

Washtenaw/Livingston MCA, HEMS MCA
System Protocols - Hazardous Materials Medical Response Team
ORGANOPHOSPHATE POISONING

Date: April 24, 2019

Section 11-12

Organophosphate Poisoning

FORMS: Liquids, solids (dusts, wettable powders) and aerosols.

ROUTES OF EXPOSURE: Skin and eye, inhalation, ingestion, skin absorption

SIGNS AND SYMPTOMS:

- CNS:** Altered mental status, seizures, coma, fasciculation and death
- Eye:** Pain, lacrimation, blurred vision and constricted pupils.
- Cardiovascular:** Bradycardia or tachycardia, ventricular arrhythmias, A-V blocks, hypotension or hypertension.
- Respiratory:** Respiratory failure or arrest, prominent wheezing, acute pulmonary edema, bronchial secretions, dyspnea and tightness of the chest.
- Gastrointestinal:** Nausea/vomiting/diarrhea, abdominal cramps, excessive salivation, urination and defecation.
- Skin:** Pale, cyanotic skin with excessive diaphoresis.
- Other:** SLUDGE syndrome (salivation, lacrimation, urination, defecation, G.I. pain and emesis)
DUMBELS (diarrhea, urination, miosis, bronchorrhea, bronchospasm, and bradycardia, emesis, lacrimation, salivation)

NOTE: In general, cardiac dysrhythmias and seizures can be corrected with atropine therapy. Lasix is not effective in treating pulmonary edema!

Pre-Medical Control

PARAMEDIC

1. Follow **General Hazardous Materials Treatment** protocol.
2. Consider CPAP.

In the symptomatic patient with significant exposure administer treatment in the following order:

1. Administer Atropine: Adult dose: 0.5 – 2 mg IV/IO push or IM. Pediatric dose: 0.05 mg/kg IV/IO push or IM, min 0.1 mg, max 5 mg. Initial dosing should be given as soon as possible.
2. If no effect (which helps confirm the diagnosis) repeat Atropine q 2-5 minutes until

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lungs are dry (noted by decreased rhonchorous breath sounds), patient ventilates easily and the MAP is > 60 mm Hg. There is no maximum dose in Organophosphate Poisoning.

3. If available, as an alternative to individual Atropine and Pralidoxime, Mark 1 or Duo Dote Auto injector kits may be used. Administration per Mark I Kit/Duo Dote auto injector Dosing Directive – See Chart
4. Follow **Seizures** protocol and administer a benzodiazepine IV or IM for a patient with either seizure or arrest.

Post-Medical Control

1. Pralidoxime (2-PAM), Adult: 1 gm IV or IM (max 1 gm IV, 2 gm IM) over 5 – 10 minutes. Pediatric: 25 mg/kg IV or IM (max 1 gm IV, 2 gm IM) over 5 – 10 minutes. Dose may be repeated in 30 – 60 minutes (1 – 2 doses) for weakness or high Atropine requirements.

NOTES:

In cases of skin absorption atropine may not reverse respiratory paralysis. Do not give aminophylline, theophylline, morphine, furosemide or succinylcholine.

Pupillary dilation is an early response and can't be used to guide therapy. Tachycardia is not a contraindication to Atropine therapy and may actually lessen as the hypoxia resolves with drying up of the secretions and clearing of the bronchospasm. The patient must be observed carefully for ventricular arrhythmias secondary to hypoxia, especially when administering atropine. In massive organophosphate overdoses huge amounts of atropine may be needed.

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*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**