CENTRAL CALIFORNIA
EMERGENCY MEDICAL SERVICES

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Subject:	Nerve Agent Exposure	
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: EMS Division Manager	DANIEL J. LYNCH (Signature on File at EMS Agency)	Revision: **02/14/2024**
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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. If you have access to the Nerve Agent Antidotes, treat yourself immediately.

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 less than 10 years old or weighing less than 41kgs/90 lbs. (refer to Attachment B for treating patients less than less than 10 years old or weighing less than 41kgs/90 lbs.).

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.

   *Do Not Remove Gray Safety Release until ready to use.
   *****Never touch the Green Tip (Needle End)!

4. Tear open the plastic pouch at any of the notches. Remove the DuoDote autoinjector from the pouch.

5. Place the DuoDote autoinjector in your dominant hand. (If you are right-handed, your right hand is dominant.) Firmly grasp the center of the DuoDote autoinjector with the Green Tip (needle end) pointing down.

6. With your other hand, pull off the Gray Safety Release. DuoDote is now ready to be administered.

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7. The injection site is the mid-lateral thigh area. The DuoDote autoinjector can inject through clothing. However, make sure pockets at the injection site are empty. People who may not have a lot of fat at the injection site should also be injected in the mid-lateral thigh, but before giving the injection, bunch up the thigh to provide a thicker area for injection. DO NOT inject into areas near the hip, knee, or femur.

8. Firmly push the Green Tip straight down (a 90° angle) against the mid-lateral thigh. Continue to firmly push until you feel the DuoDote autoinjector trigger. After the autoinjector triggers, hold the DuoDote autoinjector firmly in place against the injection site for approximately 10 seconds.

9. Remove the DuoDote autoinjector from the thigh and look at Green Tip. If the needle is visible, the drug has been administered. If the needle is not visible, check to be sure the Gray Safety Release has been removed, and then repeat above steps beginning with Step 6, but push harder in Step 7.

10. After the drug has been administered, push the needle against a hard surface to bend the needle back against the DuoDote autoinjector.

11. Put the used DuoDote autoinjector back into the plastic pouch, if available. Leave used DuoDote autoinjector(s) with the patient to allow other medical personnel to see the number of DuoDote autoinjector(s) administered.

12. Immediately move yourself and the patient away from the contaminated area and seek definitive medical care for the patient.

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13. Repeat the above steps using the second and third sets of Nerve Agent Antidote Kits, as necessary.

14. Document doses given as appropriate to the situation (on triage tag and/or prehospital care report).

15. Massage the injection site if time permits.

B. Self Administration

*Do Not Remove Gray Safety Release until ready to use.
*****Never touch the Green Tip (Needle End)!

1. Tear open the plastic pouch at any of the notches. Remove the DuoDote autoinjector from the pouch.

2. Place the DuoDote autoinjector in your dominant hand. (If you are right-handed, your right hand is dominant.) Firmly grasp the center of the DuoDote autoinjector with the Green Tip (needle end) pointing down.

3. With your other hand, pull off the Gray Safety Release. DuoDote is now ready to be administered.

4. The injection site is the mid-lateral thigh area. The DuoDote autoinjector can inject through clothing. However, make sure pockets at the injection site are empty. People who may not have a lot of fat at the injection site should also be injected in the mid-lateral thigh, but before giving the injection, bunch up the thigh to provide a thicker area for injection. DO NOT inject into areas near the hip, knee, or femur.

5. Firmly push the Green Tip straight down (a 90° angle) against the mid-lateral thigh. Continue to firmly push until you feel the DuoDote autoinjector trigger. After the autoinjector triggers, hold the DuoDote autoinjector firmly in place against the injection site for approximately 10 seconds.

6. Remove the DuoDote autoinjector from the thigh and look at Green Tip. If the needle is visible, the drug has been administered. If the needle is not visible, check to be sure the Gray Safety Release has been removed, and then repeat above steps beginning with Step 4, but push harder in Step 5.

7. After the drug has been administered, push the needle against a hard surface to bend the needle back against the DuoDote autoinjector.

8. Put the used DuoDote autoinjector back into the plastic pouch, if available. Leave used DuoDote autoinjector(s) with the patient to allow other medical personnel to see the number of DuoDote autoinjector(s) administered.

9. Immediately move yourself away from the contaminated area and seek definitive medical care.

10. Massage the injection sites if time permits.

11. After administering one set of injections, initiate decontamination procedures as necessary.

12. Administer the appropriate number of Nerve Agent Antidote Kits related to the signs and symptoms (mild, moderate, or severe).

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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.

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VIII. DRUG DOSAGE AND ADMINISTRATION

Adult (10 years or older or >41 kgs. /90 lbs.) (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 or <41 kgs. /90 lbs.) (Attachment B):

A. Mild Exposure – Administer
For patients 0-2 years old
Atropine: 0.05 mg/kg IM
0.5mg Atropen may be used
2-PAM Cl: 15 mg/kg IM

For patients 2-10 years old
Atropine: 1 mg IM
1.0mg Atropen may be used
2-PAM Cl: 15 mg/kg IM

Atropine may be repeated every 5 minutes until symptoms improve.

B. Moderate Exposure – Administer
For patients 0-2 years old
Atropine: 0.05 mg/kg IM
0.5mg Atropen may be used
2-PAM Cl: 15 mg/kg IM

For patients 2-10 years old
Atropine: 1 mg IM
1.0mg Atropen may be used
2-PAM Cl: 15 mg/kg IM

Atropine may be repeated every 5 minutes until symptoms improve.

C. Severe Exposure – Administer
For patients 0-2 years old
Atropine: 0.1 mg/kg IM
1.0mg Atropen may be used
2-PAM Cl: 25 mg/kg IM

For patients 2-10 years old
Atropine: 2 mg IM
1.0mg Atropen may be used
2-PAM Cl: 25 mg/kg IM

Atropine may be repeated every 5 minutes until symptoms improve.

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.

E. Multi-dose vials of 2-PAM Cl will need to be reconstituted using sterile water prior to administration.

F. Remember that atropine is the antidote to nerve agent exposure. 2-PAM is just an extra that may, or may not, be effective.

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 or older or > 41kgs./90 lbs.
Do not use Nerve Agent Antidote auto-injectors in patients weighing less than 41kgs/90 lbs.

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 or < 41kgs./90 lbs.. **Do not use** Nerve Agent Antidote auto-injectors in patients weighing less than 41kgs/90 lbs..

Ensure patient is decontaminated prior to starting treatment.

Mild Exposure

Administer

For patients 0-2 years old
Atropine: 0.05 mg/kg IM
0.5mg Atropen may be used
2-PAM Cl: 15 mg/kg IM

For patients 2-10 years old
Atropine: 1 mg IM
1.0mg Atropen may be used
2-PAM Cl: 15 mg/kg IM

Atropine may be repeated every 5 minutes until symptoms improve.

Moderate Exposure

Administer

For patients 0-2 years old
Atropine: 0.05 mg/kg IM
0.5mg Atropen may be used
2-PAM Cl: 15 mg/kg IM

For patients 2-10 years old
Atropine: 1 mg IM
1.0mg Atropen may be used
2-PAM Cl: 15 mg/kg IM

Atropine may be repeated every 5 minutes until symptoms improve.

Severe Exposure

Administer

For patients 0-2 years old
Atropine: 0.1 mg/kg IM
1.0mg Atropen may be used
2-PAM Cl: 25 mg/kg IM

For patients 2-10 years old
Atropine: 2 mg IM
1.0mg Atropen may be used
2-PAM Cl: 25 mg/kg IM

Atropine may be repeated every 5 minutes until symptoms improve.

For Seizure activity, Midazolam IM per policy 530.19