### ACTIONS AND USES

By occupying muscarinic receptors, atropine blocks the parasympathetic actions of Ach and induces symptoms of the fight-or-flight response. Most prominent are increased heart rate, bronchodilation, decreased motility in the GI tract, mydriasis, and decreased secretions from glands. At therapeutic doses, atropine has no effect on nicotinic receptors in ganglia or on skeletal muscle.

Although atropine has been used for centuries for a variety of purposes, its use has declined in recent decades because of the development of safer and more effective medications. Atropine may be used to treat hypermotility diseases of the GI tract such as irritable bowel syndrome, to suppress secretions during surgical procedures, to increase the heart rate in clients with bradycardia, and to dilate the pupil during eye examinations. Once widely used to cause bronchodilation in clients with asthma, atropine is now rarely prescribed for this disorder.

### INTERACTIONS

**Drug–Drug:** Drug interactions with atropine include an increased effect with antihistamines, tricyclic antidepressants, quinidine, and procainamide, and decreased effects with levodopa.

**Lab Tests:** Unknown.

**Herbal/Food:** Use with caution with herbal supplements, such as aloe, sonna, buckthorn, and cascara sagrada, which may increase atropine's effect, particularly with chronic use of these herbs.

**Treatment of Overdose:** Accidental poisoning has occurred in children who eat the colorful, purple berries of the deadly nightshade, mistaking them for cherries. Symptoms of poisoning are those of intense parasympathetic stimulation. Overdose may cause CNS stimulation or depression. A short-acting barbiturate or diazepam (Valium) may be administered to control convulsions. Physostigmine is an antidote for atropine poisoning that quickly reverses the coma caused by large doses of atropine.

### ADMINISTRATION ALERTS

- Never administer IM or IV.
- Oral and subcutaneous doses are not interchangeable.
- Monitor blood pressure, pulse, and respirations before administration and for at least 1 hour after subcutaneous administration.
- Pregnancy category C.

### PHARMACOKINETICS

- **Onset:** 30 min PO; 5–15 min subcutaneously
- **Peak:** 60–90 min PO; 15–30 min subcutaneously
- **Half-life:** 4 h PO; 120 min subcutaneously
- **Duration:** 6 h PO; 4 h subcutaneously

### NURSING PROCESS FOCUS  Clients Receiving Anticholinergic Therapy

#### Assessment

<table>
<thead>
<tr>
<th>Potential Nursing Diagnoses</th>
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</thead>
<tbody>
<tr>
<td>Knowledge, Deficient, related to drug therapy</td>
</tr>
<tr>
<td>Cardiac Output, Decreased</td>
</tr>
<tr>
<td>Body Temperature, Imbalanced, Risk for</td>
</tr>
<tr>
<td>Oral Mucous Membrane, Impaired</td>
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<tr>
<td>Constipation</td>
</tr>
<tr>
<td>Urinary Retention</td>
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<tr>
<td>Injury, Risk for, related to effect of drug</td>
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</tbody>
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#### Planning: Client Goals And Expected Outcomes

The client will:

- Exhibit a decrease in symptoms for which the medication is prescribed.
- Verbalize techniques to avoid hazardous side effects associated with anticholinergic therapy.
- Demonstrate an understanding of the drug's action by accurately describing drug side effects and precautions.

#### Implementation

<table>
<thead>
<tr>
<th>Interventions and (Rationales)</th>
<th>Client Education/Discharge Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor for signs of anticholinergic crisis resulting from overdosage. (Fever, tachycardia, difficulty swallowing, ataxia, reduced urine output, psychomotor agitation, confusion, and hallucinations are signs of an anticholinergic crisis.)</td>
<td>Instruct clients to report side effects related to therapy such as shortness of breath, cough, dysphagia, syncope, fever, anxiety, right upper quadrant pain, extreme lethargy, or dizziness.</td>
</tr>
</tbody>
</table>
Clinicians Receiving Anticholinergic Therapy

Provide comfort measures for dry mucous membranes such as applying lubricant to moisten lips and oral mucosa, assisting in rinsing mouth, and using artificial tears for dry eyes, as needed. (Dryness is due to anticholinergic effect.)

Monitor intake and output ratio. Palpate abdomen for bladder distention. (Anticholinergics block muscarinic receptors and may decreases tone and causes urinary retention.)

Monitor client for abdominal distention and auscultate for bowel sounds. (Anticholinergics block muscarinic receptors and may decreases tone and motility of intestinal smooth muscle.)

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Instruct client to monitor vital signs, ensuring proper use of home equipment.

Instruct client to:
- Report side effects.
- Avoid driving and hazardous activities until effects of the drugs are known.
- Wear sunglasses to decrease the sensitivity to bright light.

Instruct client to notify healthcare provider if difficulty in voiding occurs.

Advise client to increase fluid and add bulk to the diet if constipation becomes a problem.

Evaluation of Outcome Criteria

Evaluate the effectiveness of drug therapy by confirming that client goals and expected outcomes have been met (see “Planning”).

- The client exhibits a decrease in symptoms for which the medication is prescribed.
- The client states techniques to avoid hazardous side effects associated with anticholinergic therapy.
- The client demonstrates an understanding of the drug’s action by accurately describing drug side effects and precautions.

See Table 13.3 for a list of drugs to which these nursing actions apply.

NURSING CONSIDERATIONS

The role of the nurse in anticholinergic therapy involves careful monitoring of a client’s condition and providing education as it relates to the prescribed drug treatment. Perform a thorough medical history, including medications the client is currently taking that could cause drug–drug interactions. Antihistamines, in particular, can lead to excessive muscarinic blockade. Check for history of taking herbal supplements because some have atropine-like actions that potentiate the effects of the cholinergic blockers and can be harmful to the client. For example, aloes, senna, buckthorn, and cascara sagrada may increase atropine’s effect, particularly with chronic use of the herbs.

Do not use this class of drugs if the client has a history of acute-angle glaucoma. Anticholinergics block muscarinic receptors in the eye, creating paralysis of the iris sphincter, which can increase intraocular pressure.

Anticholinergics are contraindicated in clients with cardiopulmonary conditions such as COPD, asthma, heart disease, and hypertension, because blockade of cardiac muscarinic receptors prevents the parasympathetic nervous system from slowing the heart. The potential acceleration of heart rate may exacerbate these conditions. Clients with hyperthyroidism should not be given these medications, because in hyperthyroidism the heart rate is generally high, and administration of anticholinergics can cause dysrhythmias owing to norepinephrine release from sympathetic nerves that regulate heart rate.

Assess for baseline bowel and bladder function. Renal conditions are contraindications because of the effect of anticholinergics on bladder functioning. Gastrointestinal conditions such as ulcerative colitis and ileus are also contraindications, because blockade of muscarinic receptors in the intestine can decrease the tone and motility of intestinal smooth muscle, which can exacerbate intestinal conditions. Monitor clients with esophageal reflux and hiatal hernia, because anticholinergics reduce GI motility. Clients with gastroesophageal reflux disease (GERD) and hiatal hernia experience decreased muscle tone in the lower esophageal sphincter and delayed stomach emptying. Anticholinergics exacerbate these symptoms, increasing the risk of esophageal injury and aspiration. Clients with Down syndrome may be more sensitive to the effects of anticholinergics than other clients.