Capitol Region Metropolitan Medical Response System

Hartford, Connecticut

PROTOCOL FOR THE USE OF NERVE AGENT ANTIDOTE KITS

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Capitol Region Metropolitan Medical Response System

Directives For the Use and Storage of Nerve Agent Antidote Kits

Purpose

These directives are designed to present a “minimum standard” for the acceptance, storage, maintenance and use of the MARK I Nerve Agent Antidote Kits for first responder agencies in the Capitol Region MMRS. The protocol for use is derived from the CR-MMRS training program for nerve agent symptom recognition and treatment. Strict adherence to the terms of these protocols is expected of each agency participating in the CR-MMRS pharmaceutical program.

Nerve Agent Antidote Kit Distribution to Recipient Agencies

1. Each agency receiving MARK I/Diazepam injectors shall provide the CR-MMRS with its storage/distribution plan prior to receiving CR-MMRS authorization to receive the antidote kits. The plan shall include provisions for secure storage and monitoring of the storage location, and shall meet the requirements for safe storage [refrigeration, etc.] as directed by the Hartford Hospital Department of Pharmacy.

2. Upon completion of the Train-the-Trainer program, each public safety agency shall provide the CR-MMRS with a schedule of training for their personnel.

3. Upon completion of the training of the agency’s personnel at the WMD Awareness/Chemical Antidote Kit level, the agency shall provide the CR-MMRS with a roster of trained personnel. This roster shall be reviewed by CR-MMRS and, once approved, the agency shall be designated as eligible to receive chemical agent antidote kits (three MARK I / one Diazepam auto-injectors) in a quantity that shall allow for one kit per on-duty personnel.

4. Upon completion of training of the public safety agency’s personnel, one member of each public safety agency is to be designated as Medical Supply Officer (MSO). The name and contact information for this individual shall be provided to CR-MMRS. The MSO shall be the sole authorized person to sign out chemical agent antidote kits from the Hartford Hospital pharmacy.

5. Kits shall be distributed in sealed, numbered tamper-evident bags. The Diazepam component shall be distributed separately from the MARK I component.

6. Upon signing out the antidote kits, the MSO shall be responsible for their storage, inventory and distribution. The MSO shall be responsible for providing CR-MMRS with an inventory of antidote kits and expiration dates every six months or as requested by CR-MMRS.
Maintenance

1. The nerve agent antidote kits must be kept in a location that is securely locked and monitored. The agency receiving the kits shall provide a locked storage compartment for the Diazepam secured to their vehicles/apparatus or other DCP-approved security system.
2. It shall be the responsibility of the on-duty personnel to check the kits for tampering/damage at the beginning of each shift. Damaged or tampered kits are to be taken off-line and a report is to be made to the MSO before the shift change.
3. Missing Diazepam auto-injectors are to be reported to the MSO immediately upon determination of the loss. The MSO will investigate the loss of the auto-injector and provide a report to CR-MMRS.
4. The report shall be forwarded to the CR-MMRS within 24 hours and replacement shall be arranged. It shall be the responsibility of the CR-MMRS to report issues regarding the Diazepam auto-injectors to the CT Department of Consumer Protection within 72 hours.
5. The public safety agency receiving the antidote kits shall be responsible for providing an inventory to CR-MMRS complete with expiration dates semi-annually. CR-MMRS reserves the right to perform periodic spot checks to assure antidote kit integrity and to check expiration dates.

Protocol for Use of the Nerve Agent Antidote [Mark I] Kit

Statement of Purpose

The use of the MARK I auto-injector is intended for self- or unit-preservation in the event of poisoning by a chemical nerve agent. Use of the kit is limited solely to this purpose. The use of this antidote for any other class of agents is contraindicated and may be a life-threatening hazard to the responder.

Indications for Use

In the event of exposure to a known or a suspected WMD chemical agent, responders should withdraw immediately from the area if possible. Withdrawal should be made with the realization that the responder may be contaminated and should be limited to the nearest fresh-air site avoiding contamination of bystanders or other responders.
Kit Dosing

1. In general, pinpoint pupils, increased secretions, and muscle fasciculation are the most reliable signs of nerve agent exposure.

2. Nerve agents are either vaporous or liquid agents belonging to the classification of drugs known as organophosphates. Tabun (GA), Sarin (GB), Soman (GC) and VX are the most commonly stockpiled agents. The first three, though transported as liquids, are weaponized by vaporization and are inhaled. VX stays in a heavy liquid form, much like motor oil, and is spread by the droplet route.

Mild Vapor Exposure

1. Signs and symptoms following a vapor exposure occur within seconds to minutes, and include:
   a. Miosis – constriction of the pupil. Characteristically occurs from a nerve agent vapor exposure to the eye, or from direct liquid contact with the eye. Miosis is usually accompanied by eye pain, described often as a dull ache in the front of the forehead or as pain about the orbit
   b. Headache
   c. Dim vision
   d. Increased salivation, lacrimation, and rhinorrhea (rhinorrhea may be the first indicator of exposure, aside from eye findings, in a vapor exposure)
   e. Mild respiratory distress
   f. Mild muscle weakness and/or mild, localized muscle twitching

2. Management
   a. most symptoms resolve spontaneously within 15-30 minutes
   b. no specific treatment is indicated

3. Treatment:
   a. If airway effects are noted (chest tightness, shortness of breath, airway secretions), and/or if other symptoms are not improving over time, **ONE MARK-I kit is administered.**
   b. Monitor progress, noting that MARK-I auto injectors will not reverse miosis. Supplemental oxygen is required in those personnel with pulmonary manifestations, or with a history of cardiac disease.
Moderate Exposure

1. Signs and symptoms for a moderate exposure include:
   a. Those occurring in mild exposures
   b. More respiratory distress
   c. Muscular weakness and fasciculation – twitching can be localized, as in the case of mild to moderate liquid exposure, or generalized, as in large liquid and moderate to large vaporous exposures
   d. Gastrointestinal effects (vomiting and diarrhea) – these are generally the first systemic signs of skin exposure (liquid agent) to a nerve agent
   e. Sweating – may be localized for a mild to moderate liquid exposure, or generalized for a vapor or large liquid exposure
   f. Tachycardia, hypertension

3. Management and Treatment:
   a. ONE OR TWO MARK-I kits are administered, and titrate to symptomatology (up to a maximum of three MARK I kits)
   b. Respiratory management – supplemental oxygen, assistance in secretion management

Severe Exposure

1. Signs and symptoms for a severe exposure include:
   a. Miosis
   b. Copious respiratory secretions impairing a patent airway
   c. Severe respiratory distress or apnea
   d. Possible cyanosis
   e. Muscle twitching which progresses to muscle rigidity and flaccid paralysis
   f. Altered level of consciousness – patient may be unconscious or seizing
   g. Incontinence of bowel and bladder

2. The onset of symptoms for a severe exposure are usually rapid, from seconds to minutes for a vapor exposure, but may take up to 30 minutes for a VX or liquid exposure.

3. Management and Treatment
   a. Aggressive airway control, including BVM, intubation, Combitube insertion, and vigilant suctioning
   b. THREE MARK-I kits should be given in rapid succession
   c. Anticonvulsant medications will probably be required, even in the absence of seizure activity. **Administer ONE DIAZEPAM AUTO-INJECTOR**
Special Considerations

1. Riot control agents, i.e. mace, tear gas, pepper spray, are irritants to mucous membranes
   a. excessive tearing and rhinorrhea will be present
   b. shortness of breath may be present
   c. miosis is never present
      c. Atropine and Pralidoxime are not indicated

2. Pesticides, such as malathion, chlorpyrifos, and diazinon are also organophosphates
   a. they are not as potent
   b. treatment is usually limited to atropine alone
      c. Pralidoxime is not indicated for pesticides containing carbamates

3. Industrial gases, such as chlorine and phosgene, have similar presentations to nerve agents
   a. shortness of breath, skin or mucous membrane irritation, and cough may be present
   b. muscle fasciculation and miosis are not present

Recommended Procedure for Administration of MARK 1 Kits

Note: Two self-administration protocols are outlined: the sequential protocol allows the two components of the MARK 1 kit to be given one at a time; the simultaneous protocol allows for both auto-injectors to be administered at the same time. There are no therapeutic advantages of one over the other, and either may be employed with the same effect.

A. Self-Administration: Sequential Protocol

1. Please note the MARK-I kit contains two auto-injectors: the larger black-tipped Pralidoxime, labeled #2, containing 600mg of medication in 2ml; and the smaller green-tipped Atropine, labeled #1, containing 2mg in 0.7ml
2. Hold the kit in the non-dominant hand with the larger (#2) auto-injector on top
3. Grasp the smaller (#1) auto-injector in the dominant hand with a pencil-type grip, pull and remove the smaller green-tipped #1 Atropine injector from its clips
4. The Atropine auto-injector is now “armed”
5. Select a large muscle mass – the anterolateral thigh is the preferred site
6. The upper outer quadrant of the buttocks is permissible, particularly for thin casualties
7. Remove any objects (coins, keys, buttons) that may be obstructing the path of the spring-loaded needle; do not inject directly onto or in close proximity to the thigh, hip, or knee bone
8. The auto-injectors are designed to be used through clothing and turnout gear
9. Place the colored end (needle side) against the selected site and apply firm, even, stabbing pressure to the auto-injector
10. Hold in place for 10 seconds
11. Massage the site if possible
12. Repeat, using the black-colored Pralidoxime injector labeled #2
13. Make every effort to dispose of used needles carefully, either by utilizing a sharps container/ bucket, and/or by bending the tips of the non-retracting needles against a hard surface (ground)
14. Monitor for improvement in symptoms – remember, miosis or pupillary constriction will not improve unless topical Atropine is given
15. Multiple or repeated doses may be given according to signs and symptoms up to a maximum of 3 MARK-I kits

B. Self-Administration: Simultaneous Protocol

1. Prepare both auto-injectors, as described above
2. Select two muscle sites, one in each thigh or buttock
3. Simultaneously, inject both auto-injectors into the desired sites, holding firm pressure for 10 seconds until both auto-injectors are fully discharged
4. Massage, dispose of sharps, and monitor effects and symptoms as above

C. Buddy Administration

1. If conscious, have the recipient squat and not kneel to receive antidote administration
2. If unconscious, position the recipient on his/her side in a lateral position
3. Select the thigh or upper outer quadrant of the buttocks as the site of injection (the thigh is preferable)
4. Administer per injection protocols
5. Monitor for improvement or need for additional MARK I injections
6. In order to determine that a responder has received treatment with antidote kit[s], each CR-MMRS kit shall include a marking pen. The pen is to be used to signify that a responder has received treatment with MARK 1 kits and/or Diazepam.
7. A single vertical line shall be drawn upon the forehead of the responder for every MARK 1 kit received, and a “V” added when needed to signify the administration of the Diazepam component.
Post-Treatment Actions

A. Once egress is made and self-treatment has been performed, the responder shall notify other personnel on scene of the danger inside and shall await decontamination before advancing for further medical evaluation.

B. Once treated with antidote kit[s], the responder shall be taken off-line immediately and transported to the nearest Emergency Department for further medical evaluation.

C. A triage tag will be attached to the responder indicating the use of MARK 1 / Diazepam auto injector(s), and adding any information regarding the exposure [liquid or vapor, signs and symptoms, and especially if the responder has been decontaminated].
Capitol Region MMRS MARK 1 Kit Utilization

DISASTER PROTOCOL

Introduction

The primary intent of using MARK I Kits is to allow first responders to self-treat or to treat other first responders in the event of a chemical nerve agent exposure. However, the Capitol Region Metropolitan Medical Response System realizes that, in the event of a mass public exposure to a nerve agent, the first responders may possess the resources to treat other members of the public safety response team. Accordingly, the Capitol Region MMRS endorses the following protocol for on-scene administration of the MARK 1 Kits.

ON-SCENE PROTOCOL

“A Disaster Occurs”
- Self-Treat and Treat Your Crew
- Provide Treatment To Other Public Safety Responders
  - Paramedics May Administer the MARK 1 Kits
    - If sufficient resources are not available then:
  - Basic-EMT May Administer the MARK 1 Kits
    - If sufficient resources are not available then:
  - Trained First Responders May Administer the MARK 1 Kits

TRANSPORT

For patients requiring continued administration of the MARK 1 Kit the Capitol Region MMRS authorizes the following transportation protocol (in order of preference):
- Paramedic Accompanies the Patients
  - If sufficient resources are not available then:
- Basic-EMT Accompanies the Patients
  - If sufficient resources are not available then:
- MARK 1 kits may be given to transporting medical personnel to facilitate continued patient care, including air-evacuation crews

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