15. Anaesthesia

15.1 - General Anaesthesia

NOTE: Drugs for general anaesthesia should only be administered by or under the direct supervision of personnel experienced in their use and only in locations where resuscitation equipment is available. Personnel should have adequate training in anaesthesia and airway management.

15.1.1 Intravenous anaesthetics

- Etomidate
- Ketamine
- Propofol
- Thiopental

15.1.2 Inhalational anaesthetics

- Desflurane
- Entonox® / Equanox®
- Isoflurane
- Nitrous oxide
- Sevoflurane

Prescribing points

- Use of absorption breathing systems can permit use of low fresh gas flow techniques which can result in significant economies with these agents.

15.1.3 Antimuscarinic drugs

- Atropine
- Glycopyrronium
- Glycopyrronium + neostigmine
- Hyoscine hydrobromide

15.1.4 Sedative and analgesic peri-operative drugs

15.1.4.1 Benzodiazepines

- Diazepam
- Lorazepam
- Midazolam
- Temazepam tablets

Prescribing points

- To ensure the appropriate prescribing of high dose midazolam injections see NPSA Rapid Response Report - Reducing risk of overdose with midazolam injection in adults (Dec. 2008)

15.1.4.2 Non Opioid analgesics

- Diclofenac (oral, PR, IM)
- Ketorolac injection
- Paracetamol (PR and IV)

KEY:

H - Hospital Use Only
S - Specialist Initiation or Recommendation
R - Restricted Use Only

Fife Formulary

October 2014
Last amended May 2018
Prescribing points

- Diclofenac is contraindicated in patients with established ischaemic heart disease, peripheral arterial disease, cerebrovascular disease and congestive heart failure (NYHA class II–IV).
- Diclofenac or ketorolac should only be initiated after careful consideration in patients with significant risk factors for cardiovascular events (e.g. hypertension, hyperlipidaemia, diabetes mellitus, and smoking).
- For further information on prescribing of NSAIDs refer to section 10.1.1.
- For further information on prescribing of analgesics refer to section 4.7 Analgesia.

15.1.4.3 Opioid analgesics

- **H-** Alfentanil
- **H-** Fentanyl injection
- **H-** Morphine
- **R-** Pethidine
- **H-** Remifentanil
- **H-** Tramadol injection

Prescribing points

- **R-** Pethidine is approved for restricted use only in patients undergoing endoscopy.
- Tramadol should be used with caution in patients with a history of epilepsy or those susceptible to seizures. Tramadol can also increase the potential for seizure threshold lowering drugs (e.g. antidepressants, antipsychotics, quinolones) to cause convulsions.

15.1.4.4 Other drugs for sedation

- **R-** Dexmedetomidine (Dexdor®)
- **R-** Clonidine (Off label use)

Prescribing points

- Dexmedetomidine is approved for restricted use in hospital for sedation in adult intensive care unit (ICU) patients requiring a sedation level not deeper than arousal in response to verbal stimulation (corresponding to Richmond Agitation-Sedation Scale [RASS] 0 to -3). Restricted to use in patients who do not achieve adequate sedation with propofol.
- Clonidine is approved for restricted use in hospital for anxious children requiring sedative premedication where midazolam is ineffective or unsuitable for use.

15.1.5 Neuromuscular blocking drugs

Non-depolarising

- **H-** Atracurium
- **H-** Mivacurium
- **H-** Rocuronium

Depolarising

- **H-** Suxamethonium

15.1.6 Drugs for reversal of neuromuscular blockade

**KEY:**

- **H-** Hospital Use Only
- **S-** Specialist Initiation or Recommendation
- **R-** Restricted Use Only

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October 2014
Last amended May 2018
### 15.1.7 Antagonists for central and respiratory depression

<table>
<thead>
<tr>
<th>Prescribing points</th>
</tr>
</thead>
<tbody>
<tr>
<td>R - Flumazenil</td>
</tr>
<tr>
<td>H - Naloxone</td>
</tr>
<tr>
<td>S - Naloxone (Prenoxad®)</td>
</tr>
</tbody>
</table>

### 15.1.8 Drugs for malignant hyperthermia

<table>
<thead>
<tr>
<th>Prescribing points</th>
</tr>
</thead>
<tbody>
<tr>
<td>H - Dantrolene (Dantrium®)</td>
</tr>
</tbody>
</table>

### 15.2 - Local Anaesthesia

<table>
<thead>
<tr>
<th>Prescribing points</th>
</tr>
</thead>
<tbody>
<tr>
<td>H - Bupivacaine (heavy injection only)</td>
</tr>
<tr>
<td>H - Bupivacaine and adrenaline</td>
</tr>
<tr>
<td>H - Levobupivacaine</td>
</tr>
<tr>
<td>Lidocaine</td>
</tr>
<tr>
<td>H - Lidocaine + phenylephrine</td>
</tr>
<tr>
<td>H - Prilocaine</td>
</tr>
<tr>
<td>R - Prilocaine 2% hypobaric solution (Prilotekal®)</td>
</tr>
<tr>
<td>Lidocaine 2.5% + prilocaine</td>
</tr>
</tbody>
</table>

**KEY:**

- **H** - Hospital Use Only
- **S** - Specialist Initiation or Recommendation
- **R** - Restricted Use Only

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October 2014

Last amended May 2018
Prescribing points

- Lidocaine is a rapidly-acting local anaesthetic. The site of injection determines the concentration to be used e.g. 0.5% for infiltration, 1% for minor nerve block, up to 2% for major nerve block. To prolong the effect of lidocaine and to reduce the likelihood of systemic toxicity large doses of adrenaline should not be used without the co-administration of adrenaline as a vasoconstrictor. Because of the risk of ischaemic necrosis, adrenaline should not be added to injections used in appendages.

- Lidocaine with phenylephrine topical solution is used by ENT specialists to provide vasoconstriction and anaesthesia for the nasal mucosa.

- R - Prilocaine 2% hypobaric solution (Prilotekal®) is approved for restricted use for spinal anaesthesia in ambulatory surgery settings such as day surgery units.

Topical Anaesthetics

- Emla® cream contains lidocaine 2.5% and prilocaine 2.5%. It is used to provide local anaesthesia of the skin prior to venepuncture and minor dermatological procedures. To be effective, the cream must be applied in a thick layer under an occlusive dressing, at least one hour before the procedure.

- R - Lidocaine 5% plaster (Versatis®) is approved for restricted use when initiated/recommended by a pain specialist in post herpetic neuralgia or for other localised neuropathic pain. Versatis® is more expensive than other products used in post herpetic neuralgia. Restricted to patients who are intolerant of first line therapies or where these therapies have been ineffective. Versatis® should be discontinued if there is no evidence of response after 4 weeks of treatment.

- Ametop® (tetracaine 4%) gel provides local anaesthesia within 30 minutes and causes localised venodilation making cannulation easier. Its use is restricted to children undergoing day surgery and for dental procedures requiring cannulation.

Dental Use Only

- Articaine 4% with adrenaline (Septanest®) is available for restricted use by the dental service. To be used for adults and children over 4 year, in addition to lidocaine especially in cases of acute pulpitis when insufficient analgesia has been obtained with lidocaine alone.

- Lidocaine 2% + adrenaline 1:80000 is used for infiltration and nerve block.

- Lidocaine 5% gel is use intraorally as a topical anaesthetic.

- Mepivacaine may be used in specific dental circumstances as an alternative to lidocaine.