GLYCOPRROLATE

Alternatives

- Preoperative inhibition of salivation and excessive respiratory tract excretions
  1. Assess need for premedication on an individual patient basis. Routine use not recommended.
  2. **Atropine sulfate parenteral:**
     Adult: 0.4 mg (range: 0.2–1 mg) SC, IM, IV 30–60 min prior to anesthesia
     Pediatric: 0.1 mg for children weighing 3 kg, 0.2 mg for 7 to 9 kg, 0.3 mg for 12 to 16 kg and 0.4 mg for those weighing more than 20 kg
  3. **Scopolamine hydrobromide parenteral:**
     0.3 mg to 0.6 mg SC, IM, IV 45 to 60 minutes prior to anesthesia
  4. **Scopolamine 1.5 mg transdermal patch**
     Apply 12 hours before surgery
  5. **Atropine (Other routes)**
     Oral solution (ophthalmic drops, compound)
     Pediatric dose: 0.02 mg/kg to 0.03 mg/kg. **Note:** Significantly less effective than IV atropine.
     Rectal solution (compound)
     Pediatric dose: 0.05 mg/kg (Max 1.5 mg)

- Intraoperative and postoperative use to counteract excessive vagal stimulation to the heart and the adverse muscarinic effects (bradycardia and excessive secretions) of neostigmine or pyridostigmine.
  1. **Atropine sulfate IV:**
     Adult: 0.4 mg (range: 0.2–1 mg) OR 0.6–1.2 mg for each 0.5–2.5 mg of neostigmine methylsulfate or 10–20 mg of pyridostigmine bromide
     Pediatric: 0.02 mg/kg
  2. **Scopolamine hydrobromide IV:**
     Adult: 0.3 to 0.6 mg
     **Note:** may not be effective in blocking muscarinic effects of neostigmine or pyridostigmine)

- Management of gastrointestinal disorders
  1. **Hyoscine butylbromide** (Buscopan) 20 mg/ml
     Adult: 10 mg to 20 mg IM, SC or IV at an injection rate of 1 mL/min.
  2. **Atropine sulfate** - 0.4 to 0.6 mg SC, IM, or IV every 4 to 6 hours
  3. **Scopolamine hydrobromide**
     Adult: 0.3–0.65 mg IM, IV, SC; may be repeated 3 or 4 times if necessary
     Pediatric: 0.006 mg/kg (6 mcg/kg) or 0.2 mg/m² IM, IV, SC
**Rationale:**

*Routine use of premedication with an antimuscarinic agent is not recommended.*

- General anesthetics such as halothane, pentothal and similar agents don’t stimulate salivation and excess tracheobronchial secretions (with the exception of ketamine).  
- Premedication does not reduce the frequency or severity of acid-aspiration pneumonitis.  
- Anticholinergic premedication is not necessary and may even be harmful during flexible bronchoscopy.

1. AHFS electronic database – glycopyrrolate  
2. Micromedex electronic database - atropine  

**Atropine, scopolamine and glycopyrrolate have all been used effectively as preoperative medications.**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Reduces secretions</th>
<th>Increases heart rate</th>
<th>Blocks AE’s of α’cholinesterases</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycopyrrolate</td>
<td>++</td>
<td>+</td>
<td>+++</td>
<td>No CNS effects</td>
</tr>
<tr>
<td>Atropine</td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>Shorter duration of effect</td>
</tr>
<tr>
<td>Scopolamine</td>
<td>+++</td>
<td>+</td>
<td>?</td>
<td>Strong sedative effects</td>
</tr>
</tbody>
</table>

1. AHFS electronic database – atropine, glycopyrrolate, scopolamine  
2. Micromedex electronic database – atropine, glycopyrrolate, scopolamine  
**Transdermal scopolamine for preoperative medication**

One study observed that transdermal scopolamine applied 12 hours before surgery was more effective than placebo and IM scopolamine as an antisynergugue, sedative and post-operative antiemetic.¹

1. AHFS electronic database – scopolamine monograph.

**Oral atropine vs. parenteral anticholinergics**

Studies are all from pediatric populations; effect of oral atropine for premedication has not been investigated in adults. Oral atropine was less effective than parenteral atropine and glycopyrrolate in reducing pharyngeal secretions, increasing heart rate and preventing cardiac arrhythmias.¹²


**Rectal atropine**

In one study atropine 0.05mg/kg and midazolam diluted to 6 ml with normal saline provided equivalent inhibition of salivary secretion and sedation as IM atropine and midazolam.¹