THERAPEUTICS SNAPSHOT
PEER REVIEWED

Atropine

Khursheed Mama, DVM, DACVAA
Colorado State University

In dogs and cats, the use of atropine for routine clinical purposes is variable and likely influenced by patient and situational factors.

Clinical Applications

Onset of IV atropine typically is rapid and duration of action generally short, ranging from 20–30 minutes.

- For small animals, doses of 0.01–0.04 mg/kg are recommended.
- Under nonemergent conditions, IV dosing of 0.01–0.02 mg/kg is usually sufficient; in an emergency, higher doses of 0.04 mg/kg may be administered.
- Atropine may also be administered IM or SC at the higher end of the dose range. In emergent situations, such as CPR when IV administration is not possible, intratracheal administration may be effective. A dose of 0.08 mg/kg has been recommended.

Atropine competes with the actions of acetylcholine at muscarinic postganglionic cholinergic sites.

- Clinically, atropine is used for its parasympatholytic effects.
- Nicotinic effects (eg, muscle weakness, orthostatic hypotension) can occur at very high doses.

At an appropriate dose, atropine can increase the heart rate and counter atrioventricular (AV) blocks and opioid-induced bradycardia in dogs.

- Generally not recommended for treatment of bradycardia induced by α_2-agonists
- After administration of low doses, a direct peripheral cholinergic effect may cause a decrease in the patient's heart rate; administration of additional atropine counters this and raises the heart rate.
- Tachycardia is not uncommon, especially after IV administration, and occasional tachydysrhythmias are reported.

COPD = chronic obstructive pulmonary disease

Bronchodilator effect of atropine may be useful in patients with some airway diseases (eg, cats with asthma, horses with COPD).
- Increase in anatomic dead space is expected following administration.

Decreases oral (salivary) and bronchial secretions in dogs and cats and can counter oversecretion seen with drugs such as ketamine.
- In small patients, secretions may thicken and obstruct an endotracheal tube.
- Patients may exhibit signs of dry mouth following administration.

Reduces GI and biliary spasm but is not routinely recommended for this purpose because of concern for hypomotility or ileus following administration.
- Constipation may be seen in horses but is uncommon in dogs and cats in which the actions of atropine are short-lived.

Crosses the blood–brain barrier and, therefore, has CNS effects.
- Although this can benefit patients with organophosphate poisoning in which atropine provokes deleterious central effects of the toxin, risk for causing central anticholinergic syndrome characterized by dysphoria or mania exists following very high or repeated dosing.

At appropriate dosing, crosses the placental barrier and helps counter bradycardia in the fetus, as caused by concurrently administered opioids.
- Lower doses may, however, exacerbate bradycardia.

Cautions

Can cause mydriasis and cycloplegia following both systemic and topical administration.
- Atropine may be used to facilitate ocular evaluation but should be avoided in patients with narrow-angle glaucoma, as it can increase intraocular pressure by impeding drainage from the anterior chamber of the eye.
- Consultation with an ophthalmologist is recommended before atropine is administered to these patients.

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SUGGESTED READING

Cholinergic pharmacology: Autonomic drugs. Adams HR. In Adams HR (ed): *Veterinary Pharmacology and Therapeutics*, 8th ed—Ames: Iowa State University Press, 2001, pp 117-136.

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KHURSHEED MAMA, DVM, DACVAA, is professor of anesthesiology at Colorado State University. Her broad interest is improving anesthetic safety and providing appropriate treatment of perioperative pain in veterinary patients; her clinical teaching, research efforts, and CE seminars/laboratories are designed with these goals in mind. Dr. Mama completed an internship in large animal medicine and surgery at University of Guelph, Ontario, and a residency in anesthesiology and critical patient care at University of California, Davis. She earned her DVM from Washington State University.