

## APPENDIX E

### PROCEDURES FOR ADMINISTERING THE NERVE AGENT ANTIDOTES

#### E-1. Injection Site

The injection site for administering the MARK I and CANA (fig E-1) is normally in the outer thigh muscle. The thigh injection site is the area about a hand's width above the knee to a hand's width below the hip joint (fig E-2). It is important that the injections be given into a large muscle area. If the individual is thinly-built, then the injections should be administered into the upper outer quarter (quadrant) of the buttocks (fig E-3). Injecting in the buttocks of thinly-built individuals avoids injury to the thigh bone.

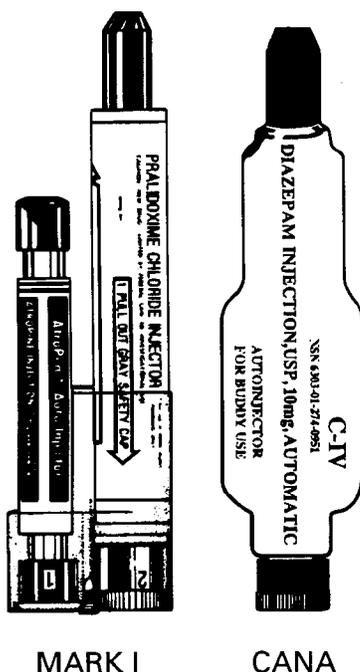


Figure E-1. Nerve agent antidotes, MARK I and CANA.

#### E-2. Self-Aid

If you experience any or all of the nerve agent poisoning MILD symptoms (para 2-5 b (1)), you must IMMEDIATELY self-administer the MARK I (fig E-1). Follow the procedure given below.

- a. Immediately put on your protective mask.
- b. Remove one MARK I from your protective mask carrier, pocket of the MOPP suit, or other location as specified by your unit SOP. (In cold weather, the MARK I should be stored in an inside pocket of your clothing to protect the antidote from freezing. A frozen MARK I cannot be used to provide

you with antidote, when needed. However, the MARK I can still be used after complete thawing.)

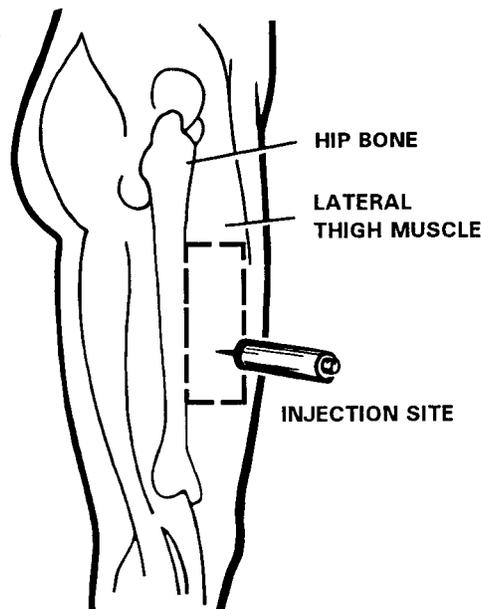


Figure E-2. Thigh injection site.

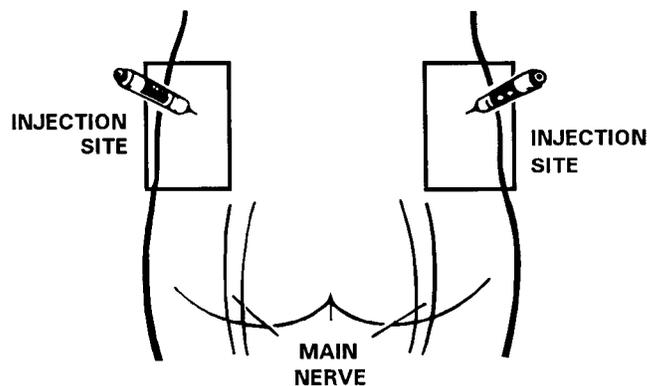


Figure E-3. Buttocks injection site.

- c. With your nondominant hand, hold the autoinjectors by the plastic clip so that the larger autoinjector is on top (fig E-4A) and both are positioned in front of you at eye level.
- d. With your dominant hand, check the injection site (thigh or buttocks) for buttons or objects in pockets which may interfere with the injections.

e. With this same hand, grasp the **atropine** autoinjector (the smaller of the two) with the thumb and first two fingers (fig E-4B). **DO NOT** cover or hold the needle end with your hand, thumb, or fingers—you might accidentally inject yourself. An accidental injection into the hand **WILL NOT** deliver an effective dose of the antidote, especially if the needle goes through the hand.

f. Pull the injector out of the clip with a smooth motion (fig E-4C). The autoinjector is now armed. **DO NOT** touch the needle end.

g. Hold the autoinjector with your thumb and two fingers (pencil writing position). Be careful not to inject yourself in the hand!

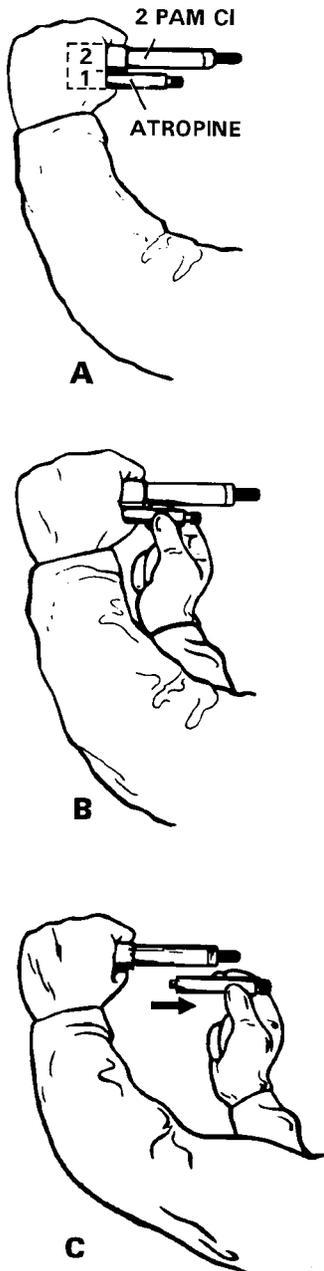


Figure E-4. Removing atropine autoinjector from clip.

h. Position the green (needle) end of the injector against the injection site (thigh or buttock). **DO NOT** inject into areas close to the hip, knee, or thigh bone.

(1) On the outer thigh muscle (fig E-5).

OR

(2) If you are thinly-built, inject yourself into the upper outer quarter (quadrant) of the buttock (fig E-6). There is a nerve that crosses the buttocks; hitting this nerve can cause paralysis. Therefore, you must only inject into the upper outer quarter (quadrant) of the buttocks.

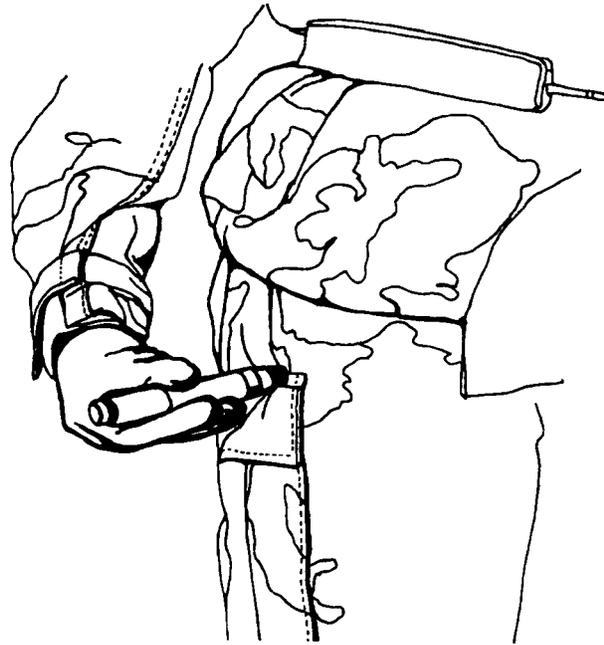


Figure E-5. Thigh injection site for self-aid.



Figure E-6. Buttocks injection site for self-aid.

i. Apply firm, even pressure (not jabbing motion) to the injector until it pushes the needle into your thigh (or buttocks). Make sure you **DO NOT** hit your mask carrier, any buttons, or objects in your pocket. Using a jabbing motion may result in an improper injection or injury to the thigh or buttocks.

j. Hold the injector firmly in place for at least 10 seconds. The seconds can be estimated by counting "one thousand one," "one thousand two," and so forth. Firm pressure automatically triggers the coiled spring mechanism. This plunges the needle through the clothing into the muscle and at the same time

injects the antidote into the muscle tissue.

k. Carefully remove the autoinjector from your injection site.

l. Place the used atropine injector carefully between the little finger and the ring finger of the hand that is holding the remaining autoinjector and the clip (fig E-7A). Watch out for the needle!

m. Pull the **2 PAM CI** injector (the larger of the two) out of the clip (fig E-7B and C) and inject yourself in the same manner as steps f through k above, holding the black (needle) end against your outer thigh (or buttocks).

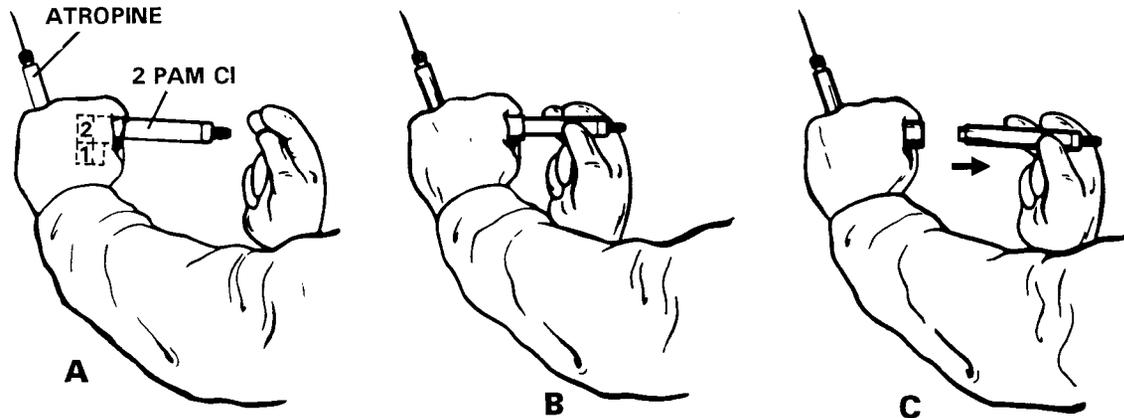


Figure E-7. Removing 2 PAM CI autoinjector from clip.

n. Drop the clip *without dropping the used injectors*.

o. Attach the used injectors to your clothing (fig E-8).

(1) Push the needles of the used injectors (one at a time) through a pocket flap of your protective overgarment jacket. Use the sleeve pocket flap on the new overgarment jacket.

(2) Bend each needle to form a hook. It is important to keep track of all used autoinjectors so that medical personnel can determine how much antidote has already been given. Knowing how much antidote has been given enables them to provide the proper follow-up treatment, if needed. Be careful not to tear your protective garment and gloves with the needles.

p. Massage the injection site, if time permits.

q. After administering the first set of injections, wait 5 to 10 minutes. After administering one set of injections, you should decontaminate your skin (app D), if necessary, and put on any remaining protective clothing.

(1) If your heart beats very rapidly and your mouth becomes very dry you have received enough antidote to overcome the dangerous effects of the nerve agent. **DO NOT** give yourself another set of injections. If you are able to walk without assistance (ambulate), know who you are, and where you are,

you **WILL NOT** need the second set of injections. (If not needed, giving yourself a second set of MARK I injections may create a nerve agent antidote overdose, which could cause incapacitation.)

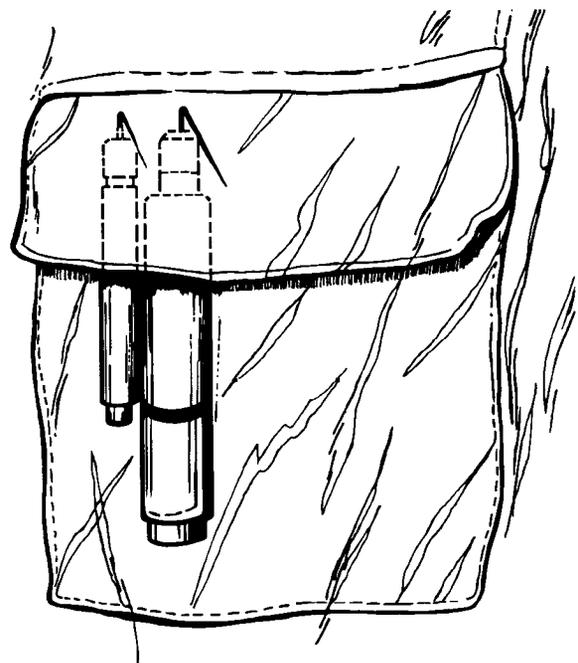


Figure E-8. One set of used autoinjectors attached to pocket flap.

(2) If you continue to have symptoms of nerve agent poisoning, seek someone else (a buddy) to check your symptoms and administer the additional sets of injections, if required.

### E-3. Buddy Aid

Service members may seek assistance after self-aid (self-administering one MARK I) or may become incapacitated after self-aid. A buddy must evaluate the individual to determine if additional antidotes are required to counter the effects of the nerve agent. Also, service members may experience SEVERE symptoms of nerve agent poisoning (para 2-5 b (2)); they will not be able to treat themselves. In either case, other service members must perform buddy aid as quickly as possible. Before initiating buddy aid, determine if one set of MARK I injectors has already been used so that no more than three sets of the antidote are administered. Buddy aid also includes administering the CANA with the third MARK I to prevent convulsions. Follow the procedures indicated below.

#### WARNING

**Squat, DO NOT kneel, when masking the casualty or administering the nerve agent antidotes to the casualty. Kneeling may force the chemical agent into or through your protective clothing.**

- a. Mask the casualty (follow the procedure outlined in FM 3-4).
- b. Position the casualty on his or her side (swimmers position).
- c. Position yourself near the casualty's thigh.
- d. Remove all three MARK I sets (or the remaining sets) of the antidote autoinjectors and the CANA autoinjector from the inside pocket of the casualty's protective mask carrier, pocket of the MOPP suit, or other location as specified in your unit SOP. Do not use your own MARK I sets on a casualty. You may not have any antidote if needed for self-aid.
- e. With your nondominant hand, hold the set of injectors by the plastic clip, so that the larger injector is on top (fig E-4A) and both are positioned in front of your body at eye level.
- f. With your dominant hand, check the injection site (thigh or buttocks) for buttons or objects in pockets which may interfere with the injections.
- g. With this same hand, grasp the atropine autoinjector (the smaller of the two) with the thumb and first two fingers (fig E-4B). **DO NOT** cover or hold the needle end with your hand or fingers—you might accidentally inject yourself.
- h. Pull the injector out of the clip with a smooth motion (fig E-4C). Make sure your hand **DOES NOT**

cover the needle end. Holding or carrying the needle (green) end of the autoinjector may result in accidentally injecting yourself.

i. Hold the autoinjector with your thumb and two fingers pencil writing position). Be careful not to inject yourself in the hand!

j. Position the green (needle) end of the injector against the casualty's injection site (thigh or buttocks).

(1) On the casualty's outer thigh muscle (fig E-9) .

#### WARNING

**DO NOT inject into areas close to the hip, knee, or thigh bone.**

#### OR

(2) If the casualty is thinly-built, inject the antidote into the buttocks. Only inject the antidote into the upper outer portion of the casualty's buttocks (fig E-10). This avoids hitting the nerve that crosses the buttocks (fig E-3). Hitting this nerve can cause paralysis.



Figure E-9. Injecting the casualty's thigh.



Figure E-10. Injecting the casualty's buttocks.

k. Apply firm, even pressure (not a jabbing motion) to the injector until it pushes the needle into the casualty's thigh (or buttocks). Make sure you do not hit the casualty's mask carrier or any objects in the individual's pockets. Using a jabbing motion may result in an improper injection or injury to the thigh or buttocks.

l. Hold the injector firmly in place for at least 10 seconds. The seconds can be estimated by counting "one thousand one," "one thousand two," and so forth.

m. Carefully remove the atropine autoinjector from the casualty's injection site.

n. Place the used injector carefully between the little finger and the ring finger of the hand that is holding the remaining autoinjector and the clip (fig E-7A). Watch out for the needle!

o. Pull the 2 PAM C1 injector (the larger of the two) out of the clip (fig E-7B and C) and inject the casualty in the manner described in steps g through l above, holding the black (needle) end against the casualty's outer thigh (or buttocks).

p. Drop the clip *without dropping the used injectors*.

q. Carefully lay the used injectors on the casualty's side.

r. Repeat the procedure immediately (steps d through p above), using the *second* and *third* sets of MARK I autoinjectors.

s. Grasp the CANA autoinjector with your dominant hand with the needle end extending beyond your thumb and two fingers. With your other hand, pull the safety cap off the autoinjector base. The injector is now armed. **DO NOT** touch the black (needle) end. To do so you may accidentally inject yourself.

t. Position the black (needle) end of the autoinjector against the casualty's injection site (thigh or buttocks).

u. Apply firm, even pressure (not a jabbing motion) to the injector until it pushes the needle into the casualty's thigh (or buttocks). Make sure you do not hit the casualty's mask carrier or any objects in

the individual's pockets.

v. Hold the injector firmly in place for at least 10 seconds. The seconds can be estimated by counting "one thousand one," "one thousand two," and so forth.

w. Carefully remove the CANA autoinjector from the casualty's injection site.

x. Attach the CANA and all three MARK I sets of used injectors to the casualty's clothing (fig E-11).

(1) Push the needles of the used injectors (one at a time) through one of the pocket flaps of the casualty's protective overgarment.

(2) Bend each needle to form a hook. Be careful NOT to tear the casualty's protective garments or your gloves with the needles.

y. Massage the injection site if time permits.

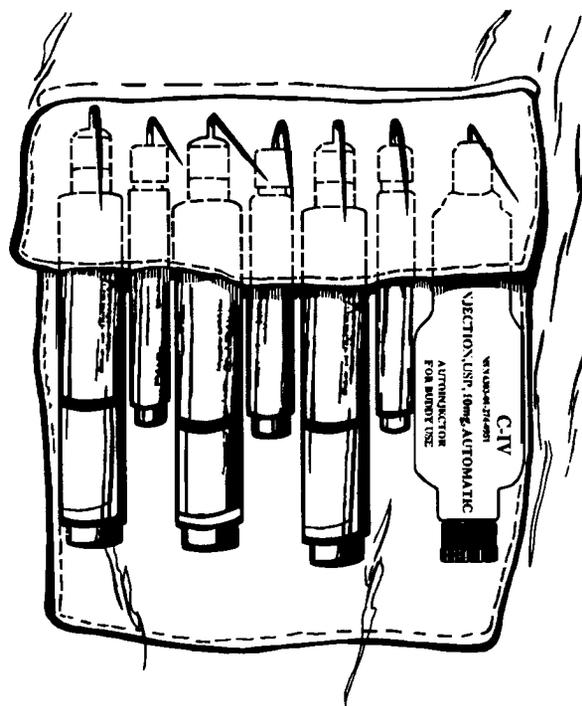


Figure E-11. Three sets of used MARK I autoinjectors and one CANA autoinjector attached to pocket flap.