

Michigan
CBRNE Protocols
NERVE AGENT/ORGANOPHOSPHATE PESTICIDE
EXPOSURE TREATMENT

Date: April 2, 2010

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Nerve Agent/Organophosphate Pesticide Exposure Treatment

Purpose: This Protocol is intended for EMS personnel at all levels to assess and treat patients exposed to nerve agents and organophosphate pesticides. The protocol includes the use of the Mark I/Duo Dote Antidote Kits and the Atropen auto injector for personnel trained in the use of these devices and authorized by the local medical control authority.

MFR/EMT/SPECIALIST/PARAMEDIC

Chemical Agents

1. Agents of Concern
 - A. Military Nerve Agents including: Sarin (GB), Soman (GD), Tabun (GA), VX
 - B. Organophosphate Pesticides (OPP) including Glutathione, Malathion, Parathion, etc.
2. Detection: The presence of these agents can be detected through a variety of monitoring devices available to most hazardous materials response teams and other public safety agencies.

Patient Assessment

1. SLUDGEM Syndrome
 - A. **S** Salivation / Sweating / Seizures
 - B. **L** Lacrimation (Tearing)
 - C. **U** Urination
 - D. **D** Defecation / Diarrhea
 - E. **G** Gastric Emptying (Vomiting) / GI Upset (Cramps)
 - F. **E** Emesis
 - G. **M** Muscle Twitching or Spasm
2. Threshold Symptoms: These are symptoms that may allow rescuers to recognize that they may have been exposed to one of these agents and include:
 - A. Dim vision
 - B. Increased tearing / drooling
 - C. Runny nose
 - D. Nausea/vomiting
 - E. Abdominal cramps
 - F. Shortness of breath

NOTE: Many of the above may also be associated with heat related illness.

3. Mild Symptoms and Signs:
 - A. Threshold Symptoms *plus*:
 - B. Constricted Pupils*
 - C. Muscle Twitching
 - D. Increased Tearing, Drooling, Runny Nose
 - E. Diaphoresis
4. Moderate Symptoms and Signs
 - A. Any or all above *plus*:
 - B. Constricted Pupils
 - C. Urinary Incontinence
 - D. Respiratory Distress with Wheezing
 - E. Severe Vomiting

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5. Severe Signs

- A. Any or All of Above *plus*
- B. Constricted Pupils*
- C. Unconsciousness
- D. Seizures
- E. Severe Respiratory Distress

***NOTE:** Pupil constriction is a relatively unique finding occurs early and persists after antidote treatment. The presence of constricted pupils with SLUDGEM findings indicates nerve agent / OPP toxicity.

Personal Protection

- 1. Be Alert for secondary device in potential terrorist incident
- 2. Personal Protective Equipment (PPE)
 - A. Don appropriate PPE as directed by Incident Commander.
 - B. Minimum PPE for Non-Hot Zone (i.e., DECON Zone)
 - a. Powered Air Purifying Respirator or Air Purifying Respiratory with proper filter
 - b. Chemical resistant suit with boots
 - c. Double chemical resistant gloves (butyl or nitrile)
 - d. Duct tape glove suit interface and other vulnerable areas
- 3. Assure EMS personnel are operating outside of Hot Zone
- 4. Avoid contact with vomit if ingestion suspected – off gassing possible
- 5. Assure patients are adequately decontaminated *prior* to transport
 - A. Follow **Decontamination Protocol**
 - B. Removal of outer clothing provides significant decontamination
 - C. Clothing should be removed before transport
 - D. DO NOT transport clothing with patient
- 6. Alert hospital(s) as early as possible

Patient Management (After Evacuation and Decontamination)

- 1. Evaluate and maintain the airway, provide oxygenation and support ventilation as needed.
- 2. NOTE: Anticipate need for extensive suctioning
- 3. Antidote administration per Mark I Kit/Duo Dote auto injector Dosing Directive – See Chart

SPECIALIST/PARAMEDIC

- 4. Establish vascular access

PARAMEDIC

- 5. Atropine 2-6 mg IV/IM per Mark I Kit Dosing Directive if Mark I Kit is not available (each Mark I Kit/Duo Dote auto injector contains 2 mg of atropine)
- 6. Treat seizures per **Seizure Protocols**
 - A. **Adult**
 - a. Administer diazepam 2-10 mg IVP **OR**
 - b. Midazolam 0.05 mg/kg to max 5 IVP
 - c. Administer Midazolam 0.1 mg/kg to max 10 mg IM
 - d. If available, Valium auto-injector

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B. Pediatrics

- a. Diazepam 0.2 mg/kg (maximum individual dose 10 mg) via intravenous route *or* 0.5 mg/kg (maximum individual dose 10 mg) via rectal route.
- b. Midazolam 0.15 mg/kg (maximum individual dose 5 mg) via intravenous or intramuscular route

7. Monitor EKG
8. Contact Medical Control

PARAMEDIC

Post Medical Control

1. Additional Atropine 2 mg IV/IM for continued secretions (0.05 mg/kg for pediatrics)
2. Seizure Prophylaxis per Seizure Protocol for patients with severe signs

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MFR/EMT/SPECIALIST/PARAMEDIC

*Mark I Kit Dosing Directive				
	Clinical Findings	Signs/Symptoms	Required Conditions	Mark I Kits To Be Delivered
SELF-RESCUE	Threshold Symptoms	<ul style="list-style-type: none"> • Dim vision • Increased tearing • Runny nose • Nausea/vomiting • Abdominal cramps • Shortness of breath 	Threshold Symptoms -and- Positive evidence of nerve agent or OPP on site	1 Mark I Kit (self-rescue)
ADULT PATIENT	Mild Symptoms and Signs	<ul style="list-style-type: none"> • Increased tearing • Increased salivation • Dim Vision • Runny nose • Sweating • Nausea/vomiting • Abdominal cramps • Diarrhea 	Medical Control Order	1 Mark I Kit
	Moderate Symptoms and Signs	<ul style="list-style-type: none"> • Constricted pupils • Difficulty breathing • Severe vomiting 	Constricted Pupils	2 Mark I Kits
	Severe Signs	<ul style="list-style-type: none"> • Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing 	Constricted Pupils	3 Mark I Kits (If 3 Mark I Kits are used, administer 1 st dose of available benzodiazepine)
PEDIATRIC	Pediatric Patient with Non-Severe Signs/Symptoms	<i>Mild or moderate symptoms as above</i>	Positive evidence of nerve agent or OPP on site	Age ≥ 8 years old: <ul style="list-style-type: none"> • As Above Age < 8 years old <ul style="list-style-type: none"> • Per Medical Control
	Pediatric Patient with Severe Signs/Symptoms	<ul style="list-style-type: none"> • Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing 	Severe breathing difficulty Weakness	Age ≥ 8 years old: <ul style="list-style-type: none"> • 3 Mark I Kits Age < 8 years old: <ul style="list-style-type: none"> • 1 Mark I Kit Contact Medical Control as needed

***NOTE: 1 Mark I Kit equals 1 Duo Dote**

MCA Name
 MCA Board Approval Date
 MDCH Approval Date
 MCA Implementation Date



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