





# Nerve Agents

## Exposure

### CRITERIA

- Signs and symptoms indicating exposure to a nerve agent (see Signs and Symptoms of Exposure in PEARLS)
- Common nerve agents are: Organophosphates (i.e. Azinphos-methyl, Malathion, Methyl parathion, etc.), Carbamates (Aldicarb, Sevin, Bendiocarb, etc.) and anticholinergics

### PROTOCOL

<b>EMR</b>	Follow <i>General – Universal Patient Care/Initial Patient Contact protocol</i> .	<b>EMR</b>
	If there is no exposure to a nerve agent with constricted pupils <b>and</b> loss of muscle tone, go to appropriate protocol.	
<b>EMT</b>	Administer one <i>DuoDote</i> .	<b>EMT</b>
<b>EMT</b>	Consider gross decontamination.	<b>EMT</b>
<b>EMT</b>	Ensure adequate airway and oxygenation.	<b>EMT</b>
<b>EMT</b>	If weakness, secretions and respiratory distress persist, repeat <i>DuoDote</i> .	<b>EMT</b>
<b>I</b>	If symptoms persist administer <i>Atropine 2-4 mg IV/IO every 2-5 minutes</i> until secretions are dried and/or the patient's breathing improves.	<b>I</b>
<b>I</b>	For vomiting, administer <i>Ondansetron (Zofran) 4mg IV/IO</i> .	<b>I</b>
<b>I</b>	If actively seizing administer <i>Diazepam (Valium) 10 mg IV/IO/IM and repeat every ten minutes as long as seizures persist</i> .	<b>I</b>

### 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.



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- **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).

### 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.)

### Concept of Treatment Protocol

- To provide the most treatment for the largest number of victims, the concept of treatment “waves” is presented.
- This will allow for treatment teams to:
  - Maximize the distribution of the limited supplies of antidotes
  - Limit their exposure time in potentially harmful atmospheres
- Victims that are non-ambulatory should be placed in the “recovery” position to allow for draining of oral secretions and maintenance of the airway.