

Initial Date: 07/19/2023

Revised Date:

Section: 9-15R

Atropine

Pharmacological Category: Anticholinergic Agent; Antidote; Antispasmodic Agent, Gastrointestinal

Routes: IV/IO

Indications:

1. Severe symptomatic bradycardia
2. Exposure to organophosphates or other nerve agents when Nerve Agent (NA) Antidote Kit is not available.

Expected effects:

1. Increased heart rate
2. Dilated pupils

Note: For Nerve Agent/Organophosphate Pesticide Exposure, when NA Antidote kit is not available, pralidoxime should also be administered in conjunction with atropine when available.

Dosing: CRASHING ADULT/IMPENDING ARREST

Indication: Bradycardia

Adults administer:

1. Atropine 1 mg IV/IO

Dosing: ADULT BRADYCARDIA

Indication: Bradycardia

Adults administer:

1. Atropine 1 mg IV/IO rapid push repeating every 3-5 minutes to a total dose of 3 mg

Dosing: PEDIATRIC BRADYCARDIA

Indication: Bradycardia

Pediatrics administer:

1. According to MI MEDIC Cards
2. If MI MEDIC Cards are not available administer:
 - a. Atropine 0.02 mg/kg IV/IO (minimum dose 0.1 mg, maximum single dose 0.5 mg).May repeat once in 5 minutes, if effective.

Dosing: NERVE AGENT/ORGANOPHOSPHATE PESTICIDE EXPOSURE

Indication: Nerve Agent/Organophosphate Pesticide Exposure when NA Antidote Kit is not available.

See chart below for number of NA kits required based on age and symptoms.

Adults administer:

1. Atropine 2 mg IM/IV for every 1 NA kit that is required.

Pediatrics administer:

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1. According to MI MEDIC cards
2. If MI MEDIC cards are not available refer to CHART A below for atropine dosage.
3. Refer to CHART B below and administer 2 mg atropine IV/IM for every one NA Antidote kit required.

CHART A

Nerve Agent/Organophosphate Antidotes/Countermeasures

Weight	Age	Duodote ¹ Mod-Severe Sxs	Atropen ² (1 mg) Mod- Severe Sxs	Atropine Dose (0.1 mg/kg) IM/IV/IO	Atropine Vial ² (1 mg/mL)	Cardiac Atropine ^{2,3} (1 mg/10 mL)	Midazolam ⁴ (10 mg/2 mL) IM/IV/IO
3-5 kg (6-11 lbs)	0-2 months	1	1	0.4 mg	0.4 mL	4 mL	0.1 mL
6-7 kg (13-16 lbs)	3-6 months	1	1	0.7 mg	0.7 mL	7 mL	0.2 mL
8-9 kg (17-20 lbs)	7-10 months	1	1	0.9 mg	0.9 mL	9 mL	0.2 mL
10-11 (21-25 lbs)	11-18 months	1	1	1 mg	1 mL	10 mL	0.2 mL
12-14 kg (26-31 lbs)	19-35 months	1	2	1.3 mg	1.3 mL	13 mL	0.25 mL
15-18 kg (32-40 lbs)	3-4 years	1	2	1.6 mg	1.6 mL	16 mL	0.3 mL
19-23 kg (41-51)	5-6 years	1	2	2 mg	2 mL	20 mL	0.4 mL
24-29 kg (52-64)	7-9 years	2	3	2.6 mg	2.6 mL	26 mL	0.5 mL
30-36 kg (65-79 lbs)	10-14 years	2	3	3.3 mg	3.3 mL	33 mL	0.6 mL
Adult	>14 years	2 to 3	4 to 6	4 to 6 mg	4 to 6 mL	40-60 mL	2 mL

¹Preferred initial autoinjector, ²May Repeat atropine every 5 minutes until airway secretions decrease (6 mg maximum), ³Not available in MEDDRUN, ⁴Patients with severe symptoms should receive midazolam even if not obviously seizing

CHART B

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	Clinical Findings	Signs/Symptoms	Required Conditions	NA Kits To Be Delivered
SELF-RESCUE	Threshold Symptoms	• Dim vision • Increased tearing • Runny nose • Nausea/vomiting • Abdominal cramps • Shortness of breath	Threshold Symptoms <i>-and-</i> Positive evidence of nerve agent or OPP on site  Medical Control Order	1 NA Kit (self-rescue)
		• Increased tearing • Increased salivation • Dim Vision • Runny nose • Sweating • Nausea/vomiting • Abdominal cramps • Diarrhea	 Medical Control Order	1 NA Kit
		• Constricted pupils • Difficulty breathing • Severe vomiting	Constricted Pupils	2 NA Kits
		• Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing	Constricted Pupils	3 NA Kits (If 3 NA Kits are used, administer 1 st dose of available benzodiazepine)

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MEDICATION SECTION
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	Clinical Findings	Signs/Symptoms	Required Conditions	NA Kits To Be Delivered
PEDIATRIC < 8 years of age	Pediatric Patient with Non-Severe Signs/Symptoms	• <i>Mild or moderate symptoms as above</i>	Threshold Symptoms <i>-and-</i> Positive evidence of nerve agent or OPP on site  Medical Control Order	1 NA Kit
	Pediatric Patient with Severe Signs/Symptoms	• Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing	Severe breathing difficulty Weakness	1 NA Kit

Used in the Following Protocols

Crashing Adult/Impending Arrest (Section 3 Adult Treatment)

Bradycardia (Section 5 Adult Cardiac)

Pediatric Bradycardia (Section 6 Pediatric Cardiac)

Nerve Agent/Organophosphate Pesticide Exposure (Section 10 Special Operations)

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Calcium Chloride

Pharmacological Category: Calcium Salt; Electrolyte Supplement, Parenteral

Routes: IV/IO

Indications:

1. Cardiac arrest in the renal failure patient
2. Calcium channel blocker toxicity
3. Crush Injury with suspected hyperkalemia

Precautions:

1. Use with caution in patients on digoxin; hypercalcemia may precipitate cardiac arrhythmias.
2. Calcium chloride is not compatible with sodium bicarbonate, flush IV line between medications.

Expected effects:

1. Increased force of myocardial contraction
2. Rise in arterial pressure

Note: If given in a line that infiltrated, calcium chloride administration may cause skin sloughing.

Dosing: GENERAL CRUSH INJURY

Indication: Suspected hyperkalemia (peaked T waves, widened QRS, hypotension)

Adults administer:

1. Calcium chloride 1 gm slow IVP over 5 minutes

Pediatrics administer:

1. According to MI MEDIC cards
2. If MI MEDIC Cards are not available administer:
 - a. Calcium chloride 20 mg/kg slow IVP over 5 minutes. Max dose 1 gm

Dosing: POISONING/OVERDOSE/ENVIRONMENTAL EXPOSURE

Indication: Symptomatic calcium channel blocker overdose

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Adults administer:

1. Calcium chloride 1 gm IV

Pediatrics administer:

1. According to MI MEDIC Cards
2. If MI MEDIC Cards are not available administer:
 - a. Calcium chloride 20 mg/kg IV. Max dose 1 gm.

Dosing: GENERAL CARDIAC ARREST (Adult)

Indication: known or highly suspected hyperkalemia (e.g., dialysis patient, EKG changes)

Adults administer:

1. Calcium chloride (10%) 1 gm/10 mL IV/IO

Dosing: PEDIATRIC CARDIAC ARREST

Indication: hyperkalemia (renal failure)

Pediatrics administer:

1. According to MI MEDIC cards
2. If MI MEDIC cards are not available administer:
 - a. Calcium chloride (10%) 20 mg/kg (0.2 mL/kg). Max single dose 1 gm

Used in the Following Protocols

General Crush Injury (Section 2 Trauma and Environmental)

Poisoning/Overdose/Environmental Exposure (Section 2 Trauma and Environmental)

General Cardiac Arrest (Section 5 Adult Cardiac)

Pediatric Cardiac Arrest – General (Section 6 Pediatric Cardiac)