

**COUNTY of ORANGE HEALTH CARE AGENCY**  
**PUBLIC HEALTH**  
**Standardized Protocol**

Subject: Management of Injection Reactions  
(Allergies, Anaphylaxis and Vasovagal Syncope)  
Supersedes: New

Page: 1 of 7  
Date: 7/16/13

Approved: Signatures on File

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**PURPOSE**

To establish the standardized protocol authorizing approved OCHCA licensed personnel to evaluate and manage reactions to injections in the Orange County Health Care Agency Public Health Clinics and programs using vaccine or medication administration (oral or injection). These standardized procedures will designate who and under what circumstances the procedures outlined hereafter may be performed.

Anaphylaxis defines a systemic allergic reaction to a foreign substance, which is potentially life-threatening. Persons who administer biologicals should be able to recognize allergic reactions, particularly anaphylaxis, and they should be able to initiate appropriate treatment. Emergency medications should be current and equipment that is used in the treatment of anaphylaxis should always be readily available at the clinic or program site

**POLICY**

A. Development and Review

1. All standardized procedures used within OCHCA Public Health are developed collaboratively with the Public Health Medical Officer, Supervising Public Health Nurses (PHNs) representative of the Public Health (PH) programs, and must conform to all 11 steps of the standardized procedure guidelines as specified in Title 16, CCR Section 1474.
2. All standardized procedures are to be kept in a manual in the Administrative Suite of 17<sup>th</sup> Street building which includes dated, signed original standardized procedure, and approval sheets of the persons covered by the standardized procedures. Read-only versions will also be kept on the OCHCA intranet.
3. All standardized procedures are to be reviewed every three years and as practice changes by the Public Health Medical Officer and Supervising PHNs.

B. Scope and Setting of Practice

1. Nurse Practitioners (NPs), Physician Assistants (PAs), and Registered Nurses (RNs) may perform the following routine functions within their training and consistent with their experience and credentialing: assessment, health promotion, education, and referral for medical care when indicated.
2. Physician consultation is to be obtained as specified in the standardized protocol.
3. The standardized protocol is not limited to functions needed for residents of the County of Orange.

C. Qualifications and Evaluations

1. Each Nurse Practitioner, Physician Assistant and Registered Nurse performing standardized protocol functions must meet the following criteria:
  - a. Education and experience:
    - 1) Possession of a valid license issued by the California Board of Registered Nursing (NP or RN) or the California Medical Board (PA).
    - 2) Possession of a valid certificate of Public Health Nurse issued by the California Board of Registered Nursing (PHNs only)
    - 3) Two years of relevant experience subsequent to receipt of a Public Health Nurse Certificate. A Master's Degree in nursing or public health may be substituted for one year of the required experience.
  - b. Initial competency completed and signed by the SPHN (see Attachment A).
2. Competency will be established initially and on a continuing basis:
  - a. Initial
    - 1) By completion of initial training by SPHN.
    - 2) As procedural steps are demonstrated during orientation training.

- 3) Completion of initial competency document with SPHN signature (Attachment A)
- b. Annually
  - 1) Annual competency completed with annual performance evaluation
  - 2) Each line item will be signed off by SPHN when the PHN demonstrates the competency in the prior year.
  - 3) When the line item has not been demonstrated in the prior year, the PHN must review the policy with the SPHN during the performance review process for completion.
3. Initial and annual competencies are to be maintained in the SPHN personnel file for each PHN.
4. Each SPHN will maintain a list of all those persons authorized to perform the standardized protocol and will place a copy of the updated list with the standardized protocol.

### AUTHORITY

California Nursing Practice Act, 2011 Edition; Section 2725, subsection (b)(2).

### PROCEDURE

#### A. VASOVAGAL SYNCOPE

1. Simple fainting is the more common injection reaction, and may be difficult to distinguish from anaphylaxis, but fainting is NOT an allergic event.
2. Vasovagal syncope can be identified, according to the following characteristics.
  - a. Signs and Symptoms
    - 1) Patient may become pale, feel faint, and may suddenly collapse unconscious.
    - 2) Pulse is steady and respirations are normal
    - 3) *NOTE: involvement of skin (rash, diffuse itching) or swelling of the oral mucosa suggests anaphylaxis, not vasovagal*
  - b. Onset – Before, during or shortly after injection.
3. Treatment
  - a. Patient feels faint: patient should lie flat or sit in a head-down position for several minutes.
  - b. Patient has fainted: patient should lie flat (may elevate feet slightly, not head). Nasal application of vapors from an ammonia inhalant may hasten arousal.
  - c. After consciousness is regained, patient should remain under observation, in clinic area, for 10-15 minutes.

#### B. ALLERGIC EVENT

1. Allergic events range from isolated skin reactions (rash or urticaria) to life-threatening anaphylaxis
2. Preventive measures constitute the ideal.
  - a. Avoid contact with or exposure to allergens or toxins to which sensitivity has been previously demonstrated.
  - b. Patients with known allergies, especially those who have a history of severe reactions, should carry on their persons *at all times* identification that shows the type of allergy.

#### C. URTICARIA (HIVES)

1. Signs and Symptoms
  - a. Generalized rash of red bumps (hives)
  - b. Itching
  - c. If respiratory symptoms (wheezing, shortness of breath), or cardiovascular symptoms (hypotension), or angioedema **proceed to anaphylaxis protocol below**
2. Treatment
  - a. If itching and swelling are confined to the injection site, observe patient closely for the development of generalized symptoms
  - b. If rash becomes generalized, closely assess airway breathing and circulation (ABC's)-- **If respiratory symptoms (wheezing, shortness of breath), cardiovascular symptoms (hypotension), or angioedema (swelling of the lips, face or throat) noted, proceed to anaphylaxis protocol below**
  - c. For children and adolescents, if ABCs stable: administer Benadryl (Diphenhydramine) orally if not contraindicated
    - 1) For children – standard dose – 1 mg/kg body weight
    - 2) Up to 30 mg maximum dose in children
    - 3) Up to 100 mg maximum dose in adolescents

- d. For adults, if ABCs stable: administer Benadryl (Diphenhydramine) orally if not contraindicated
  - 1) Standard dose, 1-2 mg/kg
  - 2) Up to maximum 100 mg single dose
  - 3) Warning: may cause drowsiness, so patient should have somebody else transport him/her home if Benadryl administered in clinic
- e. If clinical condition is stable and the patient no longer appears to be in any distress:
  - 1) Evaluate for discharge to home in the company of parent/legal guardian in the case of a minor, or a companion in the case of an adult.
  - 2) MD should be consulted prior to discharge
  - 3) Instruction/prescription for oral therapy if determined by the physician to be necessary, continued 1-5 days as needed:
    - a) **Benadryl** (Diphenhydramine hydrochloride) 5 mg/kg/24 hrs in four divided doses (total daily dose not to exceed 200 mg/24 hrs).
    - b) How supplied:
      - Capsules: 25 mg and 50 mg
      - Elixir: 12.5 mg/5 ml.
  - 4) FOLLOW-UP
    - a) Supervising Public Health Nurse, Child Health Clinic or Immunization Clinic Clinician, or designated Staff Nurse should contact the parent or patient via telephone within one (1) working day of the incident, in order to assess patient status and to offer additional medical services as needed.
    - b) All such contacts must be charted in the medical record and in the LINK “waiver” or “risk” sections as appropriate

## D. ANAPHYLAXIS

1. Signs and Symptoms
  - a. Sudden or gradual onset of generalized itching, erythema (redness), or urticaria (hives) is common (but does not need to be present to make the diagnosis)

AND some combination of:

  - b. Angioedema (swelling of the lips, face or throat)
  - c. Bronchospasm (wheezing)
  - d. Shortness of breath
  - e. Low blood pressure or shock
  - f. Abdominal cramping
2. Treatment
  - a. If diagnosis of anaphylaxis suspected or confirmed, **CALL 911**
  - b. A second person should notify on call physician and the SPHN
  - c. Place the patient in a supine position and elevate the lower extremities
  - d. Primary nurse continues to assess the airway, breathing, circulation and level of consciousness of the patient
  - e. Check chart to obtain weight if a child.
  - f. **Administration of epinephrine:** this is the initial drug of choice for anaphylaxis. Epinephrine comes in two modes of administration: aqueous 1:1000 dilution vial (needs to be drawn up in specified amount), or pre-filled automatic injection devices (Epi Pen and Epi Pen, Jr.); see table below for recommended doses in children and adults
    - 1) Epi Pen Jr and Epi Pen administration:
      - a) Epi Pen Jr. (0.15 mg) - delivers 0.15 mg intramuscular dose of epinephrine from epinephrine injection, USP, 1:2000 (0.3 ml) in a sterile solution
      - b) Epi Pen (0.3 mg) - delivers 0.3 mg intramuscular dose of epinephrine from epinephrine injection, USP, 1:1000 (0.3 ml) in a sterile solution
      - c) For administration of Epi Pen, do not remove the safety cap until you are ready to use, and note that only 0.3 ml is dispensed; the majority of the drug (1.7 ml) remains in the auto-injector
      - d) Epinephrine should ONLY be injected intramuscularly into the anterolateral aspect of the thigh (vastus lateralis); DO NOT inject into the buttock
    - 2) Aqueous epinephrine 1:1000 dilution (i.e. 1mg/ml) (see chart below for calculated doses).
      - a) Dose by approximate weight; if approximate weight is not known, can dose by age (see chart)
      - b) **Standard dose is 0.01 mg/kg body weight**
      - c) Up to **0.3 mg maximum single dose in children** (under 35 kg)
      - d) adult dose ranges **from 0.3 ml to 0.5 mL**
      - e) **maximum single dose of 0.5 mL** (indicated for any weight over 99 lbs)

- g. Consider the administration of Diphenhydramine (Benadryl), either orally or IM (see chart below)
  - 1) **OPTIONAL**: data does not support the effectiveness of antihistamines in anaphylaxis
  - 2) For **children**: standard dose is 1 mg/kg; up to 30 mg maximum dose in children ( $\leq 12$  years of age)
  - 3) For **adults and adolescents** ( $\geq 13$  years of age): standard dose is 1-2 mg/kg; maximum dose is 100 mg
- h. Monitor patient closely until EMS arrives.
- i. Administer oxygen if reaction is prolonged, or if patient has pre-existing heart or lung disease
- j. Perform cardiopulmonary resuscitation (CPR) if necessary and maintain airway.
- k. If with breathing difficulty, patient's head may be elevated, provided BP is adequate to prevent loss of consciousness.
- l. Monitor BP and pulse every 5 minutes.
- m. If EMS has not arrived and symptoms are still present, **repeat dose of Epinephrine every 5-10 minutes** for up to 3 doses depending on patient's response.
- n. Record vital signs, medications administered to the patients, including the time, dose and response and the name of the staff who administered the medication and other relevant information.
- o. Once EMS arrives, transfer care to them
- p. Notify the patient's primary care physician
- q. Follow-up:
  - 1) SPHN or clinician should contact patient or parent by phone within 1 working day of the incident to assess patient's status and to offer additional services or referrals as needed and appropriate; record contact in appropriate area
  - 2) Incident should be reported to VAERS if it involved a vaccine
  - 3) File special incident report (SIR)

### 3. SUGGESTED DOSE OF EPINEPHRINE AND DIPHENHYDRAMINE\*:

| Age Range      | Weight Range (kg) | Weight Range (lbs) | EPINEPHRINE DOSE<br>(Standard is 0.01 mg/kg body weight) |   | Diphenhydramine (Benadryl) Dose |
|----------------|-------------------|--------------------|--|---|---------------------------------|
|                |                   |                    | 1 mg/ml Injectable<br>(1:1000 dilution)<br>1 ml = 1 mg   | EpiPen Jr.: 0.15 mg<br>Adult EpiPen: 0.3 mg |                                 |
| 1- 6 mos       | 4- 8.5 kg         | 9-19 lbs           | 0.05 ml  | DO NOT USE                                  | 5 mg                            |
| 7- 36 mos      | 9 – 14.5 kg       | 20 – 32 lbs        | 0.1 ml   | DO NOT USE                                  | 10 mg                           |
| 37 - 59 mos    | 15 – 17.5 kg      | 33 - 39 lbs        | 0.15 ml  | 0.15 mg                                     | 15 mg                           |
| 5-7 yrs        | 18 – 25.5 kg      | 40 - 56 lbs        | 0.2 - 0.25 ml  | 0.15 mg                                     | 20 - 30 mg                      |
| 8-10 yrs       | 26 – 34.5 kg      | 57 – 76 lbs        | 0.25 – 0.3 ml  | 0.3 mg                                      | 30 mg                           |
| 11-12 yrs      | 35 - 45 kg        | 77- 99 lbs         | 0.35 – 0.4 ml  | 0.3 mg                                      | 40 mg                           |
| 13 yrs & older | 45 + kg           | 100+ lbs           | 0.5 ml   | 0.3 mg                                      | 50-100 mg                       |

\*Dose based on weight; if approximate weight is not known, dose based on age

Table modified from: "Medical Management of Vaccine Reactions in Children and Teens", Immunization Action Coalition, [www.immunize.org](http://www.immunize.org), July 2011

### 4. EMERGENCY TRAY

- EpiPen Auto-Injector
  - 2- 4 - EpiPen
  - 2- 4 - EpiPen Jr.
- Aqueous Epinephrine 1:1000 1mg/ml ampoules (OPTIONAL: do not need to stock if clinic does not treat children  $\leq 36$  months of age)
- Benadryl (Diphenhydramine hydrochloride), 50 mg/ml
  - 1 - multi-dose vial
- Benadryl (Diphenhydramine hydrochloride), 25 mg capsules
  - 1 - bottle
- 2- 3 ml syringes with 25 gauge, 1 inch needle
- 1 - Resusitube - Pediatric
- 1 - Tourniquet
- 4 - Ammonia inhalants
- Albuterol metered dose Inhaler

- Aerochamber, infant and adult

5. **NOTES ABOUT STORAGE**

- Epi pen: Store in a dark place at room temperature (15-30° or 59-86° F). Do not refrigerate.
- Epinephrine deteriorates rapidly on exposure to air or light, turning pink from oxidation to brown from the formation of melanin. Epinephrine solutions which show evidence of discoloration should be replaced

**References**

Lieberman, P, Bernstein, D et al. "The Diagnosis and Management of Anaphylaxis Practice Parameter: 2010 Update" *J Allergy and Clin Immunol* 2010; 126; 477-80; 480e1-42.

"Medical Management of Vaccine Reactions in Children and Teens", Immunization Action Coalition, [www.immunize.org](http://www.immunize.org), July 2011

Anaphylaxis, Care and Management (Including Vasovagal Syncope); Family Health Protocol, May 2008

**Attachment A**

STANDARDIZED PROCEDURE COMPETENCY: MANAGEMENT OF INJECTION REACTIONS

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The written competencies are the knowledge, skills and attitudes you are responsible for knowing and demonstrating. To identify your current level of performance as a Public Health Nurse or RN for management of injection reactions, please review the standardized procedure for management of injection reactions and the competencies associated with these. Assess your learning needs on the following scale:

Circle (1): No previous experience, need knowledge or instruction.

Circle (2): Previous experience, need some knowledge or instruction

Circle (3): Competent, need to review OCHCA’s policy and philosophy

Once you have identified your learning needs, it is your responsibility to find opportunities to meet your identified learning needs in collaboration with your Supervising Public Health Nurse (SPHN). The SPHN will meet with you to a regular basis to facilitate your learning experiences and validate the written orientation competencies.

I. Defines terms used

Self-assessment 1 2 3

|                    | Date Met | Validated by | Comments |
|--------------------|----------|--------------|----------|
| Vasovagal reaction |          |              |          |
| Urticaria          |          |              |          |
| Anaphylaxis        |          |              |          |

II. States steps of management.

Self-assessment 1 2 3

|  | Date Met | Validated by | Comments |
|--|----------|--------------|----------|
| Allergic reactions: preventive measures                |          |              |          |
| Vasovagal reaction                                     |          |              |          |
| Positioning of patient                                 |          |              |          |
| Observation 10-15 min in clinic                        |          |              |          |
| Urticaria  |          |              |          |
| Itching & local swelling – observation                 |          |              |          |
| Generalized rash – ABC’s                               |          |              |          |
| Benadryl administration                                |          |              |          |
| Respiratory distress – proceed to anaphylaxis protocol |          |              |          |
| Consult MD prior to discharge                          |          |              |          |
| d/c to home with companion or parent                   |          |              |          |
| Instructions/Rx for oral therapy if needed             |          |              |          |
| Follow up phone call                                   |          |              |          |
| Anaphylaxis  |          |              |          |
| Call 911 (must be first step stated)                   |          |              |          |
| Notify MD and SPHN                                     |          |              |          |
| Place patient in supine position, elevate legs         |          |              |          |
| Assess ABC’s   |          |              |          |
| Obtain weight from chart (if child)                    |          |              |          |
| Administer epi (see below for specifics)               |          |              |          |

|   | Date Met | Validated by | Comments |
|---|----------|--------------|----------|
| Monitor closely until EMS arrives             |          |              |          |
| Administer O2 if reaction prolonged           |          |              |          |
| Perform CPR if required                       |          |              |          |
| Monitor B/P, HR q 5 min                       |          |              |          |
| Transfer care to EMS                          |          |              |          |
| Documentation of all meds, VS and assessments |          |              |          |
| Notify patient's PCP                          |          |              |          |
| Follow up                                     |          |              |          |
| f/u phone call by SPHN within 1 day           |          |              |          |
| VAERS reported if vaccine related             |          |              |          |
| File special incident report (SIR)            |          |              |          |

III. Demonstrates Nursing role.

Self-assessment 1 2 3

|  | Date Met | Validated by | Comments |
|--|----------|--------------|----------|
| Identifies location of emergency kit                             |          |              |          |
| States when CPR is required                                      |          |              |          |
| Epinephrine Administration                                       |          |              |          |
| States doses or utilizes table for epinephrine administration    |          |              |          |
| Verbalizes site for Epinephrine administration                   |          |              |          |
| Demonstrates use of Epi-pen                                      |          |              |          |
| Demonstrates use of aqueous epinephrine                          |          |              |          |
| States indication of repeat Epi doses                            |          |              |          |
| States frequency of repeat Epi doses                             |          |              |          |
| Storage of medication  |          |              |          |
| Epi-pen – dark place, do not refrigerate                         |          |              |          |
| Epinephrine – deteriorates rapidly with exposure to air or light |          |              |          |