg depending on size of joint.

CI: Viral/fungal infection, tubercular or syphilitic lesions, bacterial infections unless used in conjunction with appropriate chemotherapy.

ADR: Refer to Betamethasone

Methyl prednisolone
Tablet: 4mg; Injection: as sodium succinate 40mg, 125mg, 1 gm vial, as acetate 40mg/ml vial

Indication & Dose: Acetate as retention enema for ulcerative colitis, Sodium succinate as pulse therapy for nonresponsive rheumatoid arthritis, renal transplant, pemphigus

CI: Refer prednisonole

ADR: Refer prenisolone

Prednisolone (Glucocorticoid)
Tablet: 5mg, 10mg, 20mg; Eye drops: 10mg/5ml; Injection; Suspension

Indications & Dose: ORAL: Suppression of allergic & inflammatory responses, bronchial asthma, severe dermatological reactions: AD: 5-60 mg daily, as a single dose after breakfast or as a double dose on alternate days. Acute asthma: CH: 1-2 mg/kg in divided doses once daily or bid for 3-5 days. As anti-inflammatory or immunosuppressant: CH: 0.1-2 mg/kg/day in divided doses 1-4 times a day. Nephrotic syndrome: CH: Initially, 2 mg/kg or 60 mg/m² daily in divided doses tid-qid until urine is protein-free for 3 consecutive days, followed by 1-1.5 mg/kg or 40 mg/m² every other day for 4 wks. Maintenance: 0.5-1 mg/kg/dose given every other day for 3-6 months. Max dose: 80 mg daily for 28 days. Multiple sclerosis: AD: 200 mg daily for 1 wk followed by 80 mg every other day for 1 month. RA: AD: Initially, 5-7.5 mg daily adjusted as necessary. EL: 5 mg daily.

PARENTERAL: Suppression of allergic & inflammatory responses, bronchial asthma, severe dermatological reactions reactions: AD: 4-60 mg daily IV infusion or IM. As acetate aq suspension: 25-100mg 1-2 times wkly IM.

OPHTHALMIC: Allergic & inflammatory conditions of the eye: AD: As acetate or phosphate: 0.5 or 1% drops.
INTRA-ARTICULAR: **Joint inflammations:** AD: 5-25 mg (as acetate) or 2-30 mg (as phosphate) or 4-40 mg (as phosphate). The phosphate and tebutate may also be given intralesional or inj into soft tissue. Increase dose in patients with hyperthyroidism. Use lowest effective dose in elderly patients.

**CI:** HSR; live vaccines; herpes simplex keratitis, infections.

**ADR:** Refer to Betamethasone.

**Triamcinolone (Corticosteroid)**

Injection: as acetonide 10mg/ml, 40mg/ml-2ml vial, also preservative free 40mg/ml -2ml vial; Tablet

**Indications & Dose:** **Replacement therapy in adrenal insufficiency:** ORAL: AD: 4 – 48 mg daily. IM: AD: As acetonide or diacetate: 40 mg inj.

**PARENTERAL:** **Symptomatic control for hay fever:** AD: As acetonide: 40 – 100 mg. As diacetate: 40 mg wkly.

**TOPICAL / CUTANEOUS:** **Treatment of skin disorders:** AD: As acetonide: Apply a 0.025 – 0.5% cream / lotion / ointment onto affected area.

**INHALATION:** **Management of asthma:** AD: 200 mcg using a metered – dose inhaler tid/ qid. CH: > 12 yrs: Same as adult dose. 6 – 12 yrs: 100 – 200 mcg tid – qid. Max dose: AD: 1600 mcg daily. CH: > 12 yrs: Same as adult dose. 6 – 12 yrs: 1200 mcg daily. **Prophylaxis and treatment of allergic rhinitis:** AD: As acetonide: Initially, 2 sprays (110 mcg) into each nostril once daily, reduced to 1 spray (55 mcg) when control is achieved.

**INTRADERMAL:** **Inflammatory skin disorders:** AD: As acetonide: 1 – 3 mg/site. As diacetate: 5 mg in divided doses for small lesions or 48 mg in divided doses for large lesion. As hexacetonide: 500 mcg/m² or 80 mcg/cm² of affected skin. Max dose: As acetonide: 5 mg on each site or a total of 30 mg from several sites. As diacetate: 12.5 mg on each site or 25 mg into any one lesion.

**INTRA-ARTICULAR:** **Inflammatory joint disease:** AD: As acetonide: 2.5 - 40 mg. As diacetate: 3 – 48 mg. As hexacetonide: 2 – 30 mg. Depending on the size of the joint.

**CI:** Systemic fungal infections; status asthmaticus; fungal, viral or bacterial infections of the mouth & throat; HSR.

**ADR:** Refer to Betamethasone.

**TROPHIC HORMONES**

**HCG (human chorionic gonadotrophin)**

Injection

**Indications & Dose:** IM: **Prepubertal cryptorchidism:** AD: Male: 500 – 4000 units injected 3 times wkly. Infertility due to hypogonadotrophic hypogonadism: AD: Male: 500 – 4000 units injected 2 – 3 times wkly. Induction of ovulation and pregnancy: AD: single dose of 5000 – 10,000 units. Max dose: 3 repeated inj of up to 5000 units each, given within the following 9 days. Delayed puberty associated with hypogonadism: AD: Male: Initially, 500 – 1500 units twice a wk titrated against plasma – testosterone concentration.

**CI:** HSR; precocious puberty, prostatic carcinoma or other androgenic dependent neoplasm. Lactation.
ADR: Headache, irritability, restlessness, depression, fatigue, oedema; precocious puberty, gynaecomastia; pain at inj
site; enlargement of preexisting ovarian cysts & possible rupture; arterial thromboembolism; shock; abdominal pain.

HMG (Human menopausal gonadotrophin)
Injection: 75 IU vial

**Indications & Dose:**
**INJECTION:**
- **Female infertility:** AD: given daily by IM or SC inj to provide a dose of 75 – 150 units of FSH daily; adjust gradually until adequate response is achieved. Treatment is then stopped and followed after 1 or 2 days by single doses of chorionic gonadotrophin 5000 – 10,000 units. In menstruating patients, start within the first 7 days of menstrual cycle. Alternative: 3 equal doses IM or SC, each providing 225–375 units of FSH on alternate days followed by chorionic gonadotrophin 1 wk after the first dose. **Infertility in males:** AD: Stimulate spermatogenesis with chorionic gonadotrophin, and then with HMG in a dose of 75 or 150 units of FSH 2 or 3 times wkly by IM or SC. Treatment should be continued for at least 3 or 4 months. **In vitro fertilization procedures or other assisted conception techniques:** AD: (in conjunction with chorionic gonadotrophin and sometimes clomiphene citrate or a gonadorelin analogue.) Given daily by IM or SC in a dose providing 75 – 300 units of FSH usually beginning on the 2\textsuperscript{nd} or 3\textsuperscript{rd} day of menstrual cycle. Combined regimen: 100 mg clomiphene citrate on days 2 – 6, with HMG beginning on day 5 in a dose providing 150 – 225 units of FSH daily. Continue until an adequate response is obtained; final inj of HMG is followed 1 – 2 days later with up to 10,000 units of chorionic gonadotrophin.

**CI:** Ovarian cysts not caused by polycystic ovarian syndrome; tumors of breast, uterus, ovaries, testes or prostate; vaginal bleeding of unknown cause; pregnancy and lactation.

**ADR:** Polycystic ovaries, multiple birth, ovarian enlargement – ascites and rupture, spontaneous abortions and gynaecomastia in male.

**THYROID & ANTITHYROID DRUGS**

**Carbimazole (Antithyroid)**
Tablets: 5mg

**Indications & Dose:**
**ORAL:** Management of hyperthyroidism; preparation for thyroidectomy; adjunct to radioiodine therapy; **grave’s disease:** AD: Initially, 20 – 60 mg daily as a single or divided dose, reduced gradually once euthyroidism is achieved. Maintenance: 5 – 15 mg daily for at least 1 yr or 18 months. CH: Initially, 15 mg daily.

**CI:** Hyperthyroidism due to nodular goiter.

**ADR:** GI intolerance, nausea, loss of taste; headache, arthralgia, malaise; maculopapular rash, exfoliative dermatitis, alopecia, fever, vasculitis, lupus like reaction, polyserositis, lymphadenopathy; hypoprothrombinemia, bruising; rarely rarely leucopaenia, hepatitis, cholestatic jaundice; nephritic syndrome
DRUGS FOR GROWTH DISORDERS

Octreotide (Growth Hormone Inhibitor)
Injection: 50mcg/ml, 100mcg/ml amps

**Indications & Dose:**
- **SB:** Management of secretory neoplasms: AD: As acetate: Initially, 50 mcg 1 – 2 times daily, increased gradually to 600 mcg daily in 2 – 4 divided doses according to response.
- **Acromegaly:** AD: As acetate: 100 – 200 mcg tid. Prevention of complications following pancreatic surgery: AD: 100 mcg tid of a rapid – acting preparation given for 7 consecutive days, starting at least 1 hr before operation.

**CI:** HSR to octreotide or any of its components. Lactation.

**ADR:** Local pain, stinging, tingling at site of inj; anorexia, nausea, vomiting, abdominal pain, bloating, flatulence, loose stools, steatorrhoea; increased incidence of gallstones; sinus bradycardia, conduction disturbances; Vitamin B₁₂ deficiency on long term use.

VASOPRESSIN ANALOGUES

Vasopressin (Pituitary Hormone)
Injection: 20 IU/ml, 40 IU/ml amps/vials

**Indications & Dose:**
- As argipressin: IV: Initial control of variceal bleeding: AD: 20 units infused over 15 min.

**CI:** HSR. Vascular disease especially coronary artery disease; chronic nephritis (until normal blood – nitrogen concentration attained). Pregnancy (3rd trimester).

**ADR:** Headache, nausea, belching, abdominal cramps; HSR, sweating, pallor, urticaria, gangrene; desire to defecate; backache in women; fluid retention, hyponatremia, arrhythmias, angina; seizures; bronchoconstriction.

7. DIABETES

ANTIDIABETIC DRUGS

Insulins (Pancreatic Hormone)
Injection: Recomb Human insulin-Neutral 440 IU/10ml; 70% Zn+ 30% Neutral 440 IU/10ml vials

**Indications & Dosage:** Management of diabetic ketoacidosis: IV: AD: 5-10 units/hr IV infusion of short-acting soluble insulins should be used include sodium chloride 0.9% infusion with potassium salts. IM: AD: 10-20 units as loading dose, followed by 5 units/hr.

**CI:** HSR; severe allergic reactions (bovine & porcine insulins), short-term administration of bovine insulin.

**ADR:** Hypoglycemia, lipoatrophy (rare), lipohypertrophy, Insulin resistance; insulin oedema (bovine insulin), cross-reactivity to human insulins (in patients sensitized to other insulins)
ORAL ANTIDIABETIC DRUGS & RELATED DRUGS

Glibenclamide (Sulphonylurea)
Tablets: 5mg
Indications & Dosage: ORAL: Type 2 diabetes mellitus: AD: Initially, 2.5-5 mg daily taken with breakfast, increased gradually by increments of 2.5 mg daily every 7 days for up to 15 mg daily. Max dose: 20 mg daily; doses > 10 mg may be given in divided doses.
CI: Severe or life-threatening hyperglycaemia; liver disease; severe renal failure; juvenile diabetes, ketoacidosis, precoma and diabetic coma; adrenocortical insufficiency. Pregnancy and lactation.
ADR: Hypoglycaemia; cholestatic jaundice; agranulocytosis, aplastic anaemia, haemolytic anaemia; liver dysfunction, GI symptoms, allergic skin reactions.

Glimepiride (Sulphonylurea)
Tablets: 1mg, 2mg
Indications & Dose: ORAL: Type 2 diabetes mellitus: AD: 1-2 mg daily. Maintenance: 4 mg daily. Max dose: 6 mg daily. Adjust dose in renal impairment: CrCl < 22 ml/min: Initial dose is 1 mg, increased by increments based on fasting blood glucose levels.
CI: HSR; diabetic ketoacidosis with or without coma; severe renal or liver impairment. Pregnancy, lactation.
ADR: Vomiting, GI pain, diarrhoea; pruritus, erythema, urticaria, morbilliform, maculopapular eruptions; leukopaenia, agranulocytosis, thrombocytopaenia, haemolytic anaemia, aplastic anaemia and pancytopaenia; hyponatraemia; changes in accommodation, blurred vision, jaundice.

Metformin (Biguanide)
Tablets: 500mg
Indications & Dosage: ORAL: Type 2 diabetes mellitus: AD: As hydrochloride: Initially, 500 mg bid/tid or 850 mg once or twice daily taken with or after meals. Max dose: 2-3 g daily.
CI: HSR, Diabetic coma, diabetic ketoacidosis; severe renal or hepatic impairment; cardiac failure, recent MI, CHF, IDDM; severe infection; acute or chronic metabolic acidosis with or without coma; stress, trauma; severe impairment of thyroid function; dehydration, acute or chronic alcoholism.
ADR: Anorexia, nausea, vomiting, diarrohea, weight loss, flatulence, occasional metallic taste; weakness; hypoglycaemia; rash, malabsorption of vitamin B12.
Pioglitazone (PPAR Activator)
Tablets: 15mg

**Indications & Dose:** ORAL: **TYPE 2 diabetes mellitus:** AD: 15 – 30 mg once daily increased in increments if necessary. Max dose: 45 mg once daily.

**CI:** HSR. Type1 diabetes mellitus; CHF, diabetic acidosis; active liver disease, hepatic dysfunction; children < 18 yrs.

**Lactation**

**ADR:** Plasma volume expansion, oedema, can precipitate or worsen CHF; headache; anaemia; URTI, pharyngitis, sinusitis; GI disturbances, wt gain; macular edema; dizziness, myalgia, arthralgia; haematuria, impotence; hepatic dysfunction

### 8. FERTILITY AND ANTIFERTILITY AGENTS

**OVULATION INDUCERS**

Clomiphene (Ovulation inducers)
Tablets: 50mg

**Indications & Dosage:** ORAL: **Anovulatory infertility:** AD: As citrate: 5 mg daily for 5 days starting on the 5th day of cycle or during amenorrhoea. If ovulation does not occur during the 1st therapy, 100 mg for 5 days given 30 days after the previous therapy. Max dose: 3 courses but beyond 6 treatment cycles are not recommended.

**CI:** HSR; abnormal bleeding; pregnancy, lactation; liver failure; mental depression; thrombophlebitis.

**ADR:** Ovarian enlargement; abdominal pain and bloating; blurred vision; hot flushes; breast discomfort; depression; multiple or ectopic pregnancies; wt gain, nausea, vomiting; endometriosis; headache, convulsions, dizziness, fatigue, vertigo, insomnia; rash.

**ORAL CONTRACEPTIVES**

Levonorgestrel + Ethinyl estradiol
Tablets

**Indications & Dose:** ORAL: Contraception; menstrual symptoms; endometriosis: **Contraception (21-day combined (monophasic) preparations):** AD (female): 1 tablet (‘pill’) daily for 21 days; subsequent courses repeated after 7-day pill-free interval (during which withdrawal bleeding occurs)

**CI:** Use within 3 wks of birth; breastfeeding until weaning or for first 6 months after birth; personal history of or 2 or more risk factors for venous or arterial thrombosis ; heart disease associated with pulmonary HTN or risk of embolism; migraine; history of sub-acute bacterial endocarditis; ischaemic cerebrovascular disease; liver disease, including disorders of hepatic secretion such as Dubin-Johnson or Rotor syndromes, infectious hepatitis (until liver
function normal); porphyria; systemic lupus erythematosus; liver adenoma; history of cholestasis with oral contraceptives; gallstones; estrogen-dependent neoplasms; neoplasms of breast or genital tract; undiagnosed vaginal bleeding; history during pregnancy of pruritus, chorea, herpes, deteriorating otosclerosis, cholestatic jaundice; pemphigoid gestationis; diabetes mellitus (if either retinopathy, neuropathy or if more than 20 years duration); after evacuation of hydatidiform mole (until return to normal of urine and plasma gonadotrophin values)

**ADR:** Nausea, vomiting, headache, breast tenderness, increase in body wt; thrombosis, HTN; changes in libido, depression, chorea; skin reactions, chloasma, irritation of contact lenses; impairment of liver function; ‘spotting’ in early cycles, absence of withdrawal bleeding; rarely, photosensitivity and hepatic tumours; breast cancer (small increase in risk of breast cancer during use which reduces during the 10 years after stopping; risk factor seems related to age at which contraceptive is stopped rather than total duration of use; small increase in risk of breast cancer should be weighed against the protective effect against cancers of the ovary and endometrium which persists after stopping)

## 9. GENITO URINARY SYSTEM

**Finasteride (5α–reductase Inhibitor)**

Tablets: 5mg

**Indications & Dose:**  
**ORAL:** Symptomatic BPH: AD: 5 mg once daily for 6-12 months of therapy; may be necessary in some patients before a beneficial effect is seen. BPH: AD: 5 mg once daily for ≥ 6 months, if necessary.

**CI:** HSR; childn, exposure of pregnant women to finasteride either via direct contact with crushed tablet or through semen of male sexual partners who are taking finasteride; pregnancy and lactation.

**ADR:** Gynaecomastia, decreased libido, impotence, reduction in the volume of ejaculate, testicular pain. HSR eg, swelling of lips and face, urticaria, rashes.

**Hyoscine (Anticholinergic)**

Injection: 20mg/ml amps; Tablets

**Indications Dose:** As butylbromide:  
Relieve pain of GI spasm:  
**ORAL:** AD: 10 mg tid increased to 20 mg qid if necessary.  
**CHILD:** 6-12 yrs: 10 mg tid. **PARENTERAL:** AD: 20 mg IM/IV repeated after 30 min if necessary. **Max dose:** 100 mg daily. **Prevention of motion sickness:**  
**ORAL:** AD: 300 mcg 30 min before a journey, followed by 300 mcg every 6 hrs if required. **CH:** > 10 yrs: 150-300 mcg; 4-10 yrs: 75-150 mcg. **Max dose:** 3 doses in 24 hrs.

**CI:** HSR; glaucoma, paralytic ileus, porphyria.

**ADR:** Dry mouth, mydriasis, blurring of vision, tachycardia, drowsiness, fatigue. **Eye drops:** Prolonged use may lead to irritation, hyperaemia, oedema and conjunctivitis, increase in IOP may occur in patients with closed-angle glaucoma. Occasionally, psychotic reactions. **Transdermal delivery preparations:** Bilateral mydriasis, contamination of finger and rubbing of eye may result in unilateral fixed dilatation of pupil, glaucoma, contact dermatitis, psychotic reactions. Nausea and dizziness after removal.
Oxybutynin (Anticholinergic, Antispasmodic)
Tablets: 2.5mg, 5mg
**Indications & Dose:** ORAL: **Urinary incontinence, urgency & frequency:** AD: 5 mg bit-tid. May be increased to 5 mg qid if necessary. As modified-release preparation: Initially, 5 mg once daily increased by 5 mg every wk if necessary. EL: Initially, 2.5-3 mg bid increased to 5 mg bid if necessary. Max dose: As modified-release preparation: 30 mg daily. **Management of neurogenic bladder disorders; nocturnal enuresis:** CH: >5 yrs: 2.5 or 3 mg bid increased to 5 mg bid/tid according to response with the last dose for nocturnal enuresis given before bedtime.

**CI:** HSR. Patients with GI obstruction or atrophy, severe toxic megacolon, significant bladder outflow obstruction, glaucoma and myasthenia gravis, urinary retention.

**ADR:** Angioedema, dry mouth, constipation, nausea, abdominal discomfort; blurred vision, facial flushing, difficulty in micturition, headache, dizziness, drowsiness, dry skin, rash; photosensitivity, diarrhoea, insomnia, palpitation, weakness, dry eyes, confusion, HTN.

Tamsulosin (α 1-Blocker / Antispasmodics)
SR Tablets: 0.4mg
**Indications & Dose:** ORAL: **BPH:** AD: As hydrochloride: As modified release preparation: 400 mcg once daily increased to 800 mcg once daily after 2 – 4 wks, if necessary.

**CI:** HSR, severe hepatic impairment; lactation.

**ADR:** Postural hypotension, dizziness, vertigo; headache; infection, asthenia, back pain, chest pain, somnolence, insomnia, decreased libido; rhinitis, pharyngitis, cough, sinusitis, diarrhoea, nausea; abnormal ejaculation, amblyopia.
Povidone-iodine (Topical Antiseptic): See also under Topical Antibacterials & Antifungals
Vaginal tablet: 200mg (with one applicator in a box of 14/10 tabs)

Indications & Dose: VAGINAL: Vaginal candidiasis: AD: 200 mg given as pessaries.
ADR: Local irritation (discontinue) and sensitivity (rare). Application to large areas of denuded skin may produce systemic effects due to iodine absorption.

DRUGS ACTING ON THE UTERUS

Carboprost (Prostaglandin PGF2α analog)
Injection: 250 mcg/ml amps

Indications & Dose: As Tromethamine: IM: Pregnancy 2nd trimester: 250mcg deep IM, repeated at 1.5 to 3.5 hr intervals depending on uterine response. May be increased to 500mcg if necessary. Max dose: 12 mg.
PARENTERAL: Postpartum haemorrhage: 250mcg deep IM at 15-90min intervals. Max dose: 2mg.
CI: HSR, acute pelvic inflammatory disease, Patients with acute cardiac, pulmonary, renal or hepatic disease. Patients with history of caesarian section or other major uterine surgery. Pregnancy.
ADR: Nausea, vomiting, diarrhoea, abdominal pain; flushing, shivering, headache, dizziness; hypotension, temporary pyrexia.

Danazol
Refer Gonadal hormones & related drugs

Dinoprostone (Prostaglandin PGE2 analog)
Vaginal/cervical gel: 0.5mg in 3gm; Vaginal tablet

Indications & Dose: VAGINAL: Cervical priming, induction and augmentation of labour: AD: As cervical gel: Apply 500 mcg in 2.5 ml preparation. Induction of labour: AD: As vaginal gel: 1mg (or 2 mg for primigravid patients with unfaavourable induction features) followed by another 1 or 2mg after 6 hrs if necessary. As pessary: Initially, 3mg followed by a further 3mg after 6-8 hrs if neceasasy. Max dose: As vaginal gel: 3-4 mg. As pessary: 6 mg.
EXTRA-AMNIOTIC: Termination of pregnancy 2nd trimester: AD: Instill 100 mcg/ml solution in a suitable foley catheter followed by 1-2 ml at 2-hr intervals according to patient’s response.
CI: HSR to prostaglandins, Patients in whom oxytocics are generally contraindicated or those with history of pelvic inflammatory disease; active cardiac, pulmonary, renal or hepatic disease.
ADR: Occasional nausea, vomiting, watery diarrhoea. Uterine contractile abnormalities with or without foetal distress.
Dosage > 0.5 mg intracervically can cause hypertonic uterine contractions. High incidence of nausea, vomiting, diarrhoea, abdominal pain; flushing, shivering, headache, dizziness; tachycardia, hypotension; convulsions; local tissue irritation, erythema; pyrexia, increased WBC. Intra/extra-amniotic injection: Local infection, vomiting, diarrhoea,
pyrexia, transient hypotension.

**Isoxsuprine**

Tablets: 20mg

**Indications & dosage:** AD: PO Peripheral vascular disease 10-20 mg 3-4 times/day. IV/IM To arrest premature labour 200-500 mcg/min via IV infusion until control is achieved, then 10 mg 3-8 hrly via IM inj for several days. May continue prophylaxis by giving 30-90 mg/day orally.

**CI:** Recent arterial haemorrhage. Do not give immediately postpartum and do not use in premature labour if there is an infection.

**ADR:** Hypotension, dizziness, palpitation, nausea, vomiting, abdominal distress, severe rash, flushing, tachycardia. Maternal pulmonary oedema and foetal tachycardia (IV).

**Medical Abortion Kit (Mifepristone 200mg 1 Tab +Misoprost 200mcg 4 Tab)**

**Indications & dosage:**

Termination of pregnancy upto 7 wks;

**ADR:** anorexia, nausea, tiredness, abdominal discomfort, uterine cramps, prolonged bleeding, diarrhoea.

**Oxytocin (Uterine stimulant)**

Injection: 5 IU/ml amps

**Indications & Dosage:** IV: Induction and augmentation of labour: AD: Initially, 10-30 units in 500 ml of 0.9% sodium chloride solution given by infusion at 1-2 milliunits/min gradually increased at intervals of at least 30 min. max dose: AD: 32 milliunits/min; ≤ 5 units daily. Management of missed abortions: AD: 5 units by slow inj followed by ≥ 20-40 milliunits/min infusion if necessary. Prevention & treatment of postpartum haemorrhage: AD: 5 units by slow inj followed by 5-20 units infusion in 500 ml of a nonhydrating diluent in severe cases.

**IM:** Ceasarian section: AD: 5 IU intramurally after delivery. Prophylaxis of postpartum haemorrhage in the management of 3rd stage labour: AD: 5 units given with 500 mcg ergometrine maleate with or after delivery of the baby’s shoulders.

**PARENTERAL:** 3rd stage of labour puerperium: AD: 5-10 IU slow IV or IM.

**CI:** Cephalopelvic disproportion; abnormal presentation of the foetus; HSR; parity > 4; multiparae; previous caesarian section or other uterine surgery; hypertonic contractions, uterine rupture.

**ADR:** Violent uterine contractions with risk of uterine rupture; fetal hypoxia; water intoxication, transient hypotension, reflex tachycardia. Intranasal: Nasal irritation, rhinorrhoea, lacrimation.
Methylergometrine
Injection: 0.2mg/ml 1ml amps

Indications & Dosage: AD: PO Prevention of postpartum haemorrhage: 200 mcg 3-4 times/day in the puerperium for 2-7 days. IV/IM Prevention and treatment of postpartum and postabortal haemorrhage: 200 mcg, may repeat 2-4 hrly. Max: 5 doses. Use IV route for emergency only.

CI: Hypertension, eclamptic or previously hypertensive patients, heart disease, venoatrial shunts, mitral valve stenosis, obliterative vascular disease. Do not use in cases of threatened spontaneous abortion. Pregnancy

Special precautions: Captivation of the placenta may occur if given during the 2nd or 3rd stage of labour prior to delivery of the placenta; use in this situation should only be done by a qualified personnel. Avoid prolonged use. Caution in patients with sepsis, hepatic or renal impairment. Lactation.

ADR: Headache, dizziness, hallucinations, tinnitus, nausea, vomiting, foul taste, diarrhoea; hypertension, temporary chest pain, palpitations, bradycardia; nasal congestion, dyspnoea; diaphoresis; thrombophlebitis; haematuria; water intoxication; leg cramps; allergic reactions, shock.

10. INFECTIONS AND INFESTATIONS

ANTI-BACTERIALS

Amikacin (Aminoglycoside)
Injection: 500mg/2ml vial.

Indications & Dosage: As sulfate: IM: Severe infections caused by susceptible bacteria: AD & CH: 15 mg/kg body wt daily in equally divided doses injected every 8 or 12 hrs for 7-10 days. NEONATES: 10 mg/kg daily in 2 divided doses. Max dose: AD: Up to 500mg in life-threatening infections; not exceeding total dose of 15g.

PARENTERAL: Uncomplicated UTI: AD: 15 mg/kg daily in 2 divided doses IM, slow IV inj over 2-3 min or as IV infusion. Dosage in renal impairment: A rough guide for calculating the dose in stable patients is to divide the normal dose by the patient's serum creatinine. This dose is given every 12 hrs. more accurate method for dose calculation are also available.

CI: HSR or serious toxic reactions to aminoglycosides; pregnancy; perforated ear drum.

ADR: Tinnitus, vertigo, ataxia, overt deafness; Oliguria, proteinuria, increased serum creatinine, urinary casts, red and white blood cells in urine; azotemia; neuromuscular block.

Amoxycillin (Aminopenicillin)
Capsules/ tablet: 125mg, 250mg; Oral suspension

Indications & Dosage: As trihydrate: ORAL: Biliary tract infections; endocarditis; gonorrhoea; otitis media; pneumonia; UTI; actinomycosis; bronchitis; typhoid & parathyroid fever; gastroenteritis; lyme disease;
treatment of susceptible infections; mouth infections; spleen disorders: AD: 250-500 mg every 8 hrs. CH: ≤ 10 yrs: 125-250mg every 8 hrs; < 20 kg: 20-40 mg/kg daily in divided doses every 8 hrs. Max dose: INFANTS < 3 MONTHS: 30 mg/kg daily in divided doses every 12 hrs. Treatment of uncomplicated gonorrhoea: AD: 3 g as a single dose with probenecid 1 g. Dental abscesses: AD: 3 g repeated once every 8 hrs. Treatment of uncomplicated acute UTI: AD: 3 g repeated once after 10-12 hrs. Endocarditis prophylaxis: AD: 2 or 3 g given 1 hr before dental procedure. Severe or recurrent RTI: AD: 3 g bid. Otitis media: CH: 3-10 yrs: 750mg bid for 2 days. Eradication of H. pylori infection: AD: 0.75 or 1g bid or 500mg tid in combination with either metronidazole or clarithromycin and a bismuth compound or an antisecretory drug. IV: Susceptible infections: AD: As sodium: 500 mg IM or slow IV inj every 8 hrs increased to 1g slow IV inj every 6hrs over 3-4 min or 30-60 min infusion. CH: As trihydrate: ≤ 10 yrs: 50-100 mg/kg daily in divided doses.

CI: HSR to penicillins

ADR: HSR including anaphylaxis, maculopapular rash, exfoliative dermatitis, urticaria, vasculitis, serum sickness; agitation, insomnia, dizziness, diarrhoea, nausea and vomiting; rarely interstitial nephritis; anaemia, thrombocytopaenia, leucopenia, agranulocytosis.

**Amoxycillin with clavulanic acid (Beta lactamase – resistant antimicrobial)**

Tablets: Amoxicillin 500mg with clavulanic acid 125mg; Injection: Clavulanic acid 200mg + Amoxycillin - 1g

**Indications & Dosage:** ORAL: Infections caused by beta-lactamase producing strains of organisms: AD: Amoxicillin (250 mg) + Clavulanate potassium (125 mg). Upper & lower respiratory tract-Streptococci, H.influenzae, Moraxella catarrhalis; Otitis media-H-influenzae, M.catarrhalis; Sinusitis-H.influenzae, M.catarrhalis; UTI – enterobacter spp. E.coli, Klebsiella spp.: AD: One tablet every 8hrs. In severe infections 2 tablets every 8hrs. Skin & soft tissue infections- S.aureus, E.coli, Klebsiella spp.; All other infections caused by pathogens susceptible to amoxicillin: AD: General dosage. Children under 40 kg general dosage for most infections: CH: 20 mg/kg/day of amoxicillin in 3 divided doses. Otitis media, sinusitis & LRTI: CH: 40 mg/kg/day of amoxicillin in 3 divided doses.

IV: Infections caused by beta-lactamase producing strains of organisms; Upper & lower respiratory tract-Streptococci, H.influenzae, Moraxella catarrhalis; Otitis media-H.influenzae, M.catarrhalis; Sinusitis-H.influenzae, M.catarrhalis; UTI– enterobacter spp. E.coli, Klebsiella spp.; Skin & soft tissue infections- S.aureus, E.coli, Klebsiella spp.; All other infections caused by pathogens susceptible to amoxicillin: AD: Amoxicillin sodium 1.0 g Clavulanate potassium 200 mg inj given every 6 or 8 hrs

CI: HSR to penicillins, history of penicillin- or amoxicillin with clavulanic acid-associated jaundice or hepatic dysfunction

ADR: Nausea, vomiting, diarrhoea, indigestion; rash and urticaria; superinfection including candida, pseudomembranous colitis; hepatotoxicity. Also refer Amoxycillin

**Ampicillin (Aminopenicillin)**
Injection: 500mg (Powder for solution for injection)

Indications & Dose: ORAL: As trihydrate: Biliary tract infections; endocarditis; otitis media; peritonitis; bronchitis; perinatal streptococcal infections; gastroenteritis; listeriosis; treatment of susceptible infections: AD: 0.25-1 g every 6 hrs taken 30 min before or 2 hrs after food. CH: ½ of the adult dose. Typhoid & parathypoid fever: AD: 1-2 g every 6 hrs for 2 wks in acute infections and 4-12 wks in carriers. Uncomplicated gonorrhoea: AD: 2g with 1g of probenecid as a single dose, recommended to be repeated in female patients.

IV: As sodium: Intrapartum prophylaxis against group B streptococcal infection in neonates: AD: Initially, 2 g inj followed by 1 g every 4 hrs until delivery. Meningitis: AD: 2 g every 6 hrs. CH: ½ dose of the adult dose or 150 mg/kg body wt daily in divided doses. Susceptible infections: As sodium: PARENTERAL: AD: 500 mg IM every 4-6 hrs or slow IV infusion over 3-5 min. CH: ½ the adult dose. INTRA-ARTICULAR: AD: 500 mg daily in 5 ml of water or solution of 5% procaine. ANY ROUTE: AD: 500 mg daily intrapleural or intraperitoneal in 5-10 ml of water. CH: ½ the adult dose.

CI: HSR to penicillins; infectious mononucleosis.
ADR: GI upset, nausea, vomiting, diarrhoea; urticaria, exfoliative dermatitis, other rashes esp. in AIDS, EB virus infection and lymphatic leukemia; fever; seizures; interstitial nephritis; blood dyscrasias.

Azithromycin (Macrolide Antimicrobial)
Capsules/Tabs: 250mg; DT: 100mg; Oral suspension
Indications & Dosage: As dihydrate: ORAL: Treatment & prophylaxis of susceptible infections including M.avium complex (MAC) infection; prophylaxis of endocarditis in high-risk penicillin-allergic patients: AD: Initially, 500 mg followed by 250 mg daily for 4 days or 500 mg daily as a single dose for 3 days. Uncomplicated genital infections due to Chlamydia trachomatis: AD: 1 g as a single dose. Uncomplicated gonorrhoea: AD: 2 g as a single dose. Prophylaxis of disseminated MAC infections: AD: 1.2 g once every wk. CH: > 6 months: 10 mg/kg once daily for 3 days.

IV: Pelvic inflammatory disease; treatment of community-acquired pneumonia: AD: 500 mg as a single dose in a 1 mg/ml solution administered over 3 hrs or 2 mg/ml solution over 1 hr given as infusion.
CI: HSR to the drug or other macrolides.
ADR: Mild to moderate nausea, vomiting, abdominal pain, dyspepsia, flatulence, diarrhoea, cramping; angioedema; dizziness, headache, vertigo, somnolence; transient elevations of liver enzymes, cholestatic jaundice. IV: Pain and inflammation at inj site.

Cefaclor (2nd Generation Cephalosporin)
Tablet/capsule: 250mg, 500mg; Suspension
Indications & Dosage: ORAL: UTI; upper & lower RTI; skin infections; Otitis media: AD: As monohydrate: 250-500 mg every 8 hrs. CH: > 5 yrs: 250 mg tid; 1-5 yrs: 125 mg tid; < 1 yr: 62.5 mg tid; > 1 month: 20 mg/kg daily in 3
divided doses, increased to 40 mg/kg daily if necessary. Max dose: AD: 4 g daily. CH: 1 g daily. Renal impairment: No
do dose change required.

Cl: HSR to cephalosporins.

ADR: HSR including maculopapular rash, urticaria, bronchospasm, anaphylaxis; GI disturbances; eosinophilia,
neutropenia, lymphocytosis, leukocytosis, thrombocytopenia, decreased platelet function, Positive Coomb's test
without haemolysis, anemia, aplastic anemia; transient increase in liver enzymes; reversible interstitial nephritis;
nervousness, sleep disturbances, dizziness, confusion; superinfection eg. Candidal infections, pseudomembranous
colitis

Cefadroxil (1st Generation Cephalosporin)
Tablet/capsule: 500mg; Syrup, Suspension

Indications & Dosage: ORAL: Mild to moderate susceptible infections: AD: 1-2 g daily as a single or 2 divided
doses. CH: > 6 yrs: 500 mg bid; 1-6 yrs: 250 mg bid; < 1 yr: 25 mg/kg daily in divided doses. Renal impairment: Dose
reduction based on CrCl.

Cl: HSR to cephalosporins.

ADR: Refer to Cefaclor

Cefepime (4th Generation Cephalosporin)
Injection: 500mg amp/vial

Indications & Dosage: PARENTERAL: Mild to moderate uncomplicated or complicated UTIs, including
pyelonephritis: AD: 0.5-1 g IV/IM every 12 hrs for 7-10 days. Empiric therapy for febrile neutropenic patients: AD:
2 g IV every 8 hrs for 7 days. Moderate to severe pneumonia: AD: 1-2 g IV every 12 hrs for 10 days. Complicated
intra-abdominal infections: AD: (used in combination with metronidazole) 2 g every 12 hrs for 7-10 days. Severe
uncomplicated or complicated UTIs, including pyelonephritis; moderate to severe uncomplicated skin & skin
structure infections: AD: 2 g IV/IM every 12 hrs for 10 days.

Cl: HSR to cephalosporins, penicillins or other β-lactam antibiotics.

ADR: Pain & erythema at inj site. Also refer to Cefaclor

Cefixime (3rd Generation Cephalosporin)
Tablets/ Capsules: 200mg; Syrup

Indications & Dosage: ORAL: Otitis media, pharyngitis, tonsillitis, acute bronchitis, acute exacerbations of
chronic bronchitis, UTI: AD: 200-400 mg/day as a single dose or in 2 divided doses. CH: 8 mg/kg/day as a single
doses; <6 months: Not recommended. Treatment should be continued for 48 hrs after disappearance of symptoms.

Uncomplicated gonorrhoea: AD: 400 mg single dose. Reduce dose in renal impairment.

Cl: HSR to cephalosporin.

ADR: Refer to Cefaclor
Cefoperazone (3\textsuperscript{rd} generation Cephalosporin)
Tablets: Injection: 1g Vial

Indications & Dosage: PARENTERAL: Infections caused by susceptible bacteria including pseudomonas spp.: AD: As sodium: 2-4 g daily in 2 divided doses, increased to 12 g daily in 2-4 divided doses for severe infections given as deep IM or IV infusion. Max dose for liver impairment or biliary obstruction: 4 g daily; liver and kidney impairment: 1-2 g daily.
Cl: HSR to Cephalosporins.
ADR: Hypoprothrombinaemia, bleeding; Disulfiram-like reaction with alcohol. Also refer to Cefador

Cefoperazone+Sulbactam (3\textsuperscript{rd} generation Cephalosporin + \beta-lactamase inhibitor)
Vial & Injection: Cefoperazone 1g+Sulbactam 1g

Indications & Dosage: IV: RTI; intra-abdominal infections; UTI; septicemia; bone & joint infections; gynecological infections: AD: Mild to moderate infections: 1-2 g every 12 hrs. severe infections: 2-4 g every 8 hrs; or 3-6 every 12 hrs as IV infusion. Dose should be reduced in adults with impaired hepatic function and/or renal function depending on the extent of impairment.
Cl: Known allergy to penicillins, sulbactam or cephalosporins
ADR: Refer to Cefaclor

Cefotaxime (3\textsuperscript{rd} generation Cephalosporin)
Injection: 1g Vial

ANY ROUTE: Bacteraemia; endometritis; gonorrhoea; gynaecological & obstetrical infections including pelvic cellulites; infections in immunocompromised patients; infections with multi-resistant pathogens; intraabdominal infections including peritonitis; meningitis & ventriculitis; septicemia; UTI: AD: Up to 12 g/day in divided doses every 6-8- or 12-hrs. CH: >12 hrs: Same as adult dose. 1 month-12 yrs: 50-100 mg/kg/day in equally divided doses every 6-12 hrs. In life-threatening infections, up to 150-200 mg/kg/day have been used. NEONATES ≤ 1 month: 50 mg/kg IV every 12 hrs during the 1\textsuperscript{st} week; 2-4 wks: 50 mg/kg IV every 8 hrs. Max dose: AD: 12 g. In renal impairment with CrCl of ≤5 mg/min, cefotaxime dose is reduced by 50%. Treatment is continued for up to 72 hrs after relief of symptoms and for at least 10 days in group A beta-haemolytic streptococcal infections.
Cl: HSR to cephalosporins. Women who suspect pregnancy, pregnancy, lactation.
ADR: Pain at inj site (IM); Also refer to Cefaclor.
Cefpodoxime (3rd generation Cephalosporin)

Tablet: 200mg

Indications & dosage: Urinary tract infections, Respiratory tract infections, Skin infections, Otitis media, Uncomplicated gonorrhoea

**AD:** Urinary tract infections, Respiratory tract infections: 100-200 mg every 12 hr. (Oral). Skin infections: 200-400 mg every 12 hr. (Oral). **Uncomplicated gonorrhoea:** A single dose of 200 mg may be used.

**CI:** Hypersensitivity

**ADR:** Anaphylactic shock; purpuric nephritis, skin rash, pruritus; diarrhoea, nausea, abdominal pain, vomiting, Pseudomembranous colitis, nephrotoxicity.

Ceftazidime (3rd generation Cephalosporin)

Injection: 1g vial

Indications & dosage: Pseudomonal lung infections in patients with cystic fibrosis

**AD:** Susceptible infections 1-6 g/day in divided doses. Pseudomonal lung infections in patients with cystic fibrosis 90-150 mg/kg/day in 3 divided doses, up to 9 g/day. Prophylaxis of surgical infection in patients undergoing prostate surgery 1 g at the induction of anesthesia, may repeat upon catheter removal. (IV/IM)

**CI:** Hypersensitivity to cephalosporins.

**ADR:** Hypersensitivity, dizziness, diarrhoea, nausea, vomiting, renal impairment, rash, erythema multiforme, thrombocytopenia, superinfection, phlebitis and thrombophlebitis at the site of injection, anaphylactic reactions, nephrotoxicity, pseudomembranous colitis.

Ceftriaxone (3rd generation Cephalosporin)

Injection: 1gm vial

**Indications & Dosage:**

**IV:** Prevention of secondary meningococcal meningitis: **AD:** 250 mg as a single dose. **CH:** 125mg as a single dose.

**IM:** **Uncomplicated gonorrhoea:** AD: 250 mg as a single dose.

PARENTERAL: **Chancroid; endocarditis; gonorrhoea; meningitis; septicemia; syphilis; gastroenteritis; lyme disease; typhoid fever; whipple’s disease:** **AD:** 1-2 g daily as a single or in 2 divided doses given as deep IM or slow IV inj over 2-4 min or as infusion over at least 30 min, increased to 4 g daily in severe infections. **CH:** 25-50 mg/kg once daily increased to 80 mg/kg in severe infections. Doses > 50 mg should be given as IV infusion. Max dose: **NEONATES:** 50 mg/kg daily. **Prophylaxis for surgical infections in colorectal surgery:** **AD:** 1g as a single dose given 0.5-2 hrs prior to surgery. Reduce dose in patients with severe renal impairment and those with both renal & hepatic impairment.

**CI:** HSR to cephalosporins.

**ADR:** Refer to Cefaclor
Cefuroxime (2nd generation Cephalosporin)
Tablets/Capsules: 500mg; Injection: 250mg, 750mg Vial
Indications & Dosage: ORAL: Uncomplicated UTI: AD: As axetil: 125 mg bid. RTI: AD: 250 – 500 mg bid. CH: > 3 months: 125 mg bid or 10 mg/kg. Max dose: child: 250 mg daily. Uncomplicated gonorrhoea: AD: 1 g as a single dose. Otitis media: CH: > 2 yrs: 250 mg bid or 15 mg/kg bid. Max dose: child: > 2 yrs: 500 mg daily. IV: Meningitis due to sensitive strains of bacteria: AD: 3 g every 8 hrs. CH: 200 – 240 mg/kg daily in 3–4 divided doses, decreased to 100 mg/kg daily after 3 days or once symptoms are controlled. Neonate: 100 mg/kg daily, decreased to 50 mg/kg when control has been achieved. IM: Gonorrhoea: AD: 1.5 mg as a single dose divided between 2 inj sites.
PARENTERAL: Prophylaxis for surgical infection: AD: 1.5 g IV before the procedure followed by 750 mg IM/IV every 8 hrs for up to 24–48 hrs depending on the procedure. Bone & joint infections; gonorrhoea; LRTI; otitis media; meningitis; peritonitis; pharyngitis; sinusitis; skin & soft tissue infections; UTI: AD: 750 mg every 8 hrs given as deep IM or slow IV inj over 3–5 min, increased to 1.5 g every 6–8 hrs in severe infections. CH: 30–60 mg/kg daily, increased to 100 mg/kg in divided doses or 2–3 divided doses in neonates, if necessary. CI: HSR to cephalosporins.
ADR: Also refer to Cefaclor

Cephalexin (1st Generation Cephalosporin)
Capsule, tablet & syrup.
Indications & Dosage: ORAL: Susceptible infections including skin, UTI & RTI: AD: 1-2 g daily given in divided doses at 6-, 8-, 12-hr intervals, increased to 6 g in deep-seated infections. CH: 25-100 mg/kg daily in divided doses, Max dose: CH: 4 g daily. Prophylaxis of recurrent UTI: AD: 125 mg at night. Reduce dose in patients with severe renal impairment.
CI: HSR to cephalosporins.
ADR: Pain at inj site; Also refer Cefaclor.

Chloramphenicol (Broad spectrum antimicrobial)
Capsules: 250mg; Injection: 1g vials; Eye applicaps 1%; Oral suspension,
Indications & Dosage: ORAL: Bacterial meningitis; anaerobic infections; brain abscess; granuloma inguinale; plague & tularaemia; anthrax; listeriosis; gas gangrene; whipple’s disease; severe systemic infections with campylobacter fetus; infections due to H.influenzae; ehrlichiosis; severe gastroenteritis; severe melioidosis; psittacosis; Q fever: AD & CH: 50 mg/kg daily in divided doses every 6 hrs increased to 100 mg/kg daily for meningitis or severe infections due to moderately resistant organisms. Continue treatment after the patient’s temperature has normalized for a further 4 days in rickettsial disease & 8-10 days in typhoid fever.Full-term infants >2wks: 50 mg/kg daily in 4 divided doses. Premature and full-term neonates: 25 mg/kg daily in 4 divided doses.
OPHTHALMIC: Eye infections: AD: Instill 1 drop of a 0.5% solution every 2 hrs continued after 48 hrs of complete healing. Reduce dose once symptoms are controlled or apply a 1% ointment tid-qid.
OTIC/AURAL: **Otitis externa:** AD: Instill 2-3 drops of a 5% solution into the ear bid-tid.

**CI:** History of HSR or toxic reaction to the drug; Pregnancy; lactation; parenteral administration for minor infections or as prophylaxis; preexisting bone marrow depression or blood dyscrasias.

**ADR:** HSR; Bone marrow suppression leading to anemia, leukopenia, or thrombocytopenia, pancytopenia; nausea, vomiting, unpleasant taste, diarrhea; rarely peripheral & optic neuritis, blurring of vision and digital paresthesias; encephalopathy, confusion, delirium, mental depression, headache. Haemolysis in patients with G6PD deficiency. Topical application to the eye: HSR including rashes, fever and angioedema. Ear drops: Ototoxicity.

### Ciprofloxacin (Fluroquinolone Antimicrobial)

Tablets: 500mg; Injection: 200mg in 100ml bottle; eye drops/eye oint: 0.3%

**Indications & Dosage:**

- **As hydrochloride:** Treatment of susceptible infections; gastroenteritis; cat scratch disease; Q fever; spotted fever; typhus; biliary tract infections; bone & joint infections; chancroid; infections in immunocompromised patients; legionario's disease; LRTI; otitis externa; otitis media; peritonitis; septicemia; skin infections; UTI; brucellosis; infected animal bites; anthrax; typhoid & paratyphoid fever.

  - **ORAL:**
    - AD: 250-750 mg bid depending on the severity & nature of infection.
    - CH: 5-15 mg/kg bid.
  - **IV:**
    - AD: 100-400 mg bid infused over 30-60 min.
    - CH: 4-8 mg/kg bid.

  - **Acute uncomplicated cystitis in women:** ORAL: AD: 100 mg bid.
  - **Gonorrhoea:** ORAL: AD: 250-500 mg as a single dose.
  - **Acute exacerbation of cystic fibrosis associated with P.aeruginosa infection:** ORAL: AD & CH: >5 yrs: 20 mg/kg bid. Max dose: AD & CH: 750 mg bid. IV: AD: 10 mg/kg tid infused over 60 min. Max dose: 400 mg tid.

  - **Prophylaxis of meningococcal meningitis:** ORAL: AD: 500 mg as a single dose.
  - **Surgical prophylaxis:** ORAL: AD: 750 mg as a single dose 60-90 min before procedure.

  - **Superficial ocular infections eg, corneal ulcers, conjunctivitis:** OPHTHALMIC: AD: Apply 0.3% solution every 15 min for 6 hrs then every 30 min thereafter on the 1st day, then apply every hr on the 2nd day and every 4 hrs on the 3rd-4th day of treatment. Max dose: Treatment should not exceed 21 days.

  - **CHILDREN:** Not recommended but if considered necessary, 5-10 mg/kg/day in 2 divided doses.

**CI:**

- Childn <12 yrs and adolescents; except where benefit clearly exceeds risk. Pregnancy and lactation; avoid exposure to sunlight or sun lamps.

**ADR:** Mild nausea, vomiting, and/or abdominal discomfort; headache, tremor, confusion, convulsions; rashes, Achilles tendon rupture or tendonitis; leukopenia, eosinophilia, and mild elevations in serum transaminases occur rarely.
**Ciprofloxacin + Dexamethasone**

Eye drops: Ciprofloxacin 0.3%+Dexamethasone 0.1%

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**Clarithromycin** *(Macrolide Antimicrobial)*

Tablet: 250mg

**Indications & Dosage**: Susceptible infections; RTI; skin & soft tissue infections: **ORAL**: AD: 250 mg bid increased to 500 mg bid for severe infections if necessary for 7–14 days. CH: 7.5 mg/kg bid for 5–10 days. IV: AD: 500 mg bid infused over 60 min in a 0.2% solution for 2–5 days; revert to oral therapy whenever possible. **Infections due to mycobacterium avium complex (MAC)**: **ORAL**: AD: 500 mg bid in combination with other antmycobacterials.

**Leprosy**: AD: 500 mg daily as part of an alternative multidrug therapy. **Eradication of H.pylori associated with peptic ulcer disease**: ORAL: AD: 500 mg bid in combination with either a proton pump inhibitor or histamine H₂-receptor antagonist for 7 – 14 days.

**CI**: HSR to macrolides. Patients receiving terfenadine, astemizole, pimozide, cisapride and ergot derivatives.

**ADR**: GI upset, glossitis, stomatitis, altered taste; headache, dizziness, hallucinations, insomnia, other CNS effects; rash; hepatic dysfunction; reversible hearing loss, pseudomembranous colitis, rhabdomyolysis

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**Clindamycin** *(Lincosamide Antibiotic)*

Tab/Capsules: 150mg; Injection: 600mg /4ml Amp

**Indications & Dosage**: Serious anaerobic infections: **ORAL**: As hydrochloride: AD: 150-300 mg cap every 6 hrs increased to 450 mg every 6 hrs. CH: 3-6 mg/kg every 6 hrs; <1 yr or <10 kg body wt: 37.5 mg every 8 hrs. IV: AD: 0.6-2.7 g daily in divided doses, increased to 4.8 g daily in very severeb infections. CH: >1 month: 15-40 mg/kg daily in divided doses up to a total dose of ≥ 300 mg daily. NEONATE: 15-20 mg/kg daily. **Prophylaxis in patients at risk of developing endocarditis**: **ORAL**: AD: As hydrochloride: 600 mg 1 hr before the procedure. **Bacterial vaginosis**: VAGINAL: AD: As phosphate: Apply a 2% cream. **Acne**: TOPICAL/CUTANEOUS: AD: As phosphate: Apply a 1% preparation.

**CI**: HSR

**ADR**: Diarrhoea (discontinue treatment); nausea, vomiting, abdominal discomfort; erythema multiforme, contact dermatitis, exfoliative & vesiculous dermatitis, urticaria; eosinophilia, neutropenia; hepatic dysfunction, pseudomembranous colitis, local irritation, thrombophlebitis

**Clindamycin 100mg + Clotrimazole 200mg (for vaginal use)**

See individual drugs
Cloxacillin (Isoxazolylpenicillin)
Capsules: 250mg; Injection (Powder for solution for injection): 500mg; Oral solution (Powder for oral solution)
**Indications & Dosage:** ORAL: As sodium: **Staphylococcal infections resistant to benzylpenicillin:** AD: 250-500 mg qid 30 min before food. CH: 50-100 mg/kg in divided doses every 6 hrs.
CI: HSR to penicillins
**ADR:** Neutropaenia; Gl upsets; rash.

Cotrimoxazole (Sulfamethoxazole + trimethoprim) (Inhibits Folic acid synthesis)
Injection: TMP 40mg: SMX 200mg/5 ml; Tablet: TMP 80mg: SMX 400mg & TMP 160mg: SMX 800mg
**Indications & Dosage:** **Bacterial infection:** Severe infections due to susceptible organisms: ORAL / IV: AD: Sulfamethoxazole 800 mg with trimethoprim 160 mg every 12 hrs, increased to sulfamethoxazole 1.2 g with trimethoprim 240 mg, every 12 hrs in more severe infections; CH: 6 wks–5 months: Sulfamethoxazole 100 mg with trimethoprim 20 mg every 12 hrs; 6 months–5 yrs: Sulfamethoxazole 200 mg with trimethoprim 40 mg every 12 hrs; 6–12 yrs: Sulfamethoxazole 400 mg with trimethoprim 80 mg every 12 hrs; by intravenous infusion , CH: Sulfamethoxazole 30 mg/kg daily with trimethoprim 6 mg/kg daily in 2 divided doses. **Pneumocystis jiroveci pneumonia:** ORAL / IV: AD & CH: Sulfamethoxazole up to 100 mg/kg daily with trimethoprim up to 20 mg/kg daily in 2–4 divided doses for 14–21 days. **Prophylaxis of Pneumocystis jiroveci pneumonia:** ORAL: AD & CH: Sulfamethoxazole 25 mg/kg with trimethoprim 5 mg/kg in 2 divided doses on alternate days (3 times a wk)
CI: HSR to sulfonamides or trimethoprim; porphyria
**ADR:** Nausea, vomiting, diarrhoea, headache; HSR including rashes, pruritus, photosensitivity reactions, exfoliative dermatitis, & erythema nodosum; rarely, SJS & toxic epidermal necrolysis; systemic lupus erythematosus, myocarditis, serum sickness; crystalluria- resulting in haematuria, oliguria, anuria; blood disorders including granulocytopenia, agranulocytosis, aplastic anaemia, purpura-discontinue immediately; also reported, liver damage, pancreatitis, antibiotic-associated colitis; eosinophilia, cough & shortness of breath, pulmonary infiltrates; aseptic meningitis, depression, convulsions, ataxia, tinnitus, vertigo, dizziness, hallucinations; electrolyte disturbances; megaloblastic anaemia due to trimethoprim.

Doxycycline (Tetracycline congener)
Capsules/ Dispersible tablet: 100mg
**Indications & Dosage:** **Bacterial infections due to susceptible organisms:** ORAL: AD & CH over 8 yrs: 200 mg on first day then 100 mg daily; in severe infections, 200 mg daily. PARENTERAL: AD: 200 mg on day 1 followed by 100 mg daily in a 0.1-1 mg/ml solution infused over 1-4 hrs.
**ORAL:** Syphilis: AD:100mg twice daily for 14 days; late latent syphilis 100mg twice daily for 28 days. **Uncomplicated genital chlamydia, non-gonococcal urethritis:** AD: 100 mg twice daily for 7 days (14 days in pelvic inflammatory disease). **Louse & tick-borne relapsing fevers:** AD: 100 mg or 200 mg as a single dose. **Cholera:** AD: 300mg as a
single dose; CH over 8 yrs: 100mg as a single dose. **Scrub typhus**: AD: 200mg as a single dose. **Acne**: AD: 50 mg daily.

**Malaria**: ORAL: Supplement to quinine in treatment of multiple-drug resistant *P. falciparum* malaria (where quinine resistance, in cases of hypersensitivity to sulfonamides): AD & CH over 8 yrs: 100 mg twice daily for 7–10 days. **Short-term prophylaxis of multiple-drug resistant *P. falciparum* malaria; bacterial infections**: AD: 100 mg daily for up to 8 wks; CH: Over 8 yrs: 1.5 mg/kg daily for up to 8 wks; doxycycline should be started on the day before exposure and continued for 4 wks after last risk of exposure

**CI**: Pregnancy; children under 8 years; porphyria; systemic lupus erythematosus

**ADR**: Epigastric burning and distress, abdominal discomfort, nausea, vomiting, diarrhea; erythema (discontinue treatment); photosensitivity; HSR; headache, dizziness, vertigo; hepatotoxicity esp in pregnant women; pancreatitis, & antibiotic-associated colitis reported; staining of growing teeth & occasional dental hypoplasia

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**Erythromycin (Macrolide Antimicrobial)**

**Tablets/Capsules**: 500mg; Oral suspension & liquid

**Indications & Dosage**: ORAL: Susceptible infections; bronchitis; severe campylobacter enteritis; pertussis; chancroid; diphtheria; pneumonia; sinusitis; legionella infections; trench fever; treatment of susceptible infections in penicillin-allergic patients; as alternative to tetracyclines for chlamydial infections: AD: 1-2 g daily in 2-4 divided doses, increased up to 4 g daily in divided doses for severe infections. Doses >1g should be given in more than 2 divided doses. CH: 30-50 mg/kg daily, increased to twice the usual dose in severe cases; 2-8 yrs: 1 g daily in divided doses; ≤2yrs: 500mg daily in divided doses. **Management of acne**: AD: Maintenance: 250mg daily.

**OPHTHALMIC**: Neonatal conjunctivitis; treatment & prophylaxis of eye infections: AD: 0.5-1% ointment applied to the affected area.

**TOPICAL/CUTANEOUS**: Acne: AD: 2-4% solution applied topically. Max dose in patients with renal impairment: 1.5 g daily.

**CI**: HSR to erythromycin; preexisting liver disease; porphyria; hepatic failure; pregnancy.

**ADR**: HSR eg. fever, eosinophilia, rash, urticaria; epigastric pain, diarrhea, nausea, vomiting; reversible ototoxicity; hepatitis, cholestaic jaundice; arrhythmias

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**Gatifloxacin (Fluoroquinolone Antibacterial)**

**Tablet**: 400mg; Eye drops: 0.3%; Injection

**Indications & Dosage**: RTI; UTI; susceptible infections: ORAL: AD: 400 mg once daily. IV: AD: 400 mg once daily infused in a 2 mg/ml solution over 60 min.

**ORAL**: Uncomplicated gonorrhoea: AD: 400 mg once daily. **Uncomplicated UTI**: AD: 400 mg daily as a single dose or 200 mg daily for 3 days.

**OPHTHALMIC**: Conjunctivitis: AD: Instill 1drop 2 hrly into affected eye(s) up to 8 times daily (on Days 1&2), then decrease to 4 times daily (Days 3-7). **Renal impairment**: Oral, IV CrCl ≤40 ml/min: Initially, 400mg then 200mg every 24 hrs.
CI: HSR; childn < 18 yrs; concurrent use of class IA antiarrhythmics or class III antiarrhythmics, known QT prolonged drugs; pregnancy and lactation.
ADR: QTc interval (QT interval corrected for heart rate) prolongation. Also refer to ciprofloxacin

Gentamicin (Aminoglycoside Antibacterial)
Injection (Solution for injection): 80mg/2ml, Eye drops: 0.03%
Indications & Dosage: IM: As sulfate: Treatment of severe infections caused by susceptible gram-negative organisms eg.; biliary tract infections; brucellosis; cat scratch disease; cystic fibrosis; endocarditis; endometritis; gastroenteritis; granuloma inguinale; listeriosis; meningitis; otitis externa; pelvic inflammatory disease; peritonitis; plaque; pneumonia; septicemia; skin infections; UTI: AD: Total daily dose of 3-5 mg/kg every 8 hrs for 7-10 days. CH: 2-2.5 mg/kg every 8 hrs. INFANTS & NEONATES: 2.5 mg/kg every 12 hrs. Streptococcal & enterococcal endocarditis: AD: 80 mg bid, in association with penicillin or vancomycin. Prophylaxis of streptococcal & enterococcal endocarditis in high-risk patients: AD: 120 mg with penicillin, vancomycin or teicoplanin before induction of anaesthesia.
OPHTHALMIC: Superficial infections of the eye: AD: As sulfate: Instill 1-2 drops of a 0.3% solution into the infected eye/s every 4 hrs or up to 2 drops every hr in severe infections. Alternatively, apply a small amount of 0.3% ointment bid-tid into the affected eye.
TOPICAL/CUTANEOUS: Bacterial skin infections: AD: (0.3% cream) Apply to the affected area 3-4 times daily.
Renal impairment: Increase the interval between doses keeps serum creatinine levels as a guide. In patients on dialysis an 8 hr dialysis reduce serum levels of gentamycin by 50%. At the end of each session give 1-1.7 mg/kg for adults and 2 mg/kg for children. For IV use, each dose of gentamicin diluted with 50-100 ml of IV fluids given over 20 min. duration 7-10 days.
CI: History of HSR to aminoglycoside; pregnancy; hepatic impairment. Patients with perforated ear drum.
ADR: Also refer to amikacin.

Gentamicin 0.3% + Dexamethasone 0.1% 5ml eye drops

Imipenem (Carbapenem Antibacterial)
Injection: Cilastatin 250 mg, Imipenem 250 mg (vial)
Indications: Surgical Prophylaxis, Susceptible infections, uncomplicated gonorrhea
AD: 1 g given on induction of anesthesia , followed by 1 g after 3 hr, with additional doses of 500 mg at 8th and 16th hr after induction if necessary. (IV) for Mild to moderate susceptible infections 500 mg/ 750 mg every 12 hr.(IM)
CI: Hypersensitivity.
ADR: Skin rashes, urticaria, eosinophilia, fever, nausea, vomiting, diarrhoea, tooth or tongue discoloration, altered taste, Erythema multiforme, exfoliative dermatitis, Pain, thrombophlebitis at injection site, Stevens-Johnson syndrome, toxic epidermal necrolysis.
Levofloxacin (Fluoroquinolone Antibacterial)
Tablet: 500mg; Injection: 500mg/100ml bottle

Indications & Dosage:

ORAL: Susceptible infections: AD: 250-500 mg once or twice daily. Severe or complicated infections: 750 mg once daily.

OPHTHALMIC: Ocular infections caused by susceptible organisms: AD: 1-2 drops every 2-6 hr. CH: >1 yr: 1-2 drops every 2-6 hr. For patients with CrCl of 20-49 ml/min, the initial dose of 500 mg is administered followed by 250 mg once daily. If CrCl is 10-19 ml/min, the initial dose of 500 mg is administered followed by 250 mg every 48 hrs. Reduce dose in patients with renal impairment.


ADR: Refer to ciprofloxacin.

Linezolid (Antibacterial)
Film-Coated Tab: 600mg; Injection: 600mg vial

Indications & Dose:

AD: MRSA infection: 600 mg bd for 10-14 days. Nosocomial & community-acquired pneumonia including concurrent bacteraemia; Complicated skin & skin structure infections: 600 mg IV or PO bd for 10-14 days. Vancomycin-resistant enterococcal infection including concurrent bacteraemia: 600 mg IV or PO bd for 14-28 days. CH: Nosocomial & community acquired pneumonia, complicated skin & skin structure infections, vancomycin-resistant Enterococcus faecium infections: 10 mg/kg tds. Premature neonates <7 days: 10 mg/kg bd.

CI: HSR to linezolid.

ADR: Diarrhoea, constipation, nausea, vomiting; headache, insomnia, dizziness; rash, pruritus, fever; neutropenia, thrombocytopenia, thrombocytopenia; reversible peripheral and optic neuropathy have been reported with prolonged use. Patients receiving concomitant therapy with an adrenergic or serotonergic agent or consuming more than 100 mg of tyramine a day may experience palpitations, headache, or hypertensive crisis.

Meropenem (Carbapenem Antibacterial)
Tablet; Injection: 500mg, 1000mg vial

Indications & Dosage:

IV: Cystic fibrosis; infections in immunocompromised patients; intra-abdominal infections; meningitis; RTI; septicemia; skin infections; UTI; treatment of susceptible infections: AD: As trihydrate: 0.5-1 g every 8 hrs by slow IV inj over 3-5 min or infusion over 15-30 min, increased to 2 g every 8 hrs for meningitis and cystic fibrosis. CH: >3 months and <50 kg: 10-20 mg/kg every 8 hrs, increased to 40 mg/kg every 8 hrs for meningitis or 25-40 mg/kg every 8 hrs in cystic fibrosis. Renal impairment: CrCl: 26-50 ml/min: Usual dose every 12 hrs; 10-25 ml/min: ½ the usual dose every 12 hrs; <10 ml/min: ½ the usual dose every 24 hrs.

CI: HSR.

ADR: Diarrhoea, constipation, vomiting, headache, constipation; rash, pruritus; apnoea; seizures (less likely than
imipenem); phlebitis, thrombophlebitis, swelling & pain at inj site. Rarely, erythema multiforme, SJS, eosinophilia, leucopenia & neutropenia.

**Metronidazole**
Refer Antiamoebics

**Moxifloxacin (Fluoroquinolone Antibacterial )**
Eye drops 0.5% 5ml BFS/FFS pack

**Indications & Dosage:** AD: PO Susceptible infections 400 mg once daily. Duration: 5-21 days, depending on the condition. IV Susceptible infections 400 mg once daily. Duration: 5-21 days, depending on the condition. Ophth Bacterial conjunctivitis As 0.5% soln: Instill 1 drop 3 times/day for 7 days.

**CI:** Hypersensitivity; child, adolescent; pregnancy, lactation

**ADR:** GI disturbances, CNS effects, hypersensitivity-type reactions, reversible arthralgia, abnormal liver function tests, hepatitis, haematological disturbances, tachycardia, superinfection, pain and irritation at the Inj site, tendon damage, phlebitis and thrombophlebitis, peripheral neuropathy, photosensitivity, abdominal pain, headache, vaginitis.

**Nitrofurantoin (Urinary Antiseptic)**
Tablets: 100mg

**Indications & Dosage:** ORAL: Acute uncomplicated infection: AD: 50-100 mg every 6 hrs with food for 7 days. CH: >3 months: 3 mg/kg daily in 4 divided doses. Severe chronic recurrent infection: AD: 100 mg every 6 hrs with food for 7 days. Prophylaxis: AD: 50-100 mg at bedtime. CH: >3 months: 1 mg/kg once daily.

**CI:** Severe oliguria, anuria; infants < 1 month; renal failure; pregnancy (3rd trimester) and lactation.

**ADR:** Peripheral neuropathy, headache, dizziness; anorexia, nausea, epigastric pain, vomiting; dark brown urine; exfoliative dermatitis, SJS, alopecia; anaphylaxis; leucopaenia, aplastic anaemia, hemolytic anaemia in G6PD deficiency; pulmonary fibrosis on chronic use; hepatotoxicity

**Norfloxacin (Fluroquinolone Antibacterial)**
Tablet: 400mg; Suspension

**Indications & Dose:** ORAL: UTI: AD: 400 mg bid for 3-10 days continued for up to 12 wks in chronic relapsing UTI. Reduce dose to 400 mg once daily if adequate response is achieved within the 1st 4 wks. Uncomplicated gonorrhoea: AD: 800 mg as a single daily dose.

OPHTHALMIC: Various eye infections: AD: 0.3% solution into the affected eye/s. Reduce dose in patients with renal impairment: CrCl: ≤ 30 ml/min: 400 mg once daily.

**CI:** HSR to quinolones. Pregnancy & lactation. Prepubertal children.

**ADR:** Refer to Ciprofloxacin
**Ofloxacin (Flouroquinolone Antibacterial)**

Tablet: 200mg; Injection: 200mg/100ml; Eye/Ear drops: 0.3%

**Indications & Dosage:**
- **Susceptible infections; chlamydial infections eg, nongonococcal urethritis:** ORAL: AD: 200-400 mg bid depending on the severity of the infection. Doses up to 400 mg may be given as a single dose in the morning. IV: AD: 200-400 mg bid in a 0.2% solution infused over 30 min or 0.4% solution over 60 min. **As part of alternative multidrug therapy in leprosy:** ORAL: AD: 400 mg daily or intermittently. **Treatment of uncomplicated gonorrhoea:** ORAL: AD: 400 mg as a single dose. **Eye/ ear infections:** OPHTHALMIC OR OTIC/AURAL: AD: Apply several drops of 0.3% solution on the affected eye or ear. Reduce dose in patients with renal impairment.

**CI:** HSR to quinolones. Pregnancy and lactation.

**ADR:** Refer to Ciprofloxacin.

**Ofloxacin 0.3% + ketorolac 0.5% eye drops**

**Ofloxacin 0.3% w/v + Dexamethasone 0.1% w/v ear drops**

**Ofloxacin 0.3% with Prednisolone acetate 1% eye drops**

**Penicillin G/Benzyl penicillin (Penicillin)**

Injection: 500000 IU, 1000000 IU vials

**Indications &Dose:**
- **More serious infection:** IM or slow IV inj or infusion: AD: 2.4-4.8 g daily in 4 divided doses, increased if necessary. PREMATURE INFANT & NEONATE: 50 mg/kg daily in 2 divided doses; INFANT 1-4 wks: 75 mg/kg daily in 3 divided doses; CH:1 month – 12 yrs: 100 mg/kg daily in 4 divided doses (higher doses may be required). **Bacterial endocarditis:** Slow IV inj or infusion: AD: 7.2 g daily in 6 divided doses. **Anthrax:** Slow IV inj or infusion: AD: 2.4 g every 4 hrs. **Meningococcal disease:** Slow IV inj or infusion: AD: 2.4 g every 4 hrs. PREMATURE INFANT & NEONATE: 100 mg/kg daily in 2 divided doses. INFANT: 1-4 wks: 150 mg/kg daily in 3 divided doses. CH: I month – 12 yrs: 180 – 300 mg/kg daily in 4-6 divided doses.

**CI:** Penicillin HSR

**ADR:** HSR including anaphylaxis, maculopapular rash, exfoliative dermatitis, urticaria, vasculitis, serum sickness; agitation, insomnia, dizziness, diarrhoea, nausea and vomiting; rarely interstitial nephritis; anaemia, thrombocytopenia, leucopenia, agranulocytosis. Pain at IM injection site, thrombophlebitis; Convulsions, coma and bleeding due to altered platelet function after large doses; Jarisch - Herxheimer reaction in syphilis.

**Procaine penicillin (Penicillin)**

**Indications &Dose:** (See indications in Benzyl penicillin) 0.5 -1 MU IM 12-24 h

**Refer Penicillin G**
Phenoxymethylpenicillin (Oral Penicillin)

Tablets 125mg (in metallic foil pack on both sides; 250mg (in metallic foil pack on both sides)
Indications & Dose: AD: PO Prophylaxis of recurrent rheumatic fever 250 mg twice daily. Streptococcal infections of the upper respiratory tract, including scarlet fever and erysipelas 125-250 mg 6-8 hrly for 10 days. Pneumococcal infections of the respiratory tract, including otitis media 250-500 mg 6 hrly until patient is afebrile for at least 2 days. Fusospirochetosis (Vincent's infection) of the oropharynx; Staphylococcal infections of the skin and soft tissue 250-500 mg 6-8 hrly.

CI: Hypersensitivity to penicillins.

ADR: Nausea, vomiting, epigastric distress, diarrhoea, black hairy tongue; skin eruptions (maculopapular to exfoliative dermatitis), urticaria and other serum-sickness like reactions, laryngeal oedema; fever, eosinophilia.
Potentially Fatal: Anaphylaxis

Piperacillin (Ureidopenicillin)

Injection: 1gm Vial

Indications & dosage: As sodium: IV: Serious or complicated infections: AD: 200–300 mg/kg daily in divided doses or 4 g every 6 or 8 hrs, increased to not <16 g daily in life-threatening conditions. CH: 1month–12 yrs: 100–300 mg/kg daily in 3–4 divided doses. Noenate: <7 days or <2 kg daily in 3 divided doses; >7 days or >2 kg: 300 mg/kg in 3-4 divided doses. Max Dose: Adult: 24 g daily.
IM: Uncomplicated gonorrhoea: AD: 2 g as a single dose in combination with 1 g oral dose of probenecid given 30 min before the inj

PARENTERAL: Mild or uncomplicated infections: AD: 100–150 mg / kg daily or 2 g every 6 or 8 hrs or 4 g IV every 12 hrs or 2 g IM every 8 or 12 hrs. Prophylaxis of infection during surgery: AD: 2 g just before the procedure or when the umbilical cord is clamped in caesarean section, followed by 2 doses of 2 g at intervals of 4 or 6 hrs within 24 hrs of procedure. Reduce dose in moderate to severe renal impairment.

CI: HSR to penicillins.

ADR: Refer to Penicillin G

Piperacillin + Tazobactam (Penicillin + β-lactamase inhibitor)

Injection: Piperacillin 2gm +Tazobactam 250mg Vial

Indications & dosage: Complicated & uncomplicated UTI, LRTI, intra-abdominal, skin & skin structure infections; bacterial septicaemia, polymicrobial infections, febrile neutropenia: AD & CHILDN >12 yr 4.5 g 8 hrly. Range: 2.25-4.5 g 6-8 hrly. Renal insufficiency: CrCl 20-80 mL/min 4.5 g 8 hrly, CrCl <20 mL/min 4.5 g 12 hrly. Patient on haemodialysis 8 g/1 g piperacillin/tazobactam daily w/ additional 2.25 g following each dialysis period.

Neutropenia: AD & CHILDN >12 yr, >50 kg: 4.5 g 6 hrly in combination w/ aminoglycoside. Childn w/ normal renal function & <50 kg 90 mg/kg 6 hrly in combination w/ aminoglycoside. Intra-abdominal infection: CHILDN <40 kg w/ normal renal function: 112.5 mg/kg 8 hrly.
**Roxithromycin (Macrolide Antibacterial)**
Tablets: 150mg

**Indications & Dosage:** 
**ORAL:** Susceptible infections: AD: 150 mg bid or 300 mg once daily before meals. CH: ≤40 kg: 5-8 mg/kg daily. **Cirrhosis:** 150 mg once daily.

**CI:** HSR to macrolides.

**ADR:** Nausea, vomiting, abdominal pain, diarrhoea, weakness, malaise, anorexia, constipation, dyspepsia, flatulence; hepatitis; rashes, headache, dizziness, changes in blood counts; increased liver enzyme values; eosinophilia; rarely, acute pancreatitis.

**Streptomycin (Aminoglycoside Antibacterial)**
Refer Antitubercular drugs.

**Vancomycin (Glycopeptide Antibacterial)**
Injection: 500mg vial

**Indications & Dosage:** 
**IV:** Serious staphylococcal infections: AD: 500 mg over at least 60 minutes every 6 hrs or 1g over at least 100 minutes every 12 hrs; EL(over 65 years): 500 mg every 12 hrs or 1g once daily; NEONATE upto 1wk: 15 mg/kg initially, then 10 mg/kg every 12 hrs; infant 1–4 wks, 15 mg/kg initially, then 10 mg/kg every 8 hrs; CH over 1 month: 10 mg/kg every 6 hrs. **Endocarditis prophylaxis (for procedures under general anaesthetic):** AD: 1g over at least 100 minutes then gentamicin 120 mg at induction or 15 min before procedure. CH: 20 mg/kg as a single dose.

**CI:** HSR to the drug; history of impaired hearing; IM administration.

**ADR:** HSR including anaphylaxis; rashes including exfoliative dermatitis, SJS, toxic epidermal necrolysis, & vasculitis; nausea, chills, fever; nephrotoxicity including renal failure & interstitial nephritis; ototoxicity (discontinue if tinnitus occurs). On rapid infusion, erythematous or urticarial reactions, flushing, tachycardia, hypotension, wheezing, dyspnoea, pruritus, flushing of the upper body (‘red man’ syndrome) may occur.
ANTI-TUBERCULOUS DRUGS

Ethambutol (1st Line ATT)
Tablets: 400mg, 800mg
Indications & Dosage: Primary treatment of pulmonary & extrapulmonary TB: ORAL: AD: As hydrochloride: 15 mg/kg daily or 30 mg/kg 3 times a wk or 45 mg/kg 2 times a wk given with isoniazid, rifampicin and pyrazinamide in the initial 8-wk phase. Initial doses of 25 mg/kg daily for 60 days, reduced to 15 mg/kg daily is given to patients with prior antimycobacterial treatment. CH: 15 mg/kg daily. Reduce dose in patients with renal impairment.
CI: HSR; optic neuritis, severe renal impairment, history of leprosy; childn <6 yrs. Lactation.
ADR: Retrobulbar neuritis with a reduction in visual acuity, constriction of visual field, central or peripheral scotoma & green-red colour blindness; reduced renal clearance of urates (acute gout); GI disturbances eg, nausea, vomiting, abdominal pain, anorexia; rash, pruritus, headache, dizziness, malaise, confusion, hallucinations

Isoniazid (1st Line ATT)
Tablet: 100mg, 300mg; Injection (Solution for injection)
Indications & Dosage: ORAL: primary treatment of pulmonary & extrapulmonary TB: AD: 300 mg daily on an empty stomach. CH: 5 mg/kg body wt daily. Max dose: CH: 300 mg daily. Prophylaxis of TB: AD: 300 mg for at least 6 months up to 1 yr. CH: 5-10 mg/kg daily. Max dose: CH: 300 mg daily. Reduce dose in patients with hepatic impairment and moderate to severe renal impairment.
CI: Previous history of hepatic damage during isoniazid therapy; HSR.
ADR: Rash, fever; peripheral neuritis; hepatitis; HSR may result in fever, various skin eruptions, morbilliform, maculopapular, purpuric, and urticarial rashes; agranulocytosis, eosinophilia, thrombocytopenia, anemia; vasculitis; Arthritic symptoms (back pain; bilateral proximal interphalangeal joint involvement; arthralgia of the knees, elbows, and wrists; and the "shoulder-hand" syndrome); convulsions, memory loss, psychosis, muscle twitching, dizziness, ataxia, paresthesias, stupor, and toxic encephalopathy; optic neuritis and atrophy; anemia.

Pyrazinamide (1st Line ATT)
Tablet: 500mg
Indications & Dosage: ORAL: TB: AD & CH: 35 mg/kg daily or 50 mg/kg 3 times wkly or 75 mg/kg twice wkly. Max dose: Adult: 3g daily. Reduce dose in patients with renal impairment.
CI: HSR; existing liver disease; acute gout or hyperuricaemia. Porphyria. Pregnancy & lactation.
ADR: Hepatotoxicity (hepatomegaly, splenomegaly and jaundice may develop and in rare case fulminating acute yellow atrophy and death); hyperuricaemia; anorexia, nausea, vomiting; arthralgia, malaise, fever, flushing, skin rashes; glucose intolerance.
Rifampicin (1st Line ATT)
Capsule & tablet: 100mg, 150mg, 300mg.

**Indications & Dosage:**
- **ORAL:**
  - **TB** (combination therapy): AD & CH: 10 mg/kg daily or 10-15 mg/kg 2-3 times wkly in empty stomach. Max dose: AD: 600-900 mg. **Paucibacillary leprosy** (in combination with dapsone): AD: 600 mg once a month; CH under 10 yrs: 10-14 yrs 450 mg once a month; continue treatment for 6 months. **Multibacillary leprosy** (in combination with dapsone and clofazimine): AD: 600 mg once a month under supervision; CH under 10 yrs: 10-14 yrs 450 mg once a month under supervision; continue treatment for 12 months. **Prophylaxis against meningococcal meningitis:** AD: 600 mg bid for 2 days. CH: 1-2 yrs: 10 mg/kg; <12 months: 5 mg/kg bid for 2 days.
- **CI:** HSR; jaundice, biliary obstruction, severe hepatic disease. IM/SC route of administration. Porphyria.
- **ADR:** Anorexia, nausea, vomiting, diarrhoea (antibiotic-associated colitis reported); alterations of liver function-jaundice & potentially fatal hepatitis (dose related; do not exceed maximum dose of 600 mg daily); headache, drowsiness; rashes, fever, influenza-like syndrome & respiratory symptoms, collapse, shock, haemolytic anaemia; acute renal failure; thrombocytopenic purpura-more frequent with intermittent therapy; oedema, muscular weakness & myopathy, exfoliative dermatitis, toxic epidermal necrolysis, pemphigoid reactions, leukopenia, eosinophilia; urine, tears, saliva, & sputum coloured orange-red

**Rifampicin with Isoniazid**
Tablets: Rifampicin 100mg + INH 50mg, Rifampicin 450mg+INH 300mg

**Indications & Dosage:**
- **ORAL (combination therapy):** **TB, 6-month regimen:** AD: 10 mg/kg (rifampicin) and 5 mg/kg (isoniazid) daily OR AD: 10 mg/kg (rifampicin) and 10 mg/kg (isoniazid) 3 times a wk
- **CI & ADR:** Refer Rifampicin and Isoniazid

**Rifampicin 100mg + INH 50mg + Pyrazinamide 300 mg**

**Indications & Dosage:**
- **ORAL:** **TB, induction phase of 6-month regimen:**
- **CI:** Combined preparation not suitable for use in children; Refer individual drugs
- **ADR:** Refer individual drugs

**Streptomycin (1st Line ATT)**
Injection: 0.75gm vial

**Indications & Dosage:**
- **IM:** As sulfate: **TB:** AD: 15 mg/kg daily. CH: 15-20 mg/kg daily. Max dose: AD & CH: 1 g daily.
- **Non-tuberculous infections:** AD: 1-2 g daily in divided doses depending on the severity of the infection. CH: 40 mg/kg daily in divided doses. Max dose: CH: 1 g daily. Treatment: 7-14 days. Max dose: (patients >40 yrs & in those weighing <50 kg): 500-750 mg daily. Patients with renal impairment &/or nitrogen retention should receive reduced dosages. Peak serum conc. in kidney damage should not exceed 20-25 mcg/ml.
- **CI:** Hearing disorders; myasthenia gravis; pregnancy; hypersensitivity.
**ADR:** Vestibular and auditory damage, nephrotoxicity; neuromuscular blockade; HSR—withdraw treatment; paraesthesia of mouth; rarely, hypomagnesaemia on prolonged therapy; antibiotic-associated colitis; also, nausea, vomiting, rash; rarely, haemolytic anaemia, aplastic anaemia, agranulocytosis, thrombocytopenia; pain and abscess at inj site

**ANTI-LEPROTICS**

**Clofazimine (Antieprotic & Antiinflammatory)**
Tabs/Capsules: 50mg

**Indications & Dosage:** ORAL: **Multibacillary leprosy:** AD: 300 mg with 600 mg rifampicin, both given once a month together with 50mg clofazimine and 100mg dapsone daily for 12 months. CH: 10–14 yrs: 150 mg once a month and 50mg on alternate days. **Type 2 lepra reactions:** AD: Upto 300 mg daily for not >3 months. **Opportunistic mycobacterial infections:** AD: 100–200 mg daily, increased up to 300 mg daily in patients with AIDS.

**CI:** HSR, lactation.

**ADR:** Red-brownish black discolouration of skin especially areas exposed to sunlight, hair, sweat, sputum, urine, faeces; dryness of the skin, inchthyosis, decreased tear & sweat production, rash, pruritus, photosensitivity; diarrhoea, nausea, abdominal pain, vomiting, weight loss, altered taste; headache, drowsiness, dizziness

**Dapsone (Antieprotic)**
Tablets: 50mg, 100mg

**Indications & Dosage:** ORAL: **Prophylaxis of malaria:** AD: 100 mg with 12.5 pyrimethamine every wk.

**Bacteriologically negative tuberculoid & indeterminate disease:** AD: 100 mg daily for 6 months with rifampicin 600 mg. **Paucibacillary leprosy:** AD: 100 mg daily with 600 mg rifampicin once a month, both given for 6 months. CH: Reduce dose as for multibacillary leprosy. **Dermatitis herpetiformis:** AD: Initially, 50 mg daily increased gradually to 300 mg daily if required.

**CI:** HSR. Severe anaemia, porphyria.

**ADR:** Anaemia, haemolysis, methaemoglobinemia (dose related); nausea, vomiting, anorexia, headache; maculopapular rash, toxic epidermal necrolysis, SJS; peripheral neuropathy; rarely nervousness psychosis, hepatitis and agranulocytosis

**Rifampicin**
Refer Antituberculosis drugs.
ANTIFUNGALS

Amphotericin B (Polyene Antifungal)
Injection: 50mg vial

Indications & Dosage: ORAL: Oral or perioral candidiasis: AD: 1 ml of a 100 mg/ml oral suspension qid retained in the mouth for a few min before swallowing or 10-mg lozenges dissolved in the mouth qid, increased to 8 lozenges daily if necessary or 100-200 mg tab qid. IV: Severe systemic fungal infections: AD: As conventional formulation: Initially, 1 mg infused over 20-30 min, followed by a daily dose of 250 mcg/kg daily or on alternate days in seriously ill patients.

Severe meningitis: AD: Initially, 25 mcg increased gradually to 0.25-1 mg 2-4 times a wk.

IRRIGATION: Candiduria: AD: 50 mg daily in 1000 ml of sterile water by continuous bladder irrigation.

CI: HSR; lactation; do not give to patients receiving antineoplastics.

ADR: Fever, chills, loss, tachypnoea, hypotension may occur during IV infusion; convulsions, malaise; nausea, vomiting, anorexia; tinnitus, vertigo, hearing loss; nephrotoxicity; hypochromic, normocytic anemia; rarely thrombocytopenia, mild leukopenia; peripheral neuropathy; phlebitis, pain at inj site. Topical: Local irritation, pruritus and skin rash

Fluconazole (Triazole Antifungal)
Tablet, capsule: 150mg; Injection: 200mg/100ml bottle; Eye drops: 0.3%

Indications & Dosage: ORAL: Superficial mucosal candidiasis: AD: 50 mg daily increased to 100 mg daily, if necessary, continued for 7-14 days in oropharyngeal candidiasis, 14 days in atrophic oral candidiasis, 14-30 days in other mucosal candidal infections including oesophagitis. CH: >4 wks: Initially, 6 mg/kg on day 1 followed by 3 mg/kg daily.

Vaginal candidiasis; candidial balanitis: AD: 150 mg as a single dose. Dermatophytosis, pityriasis versicolor & candida infections: AD: 50 mg daily for 6 wks.

ANY ROUTE: Systemic candidiasis; cryptococcal infections including meningitis: AD: Initially, 400 mg followed by 200-400 mg daily given by mouth or IV infusion containing 2 mg/ml at a rate of 5-10 ml/min, continued for 6-8 wks in cryptococcal meningitis. CH: > 4wks: 6-12 mg/kg daily. Prevention of relapse following a primary course of antifungal treatment for acute cryptococcal infections in patients with AIDS: AD: 100-200 mg oral or IV.

Prophylaxis of fungal infections in immunocompromised patients: AD: 50-400 mg daily oral or IV infusion. CH: 3-12 mg/kg daily oral or IV infusion; 2-4 wks: 3-12 mg/kg every 48 hrs; <2 wks: 3-12 mg/kg every 72 hrs. Max dose: CH: 400 mg daily. INFANTS: 12 mg/kg at appropriate intervals. Renal impairment: Initially, administer normal loading or initial doses followed by maintenance doses based on CrCl: >50 ml/min: ½ of the standard dose. Patients on regular haemodialysis should be given a standard dose of fluconazole every dialysis session.

CI: HSR, pregnancy & lactation.

ADR: Nausea, vomiting, abdominal pain, flatulence, diarrhoea; headache, taste disturbance; hepatic dysfunction & rarely hepatic failure; HSR- angioedema, anaphylaxis; rash(withdraw treatment), alopecia, pruritus, bullous lesions, toxic epidermal necrolysis & SJS (skin reactions more common in AIDS)
Flucytosine (Antifungal)
Tablet: 100mg
**Indications & Dosage:** Cryptococcosis, Chromoblastomycosis: AD & CH: 25mg/kg(with amphotericin B) every 6 hrs
**ADR:** Dose dependent bone marrow depression, GI disturbances like enteritis and diarrhea, Mild liver dysfunction
**CI:** HSR

Griseofulvin (Antifungal)
Tablets: 250mg
**Indications & Dosage:** ORAL: Dermatophyte infections: AD: 0.5-1 g daily in single or divided doses for 2-6 wks in hair and skin infections, 6 months in fingernail infections and 12 months or more for nail infections. CH: 10 mg/kg daily.
**CI:** Severe liver disease; porphyria; monilial infection; systemic lupus erythematosus; pregnancy.
**ADR:** Nausea, vomiting, diarrhea, severe enterocolitis; bone marrow suppression leading to leucopaenia, thromocytopenia; elevated hepatic enzymes

**ANTIAMOEBICS & OTHER ANTIPROTOZOALS**

Chloroquine
Refer Antimalarials

Metronidazole (5-Nitroimidazole / Antiprotozoal – Antibacterial)
Tablets: 200mg, 400mg; Injection: 500mg/100ml Bottles; Gel: 3%; Oral suspension
**Indications & Dosage:** Amoebiasis: ORAL: **Invasive Amoebiasis:** AD & CH: 30 mg/kg daily in 3 divided doses for 8–10 days; **subsequent course of luminal amoebicide Giardiasis:** AD: 2 g once daily for 3 days; CH: 15 mg/kg daily in divided doses for 5–10 days. **Urogenital trichomoniasis:** AD: 2 g as a single dose or 400–500 mg twice daily for 7 days; sexual partners should be treated concomitantly
**IV:** Subsequent course of luminal amoebicide Invasive amoebiasis (if oral administration not possible): AD & CH: 30 mg/kg daily in 3 divided doses (until patient able to complete course with oral drugs)
**Bacterial infection:** ORAL: **Anaerobic infections** (usually treated for 7 days): AD: 800 mg initially then 400 mg every 8 hrs or 500 mg every 8 hrs; CH: 7.5 mg/kg every 8 hrs. **Bacterial vaginosis:** AD: 2 g as a single dose or 400–500 mg twice daily for 5–7 days. **Pelvic inflammatory disease:** AD: 400 mg twice daily for 14 days. **Leg ulcers & pressure sores:** AD: 400 mg every 8 hrs for 7 days. **Acute ulcerative gingivitis:** AD: 200–250 mg every 8 hrs for 3 days; CH: 1–3 yrs, 50 mg every 8 hrs for 3 days; 3–7 yrs, 100 mg every 12 hrs for 3 days; 7–10 yrs, 100 mg every 8 hrs for 3 days. **Acute dental infections:** AD: 200 mg every 8 hrs for 3–7 days. **Antibiotic-associated colitis:** AD: 800 mg initially then 400 mg 3 times daily for 10 days. **Surgical prophylaxis:** AD: 400–500 mg 2 hrs before surgery; up to 3 further doses of 400–500 mg may be given every 8 hrs for high-risk procedures; CH: 7.5 mg/kg 2 hrs before surgery;
up to 3 further doses of 7.5 mg/kg may be given every 8 hrs for high-risk procedures IV: **Anaerobic infections**: AD: 500 mg every 8 hrs; CH: 7.5 mg/kg every 8 hrs. **Surgical prophylaxis** (if rectal administration inappropriate): AD: 500 mg at induction; up to 3 further doses of 500 mg may be given every 8 hrs for high-risk procedures; CH: 7.5 mg/kg at induction; up to 3 further doses of 7.5 mg/kg may be given every 8 hrs for high-risk procedures

**RECTUM**:

**Anaerobic infections**: AD & CH over 10 years: 1 g every 8 hrs for 3 days, then 1 g every 12 hrs; CH up to 1 yr: 125 mg every 8 hrs for 3 days, then every 12 hrs; 1–5 yrs: 250 mg; 5–10 yrs: 500 mg. **Surgical prophylaxis**: AD: 1 g 2 hrs before surgery; up to 3 further doses of 1 g may be given every 8 hrs for high-risk procedures; CH: 5–10 yrs 500 mg 2 hrs before surgery; up to 3 further doses of 500 mg may be given every 8 hrs for high-risk procedures

**CI**: Blood dyscrasias; active CNS disease; HSR; serious neurological disease, seizures; alcohol & severe hepatic failure. Pregnancy (1st trimester) & lactation.

**ADR**: Nausea, vomiting, unpleasant metallic taste, furred tongue; rarely, headache, drowsiness, dizziness, ataxia; darkening of urine; erythema multiforme, pruritus, urticaria, angioedema & anaphylaxis; abnormal liver function tests, hepatitis, jaundice; thrombophlebitis; leucopenia, thrombocytopenia, aplastic anaemia, myalgia, arthralgia, peripheral neuropathy, epileptiform seizures on prolonged or high dosage regimens; disulfiram like reaction with alcohol

**ANTIMALARIALS**

**Artesunate** (Quinghaosu Antimalarial)

**Injection**: 60mg vial; Tablet

**Indications & Dosage**: **ORAL**: Chloroquine-resistant falciparum infection: AD: 100 mg twice on day 1 followed by 50 mg bid for 4 days. CH: 1.2 mg/kg for 5 days. A second dose may be given on day 1 in children with severe malaria or heavy parasitaemia.

**PARENTERAL**: Severe malaria including cerebral malaria: AD: 120 mg IM or IV on day 1 followed by 60 mg daily for 4 days. In severe cases, an additional dose of 60 mg may be given on the 1st day, 6 hrs after the first dose.

**CI**: HSR.

**ADR**: Vomiting, abdominal pain, anorexia; headache, dizziness; bradycardia, transient 1st-degree heart block;

**Chloroquine** (Antimalarial / Antirheumatoid / Amoebicide)

**Tablets**: as Phosphate 250mg; Injection (Solution for injection): as sulphate 64.5mg/ml; Oral syrup

**Indications & Dosage**: **ORAL**: Malaria acute attack: AD: Initially, 600 mg base followed by 300 mg base after 6 – 8 hrs on day 1. On days 2 and 3, single doses of 300 mg base/day. CH: Initially, 10 mg base/kg (max 600 mg base) followed by 5 mg base/kg (max 300 mg base) after 6 hrs. single doses of 5 mg base/kg on days 2 and 3. **IV**: Malaria: AD: 25 mg/kg given in several infusions over 30–32 hrs at a slow rate. Prophylaxis of malaria: AD: 300 mg once wkly, starting 1 wk before exposure, continuing throughout and for at least 4 wks after exposure. CH: 5 mg/kg wkly.

**Discoid & systemic lupus erythematosus**: AD: Initially, 150 mg daily reduced gradually until control is achieved. CH: 3 mg/kg daily. Max dose: AD: 2.5 mg/kg daily. Hepatic amoebiasis: AD: 600 mg daily for 2 days then 300 mg daily for 2 or 3 wks given with emetine or dehydroemetine. CH: 6 mg/kg daily. Max dose: CH: 300 mg daily.
**Primaquine (Antimalarial)**
Tablets 7.5mg

Indications & Dosage: AD: PO Radical treatment of vivax or ovale malaria 15 mg/day for 14 days. Higher doses or longer courses may be required if resistance in P. vivax occurs. Prevention of chloroquine-resistant malaria 30 mg once daily; to be started 1-2 days before travel and continue for 7 days after departure from the malaria-endemic area.

Cl: Hypersensitivity. Childn <1 yr. Acute flare-ups of systemic diseases (RA, SLE) having tendency for agranulocytopaenia, Pregnancy and lactation

ADR: Nausea, vomiting, epigastric distress, abdominal cramps, leucopaenia, leucocytosis, agranulocytosis, methaemoglobinemia in NADH methaemoglobin reductase-deficient individuals.

Potentially Fatal: Haemolytic anaemia (G6PD deficient), thrombocytopaenia, leucopaenia, AV block.

**Quinine (Antimalarial)**
Tablets: 600mg; Injection (Solution for dilution for infusion): dihydrochloride 600mg/2ml Amp

Indications & Dosage: Malaria: ORAL: AD: As sulfate, hydrochloride or dihydrochloride: 600 mg given every 8 hrs for 7 days. CH: 10 mg/kg given every 8 hrs for 7 days. IV: AD: As dihydrochloride: Initially, 20 mg/kg given over 4 hrs. Maintenance: 10 mg/kg up to 700 mg given over 4 hrs every 8-12 hrs starting 8 hrs after loading dose.

Max dose: 1.4 g.

Cl: HSR to quinine or quinidine. Therapeutic mefloquine within the preceding 14 days; myasthenia gravis; haemolytic anaemia; quinine-resistant falciparum; patients with tinnitus or optic neuritis; patients who have suffered an attack of blackwater fever. Pregnancy.

ADR: Cinchonism (tinnitus, headache, blurred vision, temporary blindness, altered auditory acuity, nausea, diarrhoea, hot & flushed skin, rashes, confusion); HSR including angioedema; bronchoconstriction; hypoglycaemia (especially after parenteral administration); hemolysis, haemoglobinuria (Blackwater fever) renal damage (culminating in acute renal failure and anuria); cardiac arrhythmias; very toxic in overdosage-immediate medical attention required

**Sulfadoxine with pyrimethamine (Antimalarial)**
Tablet: Sulfadoxine 500mg + Pyrimethamine 25mg; Suspension

Indications & Dosage: ORAL: Chloroquine resistant falciparum malaria acute attack: Pyrimethamine 25mg + Sulfadoxine 500mg (tablet): AD: 3 tabs single dose. CH: 9-14 yrs: 2 tabs single dose. 4-8 yrs: 1 tab single dose. Under 4 yrs: ½ tab single dose.
**CI:** Severe renal impairment, severe liver parenchymal damage, blood dyscrasias, HSR to components, megaloblastic anaemia due to folate deficiency, pregnancy at term and during lactation, infants less than 2 months old.

**ADR:** Urticaria, serum sickness, periorbital oedema, photosensitisation, arthralgia, nausea, vomiting, abdominal pain, diarrhoea, liver damage, headache, peripheral neuritis, ataxia, tinnitus, vertigo, convulsions, toxic nephrosis & lupus erythematosus.

**ANTHELMINTICS**

**Albendazole (Anthelmintic)**

Chewable tablets/tablet.: 400mg; Suspension

**Indications & Dosage:**
- **ORAL:** Cestode infections: AD over 60 kg: 800 mg daily in 2 divided doses for 28 days followed by 14 tablet-free days; AD less than 60 kg: 15 mg/kg daily in two divided doses (to a maximum daily dose of 800 mg) for 28 days followed by 14 tablet-free days; up to 3 courses may be given. **Alveolar echinococcosis:** AD: As for cystic echinococcosis, but treatment cycles may need to be continued for months or years. **Neurocysticercosis:** AD over 60 kg: 800 mg daily in 2 divided doses for 8–30 days; AD less than 60 kg: 15 mg/kg daily in two divided doses (to a maximum daily dose of 800 mg) for 8–30 days
- Intestinal nematode infections: Ascariasis, hookworm infections, enterobiasis, and trichostrongylia, AD & CH over 2 yrs: 400 mg as a single dose; CH 12 months–2 rs: 200 mg as a single dose.
- **Trichuriasis:** AD & CH over 2 yrs: 400 mg as a single dose (for moderate infections) or 400 mg daily for 3 days (severe infections); CH 12 months–2 yrs: 200 mg as a single dose (for moderate infections) or 200 mg initially then 100 mg twice daily for 3 days (severe infections).
- Strongyloidiasis: AD & CH over 2 yrs: 400 mg once or twice daily for 3 days.
- **Capillariasis:** AD & CH over 2 yrs: 400 mg daily for 10

**CI:** Pregnancy

**ADR:** GI disturbances, headache, dizziness; increases in liver enzymes; reversible alopecia, rash; fever; leukopenia and rarely, pancytopenia; allergic shock if cyst leakage; convulsions and meningism in cerebral disease

**Diethylcarbamazine citrate (Antifilarial)**

Tablets: 100mg; Syrup

**Indications & Dosage:**
- **ORAL:** **Filariaisis:** **Loiasis:** AD: 1 mg/kg as a single dose on the first day, doubled on two successive days, then adjusted to 2–3 mg/kg 3 times daily for a further 18 days. **Loiasis, prophylaxis:** AD: 300 mg wkly for as long as exposure occurs. **Lymphatic filariasis:** **Lymphatic filariasis (bancroftian):** AD & CH over 10 yrs: 6 mg/kg daily, preferably in divided doses after meals, for 12 days; CH under 10 yrs: Half the adult dose; mass treatment control programmes, AD & CH over 10 yrs: 6 mg/kg in divided doses over 24 hrs, once a yr; CH under 10 yrs: Half the adult dose. **Lymphatic filariasis (brugian):** AD & CH over 10 yrs: 3–6 mg/kg, preferably in divided doses after meals, for 6–12 days; CH under 10 yrs: Half the adult dose; mass treatment control programmes, AD & CH over 10 yrs: 3–6 mg/kg in divided doses over 24 hrs, 6 times at wkly or monthly intervals; CH under 10 yrs: Half the adult dose. **Occult filariasis:** AD: 8 mg/kg daily for 14 days, repeated as necessary if symptoms return
Mebendazole (Anthelmintic)
Tablet: 100mg; Suspension & granules.

Indications & Dosage: ORAL: Cestode infections: Cystic echinococcosis, alveolar echinococcosis: AD: 4.5 g daily in 3 divided doses for 6 months; in alveolar echinococcosis, treatment may be required for up to 2 yrs after radical surgery, or indefinitely in inoperable cases. Intestinal nematode infections: Ascariasis: AD & CH over 1yr: 500 mg as a single dose or 100 mg twice daily for 3 days. Hookworm infections, trichuriasis: AD & CH over 1yr: 100 mg twice daily for 3 days; if eggs persist in the faeces, second course after 3–4 wks; alternatively (especially for mass treatment control programmes), AD & CH over 1 yr: 500 mg as a single dose. Enterobiasis: AD & CH over 1 yr: 100 mg as a single dose, repeated after interval of 2–3 wks; all household members over 2 yrs should be treated at the same time. Capillariasis: AD & CH over 2 yrs: 200 mg daily for 20–30 days; for mass treatment control programmes, AD & CH over 2 yrs: 500 mg as a single dose 4 times a year

CI: Pregnancy
ADR: GI disturbances; headache, dizziness with high doses; allergic reactions; raised liver enzymes; alopecia; bone marrow depression leading to granulocytopenia

ANTIVIRALS

Acyclovir (Antiviral)
Tablets: 200mg, 400mg; Injection: 250mg; Eye ointment: 3%; Skin ointment: 5%

Indications & Dose: ORAL: Primary herpes simplex infections including genital herpes: AD: 200 mg 5 times daily every 4 hrs for 5-10 days or 400 mg 5 times daily for 5 days in severely immunocompromised patients and those with impaired absorption. Suppression of recurrent herpes simplex: AD: 800 mg daily in 2-4 divided doses. Reduce to 400-600 mg daily if necessary. Prophylaxis of herpes simplex in immunocompromised patients: AD: 200-400 mg qid. CH: ≥2 yr: Same as adult dose; <2 yrs: ½ the adult dose. Chicken pox: AD: 800 mg 4-5 times daily for 5-7 days. Herpes zoster: AD: 800 mg 5 times daily for 7-10 days. CH: ≥6 yrs: 800 mg qid; 2-5 yrs: 400 mg qid; <2 yrs: 200 mg qid. IV: Herpes simplex infections in the immunocompromised severe initial genital herpes or varicella-zoster infections; prophylaxis of herpes simplex infections in immunocompromised patients: AD: 5 mg/kg every 8 hrs for 5-7 days. Herpes simplex encephalitis: AD: 10 mg/kg every 8 hrs for 10 days. CH: 500 mg/m² every 8 hrs. Herpes simplex & varicella-zoster infections: CH: 250 mg/m² every 8 hrs. Neonatal herpes: CH: Infants and neonates: 10 mg/kg every 8 hrs for 10 days.
OPHTHALMIC: Herpes simplex keratitis: AD: Apply a 3% ointment 5 times daily every 4 hrs until the 3rd day of complete healing.

TOPICAL/CUTANEOUS: Herpes simplex infections of the skin: AD: Apply a 5% ointment/cream 5-6 times daily every 3-4 hrs for 5-10 days. Reduce dose in patients with renal impairment.

CI: HSR. Rapid or bolus injection.

ADR: Nausea, vomiting, headache, diarrhoea, rash, haematological changes (occasional); increase in liver enzymes; burning, itching or erythema (topical use). Increase in BUN and/or creatinine. Rarely, renal failure and neurotoxicity leading to tremors, delirium, seizures. Eye application: stinging, superficial punctate keratopathy, blepharitis or conjunctivitis. IV administration: Local reaction, rashes, sweating, hypotension, pain, inflammation, phlebitis, extravasation leads to ulceration..

Nevirapine (Non-Nucleoside Reverse Transcriptase Inhibitor; Antiretroviral)

Tablets: 200mg; Oral suspension

Indications & Dosage: ORAL: HIV-1 infection combination treatment with other antiretroviral agents: AD: 200 mg/day for first 14 days and then followed by 200 mg in combination with antiretroviral agents. In patients who have developed rashes during the first 14 wks, dose should be increased only after the rashes subsided. CH: 2 mth-8 yrs: 4 mg/kg/day for first 14 days followed by 7 mg/kg bid. 8 yrs and above: 4 mg/kg once daily for 2 wks followed by 4 mg/kg bid. In patients who have developed rashes during the first 14 wks, the dose should be increased only after the rashes subsided. Max dose: 400 mg/day.

CI: HSR. Renal or hepatic failure.

ADR: Skin rashes including SJS, TEN; nausea, vomiting; abnormal LFT, fulminant hepatitis; fatigue, fever, myalgia, somnolence, arthralgia, paraesthesia; ulcerative stomatitis, abdominal pain, diarrhea

VACCINES, SERA & IMMUNIZERS

Sera & immunoglobulins

Anti-D Rh factor human Immunoglobulin

Injection: (free from HIV) 300 mcg Polyvalent PFS

Indications & Dosage: IM: Following birth of a rhesus-positive infant in rhesus-negative mother: AD: 250 mcg immediately or within 72 hrs. Following any potentially sensitizing episode (for example amniocentesis, stillbirth): AD up to 20 wks’ gestation: 250 mcg per episode (after 20 wks, 500 micrograms) immediately or within 72 hrs.

Following Rh0 (D) incompatible blood transfusion: AD: 10–20 mcg per ml transfused rhesus-positive blood

CI: Anaphylaxis, although rare, can occur and epinephrine (adrenaline) must always be immediately available during immunization & known HSR.
**Antitetanus immunoglobulin (human)**

Injection: 1000 IU vial

**Indications & Dosage:** Management of tetanus-prone wounds. IM: AD & CH: 250 units, increased to 500 units if wound older than 12 hrs or there is risk of heavy contamination or if patient weighs more than 90 kg; 2nd dose of 250 units given after 3–4 wks if patient immunosuppressed or if active immunization with tetanus vaccine contraindicated

**CI:** HSR, anaphylactic reactions.

**ADR:** IM: Local reactions including pain and tenderness may occur at the inj site. HSR may occur including, rarely, anaphylaxis. IV: Systemic reactions including fever, chills, facial flushing, headache & nausea may occur, particularly following high rates of infusion. HSR may occur, rarely, anaphylaxis.

**Anti-snake venom (polyvalent) serum**

Injection: lyophilised powder to be made upto10ml

**Indications & Dosage:** Snake bites: Depends on the specific antivenom used.

**CI:** HSR, history of HSR.

**ADR:** Anaphylaxis may occur with hypotension, dyspnoea, urticaria & shock. Serum sickness may occur after 7–10 days.

**Human IV gammaglobulin**

Injection: 5gm/100ml vial

**CI:** HSR, selective IgA deficiency, patients with normal levels of immunoglobulins. Routine prophylaxis or treatment of rubella, poliomyelitis, mumps or varicella.

**ADR:** Anaphylaxis, IM administration: local pain & tenderness at site of inj. HSR. IV: Fever, chills, facial flushing, headache & nausea.

**Rabies immunoglobulin (human)**

Injection, rabies immunoglobulin 150 units/ml, 2-ml vial, 10-ml vial

**Indications & Dosage:** Immunization against rabies: post-exposure (or suspected exposure) treatment, IM and wound infiltration, AD & CH: 20 units/kg (half by IM inj & half by wound infiltration)

**CI:** Anaphylaxis, HSR, avoid repeat doses after vaccine treatment initiated; IV administration.

**ADR:** IM: Local reactions including pain & tenderness may occur at the inj site. HSR may occur including, rarely, anaphylaxis.
**Vaccines**

**BCG vaccine (Bacillus Calmette-Guérin)**
Injection (Powder for solution for injection): 40mg lyophilized; 40mg lyophilised intravesical vial

**Indications & Dosage:** Immunization against TB: intradermal inj: INFANTS up to 3 months: 0.05 ml; AD & CH over 3 months: 0.1 ml

**CI:** Anaphylaxis, acute illness, minor infection without fever, definite reaction, pregnancy, malignant disease such as leukaemia or lymphomas or other tumours of the reticulo-endothelial system, impaired immune response, individuals with symptomatic HIV infection; generalized oedema; antimycobacterial treatment

**ADR:** Local reactions including inflammation and lymphangitis may occur. Sterile abscess may develop at the inj site; fever, headache, malaise starting a few hours after inj and lasting for 1–2 days may occur. HSR rarely, anaphylaxis. Lymphadenitis & keloid formation; osteitis & localized necrotic ulceration; rarely, disseminated BCG infection in immunodeficient patients;

**Diphtheria, Pertussis and Tetanus vaccine (DPT)**
Injection, diphtheria and tetanus toxoids and pertussis vaccine adsorbed onto a mineral carrier

**Indications & Dosage:** Primary immunization of children against diphtheria, pertussis & tetanus, IM: INFANT 0.5 ml at 6, 10 and 14 wks

**CI:** History of severe local or generalized reaction to vaccine or any of its components. Anaphylaxis to the ingestion of eggs, patients who is taking immunosuppressive therapy, malignant conditions, hypogammaglobulinaemia.

**ADR:** Induration/ sterile abscess, lymphangitis, headache, fever, malaise & HSR. Tetanus component rarely associated with peripheral neuropathy; pertussis component rarely associated with convulsions & encephalopathy.

**Diphtheria and Tetanus vaccine (DT)**
Injection, diphtheria and tetanus toxoids adsorbed onto a mineral carrier

**Indications & Dosage:** Primary immunization of children against diphtheria & tetanus when pertussis immunization is contraindicated, IM: CH under 10 yrs: 3 doses each of 0.5 ml with an interval of not less than 4 wks between each dose. Reinforcing immunization of children against diphtheria & tetanus, IM: CH under 10 yrs of age: 0.5 ml at least 3 yrs after completion of primary course of DPT or DT immunization

**CI:** Adults and children over 10 years of age

**ADR:** Tetanus component rarely associated with peripheral neuropathy

**Hepatitis B vaccine**
Injection: 20mcg

**Indications & Dosage:** Immunization of children against hepatitis B, IM: INFANT 0.5 ml either Scheme A at birth and at 6 and 14 wks of age, or Scheme B at 6, 10 and 14 wks of age. Immunization of unimmunized high risk
persons against hepatitis B, IM: AD & CH over 15 yrs of age: 3 doses of 1 ml, with an interval of 1 month between the first and second dose and 5 months between the 2nd and 3rd doses; CH under 15 yrs: 0.5 ml

CI: HSR to yeast or any components of the vaccine.

ADR: Inj site soreness, erythema, swelling, warmth, induration, pain, tenderness, pruritus, ecchymosis, nodule formation may occur at inj site. Nausea, vomiting, abdominal pain/cramps, dyspepsia, diminished appetite, anorexia, diarrhoea, abnormal liver function tests, headache, lightheadedness, vertigo, paresthesia, insomnia, disturbed sleep, somnolence, irritability, agitation, migraine, syncope, paresis, neuropathy including hypoesthesia, Guillan–Barre syndrome, Bell's palsy, transverse myelitis, URTI, rhinitis, influenza-like symptoms, cough, bronchospasm, arthralgia, pharyngitis, myalgia, back, neck & shoulder pain, neck stiffness, pruritus, rash (nonspecified), angioedema, urticaria, petechiae, eczema, purpura, herpes zoster, fatigue, fever, malaise, sweating, achiness, sensation of warmth, chills, flushing, tingling, lymphadenopathy, earache, hypotension, dysuria, tachycardia/palpitations, thrombocytopenia, conjunctivitis, keratitis, visual disturbances.

Measles vaccine

Injection (Powder for solution for injection)

Indications & Dosage: Immunization of children against measles, IM or deep SC: INFANT at 9 months of age: 0.5 ml . Prophylaxis in susceptible children after exposure to measles, IM or deep SC within 72 hrs of contact, CH over 9 months of age: 0.5 ml

CI: HSR to any antibiotic present in vaccine; HSR to egg or gelatin, patients receiving immunosuppressive therapy, blood dyscrasia, leukaemia, lymphoma of any type or other malignant neoplasms affecting the bone marrow or lymphatic systems, primary or acquired immunodeficiency, active untreated TB, family history of congenital or hereditary immunodeficiency.

ADR: Anaphylactoid reactions, fever, rash, cough & rhinitis, mild lymphadenopathy, rarely diarrhoea, vasculitis, SJS, afebrile convulsion, syncope, encephalitis, encephalopathy, ocular palsies, Guillain–Barre syndrome, subacute sclerosing panencephalitis in children (who did not have a history of natural measles but received measles vaccine). Burn or stinging of short duration at inj site, rarely allergic reactions like wheal & flare at the inj site. Urticaria have occurred, marked swelling, redness & vesiculation at the inj site. Systemic reactions including atypical measles have occurred in persons previously vaccinated with killed measles. Thrombocytopenia, purpura (extremely rare).

Measles, Mumps and Rubella vaccine (MMR vaccine)

Injection : 0.5ml

Indications & Dosage: Primary immunization of children against measles, mumps & rubella, IM or deep SC: CH 12–15 months: 0.5 ml. Reinforcing immunization of children against measles, mumps & rubella, IM or deep SC: CH: 0.5 ml 2–5 yrs after primary dose. Prophylaxis in susceptible children after exposure to measles, IM or deep SC: within 72 hrs of contact, CH 12 months of age and older: 0.5 ml
CI: History of severe local or generalized reaction to vaccine or any of its components, anaphylaxis to the ingestion of eggs, patients who are taking immunosuppressive therapy, malignant conditions, hypogammaglobulinaemia.

ADR: Induration or sterile abscess, lymphangitis, headache, fever, malaise & HSR may develop. Sensorial hearing loss may be possible. Gait disturbances & transverse myelitis.

**Tetanus and diphtheria vaccine (Td)**

Injection, diphtheria (low dose) and tetanus toxoid adsorbed onto a mineral carrier

**Indications & Dosage:** Primary immunization of unimmunized adults & children over 10 yrs of age against tetanus & diphtheria, IM: AD & CH over 10 yrs of age: 3 doses each of 0.5 ml with an interval of not less than 4 wks between each dose. **Reinforcing immunization of adults & children over 10 yrs of age against tetanus & diphtheria,** IM: AD & CH over 10 yrs of age: 0.5 ml 10 yrs after completing primary course

**CI:** Children under 10 years

**ADR:** Tetanus component rarely associated with peripheral neuropathy

**Tetanus vaccine (Tetanus Toxoid)**

Injection: 0.5ml/dose 10 dose vial,

**Indications & Dosage:** Primary immunization of unimmunized adults against tetanus, IM: AD: 3 doses each of 0.5 ml with an interval of 4 wks between each dose. **Reinforcing immunization of adults against tetanus,** IM: AD: 2 doses each of 0.5 ml, the first 10 yrs after completion of primary course, and the second dose 10 yrs later.

**Immunization of women of child-bearing age against tetanus,** IM: woman of child-bearing age, 3 primary doses each of 0.5 ml with an interval of not less than 4 wks between the first and second doses and 6 months between the second and third doses; 2 reinforcing doses each of 0.5 ml, the first 1 yr after completion of the primary course and the second dose 1 yr later; unimmunized pregnant woman 2 doses of 0.5 ml with an interval of 4 wks between each dose (second dose at least 2 wks before delivery) and 1 dose during each of subsequent 3 pregnancies (maximum 5 doses). **Management of tetanus-prone wounds & clean wounds,** IM or deep SC: AD: 0.5 ml, the dose schedule being dependent upon the immune status of the patient and the level of contamination of the wound.

**CI:** HSR to tetanus toxoid, or to any of its product components.

**ADR:** Erythema, induration surrounding inj site, pruritus, pain & tenderness, low-grade fever,chills, malaise, generalized aches & pains, headache, flushing, tachycardia, anaphylaxis, hypotension, neurological complications.

**Vaccines for specific groups of individuals**

**H. Influenza vaccine**

Injection, inactivated influenza virus, types A and B

**Indications & Dosage:** Immunization against influenza (annually for high-risk persons), IM or deep SC: AD & CH over 13 yrs: 0.5 ml as a single dose; CH: 6–35 months: 0.25 ml repeated after at least 4 wks if child not previously
infected or vaccinated; CH: 3–12 yrs of age: 0.5 ml, with a second dose after at least 4 wks if child not previously infected or vaccinated

**CI:** Anaphylaxis, acute illness, minor infection without fever, definite reaction, whole virion vaccine not recommended in children; HSR to any antibiotic present in vaccine; HSR to egg

**ADR:** Local reactions including inflammation and lymphangitis may occur. Sterile abscess may develop at the inj site; fever, headache, malaise starting a few hours after inj & lasting for 1–2 days may occur. HSR can occur rarely, anaphylaxis, occasionally, severe febrile reactions—particularly after whole virion vaccine in children

### Rabies vaccine

Inactivated rabies virus prepared in cell culture

**Injection:** vero cells/chicken embryo vial

**Indications & Dosage:**

**Immunization against rabies: pre-exposure prophylaxis,** deep SC or IM: AD & CH: 1 ml on days 0, 7 and 28, with reinforcing doses every 2–3 yrs for those at continued risk. **Immunization against rabies:** post-exposure treatment (in unimmunized individuals), deep SC or IM: AD & CH: 5 doses of 1 ml on days 0, 3, 7, 14 and 28 (plus rabies immunoglobulin given on day 0). **Immunization against rabies: post-exposure treatment (in fully immunized individuals),** deep SC or IM: AD & CH: 2 doses of 1 ml separated by 3–7 days

**CI:** HSR, immunodeficiency syndrome, immunosuppressant therapy, major acute illness. Lymphoreticular malignancy.

**ADR:** HSR, transverse myelitis, neuropathy, encephalopathy. Pain, erythema induration at site of inj. Nausea, headache, fever, malaise & myalgia.

### Rubella vaccine

Injection (Powder for solution for injection), live attenuated rubella virus

**Indications & Dosage:** Immunization of women of child-bearing age against rubella, deep SC or IM: AD: 0.5 ml as a single dose

**CI:** History of HSR, patients receiving immunosuppressive therapy, blood dyscrasia, leukaemia, lymphoma of any type or other malignant neoplasms affecting the bone marrow or lymphatic systems, primary or acquired immunodeficiency, persons who are immunosuppressed in association with AIDS or other clinical manifestations of infection with HIV, cellular immune deficiencies, & hypogammaglobulinaemic & dysgammaglobulinaemic states, active untreated tuberculosis, family history of congenital or hereditary immunodeficiency; until the immune competence of the potential vaccine recipient is demonstrated.

**ADR:** Burning or stinging of short duration at the inj site, regional lymphadenopathy, urticaria, rash, malaise, sore throat, fever, headache, polyneuritis, temporary arthralgia (infrequently associated with inflammation), local pain, induration and erythema may occur at the inj site, encephalitis & other CNS reactions, erythema multiforme, optic neuritis, polyneuropathy (including Guillain-Barre syndrome), arthritis, arthralgia, rarely myalgia & paraesthesia.
11. RESPIRATORY SYSTEM

ANTIASTMATIC DRUGS

Aminophylline  (Bronchodilator)
Tablets: 100mg; Injection (Solution for injection): 250mg/10 ml amp

**Indications & Dosage:**

**ORAL:**
- **Acute bronchospasm:** AD: 100-300 mg tid/qid after food.
- **Chronic bronchospasm:** AD: As hydrate: Initially, 225-450 mg bid, increased if necessary. CH: >3 yrs: As modified-release hydrate: 12 mg/kg daily increased to 24 mg/kg daily in 2 divided doses after 1 wk.

**IV:**
- **Management of acute severe bronchospasm:** AD & CH: 250-500 mg (25 mg/ml) by slow IV inj over 20 min or a 5 mg/kg loading doses by IV infusion given over 20-30 min followed by 0.5 mg/kg/hr maintenance dose. Maintenance: CH 10-16 yrs: 0.8 mg/kg/hr; 6 months-9 yrs: 1 mg/kg/hr. Reduce maintenance dose in patients with cor pulmonale, HF or liver disease and in elderly. Increase maintenance dose for smokers.

**CI:** HSR

**ADR:** Headache, insomnia, dizziness, anxiety, restlessness; tremor nausea, vomiting, palpitations, extrasystole, arrhythmia, diuresis, agitation, flushing, hypotension, tachypnoea, delirium, worsening of cardiovascular status, increased muscle tone, convulsions, shock, death.

Beclomethasone  (Corticosteroid)

R-cap: 200mcg; MDI; Ointment/cream: Dipropionate 0.025%.

**Indications & Dosage:**

**TOPICAL/CUTANEOUS:** 
- **Skin disorders:** AD: Apply a 0.025% cream/ointment onto affected area.

**NASAL:**
- **Prophylaxis & treatment of allergic & non-allergic rhinitis:** AD: 100 mcg bid or 50 mcg tid/qid in each nostril. Max dose: 400 mcg daily.

**INHALATION:**
- **Prophylaxis of asthma:** AD: Initially, 600–800 mcg daily. Maintenance: 400 mcg daily in 2-4 divided doses. CH: 50 or 100 mcg bid-qid or 100 or 200 mcg bid. **Severe asthma:** AD: 250 mcg qid or 500 mcg bid. May be increased to 500 mcg tid/qid if necessary. Max dose: 2 mg daily. Transfer from oral to inhalation steroid can be made in stable asthmatics. Initially, the inhalation is added to existing oral steroid dosage. After 1 wk, oral dose is reduced by 2.5 mg prednisone or its equivalent. Similar reduction is made at wkly intervals depending on patient response. Reinstatement of oral steroid may be needed in times of stress or exacerbation of asthma. Inhalation of beta agonists should be done 5 min before the steroids.

**CI:** HSR. Acute infections uncontrolled by antimicrobial chemotherapy.
**ADR:** Loss of collagen and subcutaneous atrophy; local hypopigmentation of deeply pigmented skin; dryness, irritation, epistaxis, rarely ulceration or perforation of the nasal septum; smell & taste disturbances; hoarseness & candidiasis of the mouth or throat, see also dexamethasone

**Betamethasone**
Refer Corticosteroids

**Budesonide (Corticosteroids)**
Intra Nasal spray 0.05% W/V; Respules, MDI, AC-haler injection & capsules.

**Indications & Dosage:**

**NASAL:**
Prophylaxis & treatment of rhinitis: AD: Initially, 200 mcg into each nostril daily, reduced to 100 mcg into each nostril daily until symptoms are controlled. Or initially, 100 mcg into each nostril bid.

Nasal polyps: AD: 100 mcg bid into each nostril up to 3 months.

**INHALATION:**
Management of asthma: AD: Metered-dose inhaler: 400 mcg daily in 2 divided doses, increased up to 1.6 mg daily in severe cases. Maintenance: 200 – 400 mcg daily. As dry powder inhaler: 200 – 800 mcg daily in single dose or 2 divided dose. As nebulised solution: Usual dose: 1 – 2 mg inhaled bid. Maintenance dose: 0.5 – 1 mg bid.

CH: Metered-dose inhaler: 50 – 400 mcg bid. Nebulised solution: 3 months – 12 yrs: Initially, 0.5 – 1 mg bid. Maintenance dose: 0.25 – 0.5 mg bid. Max dose: AD: Dry powder inhaler: 800 mcg bid. Budesonide is not indicated for acute attacks of asthma. Patients should be instructed to rinse the mouth with water after each dosing.

**CI:** HSR. Acute infections uncontrolled by antimicrobial chemotherapy.

**ADR:** Loss of skin collagen and subcutaneous atrophy; local hypopigmentation of deeply pigmented skin; dryness, irritation, epistaxis, rarely ulceration or perforation of the nasal septum; smell and taste disturbances; hoarseness and candidiasis of the mouth or throat.

**Fluticasone**
Refer Topical Steroids Preparations

**Ipratropium bromide (Antimuscarinic)**
Solution: 250mcg/ml bottle; MDI; spray; respule & R-capsule.

**Indications & Dosage:**

**INHALATION:**
Reversible airways obstruction & COPD: AD: As metered-dose aerosol: AD 20–40 mcg tid/qid, up to 80-mcg single dose as required. As dry powder: 40 mcg tid/qid. As nebulised solution: 100-500 mcg up to qid. CH: As metered-dose aerosol: 6-12 yrs: 20 or 40 mcg tid; <6 yrs: 20 mcg tid. As nebulised solution: 3-14 yrs: 100-500 mcg up to tid; 1 month-3 yrs: 62.5-250 mcg up to tid.

**CI:** HSR to atropine or its congeners.

**ADR:** Dry mouth, buccal ulceration, dry mucous membranes, nasal dryness, nasal congestion, conjunctivitis, hoarseness, increased intraocular pressure, paralytic ileus, headache, nausea, constipation, paradoxical,
bronchospasm, acute angle-glaucoma (nebulised solution); nasal dryness & epistaxis (intranasal), Palpitations, hypertension, tachycardia, supraventricular tachycardia, atrial fibrillation.

Isoprenaline (β Agonist)
Injection 2mg amps

**Indications & dosage:** Adult: IV Bronchospasm during anesth 0.01-0.02 mg, repeat if needed. Emergency treatment of cardiac arrhythmias Initial: 0.02-0.06 mg via bolus inj. Subsequent dose range: 0.01-0.2 mg. For temporary use in 3rd degree atrioventricular block until pacemaker insertion 2-10 mcg/min. Adjust subsequent rate based on patient's response. Complete heart block following closure of ventricular septal defects 0.04-0.06 mg as bolus doses. Adjunct in shock 0.5-5 mcg/min, adjust subsequent rate based on patient's response. As diagnostic agent. Diagnosing etiology of mitral regurgitation: 4 mcg/min as infusion. Diagnosis of coronary artery disease or lesions: 1-3 mcg/min as infusion. IM/SC. Post-op cardiac patients with bradycardia Initial: 0.2 mg. Subsequent dose range: 0.02-1 mg (IM administration) or 0.15-0.2 mg (SC administration)

**CI:** Tachyarrhythmias; tachycardia or heart block due to digitalis intoxication; ventricular arrhythmias which require inotropic therapy; angina pectoris

**ADR:** Nervousness, restlessness, insomnia, anxiety, tension, blurring of vision, fear, excitement. Rarely, sweating, weakness, pallor, dizziness, mild tremor, headache, flushing of the face or skin, nausea, vomiting, tinnitus, lightheadedness, asthenia. Swelling of the parotid glands (prolonged use). Pulmonary oedema, dyspnoea. Palpitation and ventricular tachycardia. Transient myocardial ischaemia or myocardial dysfunction in children. Potentially Fatal: Ventricular arrhythmias.

Salbutamol (β₂ Agonist)
Tablets: 2mg, 4mg; Syrup: 2mg/5ml 100ml bottle; Respiratory solution: 75mg/15ml; Rota cap 200mcg; Injection

**Indications & Dose:** For asthma: ORAL: Chronic asthma (when inhalation is ineffective): AD: 2–4 mg 3 or 4 times daily; in some patients up to maximum of 8 mg 3 or 4 times daily; CH under 2 yrs: 100 mcg/kg 4 times daily, 2–6 yrs, 1-2 mg 3-4 times daily, 6-12 yrs, 2 mg 3-4 times daily. IV: Severe acute bronchospasm: AD: 250 mcg, repeated if necessary.

AEROSOL INHALATION: Relief of acute bronchospasm: AD: 100–200 mcg (1–2 puffs); CH: 100 mcg (1 puff) increased to 200 mcg (2 puffs) if necessary. Prophylaxis of exercise-induced bronchospasm: AD: 200 mcg (2 puffs); CH: 100 mcg (1 puff) increased to 200 mcg (2 puffs) if required. Chronic asthma (as adjunct in stepped treatment): AD: 100–200 mcg (1–2 puffs) up to 3-4 times daily; CH: 100 mcg (1 puff) 3–4 times daily, increased to 200 mcg (2 puffs) 3–4 times daily if necessary

IM OR SC INJECTION: Relief of acute bronchospasm: AD: 500 mcg repeated every 4 hours if necessary.
INHALATION OF NEBULIZED SOLUTION: Severe acute asthma or chronic bronchospasm unresponsive to conventional treatment: AD & CH over 18 months: 2.5 mg repeated up to 4 times daily; may be increased to 5 mg if necessary— medical assessment should be considered since alternative therapy may be indicated; CH under 18 months: Clinical efficacy uncertain (transient hypoxaemia may occur—consider oxygen supplementation)

Premature labour: IV INFUSION: AD: Initially 10 mcg/minute, rate gradually increased according to response at 10-minute intervals until contractions diminish then increase rate (maximum of 45 mcg/minute) until contractions have ceased, maintain rate for 1 hr then gradually reduce; or IV OR IM INJ: AD: 100–250 mcg repeated according to response, then ORAL: 4 mg every 6–8 hrs (use for more than 48 hrs not recommended)

CI: First and second trimester of pregnancy; cardiac disease, eclampsia and pre-eclampsia, intra-uterine infection, intra-uterine fetal death, antepartum haemorrhage, placenta praevia, cord compression, ruptured membranes

ADR: Nausea, vomiting, flushing, sweating, tremor; tachycardia, palpitations, hypotension, pulmonary oedema; chest pain or tightness and arrhythmias, hypokalaemia, increased tendency to uterine bleeding, HSR including bronchospasm, urticaria and angioedema reported.

Levosalbutamol 100mcg + Ipratropium bromide 40mcg rotacap (Blister pack of ten)
Refer salbutamol and ipratropium

Salmeterol (Long acting β₂ Agonist)
Rota cap 50mcg

Indication and dosage: Maintenance therapy of Bronchial Asthma, Noctural Asthma along with corticosteroids: 50mcg twice daily upto 100mcg twice daily if needed

CI: Without use of an asthma control medication like corticosteroid

ADR: Reports of asthma exacerbation and death on long term use

Also refer salbutamol

Salmeterol + Fluticasone (Long Acting β₂ Agonist + Corticosteroid)
Rotacaps: Salmeterol 50mcg + Fluticasone 100 mcg; Inhaler

Indications & Dosage: Regular treatment of reversible obstructive airway disease including asthma: AD & CHILDN ≥12 yr: 2 inhalations of Salmeterol + Fluticasone twice daily.

ADR: Hoarseness or dysphonia, throat irritation, headache, candidiasis of mouth & throat, palpitations, tremor, paradoxical bronchospasm, arthralgia.

Terbutaline (β₂ Agonist)
Solution for Nebuliser: 100mg in 10 ml, injection: 0.5mg/ml amp; Syrup; Tablet; MDI

Indications & Dosage: As sulfate: Relief of acute bronchospasm: ORAL: AD: Initially, 2.5 or 3 mg tid increased to 5 mg tid if necessary; as modified-release tablet: 7.5 mg bid. CH: 75 mcg/kg tid; >7 yrs: 2.5 mg bid-tid. INHALATION: AD & CH: 250 mg or 500 mcg every 4-6 hrs. Max dose: 8 inhalations in 24 hrs. Treatment of severe forms of
bronchospasm: PARENTERAL: AD: 250-500 mcg SC, IM or slow IV inj up to qid, or by IV infusion as a solution containing 3-5mcg/ml at 0.5-1 ml/min. CH: >2yrs: 10 mcg/kg by SC, IM / slow IV inj. Max dose: CH >2yrs: 300 mcg.

CI: HSR; cardiac arrhythmias associated with tachycardia; tachycardia caused by digitalis intoxication. Eclampsia & severe preeclampsia; intrauterine fetal death, antepartum haemorrhage, placenta praevia & cord compression; threatened miscarriage.

ADR: Fine skeletal muscle tremor especially hands, tachycardia, palpitations, muscle cramps, headache, paradoxical bronchospasm, angioedema, urticaria, hypotension & collapse, refer salbutamol

Theophylline (Methylxanthine)
SR Tablets.: 300mg

Indications & Dosage: ORAL: Acute bronchospasm: AD: 5 mg/kg every 6-8 hrs. CH: 5 mg/kg every 4-6 hrs. Long-term management of chronic bronchospasm: AD: 300-1000 mg every 6-8 hrs daily in divided doses for conventional dosage forms or 175-500 mg every 12 hrs for modified-release preparations.

Neonatal apnoea of prematurity: CH: Neonates ≥24 days: Loading dose of 5 mg/kg then 1.5 mg/kg every 12 hrs; <24 days: 1 mg/kg every 12 hrs.

IV: Management of severe bronchospasm: AD & CH: 4-5 mg/kg as loading dose by IV infusion over 20-30 min. Maintenance: 0.4 mg/kg/hr. Maintenance: CH >9 yrs: 0.6-0.7 mg/kg/hr; 1-9 yrs: 0.8 mg/kg/hr. Reduce dose in patients with cor pulmonale, heart failure, liver disease and in the elderly. Increase maintenance dose for smokers.

CI: HSR to xanthine derivatives, porphyria.

ADR: Nausea, vomiting, abdominal pain, diarrhoea, headache, insomnia, dizziness, anxiety, restlessness; tremor, palpitations. (Refer aminophylline)

Etofylline 77mg + Theophylline 23mg
Etofylline 169.4mg + Theophylline 50.6mg/2ml Amps
Etofylline 231mg + Theophylline 69mg

ADR: (Refer aminophylline)

ANTITUSSIVES, EXPECTORANTS, MUCOLYTICS & DECONGESTANT

Cough syrup
(Each 5 ml containing Chlorpheniramine maleate 2.5 mg, Ammonium Cl 125 mg, Sod citrate 55 mg)

Bromhexine
Tablet: 10mg

ADR: rhinorrhea, lacrimation, gastric irritation, hypersensitivity reactions.
12. NUTRITION AND METABOLISM

HAEMATOPOIETIC DRUGS

Erythropoietin
Injection: 2000 IU PFS

Injection & Dose: PARETERAL: Anemia of chronic renal failure: AD & CH: Initially, 50 units/kg SC / IV 3 times wkly, increased according to response in steps of 25 units / kg at intervals of 4 wks; omit one of the wkly doses if Hb concentration rise exceeds 2 g% per month with initial dose. Maintenance: < 10 kg: 10 –30 kg body wt: 60 – 150 U / kg 3 times a wk; > 30 kg: 30 – 100 U / kg thrice wkly. Max dose: 600 U/kg wkly in 3 divided doses. Maintenance: 100 – 200 U /kg wkly in 2 – 3 divided doses. Aids patients on zidovudine related anaemia: AD: Initially, 100 U/kg SC / IV thrice wkly; increase every 4- 8 wks, by 50 – 100 U/kg thrice wkly according to response. Max dose: 300 U/kg thrice wkly. Anaemia related to non – myeloid malignant disease chemotherapy: AD: Initially, 150 U/kg SC 3 times wkly. Max dose: dose increased at 4 – 8 wks intervals to 300 U/kg 3 times wkly and later adjusted. To increase yield of autologous blood: AD: 600 U/kg IV over 2 min twice wkly for 3 wks before surgery; in conjunction with iron, folate and B12 supplementation.

CI: Uncontrolled hypertension, HSR to mammalian cell products and HSR to human albumin.

ADR: increased hematocrit, blood viscosity, thrombotic complications, peripheral vascular resistance, HTN, myalgia, arthralgia, flu – like syndrome, rashes, urticaria, seizures

Ferrous salts
Tablets: Ferrous sulphate 200mg; Oral solution: Iron drops, Injection: Iron sucrose 100mg/5ml

Indications & Dosage: ORAL: Iron-deficiency anaemia: AD: Elemental iron 100–200 mg daily in divided doses. Prevention of iron deficiency anaemia (in those at particular risk): AD: (woman) elemental iron 60 mg daily; CH under 5 yrs: Elemental iron 2 mg/kg (maximum 30 mg) daily, over 5 yrs: Elemental iron 30 mg daily; in women and children over 5 yrs: folic acid may also be given

CI: Haemosiderosis, haemochromatosis; any form of anaemia not caused by iron deficiency; patients receiving repeated blood transfusions; parenteral iron therapy

ADR: Constipation, diarrhoea, dark stools, nausea, epigastric pain, GI irritation; long-term or excessive administration may cause haemosiderosis, metallic taste, bloating sensation, colic, pain at the site of IM injection, pigmentation of skin, sterile abscess. Fever, headache, joint pain, palpitation, chest pain, dyspnoea, lymph node enlargement, anaphylactoid reaction. (systemic administration)
Ferrous salt (Fumarate) with folic acid
Tablets/capsules: each containing minimum of iron equivalent to 60mg + Folic acid 0.2mg

**Indications & Dosage:** ORAL: Severe anaemia: AD: Elemental iron 120 mg daily with folic acid 400 mcg daily for 3 months; CH under 2 yrs: Elemental iron 25 mg daily with folic acid 100–400 mcg daily for 3 months, 2–12 yrs: Elemental iron 60 mg daily with folic acid 400 mcg daily for 3 months. Prevention of iron & folic acid deficiencies in pregnancy: AD: The equivalent of about 100 mg elemental iron with 350–400 mcg Folic acids daily throughout pregnancy

**ADR:** Refer ferrous salts

Folic acid
Tablets: 5mg

**Indications & Dosage:** ORAL: Folate-deficiency, megaloblastic anaemia: AD: 5 mg daily for 4 months; up to 15 mg daily may be necessary in malabsorption states. Prevention of first occurrence of neural tube defect: AD: 400–500 mcg daily before conception and during the first twelve wks of pregnancy. Prevention of recurrence of neural tube defect: AD: 5 mg daily (reduced to 4 mg daily, if suitable preparation available) from at least 4 wks before conception until twelfth wk of pregnancy

**CI:** Should never be given without vit B₁₂ in undiagnosed megaloblastic anaemia or other vit B₁₂ deficiency states because risk of precipitating subacute combined degeneration of the spinal cord; folate-dependent malignant disease

**MINERALS, RELATED DRUGS & OTHER NUTRITIONAL SUPPLEMENTS**

Alendronate sodium (Bisphosphonate)
Tablets: 10mg, 70mg

**Indications & Dose:** ORAL: Osteoporosis in postmenopausal women: AD: As sodium: 10 mg daily or 5 mg/day for prophylaxis. Paget’s disease of bone: AD: 40 mg daily for 6 months repeated if necessary at 6 – month intervals.

**CI:** Hypocalcaemia; esophageal abnormalities and factors which delay emptying (stricture or achalasia); severe renal impairment; HSR; inability to stand or sit upright for ≥ 30 min. pregnancy and lactation.

**ADR:** headache, bodyache, oesophagitis, oesophageal ulcers & erosion, dysphagia, heartburn, retrosternal pain, abdominal pain, distension, diarrhoea, constipation, flatulence, headache, rash, erythema, musculoskeletal pain, transient decrease in serum phosphate.

Glucosamine (Nutritional supplement)
Capsule: 500mg.

**Indications & Dose:** ORAL: Osteoarthritis; rheumatic disorders: AD: For light or moderate arthritic symptoms: 500 mg bid for 6 wks. For severe arthritic symptoms: Initially, 500 mg tid for at least 8 wks, followed by maintenance dose of 500 mg bid for 3 – 4 months.

**CI:** Allergy to shellfish.
**Glucosamine 500mg+Ascorbic acid 50mg**

**Indications**: Osteoarthritis, rheumatic disorders

**AD**: 500 mg 3-4 times/day. (Oral)

**CI**: Allergy to shellfish.

**ADR**: Heartburn, epigastric pain/tenderness, diarrhoea, nausea, dyspepsia, constipation, abdominal pain, palpitations, drowsiness, skin reaction, headache, indigestion.

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**Calcium**

Tablet: as citrate 500mg; Injection: as chloride/gluconate 10% amp

**Elemental calcium + Vit D**

Tablets: Calcium 250mg + Vitamin D3 125 IU; Syrup & suspension.

**Indications & Dose**: Calcium deficiency and increased needs, calcium supplementation in pregnancy and lactation, osteoporosis, fractures, menopausal women. Tab: 1 – 2 tablets with meals & Syrup: 5 – 10 ml daily.

**ADR**: constipation, renal stones, anorexia, nausea and vomiting.

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**VITAMINS**

**Cholecalciferol (Vitamin D3)**

Granules 60000 iu/1g sachet

**Indications & Dose**: ORAL: Hypocalcaemia: AD: Initially, 1 mcg daily. Maintenance: 0.25–1mcg daily. CH:<20 kg: 0.05mcg/kg daily; PREMATURE INFANTS & NEONATES: 0.05–0.1mcg/kg daily. EL: 0.5mcg daily.

**CI**: Hypercalcaemia, hyperphosphataemia (except when occurring with hypoparathyroidism), hypermagnesaemia.

**ADR**: Anorexia, nausea, vomiting, diarrhoea, lassitude, polyuria, sweating, headache, thirst and vertigo.

**Vitamin B2 (Riboflavin hydrochloride)**

Tablet: 10mg

**ADR**: Yellow-orange discoloration of urine.

**Vitamin B6 pyridoxine Hcl**

Tablets: 10mg, 50mg; Injection: 50mg/2ml

**ADR**: Neuropathy, unstable gait, drowsiness, somnolence, perioral numbness, photoallergic reaction; ataxia

**Mecobalamin (Vit B12 substance)**
Injection: Vitamin B12 1000 mcg; Tablets

**Indications & Dose:** ORAL: **Alcoholic neuropathy; diabetic neuropathy; drug induced neuropathy; peripheral neuropathy:** AD: 1500 mcg per day in 3 divided doses.
CI: Leber’s disease (inherited eye problems) or tobacco amblyopia. B12 deficiency without confirmed diagnosis.

**ADR:** Dyspnoea, chest pain; skin hives, rash, itchy / swollen skin; mild diarrhoea, anorexia, nausea, vomiting & diarrhoea.

**B complex**
Capsules: Vitamin B1 IP 2.0 mg, Vitamin B2 IP 2.0 mg, Vitamin B6 IP 0.5mg, Niacinamide IP 25mg, Calcium pantothenate USP 1.0 mg

**Indications & Dose:** Treatment of patients with deficiencies of, or increased requirement for vit B-complex, C & zinc.: 1cap / day or as directed.

**Vit A, D, B2 ,B6, Niacinamide+Pantothenate**

**Vitamins + minerals + Zinc**
Tablets & Syrup

**Indications:** Nutritional supplement during pregnancy & lactation, for growing children & old patients and during convalescence.

**Vitamin A (Retinol)**
Sugar-coated tablets (Coated tablets), Capsules: 25000 IU, 50000 IU, Oral solution (oily): solution/Drops 100ml; Water-miscible injection (Solution for injection)

**Indications & Dosage:** ORAL: **Prevention of vitamin A deficiency** (universal or targeted distribution programmes), INFANT under 6 months: 50 000 units, 6–12 months, 100 000 units every 4–6 months, preferably at measles vaccination; CH over 1 yr (preschool): 200 000 units every 4–6 months; AD: 200 000 units every 6 months; AD pregnant woman: maximum of 10 000 units daily or maximum 25 000 units wkly; AD mothers: 200 000 units at delivery or within 6 wks. **Xerophthalmia,** INFANT under 6 months: 50 000 units on diagnosis, repeated next day and then after 2 wks; 6–12 months: 100 000 units immediately on diagnosis, repeated next day and then after 2 wks; CH over 1 yr & AD (except woman of child-bearing age): 200 000 units on diagnosis, repeated next day and then after 2 wks; AD:S severe signs of xerophthalmia, as for other adults; less severe cases (for example, night blindness): 5000–10 000 units daily for at least 4 wks or up to 25 000 units wkly

**ADR:** No serious or irreversible adverse effects in recommended doses; high intake may cause nausea, vomiting, itching, erythema, dermatitis, exfoliation, alopecia, bone and joint pain, loss of appetite, irritability, bleeding, birth defects; transient increased intracranial pressure in adults or a tense and bulging fontanelle in infants (with high dosage); enlarged liver, raised erythrocyte sedimentation rate, raised serum calcium and raised serum alkaline phosphatase concentrations
Vitamin A & D 5000 IU and 400 IU  
(Refer vitamin A & D)  
Vitamin C (Ascorbic acid)  
Tablet: 100mg  
ADR: Diarrhea; nausea; vomiting. Excessive doses over long period of time may cause precipitation of cystine, oxalate or urate crystals in kidney, Faintness or dizziness may occur with rapid IV administration

Vitamin E  
Tablets/Capsules: 200mg  
Indications & Dose: ORAL: Treatment & prevention of vitamin E deficiency: AD: 40 – 50 mg daily.  
CI: Hypersensitivity on IV administration.  
ADR: HTN; myopathy; thrombophlebitis; fatigue, weakness, lethargy, nausea, headache, blurred vision, flatulence, diarrhoea, abdominal cramps, Topical: contact dermatitis, long term administration can cause creatinuria, impaired wound healing

Phytomenadione (vitamin $K_1$)  
Tablets & Injection (Solution for injection)  
Indications & Dose: Warfarin-induced hypoprothrombinaemia; no bleeding or minor bleeding: AD: Slow IV: 500 micrograms or ORAL: 5 mg; less severe haemorrhage: ORAL / IM: AD: 10–20 mg; severe haemorrhage: Slow IV: AD: 2.5–5 mg; very rarely up to 50 mg (but risk of overcorrection with high dosage). Haemorrhagic disease of the newborn, treatment: IV / IM: NEONATE: 1 mg with further doses if necessary at 8-hour intervals. Haemorrhagic disease of the newborn, prophylaxis: IM: NEONATE: 0.5–1 mg as single dose or ORAL: 2 mg followed by a second dose after 4–7 days and for breastfed babies a third dose after 1 month.  
ADR: HSR including flushing, dyspnoea, bronchospasm, dizziness, hypotension & respiratory or circulatory collapse which may be due to polyethoxylated castor oil surfactant in some inj formulations rather than due to phytomenadione, Pain, swelling, tenderness at the injection site, anaphylactoid reaction after repeated injection, erythematous, indurated, pruritic plaques; rarely, scleroderma-like lesions.

Vitamin K3 10mg/ml  
ADR: hemolysis, kernicterus in neonates,

Vitamin D.  
Tablets & injection  
Indications & Dose: Rickets, osteomalacia: 5000iu to 50,000iu daily or single large dose of 100,000 – 500000iu.  
Hypoparathyroidism: 50,000 – 200,000iu daily.
ELECTROLYTES
ORS (WHO formula) 20.5 gm pkt (each pack containing: NaCl I.P. 2.6 gm, KCl I.P. 1.5 gm, Trisodium Citrate dihydrate I.P. 2.9 gm, Glucose (Anhydrous) I.P. 13.5 gm)
Powder & sachet
Indications & Dose: Mild to moderate dehydration due to diarrhoea / stroke / vomiting: Add 1 tsp in 200 ml boiled & cooled water as directed. Few sips every 10 – 15 mins. Decide dosage according to severity of diarrhoea or dehydration.
ADR: Nausea, anorexia, constipation, widespread calcification of the soft tissues, including the heart, blood vessels, renal tubules, and lungs, Bone demineralization (osteoporosis) in adults occurs concomitantly, Decline in the average rate of linear growth and increased mineralization of bones in infants and children (dwarfism) vague aches, stiffness, and weakness, Mental retardation, Impairment of renal function with polyuria, nocturia, polydipsia, hypercalciuria, reversible azotemia, hypertension, nephrocalcinosis, generalized vascular calcification, Mild acidosis, anemia, weight loss, irreversible renal insufficiency which may result in death

13. ALLERGIC DISORDERS

Cetirizine (Antihistamine)
Tablets: 10mg; Syrup
Indications & Dosage: ORAL: As hydrochloride: Symptomatic relief of allergic conditions including rhinitis and chronic urticaria AD: 10 mg once daily or 5 mg bid. CH: > 6 yrs: Same as adult dose; 2 – 6 yrs: 5 mg once daily or 2.5 mg bid. Renal impairment: 5 mg once daily.
CI: HSR to the drug; lactation
ADR: Somnolence, insomnia, malaise, headache, dizziness, abnormal coordination, ataxia, confusion, dysphonia, hyperesthesia, hyperkinesia, hypertonia, hypoesthesia, leg cramps, migraine, myelitis, paralysis, paresthesia, ptosis, syncope, tremor, twitching, vertigo, visual field defect; abnormal thinking, agitation, amnesia, anxiety, decreased libido, GI discomfort, dry mouth, abdominal pain, diarrhoea, nausea, vomiting; occasional HSR; epitaxis, pharyngitis, bronchospasm, cardiac failure, hypertension, palpitation, tachycardia.

Chlorpheniramine maleate (Antihistamine)
Tablets: 4mg; Injection: 10mg/ml amp
Indications & Dosage: ORAL: Symptomatic relief of allergic conditions including urticaria, angioedema, rhinitis, conjunctivitis and pruritus: AD: 4 mg every 4-6 hrs. CH: 6-12 yrs: 2 mg every 4-6 hrs; 2-5 yrs: 1 mg every 4-6 yrs; 1-2 yrs: 1 mg bid. Max dose: AD: 24 mg daily. CH: 6-12 yrs: 12 mg daily; 1-5 yrs: 6 mg daily.
PARENTERAL: Adjunct in the emergency treatment of anaphylactic shock: AD: 10-20 mg IM, SC or slow IV inj over 1 min. CH: 8705 mcg/kg body wt SC qid. Max dose: AD: 40 mg daily.
**Promethazine HCl (H. Receptor Antagonist)**

Injection: 50mg/2ml amp; Elixir/syrup 5mg/5ml; Tablet

**Indications & Dose:** As hydrochloride: **Allergic conditions:** ORAL: AD: 25 mg at night increased to 25 mg bid, if needed; alternatively, 10-20 mg bid or tid. CH: 5-10 yrs: 10-25 mg daily in 1 or 2 divided doses; 2-5 yrs: 5-15 mg daily in 1 or 2 divided doses. PARENTERAL: AD: 25-50 mg/ml IM or slow IV inj of a 25 mg/ml concentration diluted to 2.5 mg/ml or infused at a rate of not more than 25 mg/min. CH: 5-10 yrs: 6.25-12.5 mg by deep IM inj. Max dose; AD: 100 mg.

**CI:** HSR; severe CNS depression; coma; intra-arterial or SC inj; neonates, pregnancy and lactation.

**ADR:** CNS depression, sedation, paradoxical excitation in child, dry mouth, blurring of vision, retention of urine, constipation, glaucoma, tachycardia, headache, hypotension, tinnitus. (refer chlorpheniramine)

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**14. EAR, NOSE AND OROPHARYNX**

**TOPICAL NASOPHARYNGEAL MEDICATIONS**

**Beclomethasone**
Refer Antiasthmatics

**Budesonide**
Refer Antiasthmatics

**Oxymetazoline (Sympathomimetic Decongestant)**

Solution 0.05%

**Indications & Dose:** NASAL: **Symptomatic relief of nasal congestion:** AD: As hydrochloride: Instill 0.05% solution into each nostril bid.

**CI:** Glaucoma; hyperthyroidism, heart disease (including angina), HTN, advanced arteriosclerotic conditions, diabetes mellitus, difficulty in urination secondary to prostate enlargement. Children < 6 yrs.
**ADR:** Nasal drops: local stinging or burning, sneezing, dry mouth & throat, atropic rhinitis, anosmia. Prolonged or frequent use may cause rebound congestion. Headache, insomnia, tachycardia, HTN, nervousness, nausea, dizziness, palpitation, arrhythmia. Eye drops: dryness of eye.

**Xylometazoline (Sympathomimetic Decongestant)**

Nasal drops 1:1000 10ml bottle

**Indications & Dose:**
- **NASAL:** As hydrochloride: **Symptomatic relief of nasal congestion:** AD: As 0.1% solution: instill into each nostril bid-tid.
- **CH:** As 0.05% solution: < 12 yrs: 1-2 drops into each nostril once or bid.

**CI:** Glaucoma, hyperthyroidism, heart disease (including angina), HTN, advanced arteriosclerotic conditions, diabetes mellitus, MAOIs, difficulty in urination secondary to prostate enlargement.

**ADR:** Nasal drops: local stinging or burning, sneezing, dry mouth & throat. Prolonged / frequent use may cause rebound congestion. Headache, insomnia, tachycardia, HTN, nervousness, nausea, dizziness, palpitation, arrhythmia.

**OROPHARYNGEAL PREPARATIONS**

**Chlorhexidine (Topical Antiseptic)**

Mouth wash: 0.2% 500 ml bottle; Scrub - 500 ml bottle; Paste as gluconate 1% w/w

**Indications & Dose:**
- **MOUTH / THROAT:** **Oral hygiene; plaque inhibition:** AD: Rinse mouth with 10 ml of a 0.2% solution for 1 min bid.
- **Gingivitis; reduction of accumulated plaque:** AD: Rinse mouth with 0.1 – 0.2% solution bid – tid.

**CI:** Brain, meninges, middle ear or sensitive tissues.

**ADR:** Skin sensitivity; irritation of conjunctiva, mucosal irritation; reversible brown staining of the teeth; tongue discoloration; parotid gland swelling.

**Povidone iodine**
Ref: Topical Antibacterials & Antifungals

**AURAL PREPARATIONS**

**Betamethasone**
Ref: Corticosteroids

**Ciprofloxacin**
Ref: Antibacterials

**Clotrimazole**
Ref: Topical Antibacterials & Antifungals.
**Framycetin** (Aminoglycoside antimicrobial)
Eye / ear drops: 0.5%; Ointment: 1%; Gauze for dressing

**Indications & Dose:**
- **OTTIC / AURAL:** Posttraumatic or pre and postoperative otitis externa. AD: 1% drops with dexamethasone. 1-2 drops as required daily. 2-3 drops 3-4 times daily into the ears.
- **OPHTHALMIC:** Conjunctivitis, blepharitis, styes. Dacrocystitis, rosacea conjunctivitis & keratitis, scleritis, episcleritis, iritis, iridocyclitis, other ocular infections: ADULT: 0.5% oin: Apply 2-3 times daily into the affected eyes.
- **TOPICAL/CUTANEOUS:** Skin infections: ADULT: As sulfate: Apply 1% dressing into affected area.

**CI:** HSR to aminoglycosides, perforated ear drums (ear drops), fungal / viral or resistant bacterial eye infections (eye drops with steroids).

**ADR:** Ototoxicity, if higher dose used in high-risk groups; sensitization, contact dermatitis, local irritation & itching.

**Gentamicin**
Refer aminoglycosides (Streptomycin)

**Norfloxacin**
Refer fluoroquinolones (Ciprofloxacin)

**Ofloxacin**
Refer fluoroquinolones (Ciprofloxacin)

**Ofloxacin 0.3% w/v + Dexamethasone 0.1% w/v ear drops**

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**15. EYE**

**OCULAR ANTIINFECTIVES**

**Chloramphenicol eye applicaps 1%**
Refer Antibacterials

**Ciprofloxacin**
Refer Antibacterials

**Framycetin**
Refer Aural preparations
Gatifloxacin
Refer Antibacterials

Gentamicin
Refer Antibacterials

Natamycin (Polyene antifungal antibiotic)
Eye dops: 5%
**Indications & Dose:** OPTHALMIC: Blepharitis, conjunctivitis & keratitis: AD: Instil 1 drop of 5% suspension in conjunctival sac every 1-2 hrs, reduced to 1 drop 6-8 times a day after 3-4 days. Duration of treatment: 2-3 wks.
**CI:** HSR.
**ADR:** Systemic absorption may result in nephrotoxicity, contact dermatitis (topical use), conjunctival chemosis and hyperemia of allergic nature.

Norfloxacin
Refer Antibacterials

Ofloxacin
Refer Antibacterials

OCULAR ANTIINFLAMMATORIES & ANTIALLERGICS

Betamethasone
Refer Corticosteroids

Cromolyn sodium
Refer Antiasthmatics

Dexamethasone
Refer Corticosteroids

Diclofenac
Refer NSAIDs, Antirheumatics

Fluorometholone (Ophthalmic Corticosteroid)
Eye drops & lotion
Indications & Dose: OPHTHALMIC: Steroid–responsive inflammatory conditions of the eye: AD CH: >2 yrs: As oint: Apply a small amount of a 0.1% oint to the conjunctival sac 1-3 times daily or every 4 hrs in severe cases. As soln: Instill 1-2 drops into the conjunctival sac every hr during day and every 2 hrs at night until symptoms are controlled then decrease gradually to 1 drop every 4 hrs; apply 1-2 drops bid–qid for mild to moderate cases. CI: Viral disease of the cornea & conjunctiva, including epithelial herpes simplex keratitis (dendritic keratitis), vaccina & varicella, mycobacterial eye infection, ocular fungal infections, untreated eye infections; HSR.

ADR: Local irritation, Elevated IOP, optic nerve damage, post subcapsular cataract formation, delayed wound healing, uveitis, perforation of the globe, keratitis, conjunctivitis, corneal ulcers, loss of accommodation, secondary ocular infections, rarely systemic hypercorticoidism; agranulocytosis; aplastic anemia and other blood dyscrasias, Fulminant hepatic necrosis, allergic sensitization; Stevens-Johnson syndrome; toxic epidermal necrolysis; secondary infections (including fungal).

Flurbiprofen
Refer NSAIDs, Antirheumatics

Hydrocortisone
Refer Corticosteroids

Indomethacin
Refer NSAIDs, Antirheumatics

Ketorolac eye drops 0.5%
Refer NSAIDs, Antirheumatics

Natamycin (Polyene Antifungal)
Tablets; Eye drops 5% 3ml
Indications & Dose: ORAL: Intestinal candidiasis: AD: Up to 400 mg daily in divided doses. Oral candidiasis: AD: 10 mg lozenge or 2.5% drops.
CI: HSR.

Ofloxacin 0.3% + ketorolac 0.5% eye drops

Ofloxacin 0.3% with Prednisolone acetate 1% eye drops

DRUGS FOR GLAUCOMA
Acetazolamide
Refer Diuretics

Brimonidine (α agonist)
Ophthalmic preparation available as 0.2% soln:
AD: 1 drop BD/TDS.

**Indication: Open angle glaucoma**
Cl: Hypersensitivity, Patients receiving MAO inhibitor therapy.
Precautions: Patients wearing soft contact lenses should wait for at least 15 min after instilling brimonidine tartrate before inserting soft contact lenses, Renal or hepatic impairment, depression, cerebral or coronary insufficiency, Raynaud's phenomenon, orthostatic hypotension, thromboangitis obliterans, Pregnancy, lactation.

**ADR:** Oral dryness, ocular hyperaemia, burning and stinging, headache, blurring of vision, foreign body sensation, fatigue or drowsiness, conjunctival follicles, ocular allergic reactions, ocular pruritus, Corneal staining/ erosion, photophobia, eyelid erythema, ocular ache, ocular dryness, tearing, upper respiratory symptoms, eyelid oedema, conjunctival oedema, dizziness, blepharitis, ocular irritation; GI symptoms; asthaenia; muscular pain.

Latanoprost (PGF₂α agonist)
Solution: 0.005%, 5ml vials

**Indications & dosage:** Ophthalmic *Ocular hypertension, Open-angle glaucoma* Eye drops:- 0.005% solution

*Adult*: Instil 1 drop of a 0.005% solution once daily in the evening.

Cl: Do not use within 5 min of thiomersal-containing preparations. Aphakia or pseudophakia with torn posterior lens cap or anterior chamber lenses; risk factors for cystoid macular oedema; brittle or severe asthma; history of intraocular inflammation; inflammatory, neovascular, angle-closure or congenital glaucoma; pregnancy, lactation. Remove contact lenses during use.

**ADR:** Brown pigmentation particularly in those with mixed-color irides; blepharitis, ocular irritation and pain; darkening, thickening and lengthening of eyelashes; localised oedema; conjunctival hyperaemia; transient punctate epithelial erosions; dyspnoea; exacerbation of asthma; local skin reactions; iritis; uveitis; darkening of palpebral skin.

Pilocarpine (Cholinomimetic)
Eye Drops : 2 %

**Indications & Dose:** OPHTHALMIC: *Open-angle glaucoma:* AD: As hydrochloride or nitrate: Instill a 0.5-4% solution into the eye qid.

Cl: Angle-closure glaucoma, acute iritis, anterior uveitis; HSR. Pregnancy.

**ADR:** OCULAR: Pain & irritation, blurred vision, lacrimation, browache, conjunctival vascular congestion, superficial keratitis, vitreous haemorrhage & increased pupillary block
MYDRIATICS & CYCLOPLEGICS

Cyclopentolate (Mydriatics / Cycloplegic)
Eye Drops: 1%.
Indications & Dose: As hydrochloride: OPHTHALMIC: Produces mydriasis & cycloplegia for ophthalmic diagnosis: AD: Instill 1 drop of a 0.5% solution into the affected eye/s repeated after 5 – 15 min. CH: Instill 1-2 drops of a 0.1% solution repeated after 5 – 15 min. INFANTS ≤ 23 months: not recommended. Uveitis & iritis: AD: Instill 1-2 drops of a 0.5% solution qid into the affected eye/s.
CI: Narrow – angle glaucoma.
ADR: Local irritation, hyperaemia, oedema & conjunctivitis, increased IOP (may precipitate narrow-angle glaucoma), systemic anticholinergic effects, severe CNS disturbances in children (rare).

Tropicamide (Mydriatics / Cycloplegic)
Eye drops: 1%
Indications & Dose: OPHTHALMIC: Production of mydriasis: AD: Instill 1-2 drops of a 0.5% solution 15-20 min before examination. Production of cycloplegia: AD: Instill 1-2 drops of a 0.1% solution repeated after 5 min. An additional drop may be administered after 20-30 min for prolonged effect.
CI: HSR. Narrow-angle glaucoma.
ADR: Increased IOP (may precipitate narrow-angle glaucoma), systemic anticholinergic effects, severe CNS disturbances in childn (rare). Prolonged use may cause local irritation, hyperaemia, oedema and conjunctivitis. May fail to produce adequate cycloplegia in childn.

Tropicamide 0.8% + phenyl ephrine 5% eye drops 5ml BFS/FFS pack

16. SKIN

TOPICAL ANTIBACTERIALS & ANTIFUNGALS

Clotrimazole (Imidazole Antifungal)
Powder, Cream: 1%; Ear drops: 1%; Vaginal tablets: 100mg
Indications & Dosage: VAGINAL: Vulvovaginal candidiasis: AD: 100 mg for 6 days, 200 mg for 3 days or 500 mg as a single dose given as pessaries; alternatively, apply 1% cream.
OTTIC / AURAL: Fungal otitis externa: AD: Apply 1% solution to affected area.
TOPICAL / CUTANEOUS: **Fungal skin infections:** AD: Apply a 1% cream / lotion / solution bid – tid for 2-4 wks in conjunction with a 1% powder to prevent reinfection.

**CI:** HSR.

**ADR:** Topical: erythema, stinging and burning sensation, irritation; HSR; contact dermatitis. Oral: GI disturbances, dysuria, mental depression, elevated liver enzymes.

**Clotrimazole 0.025% cream/ointment**

**Framycetin**
Refer Aural preparations.

**Gentamicin**
Refer Antibacterials

**Metronidazole**
Refer Antiamoebics

**Povidone – Iodine (Topical antiseptic)**
Solution: 5%, 7.5% (scrub); Eye drops: 5%; Vaginal tab: 200mg Ointment:5%

**Indications & Dose:**
- **ORAL:** Vaginal infection due to candida albicans; nonspecific vaginitis: AD: 600 mg daily in 2 divided doses, 1 hr before or 2 hrs after meals.
- **VAGINAL:** Vaginal candidiasis: AD: 200 mg given as pessaries.
- **TOPICAL / CUTANEOUS:** Treatment & prevention of wound infection: AD: Apply 0.5 – 5% topical powders on the affected area.

**MOUTH / THROAT:** Oral hygiene: AD & CH: >6 yrs: Rinse mouth with 10 ml of a 0.1% undiluted or diluted solution with an equal amount of warm water solution for 30 sec qid continued for 14 days. **Oral candidiasis:** AD: Rinse mouth with 1% mouthwash solution.

**CI:** HSR; thyroid disorders or lithium therapy.

**ADR:** rashes, Local irritation and sensitivity ( rare). Application to large areas of denuded skin may produce systemic effects due to iodine absorption.

**TOPICAL/CUTANEOUS: Treatment & prevention of wound infection:** AD: Apply 0.5-5% topical powders on affected area.

**MOUTH/THROAT:** Oral hygiene: AD & CH: > 6 yrs.: Rinse mouth with 10 ml of a 0.1% undiluted or diluted solution with an equal amount of warm water solution for 30 sec qid continued for 14 days. **Oral candidiasis:** AD: Rinse mouth with 1% mouthwash solution.

**CI:** HSR; thyroid disorders or lithium therapy
**ANTIINFECTIVE PREPARATIONS**

**Gammabenzene hexachloride (Lindane) (Scabicide / Pediculocide)**
Lotion, ointment & cream: 1%. 5Ltr can

**Indications & Dose:** TOPICAL / CUTANEOUS: Scabies: Apply a 1% preparation onto affected area.

**CI:** HSR. History of seizures; broken skin.

**ADR:** Eczematous eruptions, giddiness, tremors, coma, respiratory failure; CNS toxicity, dizziness, vertigo, convulsions (children), paraesthesia; haerdache, nausea, vomiting, cardiac arrhythmia.

**Permethrin (Pyrethoid Insecticide)**
Cream, lotion, gel: 5%

**Indications & Dose:** TOPICAL / CUTANEOUS: Head pediculosis: AD: Apply a 1% preparatio on the scalp. Scabies: AD: Apply a 5% cream onto affected area.

**CI:** HSR; infants < 2 months.

**ADR:** Mild transient burning, stinging, pruritus, erythema, tingling, numbness, rash; oedema.

**PSORIASIS, SEBORRHOEA & ICHTHYOSIS**

**Benzoin acid with salicylic acid (Whitfield ointment)**
Ointment 5kg jar

**Indications:** Mild dermatophyte infections, particularly tinea pedis and tinea corporis

**ADR:** Occasionally localized, mild inflammatory reaction, irritation, burning sensation.

**ACNE**

**Azithromycin**
Refer anti-bacterials

**Benzoyl peroxide (Antibacterial / Antiacne)**
Cream, gel: 2.5%

**Indications & Dosage:** TOPICAL/ CUTANEOUS: Acne: AD: Apply a 2.5-10% preparation in combination with other antimicrobials.

**CI:** HSR.
**ADR:** Excessive drying of skin, allergic dermatitis. May bleach fabrics or hair. Skin discoloration; erythema, skin rash, peeling, transient local oedema, contact sensitization.

**Clindamycin**
Refer Anti-bacterials

**Dapsone**
Refer Antileprotics.

**Erythromycin**
Refer Anti-bacterials

**TOPICAL STEROID PREPARATIONS**

**Betamethasone**
Refer Corticosteroids

**Dexamethasone**
Refer Corticosteroids

**Fluticasone (Topical Corticosteroid)**
Intra nasal spray 0.05% w/v; Rota cap: 250mcg; MDI; Ointment, cream, lotion

**Indications & Dose:**
- **TOPICAL / CUTANEOUS: Skin disorders:** AD: As propionate: Apply a 0.05 - 0.005% cream / ointment onto affected area.
- **NASAL:** Prophylaxis & treatment of allergic rhinitis: ADULT: 100 mcg into each nostril once daily, increased to 100 mcg bid. CHILD: >4 YRS: half of adult dose.
- **INHALATION:** Prophylaxis of asthma: ADULT: Initially, 100-250 mcg bid in mild cases, increased to 500-1000 mcg bid in severe cases. CHILD: >4 yrs: Initially, 50-100 mcg bid.

**Cl:** HSR. Acne vulgaris, rosacea, perioral dermatitis, skin atrophy; primary cutaneous viral infections (eg, herpes simplex, chicken pox), perianal & genital pruritus, primary fungal or bacterial skin infections. Inhalation: status asthmaticus.

**ADR:** Topical: pruritus, hypertrichosis, dryness, numbness of fingers, burning, eruptions, hypopigmentation, allergic contact dermatitis, secondary infection, skin atrophy, cushing's syndrome, reversible HPA-axis suppression. Inhalation: oropharyngeal candidiasis, pharyngitis, dysphoria, cough, rhinitis, nasalcongestion & headache. Systemic absorption may be seen when applied to large areas, when skin is broken or under occlusive dressing.

**Triamcinolone**
Refer Corticosteroids.

17. IMMUNOSUPPRESSIVES/ CYTOTOXICS

Azathioprine (Antimetabolite)
Tablets: 50mg
**Indications & Dosage:**
- **ORAL:** Prevention of rejection in organ and tissue transplant: AD: 1-5 mg/kg.
- **Immunosuppression in conjunction with a corticosteroid:** AD: 1-3 mg/kg daily. Dose in renal impairment: CrCl 10-50 ml/min: 75% of normal daily dose; CrCl <10 ml/min: 50% of normal daily dose.
- **CI:** HSR; previous treatment with alkylating agents; pregnancy and lactation.
- **ADR:** Fever, chills; bone marrow depression characterized by leucopaenia, thrombocytopaenia or anaemia; anorexia, nausea, diarrhoea, arthralgias secondary infections; hepatotoxicity, rash, alopecia.

Cyclophosphamide (Alkylating agent)
Tablets: 50mg; Injection (Powder for solution for injection)
**Indications & Dosage:**
- **Chemotherapy of malignant tumors & leukemia: Initial treatment** Daily IV inj of 3-6 mg/kg body wt (120-240 mg/m² body surface) or 10-15 mg/kg (400-600 mg/m² body surface) with therapy-free intervals of 2-5 days; or 20-40 mg/kg body wt with therapy-free intervals of 10-20 days. Maintenance: 50-200 mg/day orally.
- **CI:** Severe bone marrow suppression, severe impairment of renal function, lower urinary outflow obstruction, acute infection. Pregnancy.
- **ADR:** GI upsets; alopecia; reticulo-endothelial system depression; hematuria; reversible amenorhea & azoospermia; myocardial damage w/ very high doses; pigmentation, macrocytosis, water retention, SIADH; induction of hyperglycemia or hypoglycemia; risk of secondary malignancies, cystitis.

Cyclosporine
Capsules: 50mg; Eye drops:0.05 > 0.1%
**ADR:** nephrotoxicity, altered liver functions, hypertension, precipitation of diabetes, anorexia, lethargy, hyperkalemia, opportunistic infections, hirsutism, gum hyperplasia, tremors, seizures.

Methotrexate (Folate Inhibitor)
Tablets: 2.5mg; Injection (Solution for injection)
**Indications:** Breast carcinoma, choriocarcinoma, chorioadenoma destruens & hydatidiform mole, lymphocytic & meningeal leukaemia, lymphosarcoma, mycosis fungoides, psoriasis.
**Dose:**
- **Trophoblastic tumours** 15-30 mg IM daily for 5 days. Repeat after 1 or more wk when toxicity disappears.
- Usually administer for 3-5 courses. **Acute lymphoblastic leukaemia** 3.3 mg/m² orally with prednisolone for 4-6 wk.
- Maintenance: 20-30 mg/m² orally or IM twice wkly or 2.5 mg/kg IV every 14 days. **Meningeal leukaemia** 0.2-0.5 mg/kg
at 2-5 day intervals intrathecally when CSF cell counts are normal, then give 1 more dose or 12 mg/m² once wkly for 2 wk, then once a mth. **Mycosis fungoides** 2.5-10 mg/day orally or 50 mg IM once wkly or 25 mg twice wkly. **Psoriasis**

Divided oral dosage: 2.5 mg 12 hrly for 3 doses/wk or 8 hrly for 4 doses/wk. Max wkly dose: 30 mg. Daily oral dosage: 2.5 mg/day for 5 days. Rest for >2 days. Max 6.25 mg/day. Wkly dosage: 10-25 mg orally, IM or IV once wkly. Max: 50 mg/wk.

**CI:** Pregnancy & lactation. Psoriatic patient in a poor state of nutrition, serious renal or liver disorders, bone marrow hyperplasia, leukopenia, thrombocytopenia or anemia.

**ADR:** Hepatotoxicity, GI, dermatological, liver & GIT toxicity, bone marrow depression, megaloblastic anemia, mucositis, alopecia.

### 18. POISONING AND DRUG DEPENDENCE

**Atropine**

Refer Neuromuscular Blockers, Other Premedication Drugs

**Naloxone** *(Opioid antagonist)*

Injection (Solution for injection): 0.4mg/ml 1ml Amp

**Indications & Dose:** PARENTERAL: As hydrochloride: **Opioid overdose:** AD: 0.4-2 mg IV repeated if necessary at 2-3 min intervals. For opioid-dependent patients: 0.1-0.2 mg. CH: Initially, 10 mcg/kg followed by 100 mcg/kg if necessary. Max dose: 10 mg. **Opioid-induced depression in neonates due to obstetric analgesia:** CH: 100 mcg/kg IV, IM or SC repeated at 2-3 min intervals if necessary or 60 mcg/kg as a single IM dose for prolonged action.

**Reversal of central depression from opioid use during surgery:** AD: 100-200 mcg (1.5-3 mcg/kg) IV at 2 min intervals. Titrate the dose according to response while maintaining analgesia.

**CI:** HSR.

**ADR:** Nausea, vomiting; Extreme HTN (after large therapeutic dose of opioid and in addicts); Withdrawal symptoms in opioid addicts, pulmonary edema.

**Naltrexone** *(Opioid antagonist)*

**Tablet:** 50mg

**ADR:** nausea, headache, hepatotoxicity.

**Nicotine**

**Tablets:** 250mg

**Indication and Dose:** **Smoking cessation** AD: BUCCAL. Chewing gum: Smokers of >20 cigarettes/day: Initial: Chew 4 mg gum when the urge to smoke occurs; reduce to 2 mg gum when possible. Smokers of ≤20 cigarettes/day: Start with 2 mg gum. Max: ≤15 pieces of either strengths/day. LOZ: Initial: 1 loz 1-2 hrly. Max: 30 mg/day. SUBLINGUAL
TABS: Per tab contains 2 mg of nicotine as β-cyclodextrin complex): 1-2 tab/hr. Max: 40 tab/day. Reduce dose gradually until no longer needed. Smoking reduction As 2 or 4 mg gum: Chew 1 piece when urge occurs between smoking episodes; reduce smoking w/in 6 wk and attempt smoking cessation w/in 6 mth. TRANSDERMAL 1 patch for 16 or 24 hr daily. Start with the highest strength and reduce gradually over several wk to lower strengths. Lighter smokers may start with lower strength patches. NASAL As 500 mcg spray: 1 spray into each nostril when needed. Max: Twice/hr and 64 sprays/day. Reduce usage gradually until no longer needed. INHALATION As inhaler w/ 10 mg cartridge: Inhale when urge occurs. Initial: 6-12 cartridges/day, reduce gradually till no longer needed. As inhaler w/ 10 mg cartridge: Inhale when urge to smoke occurs between smoking episodes; reduce smoking w/in 6 wk and attempt smoking cessation w/in 6 mth

CI: Nonsmokers, children and occasional smokers. Recent cerebrovascular accident, acute MI, unstable or worsening angina pectoris, active temporomandibular joint disease (gum).

ADR: Headache, cold and flu-like symptoms; insomnia; nausea; myalgia and dizziness; palpitations; dyspepsia, hiccups; vivid dreams; chest pain; anxiety and irritability; somnolence and impaired concentration; abnormal hunger; dysmenorrhoea; rash. Patches: Skin reactions (discontinue if severe), vasculitis. Spray: Nasal irritation, nose bleeds, watery eyes, ear sensations. Gum, lozenges, SL tab or inhalator: Apthous ulceration, throat irritation. Inhalator: Cough, rhinitis, pharyngitis, stomatitis, sinusitis, dry mouth.

Pralidoxime (Cholinesterase Reactivator)
Injection & vial
Indications & Dose: PARENTERAL: Organophosphorous poisoning: AD: As chloride, iodide or mesilate: 2 - 4 mg of atropine (for atropinisation) IM or IV concomitantly with 1-2 g of pralidoxime IV or IM. Repeated if necessary depending on patient’s condition. In severe poisoning: 200-500 mg/hr as continuous infusion with dose titrated according to patient’s response. CH: As chloride: 20-40 mg/kg . As mesilate: 20-60 mg/kg . Max dose: 12 g in 24 hrs. In both adults and children, atropine might have to be injected frequently to relieve respiratory depression. Full resuscitative measures should be always utilised.

CI: Carbamate pesticide poisoning, HSR.

ADR: Drowsiness, dizziness, visual isurbances, nausea, tachycardia, headache, hyperventilation and muscle weakness.

19 SURGICAL
ANAESTHETICS – LOCAL & GENERAL

Bupivacaine (Long Acting LA)
Injection: 2.5mg, 5mg, 0.5% (plain), 0.5% in dextrose 8%(heavy) amps/vials
Indications & Dose: PARENTERAL: Infiltration anesthesia: AD: Prolonged action: 9 mg (1.8 ml) of a 0.5% solution with adrenaline (1:200,000) administered per injected site, repeated once after 2-10 min if necessary. Max dose: As hydrochloride: 150 mg followed by 50 mg every 2 hrs if necessary. Prolonged action: 90 mg (18 ml) Peripheral nerve
blocks: AD: 12.5 mg (5 ml) of a 0.25% solution or 25 mg (5 ml) of a 0.5% solution. Max dose: 150 mg. Sympathetic nerve block: AD: 50-125 mg (20-50 ml) of a 0.25% solution. Retrobulbar block: AD: 15-30 mg (2-4 ml) of a 0.75% solution. Caudal block: AD: In surgery: 37.5-75 mg (15-30 ml) of a 0.25% solution or 75-150 mg (15-30 ml) of a 0.5% solution. With analgesia during labour: 25-50 mg (10-20 ml) of a 0.25% solution or 50-100 mg (10-20 ml) of a 0.5% solution. Lumbar epidural block: AD: In surgery: 25-50 mg (10-20 ml) of a 0.25% solution or 50-100 mg (10-20 ml) of a 0.5% solution. With analgesia during labour: 15-30 mg (6-12 ml) of a 0.25% solution or 30-60 mg (6-12 ml) of a 0.5% solution. In non-obstetric surgery: 75-150 mg (10-20 ml) of a 0.75% solution. Reduce dose in children, elderly or debilitated patients and in cardiac or hepatic disease.

CI: HSR to LA of amide type. IV regional anaesthesia; paracervical block in obstetrics; spinal anaesthesia <18 yrs. Lactation. Solutions containing preservatives for caudal or epidural block.

ADR: CNS excitation may be followed by depression. Hypotension, bradycardia, arrhythmias and cardiac arrest; methaemoglobinemia; seizures, restlessness, dizziness. HSR. Prolonged block., QTc prolongation, ventricular tachycardia.

Halothane (Volatile Liquid General Anaesthetic)
Volatile liquid: 250ml bottle
Indications & Dose: INHALATION: Induction and maintenance of GA: AD: 2-4% v/v of halothane in oxygen or mixtures or nitrous oxide for induction while 0.5% v/v of halothane increased to the required level for maintenance of anaesthesia. CH: 1.5-2% v/v of halothane for induction while 0.5-2% v/v for maintenance of anaesthesia depending on the flow rate used.

CI: Obstetrics; malignant hyperthermia.

Isoflurane
Volatile liquid: 100 ml bottle
Indications and Dosage: Induction of anaesthesia AD-1.5%-3% Maintenance anaesthesia- AD 1-2%

ADR: Fall in BP, tachycardia, respiratory depression, increased tracheobronchial secretions, post anaesthetic nausea & vomiting Cardiac arrhythmias; bradycardia; hypotension, respiratory depression, shivering during recovery (occasional), hepatitis (multiple exposure), malignant hyperthermia with succinyl choline.

Ketamine (Parenteral Dissociative Anaesthetic)
Injection (Solution for injection): as hydrochloride 50mg/ml - 10ml vial/amp
Indications & Dose: Induction of anaesthesia: IV: As hydrochloride: AD: 1-4.5 mg/kg as IV inj or 0.5-2 mg/kg as IV infusion. Maintenance: 10-45 mcg/kg/min infusion rate titrated according to response. Surgical anesthesia: IV: AD: 2 mg/kg over 60 sec. IM: AD:10 mg/kg within 3-4 min. Diagnostic procedure: IM: AD: 4 mg/kg.

CI: HTN, history of cardiovascular accident, severe angina, MI; raised ocular & intracranial pressure, psychiatric disorders, HSR.
**ADR:** Emergence reactions eg, vivid dreams, hallucinations, irrational behaviour, increased muscle tone sometimes resembling seizures. Temporary HTN, hypotension, bradycardia, arrhythmias. Respiratory depression, apnoea, laryngospasm, diplopia, nystagmus; nausea, vomiting, lachrimation; hypersalivation; raised IOP & cerebrospinal fluid pressure; skin irritation & pain at inj site.

**Lidocaine (LA, Surface & Injectable Anaesthetic)**
Solution, Jelly: 2%, 4%, 10%; Spray: 10%; Amp for intra ocular use 1:1000; Injection: Lignocaine hydrochloride for IV each ml containing Lignocaine hydrochloride 21.3 mg, sodium chloride 6.0mg, 50ml vials

**Indications & Dosage:**
**IV:** Ventricular arrhythmias in advanced cardiac life support for cardiac arrest due to ventricular fibrillation & pulseless ventricular tachycardia: AD: As hydrochloride: 1-1.5 mg/kg repeated after 3-5 min to a total of 3 mg/kg if necessary. **Regional anaesthesia:** AD: 50-300 mg (10-60 ml) of a 0.5% solution without adrenaline. **Ventricular arrhythmias in stable patients:** AD: As hydrochloride: 50-100 mg or 1-1.5 mg/kg as direct injection at a rate of 25-50 mg/min repeated once or twice when no effect is seen, followed by 1-4 mg/min continuous infusion. Max dose: 200-300 mg in 1 hr.

**IM:** Emergency treatment of ventricular arrhythmias: AD: As hydrochloride: 300 mg injected into the deltoid muscle, repeated after 60-90 min if necessary.

**PARENTERAL:** As hydrochloride: LA: AD: Up to 200 mg; with adrenaline: Up to 500 mg. **Sympathetic nerve block:** AD: 50 mg (5ml) of a 1% solution for cervical block or 50-100 mg (5-10 ml) of a 1% solution for lumbar block.

**TOPICAL/CUTANEOUS:** Surface anaesthesia: AD: As eutectic mixture: Apply cream under an occlusive dressing.

**Anaesthesia of skin & mucous membranes:** Max dose: 35 g of a 5% ointment in 24 hrs.

**EPIDURAL:** Anaesthesia: AD: 2-3 ml solution administered for each dermatome to be anaesthetized.

**INTRASPINAL:** Anaesthesia: AD: 50 mg (1 ml) of a 5% hyperbaric solution or 9-15 mg (0.6-1 ml) of a 1.5% solution for normal vaginal delivery; up to 75 mg (1.5 ml) of a 5% hyperbaric solution for caesarian operation; 75-100 mg (1.5-2 ml) for other surgical procedures. Reduce dose in children, elderly & in debilitated patients.

**CI:** HSR; hypovolaemia; complete heart block.

**ADR:** Altered taste, dizziness, drowsiness, light-headedness, blurred vision, slurred speech, tinnitus, vomiting, agitation, muscle twitching, bradycardia, and hypotension, heart block, arrhythmias, mental clouding, convulsions, coma and respiratory arrest.

**Lidocaine + Adrenaline (LA + Vasoconstrictor)**
Injection: Lignocaine 2% + adrenaline 1:200000 30ml, Lignocaine 2% + adrenaline 1:80000 30ml

**Indications & dose:** ANY ROUTE: Local or regional anaesthesia, nerve blocks, epidural & caudal anaesthesia: AD: (Lignocaine HCl 20mg/ml + Adrenaline 5 mcg/ml . Dosage depends on several factors such as route, type & extent of surgical procedure, duration of anaesthesia & patient's condition & age.) For normal healthy adults the maximum dose of lidocaine given with adrenaline is 7 mg/kg & not more than 500 mg. CH: Determined by child's age and wt.
**Midazolam**

*Injection 1mg/ml 1ml vials*

**Indication and Dose:** 
- **Insomnia, Sedation for dental and minor surgical procedures, Induction of anesth, Sedation in critical care, Premed in surgical procedures**
  - **AD:** PO Insomnia 7.5-15 mg/day at bedtime. IV Sedation for dental and minor surgical procedures Initial: Up to 2.5 mg given 5-10 mins before procedure. Repeat after at least 2 mins if needed. Usual total: 3.5-5 mg. Max total: 7.5 mg. Induction of anesthesia 150-200 mcg/kg in premedicated patients and at least 300 mcg/kg for those who have not received premedications. Resistant cases: Up to 600 mcg/kg. Sedation in critical care Initial: 30-300 mcg/kg. Maintenance: 20-200 mcg/kg/hr. IM Premed in surgical procedures 70-80 mcg/kg 20-60 mins pre-op by deep inj.

**CI:** Acute narrow-angle glaucoma, coma or patients in shock, acute alcohol intoxication, intrathecal & epidural administration, acute pulmonary insufficiency or marked neuromuscular respiratory weakness including unstable myasthenia gravis, severe respiratory depression.

**ADR:** Physical & psychological dependence with withdrawal symptoms, decreased tidal volume & respiration rate, apnoea, headache, hiccups, nausea, increased appetite, vomiting, cough, oversedation, seizure-like activity, nystagmus, skin rash, pruritus, reduced alertness, confusion, euphoria, hallucinations, fatigue, dizziness, ataxia, postoperative sedation, anterograde amnesia, jaundice, cardiac arrest, heart rate changes, thrombosis, anaphylaxis, laryngospasm, bronchospasm, Respiratory depression, respiratory arrest, hypotension.

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**Propofol (Intravenous GA)**

*Injection: 10mg/ml 20ml vial*

**Indications & Dosage:**
- **IV: Sedation**
  - **AD:** In diagnostic & surgical procedures: Initially, 6-9 mg/kg/hr by infusion for 3–5 min or an alternative dose of 0.5–1 mg/kg by slow inj over 1–5 min. Maintenance Dose: 1.5-4.5 mg/kg/hr infusion. Ventilated patients: 0.3–4 mg/kg/hr by infusion. Reduce dose by 20% for high risk patients needing sedation.

**CI:** HSR, Electroconvulsive therapy; obstetrics; children < yrs. Pregnancy & lactation.

**ADR:** Involuntary muscle movements; nausea; vomiting; headache; fever; pain; burning; or stinging at inj site, fall in BP, bradycardia, induction apnoea.

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**Sevoflurane**

*Injection 250 ml botte*

**Indications & Dose:** **Induction and maintenance of GA**
- **AD:** Inhalation Via a calibrated vaporiser: Induction: Up to 5% v/v w/o oxygen or a mixture of oxygen and nitrous oxide. Maintenance: 0.5-3% v/v w/o w/o nitrous oxide.
CI: Known or suspected susceptibility to malignant hyperthermia. Previous hypersensitivity.

ADR: Cardiorespiratory depression, hypotension, malignant hyperthermia, agitation, laryngospasm, increased cough, salivation, acute renal failure, shivering, nausea, vomiting; rarely, dystonic movements in children, postoperative hepatitis, and seizure-like activity.

**Thiopental sodium** (Ultra short acting IV GA)
Injection (Powder for solution for injection): 1gm vial

**Indications & Dosage:** IV: **Induction of GA:** AD: As sodium: 100-500 mg of a 2.5 or 5% solution injected over 10-15 sec repeated every 30-60 sec according to response. Maintenance: Repeated doses or infusion of a 0.2 or 0.4% solution. CH: 2-7 mg/kg. Max dose for pregnant women is 250 mg.

CI: Porphyria; dyspnoea or obstructive respiratory disease. Pregnancy & lactation.

ADR: Coughing, hiccupping, sneezing, muscle twitching, laryngospasm, bronchospasm. IV: Thrombocytophloebitis, tissue necrosis (extravasation). Intra-arterial: Severe arterial spasm with burning pain, blanching of forearm & hands & gangrene of digits, laryngospasm, shivering, delirium during recovery, pain in the post operative period, restlessness, precipitation of acute intermittent porphyria.

**NEUROMUSCULAR BLOCKERS, OTHER PREMEDICATION DRUGS**

**Atracurium** (Neuromuscular blocker)
Injection: as besylate 25mg Amp

**Indications & Dose:** IV: *As an adjunct to GA to facilitate endotracheal intubation & to relax muscles during surgery:* AD CH: > 1 month: Initially, 300 – 600 mcg / kg by inj. Maintenance dose:100 – 200 mcg / kg by inj every 15 – 25 min, or 5 – 10 mcg / kg / min ( 300 – 600 mcg / kg / hr ) by infudion.

PARENTERAL: *To facilitate mechanical ventilation in ICU patients:* AD: Initially, 300-600 mcg/kg (optional) followed by 4.5-29.5 mcg/kg/min (usual dose: 11-13 mcg/kg/min) by IV infusion.

CI: HSR.

ADR: rash, urticaria, cutaneous reaction; bradycardia; transient hypotension in patients with CVS disorders, tachycardia; bradycardia dyspnea; rash & urticaria; bronchospasm, anaphylactic or anaphylactoid responses, cardiac arrest, Dyspnea, bronchospasm, laryngospasm.

**Succinylcholine**
Injection : 50mg/ml 10ml vial

**Dosage and indications:** Induction of anaesthesia, Endotracheal intubation AD IV 0.3-1.1 mg/kg as a single dose; then 50-100% of the initial dose may be given at 5-10 min intervals. Max: 500 mg/hr. IM 3-4 mg/kg. Max: 150 mg
CI: Genetic disorders of plasma pseudocholinesterase, personal/family history of malignant hyperthermia, hypersensitivity from previous neuromuscular drug, severe burns, massive trauma, extensive denervation of skeletal muscle, patients with risk of hyperkalaemia, renal impairment, angle closure glaucoma.

Special precautions:- Bone fracture, raised intraocular pressure, neuromuscular disease, infants, children, adolescents, pregnancy and lactation.

ADR: Bradycardia, tachycardia, hypotension, hyperpertension, raised intraocular pressure, hyperkalaemia, excessive salivation.

Potentially Fatal: Respiratory depression, dysrhythmias, rhabdomyolsis, malignant hyperthermia.

Vecuronium bromide (Non-depolarising Muscle Relaxant)

Injection: 4mg Lyophilised amp/vial

Indications & Dose: IV: Facilitation of endotracheal intubation & provision of muscle relaxation in GA during surgical procedures: AD: Initially, 80-100 mcg/kg given as inj; alternatively, 30-50 mcg/kg followed by suxamethonium. Maintenance: 20-30 mcg/kg. CH: >5 months: Same as adult dose: <5 months: Initially, 10-20 mcg/kg, increased if necessary according to response. Max dose: AD: 100 mcg/kg in caesarean section or neonatal surgery.

CI: HSR, patients at risk of aspiration of gastric contents, when rapid sequence induction is required; patients with upper airway obstruction, where the airway should be secured before administration of a long-acting neuromuscular blocking agent. Relatively contraindicated in patients with more severe renal dysfunction.

ADR: Muscle weakness, paralysis, HSR eg, bronchosasm, hypotension, bradycardia / tachycardia, urticaria & erythema, allergic reactions, fever.

Atropine sulphate (Anticholinergic)

Injection: 0.60 mg/ml 1ml amp, 100 mg/100ml bottle; Eye ointment: 1% 3gm tube

Indications & Dose: As sulfate: IV: Reversal of effects of competitive muscle relaxants: AD: 0.6–1.2 mg before or with the anticholinesterase. CH: Neonates and infants: 20 mcg/kg before or with the anticholinesterase. Brady: AD: 0.5 –1 mg repeated, every 3 – 5 min. Max dose: 0.04 mg/kg.

PARENTERAL: Reduce vagal inhibition, salivary and bronchial secretions in anaesthesia: AD: 300 – 600 mcg IM or SC 30 – 60 min before anaesthesia or 300 – 600 mcg IV immediately before induction of anaesthesia. CH: >20 kg: Same as adult dose; 12 – 16 kg: 300 mcg IM/SC; 7 – 9 kg: 200 mcg IM/SC; > 3kg: 100 mcg IM/SC.

Organophosphorous poisoning: AD: 2 mg IV/IM, every 30 min as per clinical response. Cholinesterase reactivators should be given at the earliest possible time. Overdosage with other compounds having muscarinic actions: AD: 0.5 – 1 mg IV/SC, repeated every 2 hrs.

OPHTHALMIC: Inflammatory eye disorders eg, uveitis or iritis: AD: Instill 1 – 2 drops of a 0.5 to 1% solution up to qid. CH: Instill 1- 2 drops of a 0.5% solution (or 1 drop of a 1% solution) up to tid. Eye refraction: AD: Instill 1 drop of a 1%solution bid for 1 –2 days before the procedure, or on a single occasion 1 hr before the procedure. CH: Instill 1 or 2 drops of a 0.5% solution (or 1 drop of a 1% solution) bid for 1 – 3 days before the procedure, with a further dose given 1 hr before the procedure.
**CI:** Glaucoma, chronic respiratory disease, sick sinus syndrome, thyrotoxicosis, cardiac failure, pyloric stenosis, prostatic hypertrophy.

**ADR:** Dry mouth, dysphagia, constipation, flushing and dryness of skin, tachycardia, palpitations, arrhythmias, mydriasis, photophobia, cycloplegia, raised IOP. Toxic doses cause tachycardia, hyperpyrexia, restlessness, confusion, excitement, hallucinations, delirium and may progress to circulatory failure and respiratory depression. Eye drops: Systemic toxicity especially in children, on prolonged use may lead to irritation, hyperaemia, oedema and conjunctivitis. Increased intraocular pressure.

**Lorazepam**
Refer Anxiolytics & Sedatives.

**INFUSION FLUIDS, HOSPITAL FLUIDS & PLASMA EXPANDERS**

**Human albumin**
Injection: 20% 100ml bottle

**Indications & dose:** IV: Management of acute hypovolaemic shock: AD: Initially, 25 g albumin, adjusted according to response. CH: 1 g / kg (12 - 20 ml/kg). Management of hypoproteinaemia: AD: Up 2g/kg daily. Neonatal hyperbilirubinaemia: AD: 1g/kg of albumin before exchange transfusion. Volume administered and rate of infusion must always be individualized according to situation & response.

**CI:** Cardiac failure, severe anaemia, history of HSR, parenteral nutrition.

**ADR:** Allergic reactions, nausea, vomiting, increased salivation, fever & chills; vascular overload, haemodilution & pulmonary oedema, change in heart rate or breathing; chills; confusion; fainting; headache; nausea; vomiting; weakness.

**Dextrose**
Infusion fluids (5%, 10%, 20%, 25% & 50%).

**Dextrose Monohydrate:** Oral (powder): 100 gm packet

**Dextrose + normal saline**
Infusion: Dextrose 5% + normal saline 0.9% 500 ml bottles

**ADR:** Severe allergic reactions (rash, hives, difficulty breathing, tightness in the chest, swelling of the mouth, face, lips, or tongue), confusion, muscle twitching, seizures, swelling of the hands or feet, weakness.

**Mannitol (Osmotic diuretic)**
Infusion & Injection: 20% 350ml bottle
**Indications & Dose:** IV: Patients with renal failure: AD: 50 - 100 g by IV infusion of a 5 – 25% solution. Adjust rate of administration to maintain a urine flow of at least 30 – 50 ml/hr. CH: 0.25 – 2 g/kg. Reduction of raised intracranial or IOP: AD: 0.25 – 2 g/kg by IV infusion of a 15 – 25% solution given over 30 – 60 min.

IRRIGATION: Transurethral prostatic resection: AD: Use 2.5 – 5% solution for bladder irrigation.

CI: HSR; pulmonary congestion or oedema; intracranial bleeding; HF; metabolic oedema with abnormal capillary fragility; renal failure, Lactation.

ADR: Fluid & electrolyte imbalance including circulatory overload & acidosis (with high doses). Nausea, vomiting, thirst; headache, dizziness, convulsions, chills, fever; tachycardia, chest pain; hyponatraemia, dehydration; blurred vision; urticaria & hypotension or HTN; acute renal failure; HSR; oedema, skin necrosis; thrombophlebitis.

**Ringer lactate**
Infusion fluids.

**Sodium bicarbonate**
Injection 7.5%w/v.: 10ml amp

**Indications & Dose:** ORAL: Relief of discomfort in mild UTI and prevention of developing uric – acid calculi in the initial stages of uricosuric therapy for hyperuricaemia in chronic gout: AD: Up to 10 g daily in divided doses taken with a liberal amount of fluid. Relief of dyspepsia: AD: 1 – 5 g in water as required.

**Sodium chloride**
Infusion: 0.45%, 0.9% 500ml IV bags, 3% - 100ml bottle; Eye ointment: 6%

**Indications & Dose:** ORAL: Chronic salt – losing conditions: As modified- release preparation: AD: 2.4 – 4.8 g (40 – 80 mmol sodium) accompanied by a suitable fluid intake. Max dose: 12 g / day in severe cases. Prevention of muscle cramps during routine haemodialysis: AD: 6 – 10 g every dialysis session.

NASAL: Relief of nasal congestion: AD: 0.9% used as nasal drops.

ADR: Severe allergic reactions; nausea; stomach pain; swelling in the hands, ankles, feet, or legs; vomiting.

**Amino acids**
Infusion.

**Lipid 20%**
Solution (10%, 20% & 30%)

**Fat emulsion 20% containing Soyabean oil, Egg phospholipids 100ml**

**Water for injections (sterile distilled water free from pyrogens)**
Injection: 5ml, 10ml ampoules, 500ml bottle

Uses: In preparations intended for parenteral administration & in other sterile preparations.
SURGICAL MISCELLANEOUS PREPARATIONS

Hyaluronidase  (Spreading factor)
Injecton: 1500 IU
Indications & dosage: PARENTERAL: Adjunct in hypodermoclysis: AD: 1500 units for every 500 - 1000 ml of fluid for SC administration. Facilitate SC/IM injections: AD: 1500 units directly added to the inj. Aid in the dispersal of extravasated fluids or blood: AD: 1500 units in 1 ml of water of inj is injected into the affected area. Aid in the diffusion of LA used in ophthalmology AD: 15 units/ml of local anaesthesia solution.
CI: HSR, malignancy or infection. Direct application to the cornea, reduction of swelling caused by bites or stings. Inj into or around infected area. IV administration; unexplained premature labour.
ADR: Urticaria, occasional severe allergy.

20. DIAGNOSTIC AGENTS

Amidotrizoates
Injection: (Solution for injection): Sodium diatrizoate meglumine 76% 20 ml
Indications & Dosage: Urography, venography, operative cholangiography, splenoportography, arthrography, diskography; computer-assisted axial tomography: Diagnostic radiography, AD & CH: Route and dosage depend on procedure and preparation used.
CI: HSR to iodine-containing compounds
ADR: Nausea, vomiting, diarrhoea, metallic taste, flushing, sensations of heat, weakness, dizziness, headache, rhinitis, coughing, sweating, sneezing, lacrimation, visual disturbances, pruritus, salivary gland enlargement, pallor, cardiac disorders, haemodynamic disturbances & hypotension; disseminated intravascular coagulation; fibrinolysis & depression of blood coagulation factors; rarely, convulsions, paralysis, coma, rigors, arrhythmias, pulmonary oedema, circulatory failure & cardiac arrest; occasionally anaphylactoid or HSR; hyperthyroidism; pain on inj; extravasation may result in tissue damage, thrombophlebitis, thrombosis, venospasm & embolism.

Barium sulfate
Oral suspension (or Rectal suspension); Powder 5kg packets
Indications & Dosage: Radiographic examination of GIT: AD & CH: Route and dosage depend on procedure and preparation used.
CI: Intestinal obstruction, conditions such as pyloric stenosis or lesions which predispose to obstruction; intestinal perforation or conditions with risk of perforation, such as acute ulcerative colitis, diverticulitis, or after rectal or colonic biopsy, sigmoidoscopy or radiotherapy
**ADR:** Constipation or diarrhoea, abdominal cramps & bleeding; perforation of bowel resulting in peritonitis, adhesions, granulomas & high mortality rate; electrocardiographical changes—may occur with rectal administration; pneumonitis or granuloma formation—following accidental aspiration into lungs

**Iohexol**
Injection (Solution for injection)

**Indications & Dosage:** Urography, venography, angiography, ventriculography, operative cholangiography, splenoportography, arthrography, diskography; computer-assisted axial tomography: **Diagnostic radiography**, AD & CH: Route and dosage depend on procedure and preparation used.

**CI:** HSR to iodine-containing compounds

**ADR:** Nausea, vomiting, metallic taste, flushing, sensations of heat, weakness, dizziness, headache, coughing, rhinitis, sweating, sneezing, lacrimation, visual disturbances, pruritus, salivary gland enlargement, pallor, cardiac disorders, haemodynamic disturbances and hypotension; rarely, convulsions, paralysis, coma, rigors, arrhythmias, pulmonary oedema, circulatory failure and cardiac arrest; occasionally anaphylactoid or hypersensitivity reactions; pain on inj; hyperthyroidism; extravasation may result in tissue damage, thrombophlebitis, thrombosis, embolism & venospasm

**Iopanoic acid**
Tablets

**Indications & Dosage:** ORAL: **Examination of gallbladder & biliary tract:** AD: 3 g with plenty of water 10–14 hrs before examination; if examination needs to be repeated, a further 3 g on the same day; alternatively, repeat examination carried out after 5–7 days with single 6g dose (Max dose; 6g over 24 hrs; avoid doses over 3g in renal impairment)

**CI:** Severe renal disease and hepatic disease; jaundice caused by biliary-tract obstruction; impaired absorption due to acute gastrointestinal disorders

**ADR:** Nausea and vomiting, abdominal pain and diarrhoea; mild stinging on micturition, rashes and flushing; acute renal failure, thrombocytopenia and hypersensitivity reactions reported; also uricosuric and anticholinesterase effects

**Contrast media for oral use Diatrizoate meglumine: 66% diatrizoate & sodium 10% W/V Iodine 370 mg/ml - 30 ml**

**Indications and dosage:** Excretory urography, iortography, angiocardiography, peripheral angiography, IV digital arteriography, contrast enhancement of CT imaging

**CI:** HSR, Epidural injection and injection directly into carotid, vertebral or spinal arteries. Urography is contraindicated in patients with anuria

**ADR:** HSR including anaphylaxis, vasodilation, nausea, paresthesias, rhinitis, urticaria, pain at injection site, altered taste, osmotic nephrosis after excretory urography
### IV. ABBREVIATIONS

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<td>Adverse Drug Reaction</td>
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<td>Blood Pressure</td>
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