Background
Intraoperative intravenous lidocaine potentially provides preventive analgesia, improves pain control, accelerates return of bowel function (in abdominal surgery) and reduces opioid requirements/side effects in adults.

There are occasional situations where the Acute Pain Service will use intravenous lidocaine as a rescue technique with severe acute pain where other analgesics have not provided sufficient relief and postoperatively, when regional block (rectus sheath catheter or neuraxial block) is contraindicated or failed.

Pharmacology
Lidocaine is an amino-amide local anaesthetic which acts by blocking sodium channels. At low systemic doses lignocaine blocks nociceptive (pain) neurons without interfering with normal sensory, motor or cardiac function.

Indications
- Analgesia for acute and chronic pain
- Analgesia in the opioid tolerant patient
- Adjuvant analgesia during and following surgery
- Cancer pain
- Where regional block is contraindicated or failed.

Absolute Contra-Indications
- Patient refusal
- Known lidocaine allergy
- Concurrent administration of other local anaesthesia by another route – Intravenous Lidocaine can be initiated 6 hours after the last epidural or regional catheter bolus, TAP block

Caution
- Some cardiac arrhythmias e.g. Atrial fibrillation, first and second degree heart blocks,
- Cardiovascular instability / Heart Failure / Ischaemic Heart Disease
- Renal or liver impairment
- Seizure disorder
- Pregnancy
- Drug Interactions (especially Sodium Channel Blockers)
**Pre Infusion Procedure**

- Remove rectus sheath or epidural catheters before initiating infusion
- Patient to remain in ASCU for duration of infusion
- 12 lead ECG to be attended (if no record in the last 3 months)
- A set of baseline observations to be recorded; pulse, blood pressure, oxygen saturation and pain scores
- Resuscitation equipment readily accessible with immediate access to Intralipid, defibrillator, diazepam & midazolam
- Height & current weight

**INTRAVENTOUS LIDOCAINE (LIGNOCAIN) INFUSION**

- Use the Lidocaine 4mg/ml (Lignocaine 0.4%) in Dextrose 5% 500ml bag.
- This infusion is administered through a CADD IV infusion pump.
- Anaesthetist must remain in attendance with the patient for at least 15 minutes after initiation of the infusion & provide continuous visual patient monitoring.
- Weight – If patients' BMI is more than 30, use ideal body weight: (Ideal body weight for women in kilograms = height in cm - 110)

**Loading Bolus Dose**

***Anaesthetist only***

1-2mg/kg (to a maximum of 100mg) – given slow push over 2-4 minutes followed by infusion.

**Infusion**

Lidocaine 4mg/ml (Lignocaine 0.4%) in Dextrose 5% 500ml Bag
0.5mg/kg/hr to a maximum of 2mg/kg/hr (ideal body weight)
Commence at 1mg/kg/hr

**Dosing Calculation Table**

<table>
<thead>
<tr>
<th>Height (cm)</th>
<th>Height (feet / in)</th>
<th>Ideal Body Weight (kg)</th>
<th>Loading Dose (1-2mg/kg)</th>
<th>Initial Infusion Rate (1mg/kg/hr) (4mg/ml)</th>
<th>Maximum Infusion Rate (2mg/kg/hr)</th>
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<tr>
<td>190</td>
<td>6ft 3in</td>
<td>80</td>
<td>80-100mg</td>
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<td>150</td>
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<td>30</td>
<td>30-60mg</td>
<td>8ml/hr</td>
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**Observations include:**

- Continuous 3 lead ECG monitoring, pulse oximetry and oxygen saturation.
- BP 5 minutely for first 30 minutes, then hourly
- Sedation score 5 minutely for first 30 minutes, then hourly
- Observe for signs of toxicity.
- Patient to remain in ASCU for duration of the infusion.
- For transfers to and from ASCU use transport monitor
- Typical duration is 12-72 hours.
Adverse Effects

The progression of clinical presentation in lidocaine toxicity often follows a well-described course and closely mirrors the increasing plasma concentration. Symptoms follow an almost predictable progression.

Early signs of toxicity

Numbness and tingling around the tongue and lips, metallic taste, tinnitus, diplopia and confusion. Hypertension can be an early warning sign of toxicity, followed by hypotension.

Severe signs of toxicity

- Sudden alteration in mental status, agitation or loss of consciousness with or without seizures
- Cardiovascular collapse: sinus bradycardia, conduction block, asystole and tachyarrhythmias

Treatment of Suspected Local Anaesthetic Toxicity

- Stop the local anaesthetic administration and inform the Duty Anaesthetist (41225).
- Monitor the cardiac rate and rhythm.
- Monitor oxygenation and blood pressure.
- Continue to observe closely.

If severe local anaesthetic toxicity is suspected or anticipated

- Stop the local anaesthetic administration.
- Call a Code Blue Medical “55”.
- Maintain the airway and give high flow oxygen.
- Treat hypotension with IV fluids or vasopressors.
- Treat convulsions with midazolam.
- Commence CPR if in cardiac arrest.
- In the event of severe local anaesthetic toxicity causing cardiac arrest, intravenous lipid emulsion should be administered as part of the resuscitation. A supply of intravenous lipid emulsion and guidance for its administration in the event of severe local anaesthetic toxicity are kept in the Resus trolley in the Operating Theatre Suite, the PACU emergency trolley and the Operating Theatre Suite drugs store room.
- See appendix for Management of Severe Local Anaesthetic Toxicity (AAGBI guideline).

References and resources

Related policies
## Related WNHS policies, procedures and guidelines

**Basic Life Support- Adult**

**Advanced Life Support- Adult**

<table>
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<tr>
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