Atropine

Newborn use only

2021

Alert	
Indication	Prevention of reflex bradycardia during elective endotracheal intubation. Preanaesthetic medication to prevent perioperative adverse events.
Action	Competitively inhibits acetylcholine at muscarinic acetylcholine receptors, decreases the effects of the parasympathetic nervous system and increases the effects of the sympathetic nervous system. Increases heart rate with a peak effect in 2–4 minutes after IV administration. Salivary secretion and intestinal and gastric motor activity are decreased for up to 6 hours. Bronchial smooth muscle relaxes, decreasing airways resistance.
Drug Type	Anticholinergic
Trade Name	Atropine sulphate
Presentation	Vial for injection – 600 microgram/1 mL ampoule.
Dosage	**Intubation** IV, IM: 10 microgram/kg/dose (range 10–20 microgram/kg/dose) **Preanaesthetic medication** PO: 20 microgram/kg/dose 1 hour prior to induction of anaesthesia (range 20–40 microgram/kg/dose).
Route	PO, IV, IM
Preparation	**IV, IM or PO:** Draw up 0.5 mL (300 microgram of atropine) and add 5.5 mL water for injection to make a final volume of 6 mL with a concentration of 50 microgram/mL.
Administration	IV slow bolus Administer orally with or without feeds Can be repeated after 5 minutes if required.
Monitoring	Continuous cardiorespiratory monitoring. Monitor temperature and abdominal distension.
Contraindications	Hypersensitivity to atropine. Arrhythmias, tachycardia, congenital glaucoma, intestinal obstruction, obstructive uropathy, asthma.
Precautions	Fever — in febrile patients or patients exposed to elevated ambient temperature, there is risk of provoking hyperpyrexia and heat prostration Gastro-oesophageal reflux
Drug Interactions	The hypertensive and cardiac arrhythmic adverse effects of phenylephrine absorbed from eye drops can be significantly increased by systemic atropine. There is increased risk of antimuscarinic side effects if atropine is used in combination with antihistamines (e.g. promethazine, cyclizine), codeine or phenothiazines (e.g. prochlorperazine). Atropine antagonises the gastrointestinal motility promoting effects of domperidone and metoclopramide. May increase serum concentrations of thiazide diuretics e.g. hydrochlorothiazide. Reduces the absorption of ketoconazole. Increases the absorption of nitrofurantoin. May increase the risk of opioid-induced constipation and urinary retention. Anticholinergic agents, including atropine, may increase the toxic side effects of topiramate.
Adverse Reactions	Tachycardia, arrhythmia, hyperthermia, flushing, irritability, abdominal distension, oesophageal reflux with decreased oesophageal sphincter tone, decreased gut motility, urinary retention, dry mouth.
Compatibility	Fluids: sodium chloride 0.9% Y-site: Adrenaline (epinephrine), amikacin, aminophylline, amiodarone, calcium chloride, calcium gluconate, cefazolin, cefotaxime, ceftazidime, cefuroxime, ceftriaxone, chlorothiazide, clindamycin, dexamethasone, digoxin, dopamine, dobutamine, erythromycin, famotidine, fentanyl, fluconazole, folic acid, furosemide (frusemide), gentamicin, glycopyrronium bromide (glycopyrrolate), heparin, hydrocortisone sodium succinate, imipenem, indometacin, insulin, lidocaine (lignocaine), magnesium sulfate heptahydrate, meropenem, methadone, metoclopramide hydrochloride, morphine sulfate pentahydrate, midazolam, nafcillin, naloxone, noradrenaline (norepinephrine), benzylpenicillin,

	phenobarbital (phenobarbitone), piperacillin, potassium chloride, , propranolol, pyridoxine, sodium bicarbonate, ranitidine, theophylline, tobramycin, vancomycin
Incompatibility	Y-site: Ampicillin, diazoxide, diazepam, flucloxacillin, hydralazine, pantoprazole, phenytoin, propofol, sulfamethoxazole-trimethoprim, thiopentone
Stability	Use once and discard residual.
Storage	IV − unopened vials stable at room temperature (20−25°C). Protect vial from light.
Special Comments	Atropine toxicity – treat anticholinergic symptoms with physostigmine (0.01–0.04 mg/kg/dose) by slow IV infusion.
Evidence	**Endotracheal intubation** Intravenous atropine prior to intubation is associated with a higher mean heart rate and less change in heart rate compared with no medication.[1] (LOE II GOR C) **Preanaesthetic medication** Oral atropine given 30–90 minutes prior to induction of anaesthesia attenuates cardiovascular depression and the incidence of airway complications at induction and emergence from anaesthesia.[2-4] (LOE II GOR B) **Pharmacokinetics** Reports describing the pharmacokinetics of atropine in neonates and children are limited. Unless specified, the following information pertains to pharmacokinetics in adults. Atropine is well distributed throughout the body. It crosses the blood-brain barrier and has a large apparent volume of distribution (2 to 4 L/kg). It is metabolised in the liver to several metabolites and excreted mainly in the urine. Atropine has a plasma half-life of 2–3 hours. Following intramuscular administration, elimination appears to be biphasic with an initial phase of about 2 hours and a half-life in the terminal phase of at least 12.5 hours. In children, the plasma half-life is approximately 6.5 hours.[5] With IV administration, increased heart rate effect peaks within 2–4 minutes. Serum concentrations drop rapidly within the first 10 minutes then decrease more gradually. Atropine is well absorbed following IM administration (peak plasma concentration within 30 minutes; maximum heart rate reached at 15–50 minutes). The duration of effect on heart rate is up to five hours. Inhibition of salivation occurs within 30 minutes (peak within 1–2 hours; effect persists for four hours). Low doses of the drug can cause a paradoxical decrease in heart rate. One hour after either intramuscular or intravenous injection, atropine concentrations are very similar.[5]
References	1. Kelly MA, Finer NN. Nasotracheal intubation in the neonate: physiologic responses and effects of atropine and pancuronium. Journal of Pediatrics 1984:105;303-9. 2. Shaw CA, Kelleher AA, Gill CP, Murdoch LJ, Stables RH, Black AE. Comparison of the incidence of complications at induction and emergence in infants receiving oral atropine vs no premedication. British Journal of Anaesthesia 2000:84;174-8. 3. Cartabuke RS, Davidson PJ, Warner LO. Is premedication with oral glycopyrrolate as effective as oral atropine in attenuating cardiovascular depression in infants receiving halothane for induction of anesthesia?. Anesthesia & Analgesia 1991:73;271-4. 4. Miller BR, Friesen RH. Oral atropine premedication in infants attenuates cardiovascular depression during halothane anesthesia. Anesthesia & Analgesia 1988:67;180. 5. MIMS Australia 2016, MIMS online, viewed 15 December 2016.

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