



NERVE AGENT ANTIDOTE ADMINISTRATION

AUTHORITY

Division 2.5, Health and Safety Code, Sections 1797.220 & 1797.221

POLICY / GUIDANCE

Nerve Gas auto-injectors are to be used when EMS personnel are exposed to nerve agents (Sarin, Soman, Tabun, Vx) and have signs and symptoms of nerve agent exposure, or when ALS personnel treat victims in an MCI situation in the hot zone.

EQUIPMENT

1. Mark I autoinjector antidote kit containing:
 - **Atropine** autoinjector (2 mg in 0.7 cc's)
 - **Pralidoxime chloride** autoinjector - **2-PAM** (600 mg in 2 cc's)
2. Additional atropine (2 mg) autoinjectors



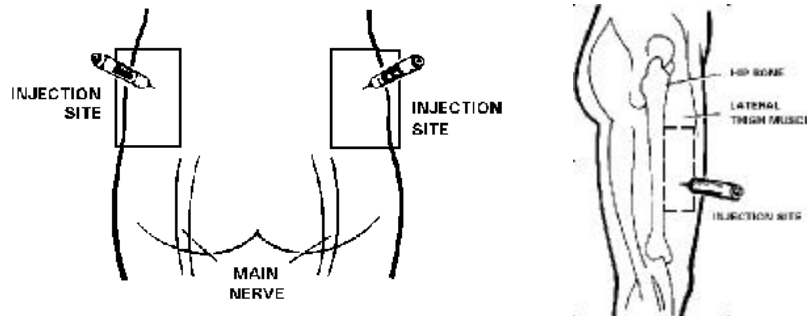
Figure 1: Mark 1 Autoinjector

PROCEDURE

If you experience any or all of the nerve agent poisoning symptoms, you must IMMEDIATELY self-administer the nerve gas antidote.

INJECTION SITE SELECTION

- The injection site for administration is normally in the **outer thigh muscle**. It is important that the injections be given into a large muscle area.
- If the individual is thin-built, then the injections should be administered into the **upper outer quadrant of the buttocks**



Figures 2 and 3: Buttock and thigh sites for self-administration

- ✓ Napa County
- ✓ Sonoma County
- ✓ Mendocino County



NERVE AGENT ANTIDOTE ADMINISTRATION CONTINUED

ARMING THE AUTO INJECTOR

- Immediately put on your protective mask.
- Remove the antidote kit
- With your nondominant hand, hold the autoinjectors by the plastic clip so that the larger autoinjector is on top and both are positioned in front of you at eye level.
- With your dominant hand grasp the **atropine** autoinjector (the smaller of the two) with the thumb and first two fingers. **DO NOT** cover or hold the needle end with your hand, thumb, or fingers-**you might accidentally inject your self**. An accidental injection into the hand WILL NOT deliver an effective dose of the antidote, especially if the needle goes through the hand.

Pull the injector out of the clip with a smooth motion. The autoinjector is now armed.

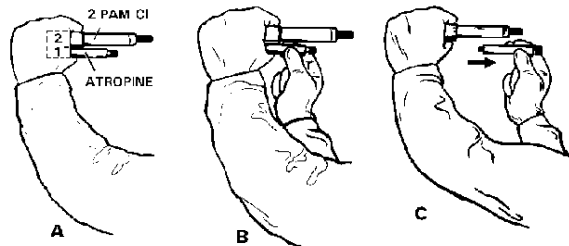


Figure 4: arming the auto injector



NERVE AGENT ANTIDOTE ADMINISTRATION CONTINUED

ADMINISTRATION

- Hold the **Atropine** portion of the autoinjector with your thumb and two fingers (pencil writing position). Be careful not to inject yourself in the hand!
- 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.
- Apply firm, even pressure (not jabbing motion) to the injector until it pushes the needle into the thigh (or buttocks). Using a jabbing motion may result in an improper injection or injury to the thigh or buttocks.
- Hold the injector firmly in place for at least 10 seconds. Firm pressure automatically triggers the coiled spring mechanism. This plunges the needle into the muscle (through the clothing if necessary) and at the same time injects the antidote into the muscle tissue.
- Carefully remove the **Atropine** autoinjector from the injection site.
- Next pull the **2 PAM** injector (the larger of the two) out of the clip.
- Inject the **2 PAM** in the same manner as the steps above, holding the black (needle) end against the outer thigh (or buttocks).
- Massage the injection sites, if time permits.
- After administering the first set of injections, wait 5 to 10 minutes.
- After administering one set of injections, you should initiate decontamination procedures, as necessary, and put on any additional protective clothing.

Atropine only may be repeated every 10 - 15 minutes as needed. (Note: multiple doses of atropine may be needed – see below)

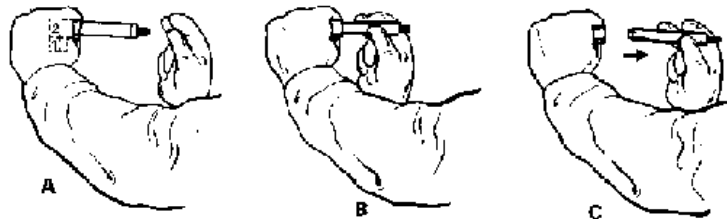


Figure 5: removing 2-PAM from the clip



NERVE AGENT ANTIDOTE ADMINISTRATION CONTINUED

PATIENT ADMINISTRATION IN THE HOT ZONE

- Ensure appropriate personal protective actions and patient protection to eliminate or reduce additional contamination/exposure.
- Squat, DO NOT kneel, when masking the casualty or administering the nerve agent antidotes to the casualty. Kneeling may expose you to contamination to the chemical agent into or through your protective clothing.
- Position the casualty on his or her side (swimmer's position).
- Position yourself near the casualty's thigh.
- The procedure for site selection and medication administration is the same as outlined above.

Atropine only should be repeated as needed. (Note: multiple doses of atropine may be needed – see below)

SPECIAL NOTE (SELF ADMINISTRATION)

The Coastal Valleys EMS Agency, due to regulatory constraints does not directly authorize self-administration of medications. Any agency or provider, which elects to utilize these procedures for the purpose of self-administration, should obtain approval and authorization from their own risk management and/or medical director.

GUIDELINES FOR SELF ADMINISTRATION

- Hold the autoinjector with your thumb and two fingers (pencil writing position). Be careful not to inject yourself in the hand!
- 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.
- Apply firm, even pressure (not jabbing motion) to the injector until it pushes the needle into your thigh (or buttocks). Using a jabbing motion may result in an improper injection or injury to the thigh or buttocks.
- Hold the injector firmly in place for at least 10 seconds. 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.
- Carefully remove the autoinjector from your injection site.
- Next pull the **2 PAM** injector (the larger of the two) out of the clip.
- Inject yourself in the same manner as the steps above, holding the black (needle) end against your outer thigh (or buttocks).
- Massage the injection sites, if time permits.
- After administering the first set of injections, wait 5 to 10 minutes.
- After administering one set of injections, you should initiate decontamination procedures, as necessary, and put on any additional protective clothing.

Atropine only may be repeated every 10 - 15 minutes as needed. (Note: multiple doses of atropine may be needed – see below)



NERVE AGENT ANTIDOTE ADMINISTRATION CONTINUED

DOSAGE SCHEME FOR MARK I ADMINISTRATION - via autoinjector for self administration or use in the hot zone

Signs & Symptoms	Onset	# of autoinjectors to use:
Vapor: small exposure Pinpoint pupils Runny nose Mild SOB	Seconds	MARK I autoinjector antidote kit – 1 dose initially (containing atropine and 2-PAM) May repeat x1 in 10 minutes
Liquid: small exposure Sweating Twitching Vomiting Feeling weak	Minutes to Hours	MARK I autoinjector antidote kit – 1 dose initially (containing atropine and 2-PAM) May repeat x1 in 10 minutes
Both: large exposure Convulsions Apnea Copious secretions	Seconds to Hours	MARK I autoinjector antidote kit – 3 doses initially (containing atropine and 2-PAM)



NERVE AGENT ANTIDOTE ADMINISTRATION CONTINUED

NERVE AGENT ANTIDOTE ADMINISTRATION (ALS)

POLICY

- Nerve agent antidote medications are only given if the patient is showing signs and symptoms of nerve agent exposure/poisoning. THEY ARE NOT TO BE GIVEN PROPHYLACTICALLY.
- This policy is to be used in conjunction with CVEMSA Policy M-7 *POISONING/ OVERDOSES* and CVEMSA Policy N-3 *SEIZURES*.
- Pralidoxime (2 PAM) is an optional scope of practice medication under the State EMSA and may be implemented at the discretion of the provider agency. Pralidoxime (2 PAM) is not a mandatory medication, any provider agency that implements use of Pralidoxime must notify the CVEMSA in writing.
- Note: A decrease in bronchospasm and respiratory secretions are the best indicators of a positive response to atropine and 2-PAM therapy.

Signs and Symptoms of Nerve Agent Exposure

(From mild to severe)

Exposure	Signs & Symptoms
Mild	<ul style="list-style-type: none"> • Unexplained runny nose • Tightness in chest • Difficulty breathing • Bronchospasm
Moderate	<ul style="list-style-type: none"> • Pinpoint pupils resulting in blurred vision • Drooling • Excessive sweating • Nausea and/or vomiting
Severe	<ul style="list-style-type: none"> • Abdominal cramps • Involuntary urination and/or defecation • Jerking, twitching and staggering • Headache • Drowsiness • Coma • Convulsions • Apnea

Mnemonic for Nerve Agent Exposure

S	salivation
L	lacrimation
U	urination
D	defecation
G	gastrointestinal pain & gas
E	emesis



NERVE AGENT ANTIDOTE ADMINISTRATION CONTINUED

- If patient exposed**
- Remove patient's clothing
 - Blot off the agent
 - Flush area with large amounts of water
 - Cover affected area

