

General Principles

- Nerve agent casualties will present in large numbers soon after the event and may continue to present for days.
- **Have a high index of suspicion for**
 - mixed agents (e.g. sarin and mustard)
 - secondary injuries (blast, trampling)
- Most casualties will arrive **without** adequate decontamination.
- **Most casualties and their parents will be:**
 1. Mildly poisoned and ambulatory and /or
 2. Psychologically traumatized
- Prepare for patient behavioral outbursts, child-care issues, security issues, the media.
- Guard against injury to health care workers from secondary exposure
- **Contact appropriate non-medical authorities** (e.g. Law Enforcement, Military Public Health) of suspicion of nerve agent exposure.
 - Determine: **time of first symptoms, liquid vs. vapor exposure, location of casualties**

Differential Diagnosis

- **Sudden mass casualties without sign of trauma → suspect airborne toxin**
 - Hypoxemic, miosis, profuse secretions → **organophosphate (nerve agent/pesticide)**
 - Unconscious, metabolic acidosis, non-hypoxemic → **Cyanide**
 - venous blood gases arterialized
- **Progressive respiratory symptoms:**
 - Consider: phosgene, anthrax, plague, Botulinum toxin

Clinical Signs

- **Children may ONLY show CNS Effects**
 - **Neuromuscular Effects:** twitching, weakness, paralysis, respiratory failure
 - **Autonomic Nervous System Effects:** reduced vision, small pupil size, drooling, sweating, diarrhea, nausea, abdominal pain, vomiting
 - **Central Nervous System Effects:** headache, convulsions, coma, respiratory arrest, confusion, slurred speech, respiratory depression
- **Miosis** - most consistently indicates a significant exposure
- **RBC-Cholinesterase** level is **NOT** useful to screen for exposure in mass casualty situation

Treatment

- **Base treatment on clinical suspicion**
 - **ABC's: Airway protection and pulmonary support are key for survival**
 - **Terminate exposure**
 - **Triage: Attend infants and children in immediate and moderate categories first** (higher susceptibilities and more tenuous airways)
 - **Decontamination:**
 - **1) Full exposure** (bag and seal any clothes or personal items).
 - **2) Wash with copious water/soap and rinse.**
 - Consider 0.05% bleach, flour, talcum, dirt, powder and wash off with water/baby wipes.
 - **In a possible liquid exposure to skin or mucous membranes**, regardless of findings, observe for 18 hours, at a minimum.
 - **Antidotes: see reverse**
 - **Atropine: Dose liberally to muscarinic effect**
 - In the Iran/Iraq War NA severely affected victims received 20-200 mg of atropine.
 - Atropine cannot reverse neuromuscular symptoms
 - Sinus Tachycardia - not an end-point for atropinization
 - **Diazepam** - other benzodiazepines may be equally effective (consider midazolam or lorazepam).
 - **Intubation:** consider a nondepolarizing agent
- Supportive care:**
- **Airway protection/bronchospsam/ pulmonary toilet**
 - Oxygen, **bronchodilators**, nasogastric tubes.
 - **Cardiac:** Monitor for arrhythmias
 - **Fluids, electrolytes, nutrition**
 - Nursing mothers -discard breast milk
 - **Prevent hypothermia and hyperthermia**
 - **Eye care**
 - Treat eye pain
 - Consider treating miosis
 - Atropine will not reverse miosis
 - **Treat complicating injuries/infections**
 - Attend any iatrogenic skin lesions
 - **Follow-up: chronic neuropsychiatric sequelae**

