

**OREGON PUBLIC HEALTH DIVISION, DHS  
IMMUNIZATION PROGRAM**

**Guidelines for Managing Severe Adverse Events  
Following Immunization**

Revisions as of 5/09

- Removed oxygen and tourniquets as recommended equipment in clinics administering vaccines. Oxygen (O<sub>2</sub>) is now optional, based on availability, cost to maintain, and your health officer or medical director's recommendation for use. (Section IV)
- Minor language additions as how to treat patients experiencing vasovagal responses or monitoring patients receiving anaphylaxis medication while waiting for Emergency Medical Services (EMS) to arrive. (Section II and III)
- Added two tables in Section IIID and E that give dosing suggestions for epinephrine and diphenhydramine in children and adults.

- I. **ORDER:** All immunization staff nurses should have "basic knowledge" in how to recognize and initiate "first-aid" treatment for anaphylaxis. They should hold current CPR certification and have on hand universal precaution equipment and medications recommended in Section IV.

**ALL adverse events following immunization must be reported to the Vaccine Adverse Event Reporting System (VAERS).**

Public providers using state-supplied vaccine will send their VAERS reports to the Oregon Health Services, Immunization Program, who will forward it to VAERS.

Should you have questions as to which events need to be reported, review appendix F in the *Epidemiology and Prevention of Vaccine-Preventable Diseases* text or contact VAERS at (800) 822-7967; visit their website [www.vaers.hhs.gov](http://www.vaers.hhs.gov) , or contact the Immunization Program at (971) 673-0300.

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Signature      Health Officer or Medical Provider

Date

May 2009

## II. VASOVAGAL RESPONSE TO INJECTION:

### A. Signs and Symptoms:

Individual:

1. Becomes pale.
2. Feels faint, light headed, dizzy, nauseated, or reports a cold sweat (diaphoretic).
3. Collapses suddenly to unconsciousness, BUT maintains a slow, steady, strong pulse, normal respirations and blood pressure.

### B. Treatment:

1. If the individual "feels faint":
  - Have patient lie flat with feet elevated or sit with their head down for several minutes.
  - Ammonia capsules may be used as needed.
2. Unconsciousness:
  - Place flat on back, with feet elevated;
  - Unconsciousness from fainting should only last seconds;
  - May use an ammonia ampule (crush and wave near patient's nose).
3. Have patient rest in a quiet area for 10 minutes after regaining consciousness. Then, slowly have patient move to a sitting position and then standing, checking to make sure no symptoms recur.

### III. ANAPHYLAXIS:

#### A. **Symptoms:**

1. Symptoms usually occur within the first 15 minutes following the injection, but may occur as soon as 30 seconds afterwards.
2. The more rapid that symptom's appear after an injection or administration of a vaccine, the more serious the reaction.
3. Anaphylaxis can be distinguished from a vasovagal response by quality of pulse. In the case of anaphylaxis, the pulse may be rapid, thready, and weak. The patient's blood pressure may be falling.

#### B. **Early signs and symptoms (may include one or more of the following):**

##### Cardiac:

- Rapid, weak pulse
- Hypotension
- Irregular heartbeat

##### Respiratory:

- Rapid, shallow breathing
- Tightness in throat or chest
- Hoarseness or stridor
- Congestion, sneezing, wheezing, or coughing

##### Cutaneous:

- Flushing, pallor, cyanosis, or a hive-like rash

##### Other:

- Swelling of lips and tongue, inability to swallow
- Anxiety, restlessness, apprehension or a "sense of doom"
- Feeling of warmth
- Irritability
- Weakness
- Diaphoresis
- Headache
- "Pins and Needles" sensation on skin
- Flushing, pallor, or cyanosis
- Itching or edema
- Nausea, vomiting, diarrhea or abdominal pain

#### C. **These signs and symptoms may lead to life-threatening manifestations:**

1. Progressive Dyspnea: with or without stridor or wheezing. The upper airway may swell and become obstructed.
2. Shock: Hypotension, weak, fast, irregular pulse.
3. Collapse/unconsciousness; altered mental status, which may include seizures.

**NOTE: Anaphylaxis may present with one, some or all of the life- threatening components.**

**ANAPHYLAXIS, continued**

**D. TREATMENT OF ANAPHYLAXIS:**

1. ASK SOMEONE TO CALL 911 FOR AN AMBULANCE IMMEDIATELY.
2. DO NOT WAIT FOR MILD SYMPTOMS TO SUBSIDE.
3. LAY PATIENT FLAT AND PROCEED WITH THE FOLLOWING:
  - Quickly assess the ABC'S:      A = Airway;  
  B = Breathing  
  C = Circulation
  - If at any time the patient suffers Respiratory or **Cardiac Arrest**, start CPR immediately.
4. Inject **EPINEPHRINE 1:1000 (aqueous): 0.01 ml/kg per dose intramuscularly**

Suggested dosing of Epinephrine for <b>children and adults</b>				
Age Group	Dose	Weight in Kg	Weight in lbs	Epinephrine Dose
1-6 mos		4-7 kg	9-15 lbs	0.05 mg (0.05 ml)
7-18 mos		7-11 kg	15-24 lbs	0.1 mg (0.1 ml)
19-36 mos		11-14 kg	24-31 lbs	0.15 mg (0.15 ml)
37-48 mos		14-17 kg	31-37 lbs	0.15 mg (0.15 ml)
49-59 mos		17-19 kg	37-42 lbs	0.2 mg (0.2 ml)
5-7 yrs		19-23 kg	42-51 lbs	0.2 mg (0.2 ml)
8-10 yrs		23-35 kg	51-77 lbs	0.3 mg (0.3 ml)
11-12 yrs		35-45 kg	77-99 lbs	0.4 mg (0.4 ml)
≥13 yrs		45+ kg	99+ lbs	0.5 mg (0.5ml)

\* adapted from table at [www.immuniz.org/catg.d/p3082a.pdf](http://www.immuniz.org/catg.d/p3082a.pdf) item #P3082a (8/06)

5. Epinephrine dosage for use with pre-measured EPIPENS<sup>1,2</sup>

EPIPEN®	Dose	Weight	Approximate age
Older child or adult	0.3 ml	>60 lbs (>27 kg)	>10 years

EPIPEN JR®	Dose	Weight	Approximate age
Younger child	0.15 ml	33-60 lbs. (15 - 27 kg)	3-10 years

<sup>1</sup>The manufacturer recommends that the Epipen® should be injected IM into the anterolateral aspect of the thigh.

<sup>2</sup>Epipens expire frequently.

6. Monitor until EMS arrives; if no improvement in condition, repeat epinephrine dose every 10 – 20 minutes for up to 3 doses, depending on patient's response.

**ANAPHYLAXIS, continued**

**E. For severe urticaria (hives) or edema, particularly edema of the larynx:**

1. Administer in addition to Epinephrine: DIPHENHYDRAMINE HYDROCHLORIDE (Benadryl®): IM (at a different site) as follows:

**Infants = 1.0 mg/kg body weight**  
**Young child = 1.25 mg/kg body weight**  
**Adult = 50-100 mg**

Suggested dosing of Diphenhydramine (Benadryl®) for <b>children and adults</b>			
Age Group Dose	Weight in Kg	Weight in lbs	Benadryl® 50 mg/mL injectable
1-6 mos	4-7 kg	9-15 lbs	5 mg
7-18 mos	7-11 kg	15-24 lbs	10 mg
19-36 mos	11-14 kg	24-31 lbs	15 mg
37-48 mos	14-17 kg	31-37 lbs	20 mg
49-59 mos	17-19 kg	37-42 lbs	
5-7 yrs	19-23 kg	42-51 lbs	30 mg
8-10 yrs	23-35 kg	51-77 lbs	
11-12 yrs	35-45 kg	77-99 lbs	40 mg
≥13 yrs	45+ kg	99+ lbs	50-100 mg

\* adapted from table at [www.immuniz.org/catg.d/p3082a.pdf](http://www.immuniz.org/catg.d/p3082a.pdf) item #P3082a (8/06)

2. Apply ice to the site where the vaccine was administered. If more than one site is involved, apply ice to the sites that appear to be red, warm, and/or swelling.
3. Record all medications administered including the time, dosage, response, and the name of the medical personnel who administered the medication.
4. Take and record the patient's vital signs at the initial assessment, and at minimum - every 10 minutes, and following the administration of any additional medication.
5. If the patient is wheezing because of respiratory difficulty, elevate the head and chest slightly; If the patient's blood pressure is decreased and the pulse is weak, lay them flat with feet elevated.
6. Any patient who develops signs and symptoms of anaphylaxis **MUST** be examined by a physician or transported via a fully equipped emergency vehicle to an emergency room before being released.

**ASSURE THAT THE PHYSICIAN OR PERSON ACCEPTING RESPONSIBILITY OF THE PATIENT'S CARE KNOWS MEDICATIONS GIVEN**

## IV. EQUIPMENT AND SUPPLIES

Equipment and supplies must be kept in a location convenient to the clinic staff. Quarterly reviews must be completed and recorded to assure that the supplies are complete and that none of the medications will expire sooner than one month after the date of the next review.

### A. Recommended Equipment and Supplies:

1. Oral airways (small, medium, and large)
2. Oxygen (O<sub>2</sub>) is optional, based on availability, cost to maintain, and your health officer or medical director's recommendation for use.
  - a. If your clinic has O<sub>2</sub> on hand, it is recommended that the container with nasal cannula and face mask be made available. When using the nasal cannula, the regulator should be set as not to exceed 6 liters of O<sub>2</sub>/minute. When using the facemask, the regulator should be set at 10-12 liters of O<sub>2</sub>/minute with a minimum of 5 liters of O<sub>2</sub>/minute.
  - b. It is not expected that oxygen be transported off-site to temporary immunization clinic sites.
3. Pediatric and adult size pocket masks with one-way valve
4. Sphygmomanometer (child, adult, and extra-large cuffs) and stethoscope.
5. Band-Aids
6. Alcohol Wipes
7. Paper and Pen
8. Syringes: 1–3cc, 22–25g, 1", 1½", and 2" needles for epinephrine and diphenhydramine (Benadryl) and 2cc syringes with 1-1½ needles for Benadryl administration.

### B. Medications:

1. Epinephrine solutions:
  - a. Aqueous epinephrine 1:1000 dilution, in ampules
  - b. Pre-measured sources are available:

The EpiPen® and the EpiPen Jr.®, and the Epi auto-injectors are marketed by Dey. The EpiPen® (0.3 ml) and the EpiPen Jr.® (0.15 ml) auto-injectors are always ready for immediate use. They require no filling, assembly, or preparation. They are not calibrated for doses other than 0.3 ML or 0.15 ml. The concealed needle of the EpiPen® devices is activated by a simple push when held against the thigh and instantly delivers the appropriate dose of epinephrine. A safety cap prevents accidental discharge or injection.
2. Diphenhydramine hydrochloride (Benadryl® 50 mg/ml).
3. Ammonia ampules (smelling salts) for fainting only.

## V. ADVERSE EVENT REPORTING:

Adverse events following immunization should be reported by public providers to the Immunization Program, Human Services, using a Vaccine Adverse Events Reporting System (VAERS) form, according to state guidelines. Private providers report all adverse events directly to VAERS. VAERS phone number is: (800) 822-7967, and the website address is [www.vaers.org](http://www.vaers.org).

## VI. REFERENCES:

1. American Academy of Pediatrics. Passive Immunization. In: Pickering LK, ed. *Red Book: 2006 Report of the Committee on Infectious Diseases*. 27<sup>th</sup> ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006: 64–66. Available at: <http://aapredbook.aappublications.org/current.shtml>
2. American Pharmacists Association, Grabenstein, JD, Pharmacy based Immunization Delivery, 2002. Medical Management of Vaccine Reactions in Adult Patients available at: <http://needletips.org/catg.d/p3082.pdf> and appendix D-20 and 21 in *Epidemiology and Prevention of Vaccine-Preventable Diseases*, 10<sup>th</sup> edition: <http://www.immunize.org/catg.d/p3082.pdf>
3. Immunization Action Coalition Website: Medical Management of Vaccine Reactions in Children and Teens, 2006. Available at: [www.immunize.org/catg.d/p3082a.pdf](http://www.immunize.org/catg.d/p3082a.pdf)
4. Oregon Department of Human Services, Public Health Division, Office of Community Health and Health Planning; Treatment of Severe Allergic Reaction; A Protocol for Training; January 2008, Available at: [www.oregon.gov/dhs/ph/ochhp](http://www.oregon.gov/dhs/ph/ochhp)

For more information or to clarify any part of the above order, consult with your health officer, medical provider, or contact Oregon Public Health Immunization Program at (971) 673-0300.

**To download this order visit our website at**  
**<http://oregon.gov/dhs/ph/imm/provider/stdgordr.shtml>**  
**To request this material in an alternate format (e.g., Braille),**  
**please call (971) 673-0300**