

TREATMENT OF SEVERE ALLERGIC REACTION
A Protocol for Training

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Authorized for use by the
Oregon Department of Human Services, Health Services

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Implementation of ORS 433.805-.830

A Protocol for Training

INTRODUCTION — The 1981 legislation was passed by the State of Oregon to provide a means of authorizing certain individuals to administer lifesaving treatment to persons suffering severe insect sting reactions, when a physician is not immediately available. In 1989, the Legislature expanded the scope of the original statute by providing for the availability of the same assistance to persons having a severe allergic response to other allergens. The statute underwent minor revisions again in 1997. It is estimated that 1-2 in every 100 people is at risk for a severe allergic reaction to food, insect stings, medications or latex. Approximately 50 deaths caused by insect stings and 100 food-related deaths are recognized each year in the United States.

These bills were introduced at the request of the Oregon Medical Association. This legislation is intended to address situations where medical help often is not immediately available: school, camps, forests, recreational areas, etc. The following Protocol for Training is intended as an administrative document outlining the specific applications of the law, describing the scope of the statute, the persons to be trained, and proposing the actual content of that training.

An Explanation of the Law and Rules

According to the law (O.R.S. 433.805-830) and the related administrative rules (O.A.R. 333-55-00 to 035), a person who meets the prescribed qualifications may obtain a prescription for pre-measured doses of epinephrine (adrenaline) and the necessary paraphernalia for administration, such administration being “limited to an emergency situation when a physician is not immediately available.” The person to be treated is defined as a “person suffering severe allergic response to an insect sting or other allergens as defined by the Oregon Department of Human Services, Health Services (formerly the Oregon Health Division).”

In order to qualify for this training, the person must be 21 years of age or older and must “have, or reasonably expect to have, responsibility for or contact with at least one other person as a result of the eligible person’s occupational or volunteer status, such as camp counselors, scout leaders, school teachers, forest rangers, tour guides or chaperones.” The person must also complete an approved educational training program as described by the law.

The training program must be conducted by a physician licensed to practice in Oregon, or may be conducted by another health professional, such as a registered nurse, as designated by a physician, and must include the following subjects: (1) Recognition of the symptoms of systemic allergic response to insect stings and other allergens; and (2) Proper administration of an injection of epinephrine. The Department of Human Services, Health Services is responsible for approving this training program as well as adopting the rules necessary for administering the law.

Stinging Insect Identification: Patients, especially children, are seldom able to identify the offending insect. Identification of the stinging insects depends upon color and markings, but the habitat is even more important. Although such identification may be impossible, an attempt should be made so the sensitive person can avoid future exposure and the allergist can be informed. Categories of stinging insects are shown below.



Insects	Physical Characteristics	Habitat	Season	Other Characteristics	Attracted To:
Honey Bee	<ul style="list-style-type: none"> * Squat hairy body * Yellow and black marking * Wild honey bees are usually darker 	<ul style="list-style-type: none"> * Domestic bee = hive * Wild bees = rock crevices, houses, hollow trees, logs, and old structures 	<ul style="list-style-type: none"> * Early spring (March) through late September * 45-50°F to 100°F and up 	<ul style="list-style-type: none"> * Only one to leave "stinger" in flesh. * Stinger continues to inject venom until scraped away * Alert and active in early spring, easily provoked 	<ul style="list-style-type: none"> * Light yellow and blue colors * Sweets such as soft drinks, juice, or beer * Cosmetics, perfume, suntan lotion, and hair spray * Some paint fumes attract, then act as an alarming agent
Bumble Bee	<ul style="list-style-type: none"> * Much larger than honey bee * Hairy orange or yellow body with black markings 	<ul style="list-style-type: none"> * Nests in ground close to fields, lawns, and flowers 	Same	<ul style="list-style-type: none"> * Nonaggressive, will sting if nest disturbed * Noisy buzzing 	<ul style="list-style-type: none"> * Flowers

Foods

- Fish, shellfish, egg whites, nuts, legumes, milk and certain grains (soy, wheat) are most often associated with anaphylaxis [Grabenstein, Smith, 1989].
- 73 known foods have been associated with severe reactions [Baker, 1985].

Medications

- Persons can experience severe reactions to medications even if they have previously taken the medication without incident.
- Penicillin causes most anaphylactic reactions yearly (100 to 500 deaths and 10% severe reactions) [Grabenstein, Smith, 1989].
- Aspirin is another common drug to which many are allergic
- Allergy injections may precipitate an allergic reaction.

Other Allergens

- Pollens and some foods can cause anaphylaxis in certain sensitive individuals who exercise after being exposed to these substances [McNeil, Strauss, 1988].
- There have been reports of anaphylaxis after exposure to such items as rubber [Slater, 1989] and talcum powder [Assalve et al, 1988].
- An increasing number of patients are also being recognized as having anaphylaxis to unknown substances [Wiggins et al, 1989].

Avoidance and Prevention Measures (for Sensitive or Suspected Sensitive Persons)

Insect Avoidance

Avoid as much as possible:

- Flowers, flowering trees/shrubs
- Certain colors and types of clothing (especially blue, yellow or dark brown), or rough fabrics (Smooth, hard finish white or tan clothing is safest)
- Fragrant cosmetics, perfumes, lotions
- Walking outside without shoes
- Exposed skin (hats, long sleeved shirts, slacks, socks and shoes are recommended)
- Picnics, cooking or eating outdoors
- Areas of trash or garbage
- Known areas of insect habitat
- Becoming excited, swatting or hitting at the insect (a gentle brushing may make it leave)

Localized Allergic Reaction To Stings

An allergy is, put simply, a hypersensitivity to a particular substance, called an allergen, which results in an exaggerated reaction when the allergic individual is exposed to the allergen. Allergies are somewhat capricious — they may arise quite suddenly with no known history; even if a person has had previous normal reactions to stings, an allergic reaction to subsequent stings is possible [Baker, 1985].

As distinguished from a normal reaction, a localized allergic reaction may involve pain, itching and swelling that extends over a larger area than a quarter (25 cents). When there is **large swelling** of an extremity that crosses a major joint line, but does not involve other areas of the body, it is still a local allergic response [Barr, 1967]. {see figure 2} The local response, in some cases, may be delayed. The person with a history of large local or systemic reaction should be observed for at least one hour after the sting. A delayed reaction may occur in a matter of hours following the sting. Symptoms may include prolonged and intensified swelling, pain and redness. Depending on the sting site, the entire arm, leg or head may be involved. It is not unusual for these symptoms to persist for up to a week or more [Torsney, 1968].

Intervention for localized reactions to stings

1. Follow steps 1-5 outlined above in intervention for normal reaction to stings.
2. Administer oral antihistamine (i.e., diphenhydramine or Benadryl®) medication from person's personal supply.
3. Keep person quiet.
4. Observe person for at least one hour.
 - a. If swelling continues to increase in size or area the person should seek immediate medical attention.
 - b. If person begins to show signs of systemic reaction, follow instructions for systemic reaction.

Toxic Reactions to Stings

These reactions are sometimes difficult to distinguish from allergic reactions, but always the result of multiple stings — usually ten or more [Tuft, 1970]. Although an individual has no sensitivity to insect stings, the amount of venom injected may cause systemic (generalized) poisoning which may lead to death. The principal symptoms are gastrointestinal, with diarrhea and vomiting, fainting and unconsciousness. The victim of multiple stings may also experience generalized swelling, headache, fever, drowsiness, involuntary muscle spasms and, occasionally, convulsions [Frazier, "Diagnosis . . .," 1968].

Intervention for toxic reaction to stings

1. Have someone call for emergency medical assistance (911). Do not leave person alone.
2. If there is any question if reaction is allergic or toxic, follow instructions for systemic reaction.
3. Embedded stingers should be removed promptly and the sites thoroughly cleansed. [Frazier, "Diagnosis . . .," 1968].
4. Reassure and calm person.
5. Have person transported to medical help.

Other Serious Non-Systemic Reactions

1. Infection: Wasps and hornets are scavengers and may transmit infection along with their venom. Local reactions may be made complicated by an infection around the sting site. [ibid.]

difficulty breathing, loss of normal blood pressure), reactions may vary substantially from person to person. Previous history of anaphylactic reactions and known exposure to potential allergens should increase the suspicion that the above signs or symptoms represent an anaphylactic reaction. Because reactions vary little from time to time in the same individual, a description of previous reactions should be elicited if possible.

A systemic (or anaphylactic) reaction to an insect sting or other allergen usually occurs quickly; death has been reported to occur within minutes after a sting [Stinging Insect Allergy, 1981]. Highly food sensitive individuals may react within seconds to several minutes after exposure to allergens. An anaphylactic reaction can occasionally occur up to 1 to 2 hours after exposure (e.g., penicillin, food, allergy shot).

Treatment for Systemic (Anaphylactic) Reactions

It is common for persons who have been stung by insects to have an increased state of anxiety. This is especially so if the person is a child or has a known insect sting allergy with a history of a previous reaction, or in the case of multiple stings.

The **most important** aspect of intervention for severe allergic response is **timing**. Because of the dangers involved, **you should always be ready to treat the person immediately**. **Epinephrine should be administered promptly at the first sign of systemic reaction. It is safer to give the epinephrine than to delay treatment for anaphylaxis. The sooner that anaphylaxis is treated, the greater the person's chance for surviving the reaction.**

Epinephrine

Epinephrine (or adrenaline) is a powerful drug which is used for the treatment of systemic or anaphylactic reaction and may have adverse side effects. It is obtained by prescription only. However, in the case of life threatening reaction to insect stings or other allergens, it is the most immediate and effective treatment available. Epinephrine acts on the body by constricting blood vessels and raising the blood pressure, relaxing the bronchial muscles, and reducing tissue swelling.

Temporary and minor side effects of epinephrine include rapid heart rate, nervousness, anxiety, nausea, vomiting, sweating, pallor, tremor, or headache [Teplitz, 1989]. These effects are temporary and will subside with rest and reassurance. Some of the possible side effects of epinephrine may resemble symptoms of anaphylactic shock; however, symptoms related to injection of epinephrine are temporary. Reassurance and a calm demeanor by the caregiver are important.

The most desirable source of epinephrine for use in this context is a pre-loaded device. Epinephrine should be stored in a dark place at room temperature. (The epinephrine syringe must be protected from freezing.) Exposure to sunlight will hasten deterioration of

Intervention for Generalized or Anaphylactic Reactions

Equipment

1. Pre-measured epinephrine injection device (EPIPEN®)
2. Cold pack for stings
3. Antiseptic solution (soap and water will do)

Observation and First Steps

1. Using the symptoms given on the previous pages, determine if the person is suffering an anaphylactic reaction. Remember, only epinephrine (adrenaline) works for the true anaphylactic reaction. Local treatment, oral treatment or inhalation treatment may be helpful but should not be relied upon [Baker, 1985]. **It is safer to give the epinephrine than to delay treatment. This is a life and death decision.**
2. Do not move person who is exhibiting symptoms of a possible serious reaction. Bring equipment and rescue personnel to him/her.
3. If the person experiencing an anaphylactic reaction is also an asthmatic and has his/her inhaler available, assist him/her with his/her own inhaler if desired. First give the epinephrine if there is evidence of anaphylaxis, then use the inhaler as an additional source of medication for treatment.

Intervention Steps for Anaphylaxis

1. Determine proper dosage and administer epinephrine from pre-measured syringe.
2. Have someone call for emergency medical assistance (911). Do not move or leave person.
3. Remove (scrape) stinger if one is present. Do not pinch or squeeze the stinger, as this can cause more venom to be released.
4. Reassure and calm person if possible.
5. Check for and maintain open airway by listening and observing person's breathing.
6. *Administer CPR if required and trained. (Recruit a CPR trained person if necessary to assist in this step). If person has stopped breathing and does not respond to rescue breathing he/she may have severe swelling of the throat which closes the airway making CPR ineffective [Emergencies, 1985].
7. **Any person who has been given emergency treatment for generalized reaction to an insect sting or other allergen should seek medical care as soon as possible. Epinephrine is short acting and the person needs evaluation for longer term, more intensive treatment by a physician.**

* *All persons meeting the criteria for insect sting intervention training are strongly encouraged to take an approved First Aid / CPR training course.*

Technique for Administration of Epinephrine Using EPIPEN® / EPIPEN JR®

1. Have someone call emergency medical assistance/ 911 immediately.
2. Do not allow person to walk — bring device to student/person.
3. Check person's name against device.
4. Check to see if there are any special physician instructions for the person and follow these. If no special instructions, proceed with the instructions below.
5. If available, it is recommended that caregivers use non-latex gloves to administer epinephrine — however, administration **should not** be delayed for the purpose of finding gloves.

Use of EPIPEN®/ EPIPEN JR® (single dose)

If EPINEPHRINE in auto-injector device is expired, this indicates a weakened solution. It is better to use the weakened solution than none at all.



1. Pull off gray safety cap.
2. Place black tip of EPIPEN® on thigh, at right angle to leg. If thigh cannot be used, use thickest part of upper arm. (Apply EPIPEN® to thigh regardless of what part of body has been stung.)
3. Press EPIPEN® hard into thigh until auto-injector mechanism functions, and hold in place for several seconds. EPIPEN® may then be removed and discarded. Massage the injection area for 10 seconds.
4. Dispose syringe according to state regulations as bio-hazardous waste.

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26. Yunginger, J.W. et al, "Fatal Food-Induced Anaphylaxis," Journal of the American Medical Association, Vol. 260, No. 10, p. 1450, 1988.
27. Anaphylaxis in schools and other child care settings, JACI, Vol. 102, No. 2, August 1998, pp 173-6.
28. The use of Epinephrine in the Treatment of Anaphylaxis, JACI, Vol. 94, No. 4, October 1994 pp 666-668.

(JACI = Journal of Allergy & Clinical Immunology)

chapter 678 as delegated by a supervising professional. The curricula shall minimally include the following subjects:

- (1) Recognition of the symptoms of systemic allergic responses to insect stings and other allergens;
- (2) Recognition of the symptoms of hypoglycemia;
- (3) Familiarity with common factors that are likely to elicit systemic allergic responses and common factors that may induce hypoglycemia;
- (4) Proper administration of a subcutaneous injection of epinephrine for severe allergic responses to insect stings and other specific allergens;
- (5) Proper administration of a subcutaneous injection of glucagon for severe hypoglycemia when other treatment has failed or cannot be initiated; and
- (6) Necessary follow-up treatment. [1981 c.367 s.3; 1989 c.299 s.5; 1997 c.345 s.4]

433.820 Eligibility for training. A person eligible to receive the training described in ORS 433.815 must meet the following requirements:

- (1) Be 21 years of age or older; and
- (2) Have, or reasonably expect to have, responsibility for or contact with at least one other person as a result of the eligible person's occupational or volunteer status, such as camp counselors, scout leaders, school personnel, forest

rangers, tour guides or chaperones. [1981 c.367 s.4; 1997 c.345 s.5]

433.825 Availability of doses of epinephrine and glucagon to trained persons. (1) A person who has successfully completed educational training described in ORS 433.815 for severe allergic responses may receive from any health care professional with appropriate prescriptive privileges licensed under ORS chapter 677 or 678 in this state a prescription for pre-measured doses of epinephrine and the necessary paraphernalia for administration. The person may possess and administer in an emergency situation when a licensed health care professional is not immediately available such prescribed epinephrine to any person suffering a severe allergic response.

(2) A person who has successfully completed educational training in the administration of glucagon as described in ORS 433.815 for hypoglycemia may receive from the parent or guardian of a student doses of glucagon prescribed by a health care professional with appropriate prescriptive privileges licensed under ORS chapter 677 or 678 in this state, as well as the necessary paraphernalia for administration. The person may possess and administer glucagon to the student for whom the glucagon is prescribed, if the student is suffering a severe hypoglycemic reaction in an emergency situation when a licensed health care professional is not immediately available and other treatment has failed or cannot be initiated. [1981 c.367 s.5; 1989 c.299 s.6; 1997 c.345 s.6]

433.830 Immunity of trained person and institution rendering emergency assistance. (1) No cause of action shall

_____ **Date**

_____ **Name**

_____ **Affiliation**

Evaluation Tool

(Open book — you may use your class notes)

1. The venomous flying insects most likely to sting are:
 - (a)
 - (b)
 - (c)
 - (d)

2. If a person exhibits symptoms of anaphylaxis, one should wait until a complete history has been obtained before giving epinephrine.
_____ True _____ False

3. Insects are more likely to sting in the _____ of the year.

4. Persons with allergic reactions should attempt to practice avoidance and prevention measures such as: (list 6)
 - (a)
 - (b)
 - (c)
 - (d)
 - (e)
 - (f)

5. A normal reaction to an insect sting causes swelling of an extremity beyond a major joint.
_____ True _____ False

6. It is generally safe to wait for 10 to 15 minutes before treating someone who is having an allergic reaction to food. _____ True _____ False

7. Multiple sting sites or a sting site in the mouth or on the face may cause a serious reaction in persons not allergic to insect stings. _____ True _____ False

8. If a person has been stung by an insect but demonstrates no serious symptoms, it is safe to assume he/she will never develop a serious reaction to insect stings.
_____ True _____ False

14. If the person's physician does not otherwise order, the recommended ages for the following epinephrine products are:

EPIPEN JR®: _____

EPIPEN®: _____

15. If a stinger is present at the site of a bee sting, it should be removed as soon as possible.
_____ True _____ False

16. After administering the epinephrine, which of the following should you do: (choose all that apply)

- a. Continue to observe the person for increased signs of anaphylaxis.
- b. Cover person with blanket, place alone in quiet dark room and let him/her sleep.
- c. Administer hot stimulant drinks such as tea or coffee.
- d. Reassure and calm victim
- e. Administer CPR if person stops breathing.

This person participated in the class on Treatment of Severe Allergic Reactions, safely demonstrated the steps in giving an injection as recommended by the manufacturers of the EPIPEN® / EPIPEN JR®, and completed the evaluation successfully.

Instructor

Date

Rx to Obtain and Certificate to Administer Epinephrine

This certifies that _____
Address _____

has completed an approved training program covering recognition of symptoms of systemic reactions to allergens and proper administration of epinephrine, pursuant to ORS 433.805 to 433.830 and rules of the Oregon Department of Human Services, Health Services.

Under ORS 433.825 this person is authorized to administer epinephrine in a severe allergic emergency. This person is also authorized to obtain an emergency supply of epinephrine consisting of one single dose Epipen® (adult dose) and one single dose Epipen Jr® (child dose). Authorization is good for three (3) years from the date below, prescription needs renewal after one (1) year. (See reverse for prescription renewal.)

Signature of authorizing physician Date

Name of physician (please print) License #

To the Pharmacist:

Under OAR 333-055-0030 the pharmacist who dispenses epinephrine doses under this rule shall also reduce the prescription to writing for his/her files, as in the case of an oral prescription for non-controlled substances, and file the same in the pharmacy.

The prescription may be filled up to 4 (four) times until the card expires (3 years from the date on the front of the card).

Pharmacist:

Please record dates epinephrine kits issued below.

1. _____ 2. _____

3. _____ 4. _____