### Cholinergic

<table>
<thead>
<tr>
<th><strong>Affected Areas</strong></th>
<th><strong>Immediate Symptoms</strong></th>
<th><strong>Immediate Symptoms (cont.)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Nervous System (CNS)</td>
<td><strong>SLUDGEMM:</strong> Salivation, Lacrimation, Urination, Defecation, GI, Emesis</td>
<td>Reduced vascular tone, Emesis, Diarrhea</td>
</tr>
<tr>
<td>Smooth Muscle</td>
<td>Miosis: Changed mental status, Muscle: Respiratory distress (bronchospasm)</td>
<td></td>
</tr>
<tr>
<td>Exocrine Glands</td>
<td><strong>SLOBBERED</strong> Salivation, Lacrimation, Obtundation, Bronchoconstriction/bronchorrhea, Bradycardia, Eye findings</td>
<td></td>
</tr>
<tr>
<td>Skeletal Muscle</td>
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</tbody>
</table>

### Immediate Symptoms (cont.)

- Reduced vascular tone
- Emesis
- Diarrhea

### Ongoing Symptoms

**Local Effects**

- Vapor to face: Miosis, Lacrimation, Hypersalivation, Wheezing

- Liquid to skin: Local sweating with fasciculations or twitching

- At increasing dose: Systematic effects (GI, CNS)

- At high dose: All symptoms can occur suddenly; rapidly fatal if untreated

### Examples

**Chemical Warfare Agents**

- **Nerve agents**
  - GA (tabun)*
  - GB (sarin)*
  - GD (soman)*
  - VX*
  - *May be weaponized

**Toxic Industrial Chemicals/Toxic Industrial Materials**

- Carbamate insecticides
  - Aldicarb
  - Methomyl
- Organophosphate insecticides
  - Chlorpyrifos
  - Parathion

### Sensitive Populations

No particularly sensitive populations

### Concerns About This Syndrome

The toxidrome encompasses insecticides and nerve agents, which can differ radically in potency. Clinical onset varies by state of agent and route of exposure as well as in especially sensitive populations (including children). Management differs between insecticides and nerve agents. Chemical aging is a concern with GD and possibly with certain insecticides. There is a differing clinical presentation in children. Infants and young children in many instances present only with neurological signs and symptoms.

### Common Treatment Protocols

- Atropine
- 2-PAM (oximes)
- Benzodiazepines
- Airway and breathing support
- Scopolamine (not FDA-approved)
- Ketamine (not FDA-approved)
- Decontamination

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Not meant to be a complete care guideline. Please refer to the CHEMM website for more information: [https://chemm.hhs.gov/mmghome.htm](https://chemm.hhs.gov/mmghome.htm)