



Nerve Agents



Exposure (Pediatric)

CRITERIA

- Signs and symptoms indicating exposure to a nerve agent (see Signs and Symptoms of Exposure in PEARLS)

PROTOCOL

EMR	Follow <i>General – Universal Patient Care/Initial Patient Contact protocol</i> .	EMR
EMT	Consider gross decontamination	EMT
EMT	Ensure adequate airway and oxygenation <i>See Airway protocol</i> .	EMT
(1 – 13 kg)		
I	Administer <i>Atropine 0.02 mg/kg IV/IO or 0.5 mg IM every 2-5 minutes</i> until secretions are dried and/or the patient's breathing improves	I
I	Administer <i>Diazepam (Valium) 0.2 mg/kg IV/IO/IM to a maximum dose of 5mg</i>	I
(13 – 25 kg)		
I	Administer <i>Atropine 0.02 mg/kg IV/IO or 1 mg IM every 2-5 minutes</i> until secretions are dried and/or the patient's breathing improves	I
I	Administer <i>Diazepam (Valium) 0.2 mg/kg IV/IO/IM to a maximum dose of 5mg</i>	I
(26 – 55 kg)		
EMT	Administer one <i>DuoDote</i> if available	EMT
I	Administer <i>Atropine 0.02 mg/kg IV/IO or 1 mg IM every 2-5 minutes</i> until secretions are dried and/or the patient's breathing improves	I
I	Administer <i>Diazepam (Valium) 0.2 mg/kg IV/IO/IM to a maximum dose of 10 mg</i>	I

PEARLS

- Victims whose skin or clothing is contaminated with liquid nerve agent can contaminate rescuers by direct contact or through off-gassing vapor.
- Victims who have ingested nerve agents may off-gas dangerous levels of vapor, even after skin decontamination. All health care professionals should wear respiratory protection that protects against nerve agents, including Self-Contained Breathing Apparatus (SCBA) and chemical protective clothing to avoid contact with emesis.

Signs/Symptoms of Acute Nerve Agent Exposure

- **VAPOR** - Initial effects following a mild vapor exposure include miosis, rhinorrhea, and dyspnea. Victims may have one of these effects or all three. A large concentration of vapor will cause sudden loss of consciousness and seizures followed by apnea and flaccid paralysis. The severe casualties will have miosis, copious secretions from the nose and mouth, and, unless they are paralyzed, will have fasciculations. "SLUDGE" (salivation, lacrimation, urination, defecation, gastrointestinal distress, emesis) will occur. Effects begin within seconds to minutes.
- **DERMAL** - A very small drop on the skin may cause sweating and twitching at the site, while a small drop on skin may cause nausea, vomiting and diarrhea. A larger drop on the skin may cause loss of consciousness, seizures, apnea, and flaccid paralysis. Effects begin within 30 minutes (large amount) to 18 hours (small amount).



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Variations of Nerve Agents

- Military grade (i.e. Sarin, Somen, Tabun, VX, etc.)
- Industrial pesticides
 - Organophosphates (i.e. Azinphos-methyl, Malathion, Methyl parathion, etc.)
 - Carbamates (Aldicarb, Sevin, Bendiocarb, etc.)

Pediatric Variations in Signs and Symptoms

- Little experience with nerve agents is available to distinguish clinical effects in children from those in adults, although two cases of anticholinesterase pesticide poisonings in children suggest a disproportionate degree of depressed level of consciousness and muscle weakness. Thus, children may manifest primarily central and/or neuromuscular effects after nerve agent exposure.

Pediatric Treatment Concept

- DuoDote provides the same medications, atropine 2.1 mg (0.7 mL) and pralidoxime 600 mg (2 mL), but as a single Autoinjector with the need for only one intramuscular injection. While not approved for pediatric use, they should be used as initial treatment in circumstances for children with severe, life-threatening nerve agent toxicity for whom IV treatment is not possible or available or for whom more precise IM (mg/kg) dosing would be logistically impossible (especially pre-hospital).