

## 4 CENTRAL NERVOUS SYSTEM

### 4.01 HYPNOTICS & ANXIOLYTICS

| GENERIC (TRADE) NAME                                                                                       | CAT.                                                        | INDICATION/DOSE                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Diazepam Tab 5mg (Valium)</b>                                                                           | <b>PS</b><br>MSL<br><br><br><br><br><br><br><br><br><br>EDL | Insomnia (anxiety-linked) 5-15mg at bedtime. Anxiety, 2mg 3 times daily, max 30mg/DAY, elderly half dose. Sedation/premed 5mg on night before minor surgery then 5mg 2 hours before procedure. Spastic conditions 2.5-15mg daily in divided doses, max 60mg/DAY. Child 2-40mg/DAY. |
| <b>Diazepam Inj 5mg/ml, 2ml (Valium)</b>                                                                   | <b>PS</b><br>MSL<br><br><br><br><br><br><br><br><br><br>EDL | Under close observation, severe acute anxiety, slow IV undiluted (max 5mg/min) 10mg repeated if needed after 4 hrs. Sedation, slow IV undiluted 10-20mg over 2-4 min just before procedure.                                                                                        |
| <b>Lorazepam Tab 1mg &amp; 2.5mg (Ativan/Temesta)</b>                                                      | <b>PS</b>                                                   | Anxiety, (short-term use) adult 1-4mg daily in divided doses (elderly half adult dose); insomnia (short term use) 1-2mg at night.                                                                                                                                                  |
| <b>*Midazolam Inj. 5mg/ml, 3ml (Dormicum/Hypnovel)</b>                                                     | <b>PS</b>                                                   | Sedation for procedure: IV bolus (undiluted or diluted in D5/NS/LR given over 2-5 min) 2.5-7.5mg, 15 min before procedure. MONITOR for rapid respiratory depression; emergency resuscitation equipment must be available before admin.                                             |
| <b>Zolpidem Tab 10mg (Stilnox)</b>                                                                         | <b>PS*</b><br>NF                                            | Insomnia (short-term use): 10mg at bedtime; ELDERLY (or debilitated) 5mg.                                                                                                                                                                                                          |
| <b>PS</b> – Drugs subject to international control under the Convention on Psychotropic Substances (1971). |                                                             |                                                                                                                                                                                                                                                                                    |

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**COMMENT/CAUTIONS:**

- **PS Psychotropic Substances.** Recording required in pharmacy/ward/OR.
- The CSM recommends that benzodiazepines be used for short-term relief (**2-4 weeks only**) of anxiety that is severe, disabling or subjecting the individual to unacceptable distress.
- All hypnotics/anxiolytics should be prescribed PRN as far as possible.
- **Long acting BDZs** e.g. diazepam should not be used for insomnia, especially in the elderly where they may give rise to memory and co-ordination problems.
- **Withdrawal:** To withdraw from chronic BDZ therapy, transfer patient to an equivalent dose of diazepam if possible, and reduce in steps of one-eighth of the daily dose every 2 weeks.
- **S/E:** drowsiness, light-headedness, confusion, ataxia, dependence, vertigo, GI disturbances, respiratory depression (note for **midazolam**).

**Approximate equivalent dosages:**

Diazepam 5mg = Lorazepam 2.5mg = Midazolam 7.5mg.

**4.02 ANTIPSYCHOTIC PREPARATIONS**

| <b>GENERIC (TRADE) NAME</b>                         | <b>CAT.</b> | <b>INDICATION/DOSE</b>                                                                                                                                              |
|-----------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Haloperidol Inj 5mg/ml<br/>(Serenace/Haldol)</b> | EDL         | Acute psychotic condition, IM undiluted 2-10mg (up to 18mg for emergency control) then 5mg up to every hour if needed (usual intervals of 4-8 hours), max 18mg/DAY. |

**COMMENT/CAUTIONS:**

- Cautious use in patients with cardiovascular, renal/hepatic disease, elderly.
- **S/E:** extra-pyramidal e.g. dystonia, akathisia, Parkinsonism & tardive dyskinesia. However anticholinergics should NOT be given routinely to avoid extra-pyramidal effects.
- **Antipsychotics** may potentiate the effects of alcohol, anxiolytics, hypotensive agents and anticholinergic drugs. They may antagonise the effects of anti-epileptic drugs.

### 4.03 ANTIDEPRESSANTS

[NOTE: Antidepressants may take at least TWO weeks to give effect, counsel patients accordingly to encourage compliance and avoid unreasonable expectations and disappointment.]

#### 4.03a TRICYCLIC ANTIDEPRESSANTS [TCA]

| GENERIC (TRADE) NAME                        | CAT. | INDICATION/DOSE                                                                                                                 |
|---------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>Amitriptyline HCl Tab 25mg (Laroxyl)</b> | EDL  | Initially 25mg 1-3 times daily or at bedtime (elderly/adolescents half dose); up to max 150mg/DAY. Not recommended for < 16 yo. |

#### COMMENT/CAUTIONS:

- **C/I:** recent MI, heart block, mania, narrow angle glaucoma. Cautious use in patients with heart disease (may induce postural hypotension, arrhythmias, CF), and in patients with overdose risk. May precipitate epilepsy.
- **S/E:** dry mouth, difficult visual accommodation, constipation, urinary retention. May cause drowsiness: caution patients to avoid driving/operate machinery.
- Do not use **TCAs** combined with **MAOIs** unless under specialist supervision.

#### 4.03b SELECTIVE SEROTONIN REUPTAKE INHIBITORS [SSRI]

| GENERIC (TRADE) NAME                       | CAT. | INDICATION/DOSE                                         |
|--------------------------------------------|------|---------------------------------------------------------|
| <b>Fluoxetine Cap 20mg (Prozac) [SSRI]</b> |      | Depression, 20mg in the morning, child not recommended. |

#### COMMENT/CAUTIONS:

- A drug-free gap of ONE WEEK should be left after stopping **TCA** (TWO WEEKS for paroxetine or sertraline, FIVE WEEKS for fluoxetine) before starting **MAOI**. A gap of TWO WEEKS is needed after stopping MAOI before starting another antidepressant.
- **SSRIs** - 1<sup>st</sup> choice in patients with overdose risk, heart disease, elderly, intolerant to TCAs.
- **SSRI S/E:** diarrhoea, nausea/vomiting, headache, restlessness and anxiety. They tend to cause less sedation, cardiotoxicity and antimuscarinic effects. Caution use in epilepsy.

## 4.04 ANTIEPILEPTICS

| GENERIC (TRADE) NAME                                                                                       | CAT.                                                                          | INDICATION/DOSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Diazepam Inj 10mg/2ml (Valium)</b><br><br><b>Caution:</b><br><b>Respiratory depression.</b>             | <b>PS</b><br><b>MSL</b><br><br><br><br><br><br><br><br><br><br><br><b>EDL</b> | Status epilepticus: slow IV undiluted (max rate 5mg/min), 10-20mg repeated if needed after 30-60 min. Child: Slow IV 200ug/kg repeated if needed after 30-60 min. Rectal administration (Micromedex): Prepare IV diazepam 20mg in a lubricated 10ml syringe with needle removed. Insert half of the syringe rectally and discharge contents, leave syringe in place and hold buttocks together for 10min. Additional 10mg doses may be repeated within 10min and then every hour according to response. |
| <b>Phenobarbital Inj 100mg/ml, 2ml [Phenobarbitone] (Gardenal)</b>                                         | <b>PS</b><br><br><br><br><br><br><br><br><br><br><b>EDL</b>                   | Seizures, febrile convulsions, IV diluted in 20mls WFI, adult 10mg/kg at a rate not > 100mg/min, max total dose 1g); child 5-10mg/kg, at a rate not > 30mg/min.                                                                                                                                                                                                                                                                                                                                         |
| <b>Phenobarbital Tab 30mg [Phenobarbitone] (Gardenal)</b>                                                  | <b>PS</b><br><br><br><br><br><br><br><br><br><b>EDL</b>                       | Seizures, febrile convulsions, 60-180mg at night, child 5-8mg/kg daily.                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Phenytoin Sodium Cap 100mg (Dilantin)</b>                                                               | <br><br><br><br><br><br><br><br><br><br><b>EDL</b>                            | Daily as single dose at night or 2-3 divided doses with water, 200-300mg max 500mg daily. Child 5-8mg/kg daily in 2 divided doses, with food, max 300mg/DAY.                                                                                                                                                                                                                                                                                                                                            |
| <b>*Phenytoin Sodium Inj 250mg/5ml (Dilantin Ready Mixed Inj)</b>                                          | <br><br><br><br><br><br><br><br><br><br><b>EDL</b>                            | Status epilepticus, slow IV undiluted 13-15mg/kg, max rate 50mg/min loading dose; maintenance 100mg q8h. Child: 15mg/kg loading dose at max rate 1mg/kg/min.                                                                                                                                                                                                                                                                                                                                            |
| <b>PS</b> – Drugs subject to international control under the Convention on Psychotropic Substances (1971). |                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

**COMMENT/CAUTIONS:**

- **PS Psychotropic Substances.** Recording required in pharmacy/ward/OR.

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**COMMENT/CAUTIONS (CONT.):**

- **Phenytoin:** IV administration NOT > 50mg/min, cardiotoxic (fatalities reported when given too rapidly). C/I: sinus bradycardia, SA block, 2nd & 3rd degree AV block, and in patients with Stokes-Adams syndrome. S/E: acne, hirsutism, gingival hyperplasia, nystagmus, ataxia, hepatic disorders, osteomalacia and megaloblastic anaemia. Requires ECG monitoring.

**4.05 ANTIEMETICS**

| <b>GENERIC (TRADE) NAME</b>                                                                                        | <b>CAT.</b> | <b>INDICATION/DOSE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Cinnarizine Tab 25mg (Stugeron)</b>                                                                             |             | Adult, 25mg, child 5-12 yo 12.5mg, up to 3 times daily.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Metoclopramide HCl Tab 10mg, Inj 10mg/2ml, Suspension 5mg/5ml, Suppository 5mg &amp; 10mg (Maxolon/Anausin)</b> | EDL         | <p>Antiemetic, by oral/IM/IV routes:<br/>           Adult 10mg 3 times daily;<br/>           15-19 yrs and &lt; 60kg 5mg tds;<br/>           Child &lt; 1 yo (up to 10kg) 1mg bd,<br/>           1-3 yo (10-14kg) 1mg bd-tds,<br/>           3-5 yo (15-19kg) 2mg bd-tds,<br/>           5-9 yo (20-29kg) 2.5mg tds,<br/>           9-14 yo (30kg and over) 5mg tds;<br/>           MAX 0.5mg/kg/DAY.</p> <p>For diagnostic procedures, as single dose 5-10 min before examination, adult 10-20mg (10mg in young adults 15-19 yo); child &lt; 3yo &amp;mg, 3-5yo 2mg, 5-9yo 2.5mg, 9-14yo 5mg.</p> <p>Inject IM undiluted into a large muscle mass, inject IV undiluted slowly over 2 min. For IV infusion, further dilute 10mg with 50mls of D5/NS/LR and infuse over 15-30 min (max 5mg/min, conc 0.2-5mg/ml).</p> |
| <b>Prochlorperazine Maleate Tab 5mg (Stemetil)</b>                                                                 | MSL         | Acute attack 20mg initially, then 10mg after 2 hrs; nausea/vomiting prevention 5-10mg 2-3 times daily; child (> 10kg) 250ug/kg/DOSE 2-3 times daily.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

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| GENERIC (TRADE) NAME                                       | CAT. | INDICATION/DOSE                                                                                 |
|------------------------------------------------------------|------|-------------------------------------------------------------------------------------------------|
| <b>Prochlorperazine Maleate Suppository 5mg (Stemetil)</b> |      | Nausea: 25mg rectally followed if needed after 6 hours by oral dose as above (dose for tablet). |
| <b>Prochlorperazine Mesylate Inj 12.5mg/ml (Stemetil)</b>  |      | Deep IM undiluted 12.5mg when required followed if necessary after 6 hours by an oral dose.     |
| <b>Promethazine HCl Tab 25mg (Phenergan)</b>               | EDL  | 25mg before journey as required.                                                                |

**COMMENT/CAUTIONS:**

- Antiemetic treatment is best administered prophylactically at least 30 min before the emetic stimulus. Parenteral/rectal preps may be useful if vomiting has started. Give at the very beginning of a migraine attack to relieve nausea.
- Routine pre-op use of antiemetics is not justified except in patients with history of post-op nausea/vomiting, or where emesis would endanger the result of surgery or harm the patient.
- Invertigo is often a self-limiting condition, and more commonly caused by drug therapy rather than treated by medications.
- **Metoclopramide** is preferred when sedation is not required, but restricted in use in < 20 yo to severe intractable vomiting of known cause, radio/chemotherapy, GI intubation aid, and as premedication, dose based on body weight.
- **Phenothiazines** and **metoclopramide** may induce extrapyramidal side effects such as acute dystonic reactions with facial and skeletal muscle spasms and oculogyric crises. These are more common in the young (esp. females) and the very old, usually occurring shortly after starting treatment and subsiding within 24 hours of stopping the drug.

NOTE. For Antihistamines, see Chapter 03 Respiratory System Section 03.03 Antihistamines & Antiallergics.

**4.06 ANTIMIGRAINE DRUGS**

| <b>GENERIC (TRADE) NAME</b>                                | <b>CAT.</b> | <b>INDICATION/DOSE</b>                                                                      |
|------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------|
| <b>Prochlorperazine Maleate Suppository 5mg (Stemetil)</b> |             | Nausea due to migraine: 5mg 3 times daily.                                                  |
| <b>Propranolol HCl Tab 40mg (Inderal/Avlocardyl)</b>       | EDL         | 40mg 2-3 times daily for migraine prophylaxis, maintenance 80-160mg daily in divided doses. |

**COMMENT/CAUTIONS:**

- Consider aspirin or paracetamol for acute attack pain relief.
- Consider metoclopramide for nausea & vomiting.