

CENTRAL CALIFORNIA EMERGENCY MEDICAL SERVICES

Manual:	Emergency Medical Services Administrative Policies and Procedures	Policy Number: 568
Subject:	Nerve Agent Exposure	Page: 1 of 8
References:	Health and Safety Code, Division 2.5 California Code of Regulations, Title 22, Division 9	Effective: 07/13/2003

I. POLICY

To establish standards for local EMS and Public Safety Personnel in treating patients with nerve agent exposures utilizing resources from secure strategically placed caches or pre-deployed assets. Includes exposures to organophosphate compounds that produce the clinical triad of Salivation, Lacrimation, and Rhinorrhea, only during the event of a Nerve Agent Exposure.

II. PURPOSE

- A. Nerve agent antidote medications are only given if the person is showing signs and symptoms of nerve agent poisoning. **THEY ARE NOT TO BE GIVEN PROPHYLACTICALLY.**
- B. All providers will ensure personal safety by assuring adequate decontamination of victims and using appropriate personal protective equipment. Medical procedures within the exclusion zone will only be performed by personnel who have specific training to allow them to function in that area.
- C. Caches of Nerve Agent antidote have been strategically placed in secure locations throughout the CCEMSA region. These caches include: Nerve Agent Antidote auto-injectors, multi-dose Atropine Sulfate, Pralidoxime Chloride (2-PAM), 0.5mg Atropen, 1.0mg Atropen, Diazepam auto-injector, 10mg Diazepam vials and sterile water for injection.
- D. Auto-injectors used to treat patients will come from cached assets, not those pre-deployed for EMS and Public Safety personnel.
- E. EMS and Public Safety personnel that have been trained and equipped may self-administer nerve agent antidote auto-injectors on themselves per EMS Policy and Procedures. With Incident Commander authorization, trained personnel may administer Nerve Agent Antidote auto-injectors to patients other than themselves or other public safety personnel within the exclusion zone.

Approved By:		Revision:
EMS Division Manager	DANIEL J. LYNCH (Signature on File at EMS Agency)	02/01/2011
EMS Medical Director	JIM ANDREWS, M.D. (Signature on File at EMS Agency)	

Subject:	Nerve Agent Exposure	Policy Number: 568
----------	----------------------	-----------------------

III. INDICATIONS

For patients exhibiting multiple symptoms of nerve agent organophosphate exposure ABSLUDGEM (A-Altered mental status; B-Bronchorrhea, Breathing difficulty or wheezing, Bradycardia; S-Salivation, Sweating, Seizures; L-Lacrimation (tearing); U-Urination; D-Defecation or Diarrhea, G-GI upset (abdominal cramps), E-Emesis (vomiting), M-Miosis/Muscle activity (twitching). Multiple patients with multiple symptoms makes diagnosis more likely.

If you begin to experience any signs/symptoms of nerve agent exposure, NOTIFY THE INCIDENT COMMANDER or MEDICAL GROUP SUPERVISOR (dispatch if Incident Command has not been established) immediately and declare yourself a patient.

IV. CONTRAINDICATIONS

- A. Use of Nerve Agent antidote in persons who in fact do not have nerve agent/organophosphate exposure.
- B. As prophylaxis against suspected nerve agents/ organophosphate.
- C. Nerve Agent Antidote auto-injectors should not be used on patients weighing less than 30kgs (refer to Attachment B for treating patients less than 30 kgs).

V. PROCEDURE (Nerve Agent Antidote Auto-Injector)

A. Patient or Buddy System Administration

1. Position patient on their side (recovery position).

NOTE: If necessary initiate decontamination procedures so not to become a victim prior to assisting patient.

2. Determine injection site:

- a. Thigh injection area – The thigh injection site is the area about one hand's width above the knee to one hand's width below the hip joint, into a large muscle and away from any bone.
- b. Buttocks – If the patient is thinly built, then the injections should be administered into the upper outer quarter (quadrant) of the buttocks to avoid injury to the vascular or nervous system.

3. Position yourself near the injection site.

4. With your non-dominant hand, hold the auto-injectors by the plastic clip so that the larger autoinjector (2-PAM) is on top and both are positioned in front of you at eye level.

5. With your dominant hand, check the injection site (thigh or buttocks) for buttons or objects in pockets, which may interfere with the injections.

6. 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 finger, as this may lead to accidental injection.

7. Pull the autoinjector out of the clip with a smooth motion. The autoinjector is now armed. DO NOT touch the needle end.

8. Hold the autoinjector with your thumb and two fingers (pencil writing position). DO NOT touch

Subject: Nerve Agent Exposure	Policy Number: 568
-------------------------------	--------------------

the needle end.

9. Position the green (needle) end of the autoinjector against the injection site (thigh or buttocks). DO NOT inject into areas near the hip, knee, or femur.
10. Apply firm even pressure (not a jabbing motion) to the autoinjector until it pushes the needle into your patients thigh (or buttocks). Take care not to hit any objects in patient's pockets. Using a jabbing motion may result in an improper injection or injury.
11. Hold the autoinjector firmly in place for at least ten (10) seconds.
12. Carefully remove the Atropine autoinjector from the injection site.
13. Place the used autoinjector carefully between the little finger and ring finger of the hand that is holding the remaining autoinjector and the clip.
14. Pull the 2-PAM autoinjector (the larger of the two) out of the clip and inject your buddy in the same manner described in steps 3 through 13, holding the black (needle) end against the injection site. DO NOT touch the needle end.
15. Drop the clip without dropping the used auto-injectors.
16. Carefully attach the used auto-injectors to the patient's clothing.
17. Repeat the above steps using the second and third sets of Nerve Agent Antidote Kits, as necessary.
18. As time permits document doses given as appropriate to the situation (on triage tag and/or prehospital care report).
19. Massage the injection site if time permits.

B. Self Administration

1. With your non-dominant hand, hold the auto-injectors by the plastic clip so that the larger autoinjector (2-PAM) is on top and both are positioned in front of you at eye level.
2. With your dominant hand, check the injection site (thigh or buttocks) for buttons or objects in pockets, which may interfere with the injections.
3. 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 finger, as this may lead to accidental injection.
4. Pull the autoinjector out of the clip with a smooth motion. The autoinjector is now armed. DO NOT touch the needle end.
5. Hold the autoinjector with your thumb and two fingers (pencil writing position). DO NOT touch the needle end.
6. Position the green (needle) end of the autoinjector against the injection site (thigh or buttocks). DO NOT inject into areas near the hip, knee, or femur.
7. Apply firm even pressure (not a jabbing motion) to the autoinjector until it pushes the needle into your thigh (or buttocks). Take care not to hit any objects in patient's pockets. Using a jabbing motion may result in an improper injection or injury.

Subject: Nerve Agent Exposure	Policy Number: 568
-------------------------------	--------------------

8. Hold the autoinjector firmly in place for at least ten (10) seconds.
9. Carefully remove the Atropine autoinjector from the injection site.
10. Place the used autoinjector carefully between the little finger and ring finger of the hand that is holding the remaining autoinjector and the clip.
11. Pull the 2-PAM autoinjector (the larger of the two) out of the clip and inject yourself in the same manner described in steps 3 through 13, holding the black (needle) end against the injection site. DO NOT touch the needle end.
12. Massage the injection sites if time permits.
13. After administering one set of injections, initiate decontamination procedures as necessary.
14. Administer the appropriate number of Nerve Agent Antidote Kits related to the signs and symptoms (mild, moderate, or severe).
15. After the administration of the Nerve Agent Antidote, pin the used injector on the clothing on the torso.

VI. COMPLICATIONS

- A. Over Atropinization (can cause cardiac arrhythmia, tachycardia, myocardial ischemia, including death).
- B. Accidental injection.
- C. Localized trauma at injection site from injection.

VII. DEFINITIONS

- A. Vapor Exposures
 1. Mild/Moderate – Miosis, dim vision, headache, rhinorrhea, salivation, dyspnea.
Time of onset – Seconds to minutes after exposure.
 2. Severe – All the above, plus, severe breathing difficulty or cessation of respiration's, generalized muscular twitching, weakness or paralysis, convulsions, loss of consciousness, loss of bladder and bowel control.

Time of onset – Seconds to minutes after exposure.
- B. Liquid on Skin
 1. Mild/Moderate – Muscle twitching at site of exposure, sweating at site of exposure, nausea, vomiting, feeling of weakness.
Time of onset – 10 minutes to 18 hours after exposure.
 2. Severe – All the above, plus, severe breathing difficulty or cessation of breathing, generalized muscular twitching, weakness or paralysis, convulsions, loss of consciousness, loss of bladder and bowel control.
Time of onset – Minutes to an hour after exposure.

Subject: Nerve Agent Exposure	Policy Number: 568
-------------------------------	-----------------------

Subject:	Nerve Agent Exposure	Policy Number: 568
----------	----------------------	-----------------------

VIII. DRUG DOSAGE AND ADMINISTRATION

Adult (10 years or older) (Attachment A):

- A. Mild Exposure – Administer one (1) nerve agent antidote auto-injector or 2mg Atropine IV/IM-600mg 2-PAM IM.
May repeat 2mg Atropine every 5 minutes until symptoms improve.
- B. Moderate Exposure – Administer two (2) nerve agent antidote auto-injectors or 4mg Atropine IV/IM-1200mg 2-PAM IM. May repeat 2mg Atropine every 5minutes until symptoms improve.
For Seizure activity, Diazepam auto-injector or Midazolam IM per policy 530.19 if Diazepam auto-injector unavailable.
- C. Severe Exposure – Administer three (3) nerve agent antidote auto-injectors or 6mg Atropine IV/IM-1800mg 2-PAM IM. May repeat 2mg Atropine every 5minutes until symptoms improve.
For Seizure activity, Diazepam auto-injector or Midazolam IM per policy 530.19 if Diazepam auto-injector unavailable.

Pediatric (less than 10 years old) (Attachment B):

- A. Mild Exposure – Administer Atropine 0.02mg/kg IM (minimum dose of 0.1mg)
0.5mg Atropen may be used for patients 0-2 years old
1.0mg Atropen may be used for patients 2-10 years old
May repeat every 5 minutes until symptoms improve.
- B. Moderate Exposure – Administer Atropine 0.02mg/kg IM (minimum dose of 0.1mg)
0.5mg Atropen may be used for patients 0-2 years old
1.0mg Atropen may be used for patients 2-10 years old
May repeat every 5 minutes until symptoms improve.
Administer 2-PAM 25mg/kg IM.
- C. Administer Atropine 0.02mg/kg IM (minimum dose of 0.1mg)
0.5mg Atropen may be used for patients 0-2 years old
1.0mg Atropen may be used for patients 2-10 years old
May repeat every 5 minutes until symptoms improve.
Administer 2-PAM 25mg/kg IM.
For Seizure activity, Midazolam IM per policy 530.19

IX. SPECIAL CONSIDERATIONS

- A. It is important that the injections be given into a large muscle area. If you or your patient are thinly built, and have insufficient muscle mass in the outer thigh area, then the injections should be administered into the upper outer quarter (quadrant) of the buttocks to avoid injury to the vascular or nervous system. The outer quarter of the buttocks should be used to avoid potential nerve damage.
- B. Accidental injections into the hand WILL NOT deliver an effective dose of the antidote, especially if the needle goes through the hand.
- C. Squat; DO NOT kneel, when administering nerve agent antidotes to your patient. Kneeling may force the chemical agent to enter through the protective clothing.
- D. Nerve Agents include Tabun (GA), Sarin (GB), Soman (GD), GF, and VX.

Subject:	Nerve Agent Exposure	Policy Number: 568
----------	----------------------	-----------------------

X. NERVE AGENT ANTIDOTE SERVICE PROVIDERS

A. Skills Proficiency

Training will be provided by a trainee who has attended the local EMS Agency Nerve Agent Exposure class, passing skills and written test. After the training has been provided, skills testing sheets will be placed on file with the provider agency and made available for audit by the local EMS Agency.

B. Nerve Agent Antidote Tracking

Personnel that administer a Nerve Agent Antidote Kit not used for an exposure must file a Quality Improvement Report within 72 hours (refer to EMS Policy #704). Patients with Nerve Agent Exposure do not require reporting incident on a Quality Improvement Report. Patients assessed and treated for Nerve Agent Exposure must be documented on the prehospital care report.

ATTACHMENT A

Adult Nerve Agent Treatment

This is intended for patients 10 years old and older.
Do not use Nerve Agent Antidote auto-injectors in patients weighing less than 30kgs.

Ensure patient is decontaminated prior to starting treatment

Mild Exposure

Administer one (1) Nerve Agent Antidote auto-injector
or
2mg Atropine IM and 600mg 2-PAM IM.

May repeat 2mg Atropine every 5 minutes until symptoms improve.

Moderate Exposure

Administer two (2) Nerve Agent Antidote auto-injectors **or** 4mg Atropine IM and 1200mg 2-PAM IM.
May repeat 2mg Atropine every 5 minutes until symptoms improve.

For Seizure activity, Diazepam auto-injector or Midazolam IM per policy 530.19 if Diazepam auto-injector unavailable.

Severe Exposure

Administer three (3) Nerve Agent Antidote auto-injectors
or
6mg Atropine IM And 1800mg 2-PAM IM

May repeat 2mg Atropine every 5 minutes until symptoms improve.

For Seizure activity, Diazepam auto-injector or Midazolam IM per policy 530.19 if Diazepam auto-injector unavailable.

ATTACHMENT B

Pediatric Nerve Agent Treatment

This is intended for patients less than 10 years old.

Do not use Nerve Agent Antidote auto-injectors in patients weighing less than 30kgs.

Ensure patient is decontaminated prior to starting treatment

Mild Exposure

Moderate Exposure

Severe Exposure

Administer Atropine 0.02mg/kg IM (minimum dose of 0.1mg)
0.5mg Atropen may be used for patients 0-2 years old
1.0mg Atropen may be used for patients 2-10 years old

May repeat every 5 minutes until symptoms improve.

Administer Atropine 0.02mg/kg IM (minimum dose of 0.1mg)
0.5mg Atropen may be used for patients 0-2 years old
1.0mg Atropen may be used for patients 2-10 years old

May repeat every 5 minutes until symptoms improve.

Administer Atropine 0.02mg/kg IM (minimum dose of 0.1mg)
0.5mg Atropen may be used for patients 0-2 years old
1.0mg Atropen may be used for patients 2-10 years old

May repeat every 5 minutes until symptoms improve.