

PHYSOSTIGMINE SALICYLATE FOR ANTICHOLINERGIC TOXICITY

General information:

- Anticholinergic toxicity presents with delirium, mydriasis, tachycardia, dry skin/mucosa, urinary retention, and hyperthermia. These signs and symptoms are predominantly mediated through blockade of the muscarinic receptors.
- Physostigmine salicylate is the antidote of choice for central anticholinergic toxicity i.e. delirium. It decreases agitation, reverses delirium and shortens recovery time for anticholinergic delirium compared to benzodiazepines.
- Physostigmine requires Special Access Program authorization from Health Canada and may not be stocked on site at all health care facilities.
 - If physostigmine is unavailable and treatment is indicated, refer to "[Alternatives to Physostigmine](#)" patient care resource.
- Contact the poison centre for additional guidance.

Mechanism of action: Physostigmine inhibits acetylcholinesterase, increasing synaptic acetylcholine to overcome central and peripheral muscarinic receptor blockade.

Indications: Patients with agitation and delirium associated with anticholinergic toxicity that has not responded to non-pharmacologic treatments.

Dosing:

*Monitor patient on a cardiac monitor during administration, with atropine available at the bedside.

Patient Population	Dose	Notes
Adults	Physostigmine 0.5 mg IV over 1-2 minutes <ul style="list-style-type: none"> • Doses may be repeated every 15 minutes until desired clinical effect is achieved (max 2 mg in the first hour.) 	Half-life of physostigmine is 22 minutes, therefore repeat dosing may be required if anticholinergic toxicity symptoms recur after initial resolution.
Pediatrics	Physostigmine 0.01-0.02 mg/kg IV (max dose 0.5 mg per dose) over 1-2 minutes <ul style="list-style-type: none"> • Doses may be repeated every 15 minutes until desired clinical effect is achieved (max 2 mg in the first hour.) 	

Duration of treatment: Sustained resolution of CNS symptoms.

Adverse Effects:

- Excess muscarinic cholinergic symptoms (bradycardia, vomiting, diarrhea, bronchospasm, bronchorrhea, salivation, miosis).
- Excess nicotinic cholinergic effects: seizures (treat with standard benzodiazepine dosing), muscle weakness.

Contraindications

- Cardiac conduction abnormalities, particularly QRS widening (> 100 msec not related to bundle branch block) and PR > 200 msec
- Bradycardia or sick sinus syndrome
- Unexplained syncopal episodes
- Severe asthma/COPD due to risk of bronchospasm
- Seizure disorder due to risk of seizures
- Hypersensitivity to salicylate (available preparation is physostigmine salicylate)



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