

Administration of Epinephrine Auto-injectors

Training standards for the administration of epinephrine auto-injectors in accordance with *Education Code* Section 49414.

Training Standards for the Administration of Epinephrine Auto-injectors

Contents

[Introduction](#) | [Training Standards](#) | [Narrative Summaries of Relevant Laws](#)
[Education Code Section 49414](#) | [Resources](#) | [Acknowledgements](#)

I. Introduction

This document provides model training standards for the administration of epinephrine auto-injectors in accordance with *Education Code (EC)* Section 49414. Based on a number of incidents of anaphylaxis in California schools, legislation was enacted in 2001 authorizing the State Superintendent of Public Instruction to develop minimum standards of training for school personnel in the administration of epinephrine auto-injectors. These standards are intended to provide guidelines for training school personnel who have volunteered for training. They are not mandates or requirements for local agencies. These standards were obtained from the agencies and organizations listed in *EC* Section 49414(e)(1) and represent the standard of care determined by those health and medical experts in this field.

It is estimated that severe allergies affect nearly 40 million Americans in all age groups and put those individuals at risk of death from anaphylaxis. Anaphylaxis is a potentially life-threatening severe allergic reaction to a substance. Epinephrine is a drug that can be successfully utilized to counteract anaphylaxis.

[return to top](#)

II. Training Standards

It is recommended that all school personnel responsible for the storage and emergency use of an epinephrine auto-injector be trained annually, that the training be conducted by a physician or school nurse, and that the training include the following information.

A. Techniques for recognizing symptoms of anaphylaxis.

The signs and symptoms of anaphylaxis usually appear rapidly, within seconds or minutes, after an exposure to an allergen, although in some cases the reaction can be delayed for up to one to three hours depending on the substance causing the reaction. The California Emergency Medical Services Authority (EMSA) definition of **ANAPHYLAXIS IS "ANY RESPIRATORY SYSTEM INVOLVEMENT, DIFFICULTY BREATHING, AUDIBLE WHEEZING, OR DIFFICULTY SWALLOWING."** Common symptoms, according to the American Academy of Allergy, Asthma and Immunology's (AAAAI) *Position Statement 34*, may include:

- Hives
- Itching (of any part of the body)
- Swelling (of any body parts)

- Red, watery eyes
- Runny nose
- Vomiting
- Diarrhea
- Stomach cramps
- Change of voice
- Coughing
- Wheezing
- Throat tightness or closing
- Difficulty swallowing
- Difficulty breathing
- Sense of doom
- Dizziness
- Fainting or loss of consciousness
- Change of color

Some individuals have an anaphylactic reaction, and the symptoms go away only to return a few hours later. This is called a bi-phasic reaction. Often the symptoms of the bi-phasic reaction occur in the respiratory system and take the individual by surprise. Therefore, according to the AAAAI, after a serious reaction "observation in a hospital setting is necessary for at least four hours after initial symptoms subside because delayed and prolonged reactions may occur even after proper initial treatment."

Once anaphylaxis has begun, the treatment of choice is an immediate intramuscular injection of epinephrine, which is effective for 10 to 15 minutes (according to the manufacturer of epinephrine auto-injectors, Dey Labs), followed by emergency medical attention.

Common causes of anaphylaxis include:

- **Food**
- **Insect stings**
- **Medication (e.g. antibiotics, aspirin, and non-steroidal anti-inflammatory drugs)**
- **Latex**

Less common causes of anaphylaxis include:

- **Food-dependent exercise induced anaphylaxis** (rare — occurs when an individual eats a specific food and exercises within three to four hours after eating)
- **Idiopathic anaphylaxis** (Unknown cause)

Severe allergic reactions may be at times unavoidable because foods may contain unknown or unreported allergy producing ingredients, insects range widely, latex can be found almost anywhere, and some individuals do not know that they are severely allergic to one or more allergens.

B. Standards and procedures for the storage and emergency use of epinephrine auto-injectors.

An epinephrine auto-injector is a disposable drug delivery system that contains the proper dose of epinephrine and is used to treat anaphylaxis. It is supplied as a spring-loaded syringe that can be easily transported. The disposable system is designed to treat a single anaphylactic episode and must be properly discarded (in compliance with applicable state and federal laws) after its use. It is generally recommended that two epinephrine auto-injectors be kept on-hand as back-up. The following information on the emergency use of an epinephrine auto-injector is based on the manufacturer's instructions and represents the consensus of the consulting agencies and organizations as listed in EC Section 49414(e)(1).

Steps in the Emergency Use of an Epinephrine Auto-Injector (EpiPen):

1. Determine if anaphylaxis is suspected. Anaphylaxis usually, but not always, occurs right after exposure to an allergen. Frequently anaphylaxis occurs in individuals who have a history of a previous reaction. If there is uncertainty about the diagnosis, but there is a reasonable probability that it is anaphylaxis, then treat as anaphylaxis.
2. **If anaphylaxis symptoms occur, call 911 or activate the emergency medical system (EMS). Stay with the victim.** Have others notify the paramedics, school nurse, parents and school administrator immediately.
3. Have the victim sit down. Reassure the victim and avoid moving him or her. Calming reduces the distribution of the allergen in the body.
4. **Prepare to administer EpiPen.**
 - a. For students in second grade or below, or if less than 66 lbs, use **White label** EpiPen Jr (0.15 mg)
 - b. For adults and students in third grade or above, or if more than 66 lbs, use **Yellow label** EpiPen (0.3 mg)

The EpiPen acts immediately; however the effects last only 10—15 minutes. *Make sure someone has called 911.*

5. EpiPen Administration Procedure:
 - . **Grasp the EpiPen and form a fist around the unit. With the other hand, pull off the GRAY Safety Cap.**
 - a. **Hold the black tip near the outer thigh. Never put thumb, fingers, or hand over the black tip.** (If an accidental injection occurs, go immediately to the nearest hospital emergency room.)
 - b. **Swing and jab the black tip firmly into the OUTER BARE THIGH so that the auto-injector is perpendicular (at a 90° angle) to the thigh. You will hear a click.** (The EpiPen can be injected through the victim's clothing, if necessary.)
 - c. **Hold the EpiPen firmly in place for 10 seconds, and then remove it from the thigh.** (After the injection, the victim may feel his or her heart pounding. This is a normal reaction.)
 - d. **Remove the EpiPen and massage the injection area for several seconds.**
 - e. **Check the black tip:**
 - If the needle is exposed, the dose has been delivered
 - If the needle is not exposed, repeat steps b through e
 - f. **Dispose of the EpiPen in a "sharps" container or give the expended EpiPen to the paramedics.**
 - g. **Call 911, if not previously called.**

6. If the anaphylactic reaction is due to an insect sting, remove the stinger as soon as possible after administering the EpiPen. Remove stinger quickly by scraping with a fingernail, plastic card or piece of cardboard. Apply an ice pack to sting area. Do NOT push, pinch, or squeeze, or further imbed the stinger into the skin because such action may cause more venom to be injected into the victim.
7. Observe the victim for signs of shock. Cover the victim with a blanket, as necessary, to maintain body temperature and help to prevent shock.
8. Monitor the victim's airway and breathing. Begin CPR immediately if the victim stops breathing.
9. Take the victim's vital signs (if trained to do so) and record them. Duplicate the emergency card for the paramedics. When paramedics arrive tell them the time EpiPen was administered and the dose administered. If EpiPen has not been disposed of in a sharp's container, give the expended EpiPen to the paramedics.
10. **If symptoms continue and paramedics do not arrive, use a new EpiPen and re-inject 15 to 20 minutes after initial injection.** Continue to monitor the victim's airway and breathing.
11. Follow-up medical care should be obtained at the emergency room or from the victim's physician. A second delayed reaction may occur up to 6 hours after the initial anaphylaxis.
12. Document the incident and complete the accident/incident report. Include in the documentation the date and time EpiPen was administered, the victim's response, and additional pertinent information. Send a copy of the report to the school nurse.

Storage:

According to the manufacturer, epinephrine auto-injectors should be **stored at room temperature** until the marked expiration date, at which time the unit must be replaced. Auto-injectors should not be refrigerated as this could cause the device to malfunction. Auto-injectors should not be exposed to extreme heat, such as in the glove compartment or trunk of a car during the summer and they should not be exposed to direct sunlight. Heat and light shorten the life of the product and can cause the epinephrine to degrade. To be effective, the solution in the auto-injector should be clear and colorless. If the solution is brown, replace the unit immediately.

C. Emergency follow-up procedures, including calling the emergency 911 phone number and contacting, if possible, the pupil's parent and physician.

When it is determined, based on the symptoms, that an anaphylactic reaction is occurring, it is important to act quickly. Administer epinephrine via an epinephrine auto-injector and have an assistant call 911 and request emergency response. Then contact the school nurse, school administrator, pupil's parent and physician and inform them of the actions taken. Stay with the pupil until the paramedics arrive.

Even after epinephrine has been administered, emergency medical care should be obtained immediately because severely allergic individuals who have experienced anaphylaxis may need emergency respiratory or cardiac care, or even to be resuscitated if they stop breathing altogether. At the very least, these individuals will need professional care to determine whether additional epinephrine, steroids, antihistamines, or other treatment is required. Follow-up diagnosis and care by medical professionals after the administration of epinephrine is important for recovery. A delayed or secondary reaction may occur. Therefore the individual needs to remain under medical supervision for at least four hours after an episode of anaphylaxis.

D. Instruction and certification in cardiopulmonary resuscitation (CPR).

Any school personnel volunteering to be trained to administer epinephrine auto-injectors are required by *EC* section 49414(e)(2)(D) to receive instruction and maintain current certification in cardiopulmonary resuscitation from a recognized provider such as the American Red Cross or the American Heart Association.

E. Written materials.

EC Section 49414(e)(2)(E) requires schools retain the following written materials for reference:

- *EC* Section 49414

- CDE Training Standards for the Administration of Epinephrine Auto-Injectors
- Training logs or documentation of training in the administration of epinephrine auto-injectors and cardiopulmonary resuscitation

It is the school's responsibility to prepare or obtain these materials and provide them as part of the training.

[return to top](#)

III. Narrative Summaries of Relevant Laws

Business and Professions Code 4119.2(a) allows pharmacies to furnish epinephrine auto-injectors to a local education agency pursuant to *Education Code Section 49414* if the epinephrine auto-injectors are furnished exclusively for use at a school district site or county office of education and a physician and surgeon provides a written order that specifies the quantity of epinephrine auto-injectors to be furnished. *Business and Professions Code 4119.2(b)* requires that records regarding the acquisition and disposition of so furnished epinephrine auto-injectors be maintained by the local education agency for a period of three years from the date the records were created. *Business and Professions Code 4119.2(b)* also requires the local education agency to be responsible for monitoring the supply of auto-injectors and assuring the destruction of expired auto-injectors.

EC Section 49414(a) allows a local education agency to provide emergency epinephrine auto-injectors to trained personnel. Personnel trained under this statute may utilize those epinephrine auto-injectors to provide emergency medical aid to persons suffering from an anaphylactic reaction.

EC Section 49414(c) allows each public and private elementary and secondary school to voluntarily determine whether or not to make emergency epinephrine auto-injectors and trained personnel available at its school. In making this determination, *EC Section 49414(c)* requires schools to evaluate the emergency medical response time to the school and determine whether initiating emergency medical services is an acceptable alternative to epinephrine auto-injectors and trained personnel.

EC Section 49414(d) allows each public and private elementary and secondary school in the state to designate one or more school personnel on a voluntary basis to receive initial and annual refresher training, based on the minimum training standards developed by the Superintendent of Public Instruction, regarding the storage and emergency use of an epinephrine auto-injector from the school nurse or other qualified person designated by the school district physician, the medical director of the local health department, or the local emergency medical services director.

EC Section 49414 (e)(1) requires the Superintendent of Public Instruction to establish minimum standards of training for the recognition, treatment and follow-up for anaphylaxis.

EC Section 49414 (e)(2) states that the training standards shall include all of the following:

- A. Techniques for recognizing symptoms of anaphylaxis.
- B. Standards and procedures for the storage and emergency use of epinephrine auto-injectors.
- C. Emergency follow-up procedures, including calling the emergency 911 phone number and contacting, if possible, the pupil's parent and physician.
- D. Instruction and certification in cardiopulmonary resuscitation.
- E. Written materials covering the information required under this subdivision.

EC Section 49414 (e)(3) requires a school to retain for reference the written materials prepared in compliance with section 49414 (e)(2)(E).

EC Section 49414(f) allows a school nurse, or if the school does not have a school nurse, a person who has received training as described in section 49414(d), may do the following:

- A. Obtain from the school district physician, the medical director of the local health department, or the local emergency medical services director a prescription for epinephrine auto-injectors.

- B. Immediately administer an epinephrine auto-injector to a person exhibiting potentially life-threatening symptoms of anaphylaxis at school or a school activity when a physician is not immediately available.

EC Section 49414(g) requires a person who has received training as described in section 49414(d) or a school nurse to initiate emergency medical services or other appropriate medical follow up in accordance with the retained training materials as specified in section 49414(e)(3).

EC Section 49414 (h) requires any local education agency electing to utilize epinephrine auto-injectors for emergency medical aid to create a plan to address all of the following issues:

- A. Designation of the individual or individuals who will provide the training pursuant to Section 49414(d).
 - B. Designation of the school district physician, the medical director of the local health department, or the local emergency medical services director that the school district or county office of education will consult for the prescription for epinephrine auto-injectors pursuant to Section 49414(f)(1).
 - C. Documentation as to which individual, the school nurse or other trained person pursuant to Section 49414(f), in the local education agency will obtain the prescription from the physician and the medication from a pharmacist.
 - D. Documentation as to where the medication is stored and how the medication will be made readily available in case of an emergency.

[return to top](#)

IV. Education Code Section 49414

49414. (a) A school district or county office of education may provide emergency epinephrine auto-injectors to trained personnel, and trained personnel may utilize those epinephrine auto-injectors to provide emergency medical aid to persons suffering from an anaphylactic reaction. Any school district or county office of education choosing to exercise the authority provided under this subdivision shall not receive state funds specifically for the purposes of this subdivision.

(b) For purposes of this section, the following terms have the following meaning: (1) "Anaphylaxis" means a potentially life-threatening hypersensitivity to a substance. (A) Symptoms of anaphylaxis may include shortness of breath, wheezing, difficulty breathing, difficulty talking or swallowing, hives, itching, swelling, shock, or asthma. (B) Causes of anaphylaxis may include, but are not limited to, an insect sting, food allergy, drug reaction, and exercise. (2) "Epinephrine auto-injector" means a disposable drug delivery system with a spring-activated concealed needle that is designed for emergency administration of epinephrine to provide rapid, convenient first aid for persons suffering a potentially fatal reaction to anaphylaxis.

(c) Each public and private elementary and secondary school in the state may voluntarily determine whether or not to make emergency epinephrine auto-injectors and trained personnel available at its school. In making this determination, a school shall evaluate the emergency medical response time to the school and determine whether initiating emergency medical services is an acceptable alternative to epinephrine auto-injectors and trained personnel. Any school choosing to exercise the authority provided under this subdivision shall not receive state funds specifically for the purposes of this subdivision.

(d) Each public and private elementary and secondary school in the state may designate one or more school personnel on a voluntary basis to receive initial and annual refresher training, based on the standards developed pursuant to subdivision (e), regarding the storage and emergency use of an epinephrine auto-injector from the school nurse or other qualified person designated by the school district physician, the medical director of the local health department, or the local emergency medical services director. Any school choosing to exercise the authority provided under this subdivision shall not receive state funds specifically for the purposes of this subdivision.

(e) (1) The Superintendent of Public Instruction shall establish minimum standards of training for the administration of epinephrine auto-injectors that satisfy the requirements in paragraph (2). For purposes of this subdivision, the Superintendent of Public Instruction shall consult with organizations and providers with expertise in administering epinephrine auto-injectors and administering medication in a school environment, including, but not limited to, the State Department of Health Services, the Emergency Medical Services Authority, the American Academy of Allergy, Asthma, and Immunology, the California School Nurses Organization, the California Medical Association, the American Academy of Pediatrics, and others. (2) Training established pursuant to this subdivision shall include all of the following: (A) Techniques for recognizing symptoms of anaphylaxis. (B) Standards and procedures for the storage and emergency use of epinephrine auto-injectors. (C) Emergency follow-up procedures, including calling the emergency 911 phone number and contacting, if possible, the pupil's parent and physician. (D) Instruction and certification in cardiopulmonary resuscitation. (E) Written materials covering the information required under this

subdivision. (3) A school shall retain for reference the written materials prepared under subparagraph (E) of paragraph (2).

(f) A school nurse, or if the school does not have a school nurse, a person who has received training pursuant to subdivision (d), may do the following: (1) Obtain from the school district physician, the medical director of the local health department, or the local emergency medical services director a prescription for epinephrine auto-injectors. (2) Immediately administer an epinephrine auto-injector to a person exhibiting potentially life-threatening symptoms of anaphylaxis at school or a school activity when a physician is not immediately available.

(g) A person who has received training as set forth in subdivision (d) or a school nurse shall initiate emergency medical services or other appropriate medical follow up in accordance with the training materials retained pursuant to paragraph (3) of subdivision (e).

(h) Any school district or county office of education electing to utilize epinephrine auto-injectors for emergency medical aid shall create a plan to address all of the following issues: (1) Designation of the individual or individuals who will provide the training pursuant to subdivision (d). (2) Designation of the school district physician, the medical director of the local health department, or the local emergency medical services director that the school district or county office of education will consult for the prescription for epinephrine auto-injectors pursuant to paragraph (1) of subdivision (f). (3) Documentation as to which individual, the school nurse or other trained person pursuant to subdivision (f), in the school district or county office of education will obtain the prescription from the physician and the medication from a pharmacist. (4) Documentation as to where the medication is stored and how the medication will be made readily available in case of an emergency.

[return to top](#)

V. Resources

- [American Academy of Allergy, Asthma and Immunology \(AAAAI\)](#) 
- [American Academy of Pediatrics \(AAP\)](#) 
- [California Department of Education \(CDE\)](#)
- [California Department of Public Health \(CDPH\)](#) 
- [California Medical Association \(CMA\)](#) 
- [California School Nurses Organization \(CSNO\)](#) 
- [Emergency Medical Systems Authority \(EMSA\)](#) 
- [Food Allergy and Anaphylaxis Network \(FAAN\)](#) 

[return to top](#)

VI. Acknowledgements

In compliance with the authorizing statute, the following individuals and agencies contributed to the development and review of the training standards:

Rob Bachmann, RN, Orange County Department of Education
Ronald P. Bangasser, MD, California Medical Association
Cathy Bray, RN, Los Angeles County Office of Education
Linda Davis-Alldritt, RN, California Department of Education
Molly Gaylord, RN, Santa Clara County Office of Education
Ruby Hennessey, RN, California School Nurses Organization
George Monteverdi, MD, FAAP, American Academy of Pediatrics
David Nunez, MD, California Department of Health Services
Cathy Owens, RN, California School Nurses Organization
Mark S. Sugar, MD, FAAAAI, American Academy of Allergy, Asthma, and Immunology
Sean Trask, EMT-P, Emergency Medical Systems Authority
Robert S. Zeiger, MD, PhD, American Academy of Allergy, Asthma, and Immunology

[return to top](#)

Questions: Coordinated School Health & Safety Office | schoolhealth@cde.ca.gov | 916-319-0914
Last Reviewed: Friday, September 06, 2013