Statewide Standard Treatment Protocols

Paramedic Standing Orders:

Chemical Terrorism, Bioterrorism, Radiation Injury and Pandemic Illness

Delaware Office of EMS
EMERGENCY MEDICAL SERVICES
DELAWARE HEALTH AND SOCIAL SERVICES
DIVISION OF PUBLIC HEALTH

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State of Delaware
Department of Health and Social Services
Division of Public Health
Office of Emergency Medical Services

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Paramedic Standing Orders

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Purpose:

To delineate a process to maximize the utilization of paramedics during potential future bioterrorism events or pandemics.

Justification:

During any man made or natural event or pandemic, Public Health will need to maximize health care resources. To provide additional resources, Public Health will utilize Delaware Certified Paramedics for roles that may exceed the scope of practice currently approved by the Board of Medical Licensure and Discipline. These out of scope roles may include the home, clinic or special operations delivery of vaccines, laboratory testing, oral, intramuscular and intravenous antibiotics and other medical procedures specific to the bio-event.

MARK I kits and DuoDotes™

As of January 2008, Meridian Medical Technologies™ is discontinuing the manufacture of MARK I kits. They have introduced the DuoDote™. This is a single auto-injector containing both nerve agent antidotes (Atropine and Pralidoxime). Agencies currently carrying MARK I kits may continue to use them following this protocol. Once these existing kits expire they will be replaced by, and services new to the Public Safety Nerve Agent Antidote Program will receive the DuoDote™ autosyringes.

Note: One DuoDote™ equals one Mark I kit

Protocol:

1. This protocol will only become effective upon the declaration of a Public Health Emergency by the Governor of Delaware or the Director of Public Health.
2. Upon Declaration of a Public Health Emergency, the State Emergency Medical Services Medical Director, with the approval of the Director of Public Health will develop a specific protocol for the paramedics to follow
3. All protocols will be presented to the Delaware Board of Medical Licensure and Discipline as soon as practical for review, comment, modification, revocation or approval.
4. Bioterrorism protocols may include vaccine delivery, medication delivery, laboratory testing, minor surgical procedures, etc. as may be routinely appropriate for the specific bio-event.
5. The State Emergency Medical Services Medical Director is responsible for the paramedic practice under this protocol and will be responsible for ensuring that all paramedics are appropriately trained in the protocols, that they are monitored, remedied as required and that a report of paramedic activity is submitted to the Board of Medical Licensure and Discipline, as soon as practical.

Nerve Agents

Background:

Nerve agents are the most toxic of the known chemical agents. They are hazards in their liquid and vapor states and can cause death within minutes after exposure. Nerve agents inhibit acetylcholinesterase in tissue, and their effects are caused by the resulting excess acetylcholine. Nerve agents are considered to be major military and terrorist threats. Common names for nerve agents include Tabun (GA), Sarin (GB), Soman (GD), GF and VX. Nerve agents are liquids under normal temperate conditions. When dispersed, the more volatile ones constitute both a vapor and liquid hazard.

With suspicion of nerve agent notify the communications center immediately and contact medical control as soon as practical.

History:

1. Setting
2. Exposure - length, type of exposure
3. Concentration of gas

Suspicion / Detection:

4. Multiple patients with miosis, rhinorrhea, difficulty breathing, convulsions or paralysis
5. May smell odor of fruit or fish but this is not reliable.
6. Liquid "G" turns M8 paper gold-yellow
7. VX turns M8 paper olive green
8. M9 paper will turn reddish brown to purple when exposed to liquid nerve agents
9. Personnel are to **immediately extricate themselves** from the area and initiate personal protection

Exam:

1. ABC's
2. Vital signs
3. Level of consciousness

Vapor:

1. Small exposure: miosis, rhinorrhea, mild difficulty breathing.
2. Large exposure: sudden loss of consciousness, convulsions, apnea, flaccid paralysis, copious secretions, miosis.

Liquid on skin:

1. Small to moderate exposure: localized sweating, nausea, vomiting, feeling of weakness.
2. Large exposure: sudden loss of consciousness, convulsions, apnea, flaccid paralysis, copious secretions

Triage:

1. **Immediate (Red Tape):** severe exposure i.e., respiratory distress, cyanosis, muscular fasciculation's, unconscious but with a pulse and blood pressure.
2. **Non-salvageable (Black tape):** no blood pressure obtainable.
3. **Delayed (Yellow Tape):** walking and talking, may still require self-administered DuoDote.

Self-Treatment:

1. Protect yourself with appropriate Personal Protective Clothing for vapor and liquid exposure.
2. General guidelines:
   - **MILD SYMPTOMS**(miosis, blurred vision, watery eyes, rhinorrhea and/or mild dyspnea): immediately give one nerve agent antidote kit.
     - If, after 10-15 minutes, no SEVERE symptoms develop, no further antidote is indicated. Seek evaluation by an ALS provider.
     - **If, at any time, SEVERE symptoms develop, administer two additional DuoDotes and immediately seek ALS care.**
   - **SEVERE SYMPTOMS**(respiratory distress, respiratory arrest, cyanosis, muscular fasciculations, unconscious):
     - Give three nerve agent antidote kits, intubate and suction frequently.
     - If available, administer 10 mg Valium via Autoinjector
     - Administer atropine 2 mg every 3 – 5minutes as needed for reduction of severe secretions and to reduce ventilatory resistance (may require between 10 and 20 mgs of atropine).
3. Decontamination of skin is not necessary with vapor exposure but remove all clothing to remove trapped vapors.
4. Decontamination of skin exposure: hypochlorite and large amounts of water. Patient will require observation for toxicity for at least three hours after decontamination.

Treatment of the Public:

1. Agencies authorized to carry Nerve Agent Antidotes for self-protection can provide aid to the public when authorized by an on-line Medical Control physician via radio contact.
2. Providers will be given a laminated wallet sized card with signs and symptoms of nerve agent exposure for rapid reference and the appropriate treatment of varying levels of severity.
   - Signs and symptoms will be communicated to the on-line physician by the on-scene providers.
   - The on-line Medical Control physician will authorize the use of Nerve Agent Antidotes (if appropriate).

- The Nerve Agent Antidotes will be obtained from existing supplies or supplemental supplies, which can be released in mass casualty situations.

3. Existing protocols for self-treatment of providers will be followed when treating adult patients with suspected exposure
   - The number of nerve agent antidote kits utilized will be the same as in the self-treatment protocol.
4. Pediatric patients (less than or equal to age 14) will be treated using pediatric Nerve Agent Antidotes (if available)
   - The number of pediatric nerve agent antidote kits utilized will be identical to the number recommended for an adult with corresponding symptoms; however, these kits contain a lower dosage of medication.

In the event pediatric nerve agent antidote kits are not available, patients with severe symptoms should be given one adult nerve agent antidote kits. Those with mild or moderate symptoms should be evacuated and an alternative method to deliver medication should be attempted.

Radiation Injury

INDICATIONS: Patient's exposed or contaminated by a radiation source.

NOTE: Traditional protection against radioactivity consists of three methods, Time-Distance-Shielding (T-D-S)

1. Limit **time** exposed to radiation. Work in short intervals
2. Place as much **distance** between radioactive source and responder as possible.
3. Use materials to place a **shield** between radioactive source and the responder. Remember that alpha and beta radiation may be shielded by a few layers of clothing. Gamma radiation, on the other hand, can penetrate through concrete.

Identify incident

1. Known event
   - Reported release from industrial source
   - Transportation incident
   - Medical facility radiation sources – i.e. nuclear medicine department
   - Nuclear power plant incident

2. Suspected event
   - Activation of on-scene detection devices
   - Radiological dispersion device (RDD)
   - Suspicious incident

Notify communications and alert other responders

Establish perimeter – restrict access and egress

Request radiation detection/metering equipment

Evaluate for Contamination and/or Exposure:

1. **No food or drink is to be consumed orally during exposure event.**

2. Contamination
   - External Contamination
     - Radioactive material deposited on skin, hair, or clothing
     - Contamination may also exist from radioactive shrapnel in wounds (after explosion of a RDD)

        - Decontamination involves removing clothing and washing skin. In cases of radioactive shrapnel, fragments must be removed as well
        - Measured by radiation survey meter
    - Internal Contamination
        - Radioactive material enters the body through ingestion, inhalation, or via open wounds
        - Field decontamination of internal contamination is not possible
        - May be measured by radiation survey meter
            - Suspect internal contamination when survey meter continues to indicate significant radioactivity even after external decontamination
    - Contaminated patients pose risk to the responder until properly decontaminated

Exposure

1. Patient's body absorbs ionizing radiation from an external source
2. Exposure stops when the patient leaves the area or the source is shielded
3. An individual exposed to only an external source of radiation is not contaminated and may be approached without risk

Treatment

1. Contamination
    - If survey meter is available, assess contamination pattern. Scan patient head-to-toe
    - Assess for the presence of radioactive shrapnel
        - Irrigation with copious amounts of sterile water or saline may help flush away radioactive shrapnel. CAUTION: runoff material may be contaminated – protect patient and responders
        - Apply dressing to wound site. Re-survey for presence of any radioactivity penetrating dressing. If radiation is present, protect responders by using T-D-S
2. Decontaminate patient
    - Remove all clothing and jewelry working from head to toe
    - Treat removed clothing as potential contamination hazard.
    - Bag and label.
    - Perform whole body radiation survey if possible. Note areas of contamination.
    - Allow patient to wash using mild soap and water. CAUTION: runoff material may be contaminated – protect patient and responders
    - Resurvey patient. The goal of decontamination is to achieve a survey reading equal to background radiation. A reading if twice background is acceptable

- Repeat decontamination washing if any radiation contamination remains
- If, after second decontamination wash, radiation contamination remains:
  - Cover contaminated areas with waterproof dressings and bandages to prevent further spread
  - Wrap patient in double sheets for transport
  - Protect responders during transport by using T-D-S.

3. Exposure
   - Evaluate patient for signs and symptoms of Acute Radiation Syndrome (ARS)

Fever	Edema	Ataxia	GI Bleeding
Hypotension	Blistering*	Papilledema	Bruising*
Tachycardia	Desquamation*	Motor/sensory deficits	Ecchymosis*
Tachypnea	Altered level of consciousness	abdominal tenderness	Petechiae of skin/mucous membranes*
Erythema			(*= late signs)

   - If patient vomits, note time frame from exposure to onset of vomiting. This time may provide an indication of the estimated dose.
   - Provide supportive care
     - If the patient is hypotensive, establish IV access in an unaffected site. Provide IV NSS to maintain adequate blood pressure and perfusion

In all cases of radiation injury, notify the receiving hospital as soon as possible, preferably before beginning transport, to give them adequate time to prepare.

Note: Following transport, survey vehicle, equipment and responders to detect any secondary contamination that exists.