

## ANAPHYLAXIS

### I. DEFINITION:

A hypersensitivity reaction, usually occurring within seconds to minutes after exposure to an antigen. Reaction may be mild and self limited, or severe and possibly life-threatening.

### II. ETIOLOGY:

Examples of agents which have been associated with anaphylaxis include non-human sera, gamma globulin, influenza vaccine, tetanus toxoid, measles and other egg-based vaccines, bee or wasp stings, foods, penicillin, neomycin, allergy extracts, pollen extracts, diagnostic agents, thimerosal, streptomycin, baker's yeast, and other medications.

### III. CLINICAL FEATURES:

- A. Generalized flush
- B. Urticaria
- C. Paroxysmal coughing
- D. Dyspnea
- E. Wheezing
- F. Orthopnea
- G. Cyanosis
- H. Hypotension
- I. Laryngeal edema

### IV. MANAGEMENT PLAN:

- A. Check emergency tray contents and document monthly.
  - 1. Document date and nurse signature and corrective action taken when needing to order medications or replace equipment.
  - 2. Identify location of emergency equipment, including oxygen, by labeling room door and cabinet.
- C. Severe Reaction:
  - 1. Severe drop in blood pressure; rapid thready or absent pulse; laryngeal edema (inspiratory crow), bronchospasm (wheezing) and/or cyanosis, with or without other symptoms.
  - 2. Instruct someone to call 911.
  - 3. Instruct someone to call physician assistance if one is immediately available.

4. Ensure an open airway.
  - a. Evaluate breathing and heart rate.
  - b. Evaluate mental status (i.e., 'alert/oriented to person, place, time = oriented x 3).
  - c. Re-evaluate every 10 minutes or sooner if needed.
5. Obtain emergency tray (See Appendix 1).
6. **Aqueous Epinephrine 1:1000** (see attached dosage schedule)
  - a. Administer subcutaneously or intramuscularly in deltoid or anterolateral thigh opposite from initial injection site. Massage area.
  - b. Aqueous Epinephrine may be given every 10-15 minutes x 3 if there is no improvement.
  - c. Filter needles are optional.
  - d. Use dosage schedule below:

**DOSAGE SCHEDULE OF 1:1000 EPINEPHRINE**

WEIGHT		APPROXIMATE AGE	DOSE (may be given every 10-15 minutes x 3 if there is no improvement)
lb.	kg		
11	5	0 - 3 months	0.05 ml
15	7	4 - 11 months	0.07 ml
19	9	12 - 24 months	0.09 ml
22	10	25 - 35 months	0.10 ml
33	15	3 - 5 years	0.15 ml
44	20	5 - 8 years	0.20 ml
55	25	8 - 9.5 years	0.25 ml
66	30	9.5 - 10.5 years	0.30 ml
77	35	10.5 - 12 years	0.35 ml
88	40	12 - 13 years	0.40 ml
99	45	13 - 14 years	0.45 ml
110	50 or over	15 to Adult	0.50 ml

7. Administer **oxygen at 8 to 15 L/min** via non-rebreather mask or 100% via ambu bag.
8. Administer **Benadryl (diphenhydramine) 50 mg/ml deep IM** per following dosage schedule: (Though this drug is not recommended for long term use in the pregnant woman, nursing mother, neonate or premature infant, in the case of anaphylaxis it may be used)

<b>BENADRYL DOSAGE SCHEDULE</b>		
<b>AGE</b>	<b>mg.</b>	<b>ml.</b>
Less than 24 months	<b>DO NOT USE</b>	
2 - 9 years	25	0.5 ml
10 years – adult	50	1 ml

9. Call Medical Director or back-up physician, if not already on premises, to report client's condition and disposition.

Medical Director \_\_\_\_\_ Phone \_\_\_\_\_

10. Send the following information with the client to the emergency room doctor and call information to the emergency room (See Appendix 2). A copy of Appendix 2 should remain in client's record.
  - a. Name of antigen and dose (if known)
  - b. Signs and symptoms of reaction
  - c. B/P, pulse, respiration and mental status
  - d. Age and approximate weight of client
  - e. Flow rate and method of oxygen administration
  - f. Epinephrine dosage, time and route
  - g. Benadryl dosage and time
11. Complete incident report and route through normal channels as indicated on report.

D. Anaphylaxis away from the county health department location:

The minimal recommendations for emergency equipment needed for home visits involving immunizations or injectable tuberculosis drugs includes Aqueous Epinephrine 1:1000, pocket resuscitator mask, airway, and Benadryl injectable, 50 mg/ml. Follow outline in the Management Plan (IV.A.) under Severe Reaction except for number 7 (O<sub>2</sub>) unless oxygen is readily available.

- E. Follow-up:
1. Allergy label should be placed on the outside of client's chart. Follow OSIS procedure for anaphylaxis notation.
  2. Check client's condition in 24 hours and document on chart.
    - a. Check with emergency room or other hospital personnel
    - b. Check with client at home
  3. Determine tracking priority utilizing professional judgment.

REFERENCES:

- Simons, F. Estelle R. *Journal of Allergy and Clinical Immunology* - Volume 125, Issue 2 Suppl 2 (February 2010) Mosby, Inc. - Chapter 14, Anaphylaxis.
- Simons, F. Estelle R. Anaphylaxis: Recent advances in assessment and treatment, *Journal of Allergy and Clinical Immunology*, Volume 124, Issue 4 (October 2009), Mosby, Inc
- Kliegman: Nelson Textbook of Pediatrics, 19th ed., Copyright © 2011 Saunders, An Imprint of Elsevier Chapter 143: Anaphylaxis.
- Simons FER: Anaphylaxis. *J Allergy Clin Immunol* 2008; 121:S402-S407.
- Simons FER: Anaphylaxis in infants: can recognition and management be improved? *J Allergy Clin Immunol* 2007; 120:537-540.
- Simons FER: Emergency treatment of anaphylaxis. *BMJ* 2008; 336:1141-1142.

## APPENDIX 1

### Contents of Emergency Tray

#### DRUGS

Aqueous Epinephrine 1:1000

Benadryl (Diphenhydramine) injectable 50 mg/ml

#### EQUIPMENT

Airways - Adult, child and infant

Safety syringes (3cc) with needles 5/8" and 1"

Alcohol sponges

Aspirator or suction bulb

Oxygen supply and mask

Adult and pediatric ventilator bag (ambu bags)

or

Pocket resuscitation masks

APPENDIX 2

DRUG REACTION

NAME \_\_\_\_\_ DATE \_\_\_\_\_  
                     LAST                    FIRST                    MIDDLE

ADDRESS \_\_\_\_\_

DATE OF BIRTH \_\_\_\_\_ APPROX. WEIGHT \_\_\_\_\_ SEX \_\_\_\_\_

DIAGNOSIS \_\_\_\_\_

ANTIGEN ADMINISTERED (DRUG, IMMUNIZATION) \_\_\_\_\_

TIME OF REACTION ONSET \_\_\_\_\_

BASELINE VITAL SIGNS      BP \_\_\_\_\_ P \_\_\_\_\_ R \_\_\_\_\_

SYMPTOMS:    Generalized Urticaria    ( )  
                     Localized Urticaria        ( )      Location \_\_\_\_\_  
                     Swelling                        ( )      Location \_\_\_\_\_  
                     Difficulty Breathing        ( )  
                     Nausea/Vomiting            ( )      How many times? \_\_\_\_\_

VITAL SIGNS					MEDICATIONS		
TIME	B/P	PULSE	RESP	Level of Consciousness		AMOUNT	TIME
					1) 1:1000 Aq. Epinephrine		
					2) 1:1000 Aq. Epinephrine		
					3) 1:1000 Aq. Epinephrine		
					Benadryl IM		
					Other		

NURSE COMMENTS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

DISPOSITION

	YES	NO	TIME	
Oxygen Started	_____	_____	_____	Method and Percentage _____
Ambulance Called	_____	_____	_____	_____
Transported to Hosp.	_____	_____	_____	NURSE _____
				NURSE _____