SECTION: Toxicological Emergencies

PROTOCOL TITLE: Exposure – Organophosphate

REVISED: 06/2017

Protocol 7-4

ORGANOPHOSPHATE

OVERVIEW:
Organophosphates irreversibly bind to cholinesterase, causing the phosphorylation and deactivation of acetylcholinesterase. The accumulation of acetylcholine at the neural synapse causes an initial overstimulation, followed by exhaustion and disruption of postsynaptic neural transmission in the central nervous system (CNS) and peripheral nervous systems (PNS). If the organophosphate / cholinesterase bond is not broken by pharmacologic intervention within 24 hours, large amounts of cholinesterase are destroyed, causing long-term morbidity or death. Carbamate poisoning exhibits a similar clinical picture to organophosphate toxicity. However, unlike organophosphates, carbamate compounds temporarily bind cholinesterase for approximately 6 hours with no permanent damage. Carbamates have poor CNS penetration and cause minimal CNS symptoms. The most important historical factors to obtain include: **what** poison was involved, **how long** the exposure lasted and **how** and **when** they were exposed. Poison Control may be contacted at any time for information on poisoning (1-800-222-1222) but **only Medical Control may give patient treatment orders**.

HPI	Signs and Symptoms	Considerations
• Exposure or suspected exposure of a potentially toxic substance • Substance exposure, route, and quantity • Time of exposure • Reason (suicidal, accidental, criminal) • Available medications in home • Past medical history	• S.L.U.D.G.E. • D.U.M.B.E.L.S. • Bradycardia • Hypotension • Severe respiratory distress • Blurred vision • Paralysis	• Agricultural pesticides • Home gardening products • Industrial manufacturing products

	EMR	EMT	A	I	P
1. Scene Safety and consider HAZ MAT activation.	•	•	•	•	•
2. Ensure patient has been thoroughly decontaminated.	•	•	•	•	•
3. Obtain general assessment of the patient.	•	•	•	•	•
4. Administer Oxygen to maintain *SPO_2* 94 - 99%	•	•	•	•	•
5. Suction oropharynx as necessary.	•	•	•	•	•
6. Establish IV of Normal Saline. Titrate to maintain a systolic BP > 90 mmHg.			•	•	•
7. Place the patient on a cardiac monitor and obtain / interpret *12 lead ECG*.		•	•	•	•

Protocol 7-4 Continued

ORGANOPHOSPHATE

	EMR	EMT	A	I	P
8. If the patient has respiratory distress due to secretions, administer *ATROPINE SULFATE* 1 - 2 mg IVP every 5 minutes until signs of pulmonary secretions decrease improve or medication supply is exhausted. There is no maximum dose in this situation.			•	•	•
9. If available, administer 2PAM 1 - 2 Gram IV *one dose* –**OR** - 0.6 Gram IM x *3 doses* in rapid succession.				•	•
10. If patient is seizing, refer to the *Medical Care Seizure protocol.*	•	•	•	•	•
11. For bronchospasm, administer *ALBUTEROL* and *ATROVENT* per *Medial Care: Respiratory Distress protocol.*	•	•	•	•	•
12. Transport promptly in position of comfort. Reassess vital signs as indicated.		•	•	•	•

Nerve Agent / Organophosphate / Carbamate Exposure Mnemonics

S.L.U.D.G.E.

Salivation (excessive production of saliva)
Lacrimation (excessive tearing)
Urination (uncontrolled urine production)
Defecation (uncontrolled bowel movement)
Gastrointestinal distress (cramping)
Emesis (excessive vomiting)

B.A.M.

Breathing difficulty (wheezing)
Arrhythmias (bradycardia, ventricular arrhythmias, AV blocks)
Miosis (pinpoint pupils)

Three C's of CNS effect

Confusion
Convulsions
Coma

D.U.M.B.E.L.S. (Muscarinic)

Diarrhea
Urination
Miosis
Bradycardia / Bronchospasm / Bronchorrhea
Emesis
Lacrimation
Salivation / Secretion / Sweating

Days of the week (Nicotinic)

Mydriasis
Tachycardia
Weakness
Hypertension / Hyperglycemia
Fasciculation's

Decontamination MUST be completed prior to transport

PEARLS:

1. Decontamination should be initiated and completed by ***qualified personnel***.
2. Decontamination takes precedence over ALS interventions.
3. Consider calling for additional drug kits for additional atropine.
4. Separate patient from causative agent. Most exposures are to liquid solutions.
5. Clothes should be removed on scene, bagged and sealed by personnel wearing appropriate PPE, and left for appropriate disposal. DO NOT transport clothes in ambulance or to hospital where they may spread contamination.
6. DO NOT use personal antidote kit, if issued, to provide patient care.

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