### Background

- Atropine is an anticholinergic medication used in hospice and palliative care primarily to manage secretions, including terminal respiratory secretions.
- All presentations, both branded and generic, of atropine ophthalmic solution and solution for injection are currently in shortage. Manufacturers of atropine report increased demand and discontinuation of some products as the cause of the shortage. Ongoing consolidations in the generic marketplace have been a root cause of shortages and price increases of generic medications commonly used in hospice and palliative care in recent years.
- **Supply information:** All manufacturers have all presentations either on backorder or in very limited supply.

### Atropine Products Affected by Shortage & Currently Unavailable

<table>
<thead>
<tr>
<th>Ophthalmic products in shortage</th>
<th>Injectable products in shortage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atropine Care 1% Ophthalmic Solution Akorn 2 mL bottle (NDC 17478-0214-20) -discontinued 5 mL bottle (NDC 17478-0214-10) -discontinued 15 mL bottle (NDC 17478-0214-12) -discontinued 2 mL bottle (NDC 17478-0215-02) -shortage 5 mL bottle (NDC 17478-0215-05) -shortage 15 mL bottle (NDC 17478-0215-15) -shortage</td>
<td>Atropine Sulfate 1% Ophthalmic Solution Valeant – discontinued all production 5 mL bottle (NDC 24208-0750-60) 15 mL bottle (NDC 24208-0750-06) Atropine Sulfate 1% Ophthalmic Solution Sandoz – all products in shortage 5 mL bottle (NDC 61314-0303-01) 15 mL bottle (NDC 61314-0303-02) Isopto Atropine Alcon – all products in shortage 5 mL bottle (NDC 00998-0303-05) 15 mL bottle (NDC 00998-0303-15)</td>
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### Recommendations

Hospice practitioners may wish to discuss terminal secretions as a normal and expected sign of the dying process. If possible, increased presence and communication with families to help process emotional impact of the impending death of a loved one may be just as effective as medications as a means to reduce family distress.

**Terminal Secretions:**

- Drugs that decrease secretions are best initiated at the first sign of death rattle as they do not affect existing respiratory secretions. These agents have limited or no impact when the secretions are secondary to pneumonia or pulmonary edema. No medication will dry existing secretions, but may reduce accumulation of new secretions.
- Anticholinergic drugs remain the standard of therapy for prevention and treatment of terminal secretions due to their ability to effectively reduce secretions. All drugs used for this indication are similar pharmacologically; select by anticholinergic potency, onset of action, route of administration, alertness of patient, and cost.
- Refer to the Commonly Used Anticholinergic Medications table for review and to assist in selection of alternative.
- Anticholinergic side effects are common and similar in this class and include blurred vision, constipation, urinary retention, confusion, delirium, restlessness, hallucinations, dry mouth and heart palpitations.
- **Please contact your HospiScript clinical pharmacist for assistance in managing patient symptoms and for recommendations of therapeutic alternatives should you encounter supply shortages of necessary medications.**

### Non-Pharmacological Treatment of Terminal Secretions

- Inform and educate the family about what to expect during the dying process.
- Always continue good mouth care – gentle swabbing with moistened oral swabs (Toothettes®) as needed.
- Position the patient on his/her side or in a semi-prone position to facilitate draining of secretions.
- Oropharyngeal suctioning is not usually recommended as it may be disturbing to both the patient and visitors.
- Treatment of terminal secretions is not required for the comfort of the patient and is only directed at alleviating potential distress and fear of the family and caregivers.
**Commonly Used Anticholinergic Medications**²⁻⁴

<table>
<thead>
<tr>
<th>Medication (Brand)</th>
<th>Usual Dosing/Range</th>
<th>Preparations</th>
<th>Average AWP</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Hyoscyamine (Levsin/SL®, Hyomax-SL®) | 0.125mg SL every 4 hours as needed | 0.125mg SL tabs 0.125mg PO tabs 0.125mg/ml oral drops 0.125mg/5ml elixir | $0.85/SL tab $39.99/15mL ($2.66/dose) $105/473mL ($1.10/dose) | • Use of SL tabs is currently the most cost effective treatment option for terminal secretions  
• If patient’s mouth is dry and hypopharyngeal secretions persist, may give SL tab with few drops of water to help dissolve tabs |
| Atropine 1% Ophthalmic (Isopto® Atropine) | 2 drops SL every 4 hours as needed | 1% ophthalmic solution 0.4mg/mL solution for injection | $25.50/5mL ($0.51/dose) $0.82/0.4mg inj | • Tends to be easiest for caregivers to use  
• Must clearly instruct not to place drops in eye  
• 2 drops is approx. 1mg of atropine when using 1% ophthalmic solution at 20 drops/mL  
• **ALL INJECTABLE AND OPHTHALMIC PRESENTATIONS IN SHORTAGE** |
| Glycopyrrolate (Robinul®, Cuvposa®) | 0.1-0.2mg SQ/IV every 6 hours as needed | 1mg tabs 2mg tabs 0.2mg/mL solution for injection 1mg/5mL oral solution (OS) | $1.90/0.2mg inj $28.75/0.4mg inj $1.30/1mg tab $2.20/2mg tab $5.95/5mL OS | • Low bioavailability via oral or sublingual routes; not recommended for terminal secretions  
• Sublingual use of injectable not recommended  
• Oral solution (1mg/5mL) is brand only  
• **ALL INJECTABLE PRESENTATIONS IN SHORTAGE** |
| Scopolamine (Transderm-Scop®) | 1-2 patches every 72 hours | 1.5mg transdermal patch | $21.40/patch | • Delayed onset of action (4-6 hours) for transdermal patch can reduce effectiveness of treatment  
• Do NOT cut patches  
• **SOLE SUPPLIER OF INJECTABLE DISCONTINUED PRODUCTION February 2015** |

**References**