

# Anaphylaxis (Pediatric)

*Updated by Valentine Alia*

**Keywords:** Anaphylaxis, rash, shortness of breath, pediatrics

**Procedures:** None

**Additional Equipment:** Airway box/cart

## LEARNING OBJECTIVES

1. Recognize when a child has an immediate life-threatening condition
2. Manage a patient with anaphylaxis
3. Create a broad differential for a patient with shortness of breath
4. Make note of pediatric dosing

## CRITICAL ACTIONS

- ✓ Make patient NPO
- ✓ Treat anaphylaxis with appropriate doses of epinephrine, H1-blocker, H2-blocker, steroids
- ✓ Administer a 20 cc/kg bolus of IV fluids
- ✓ Supplemental oxygen
- ✓ Obtain pertinent history to identify anaphylaxis to peanuts
- ✓ Admit patient to pediatric ICU

## ALL ACTIONS

- ✓ Obtain IV access with two large bore peripheral IVs
- ✓ Place patient on monitors with continuous oxygen saturation monitoring
- ✓ Place patient on continuous end-tidal capnography
- ✓ Ask for a full set of vital signs including HR, BP, oxygen saturation, and temperature
- ✓ Early supplemental oxygen
- ✓ Obtain history critical for identifying possible anaphylaxis
- ✓ Early administration of epinephrine
- ✓ Early administration of steroids, H1, H2 medications
- ✓ Perform a full physical exam including airway and skin
- ✓ Request airway equipment on standby
- ✓ Request a 20 cc/kg bolus of IV fluids
- ✓ Reassessment of vitals
- ✓ Appropriate disposition (Admission)
- ✓ Closed-loop communication
- ✓ Synthesis of case to admitting physician
- ✓ Disclose appropriate information to the patient/family

## CASE ONE-LINER

4-year-old male presents with shortness of breath after eating his friend's wrap at lunch

## PRESENTATION

SETTING	Hospital ED
ADDITIONAL ROLES	Sim operator, sim RN, debrief manager CONSULTANTS: Admitting physician CONFEDERATES: Mom, EMS
PATIENT	4yo male
CHIEF COMPLAINT	Shortness of breath for 15 min
Hx of PRESENTING ILLNESS	A 4-year-old male with hx of asthma is brought in by EMS from school after developing shortness of breath. EMS Report: Patient was transported from elementary school approximately 15 min after he developed some wheezing and itching of the skin. School nurse reported the child tried a bite of his friend's Thai peanut chicken wrap immediately prior to the onset of symptoms. School nurse noted a diffuse rash on the arms, legs, and trunk. School nurse said he did not have an inhaler in her office for emergency use. The child complained of nausea en route, and 2 mg ondansetron was administered en route. Mom's parking her car and followed us here. Mom: "My son has a peanut allergy. We try to be very careful! Is my son okay?"
ROS	(+) Rash, wheezing, difficulty breathing (-) Cough, nasal congestion, fever, chills
PMH/PSH	Asthma
MEDICATIONS	Albuterol
ALLERGIES	Peanut
SOCIAL Hx	NA

## INITIAL VITAL SIGNS

HR	BP	RR	PULSE OXIMETRY	TEMP	WEIGHT
165	60/palp	42	89% on room air	97.8F	17 kg

## PHYSICAL EXAM

Items in red need to be verbalized

### PRIMARY SURVEY

- **AIRWAY:** Patent, no stridor
- **BREATHING:** Wheezing throughout, no retractions, no cyanosis
- **CIRCULATION:** 1+ distal pulses throughout, tachycardia

**GENERAL:** AOx3, coughing, crying, and scratching arms/legs

**HEENT:** PERRL/TM physiologic, no angioedema, no tongue edema)

**NECK:** No JVD, no crepitus

**CV:** Phys S1/S2. tachycardic rate, rhythm. No murmur, rubs, gallops

**PULM:** Diffuse wheezes. no rales/ronchi. +tachypnea

**ABD:** Soft, non-tender/non-distended

**EXT:** No edema

**SKIN:** Diffuse, erythematous urticarial rash on trunk and extremities

PHASE 1: INITIAL PRESENTATION				
TIME	CLINICAL PROMPT	EXPECTED MANAGEMENT	CONSEQUENCES	CRITICAL ACTIONS
00:00-03:00	4-year old male presents with SOB after eating a friend's Thai chicken peanut wrap at lunch 15 min prior	<ul style="list-style-type: none"> <li>NPO</li> <li>Order full set of vital signs, cardiac monitors, continuous oxygen saturation monitoring</li> <li>Order IV access</li> <li>Obtain a focused history and physical examination</li> <li>Supplemental oxygen</li> <li>Request airway equipment to bedside in preparation</li> <li>Administer IM epinephrine 0.5mg IM</li> <li>Request Child Life or provide attention and care for child's concerns in a new environment</li> </ul>	<ul style="list-style-type: none"> <li>RN prompts, "Do you want vitals/patient on the monitor/ IV access?" if not requested</li> <li>RN prompts, "The child seems scared. Want me to get someone to make him feel comfortable until parents get here?" if child not addressed directly</li> </ul>	<ul style="list-style-type: none"> <li>Obtained a complete set of vital signs?</li> <li>I P N</li> <li>Obtained a focused history?</li> <li>I P N</li> <li>Performed a focused physical exam?</li> <li>I P N</li> <li>Ordered 2-large bore IVs?</li> <li>I P N</li> <li>Recognized abnormal VS?</li> <li>I P N</li> <li>Applied supplemental O2?</li> <li>I P N</li> <li>Got airway cart for backup?</li> <li>I P N</li> <li>Administered epinephrine IM early?</li> <li>I P N</li> </ul>

PHASE 2: REASSESSMENT AND SECONDARY INTERVENTION				
TIME	CLINICAL PROMPT	EXPECTED MANAGEMENT	CONSEQUENCES	CRITICAL ACTIONS
3:01-6:00	<p><b>Repeat Vital Signs (if epinephrine given)</b></p> <p>BP: 70/48 HR: 123 RR: 20 T: 97.9F Pox: 100% on NRB or 4L (otherwise sat lower)</p> <p><b>Repeat Vital Signs (if no epi given)</b></p> <p>BP: 40/palp HR: 55 RR: 20 T: 97.9F Pox: Undetectable</p>	<ul style="list-style-type: none"> <li>Reassess vitals</li> <li>Order IV fluids</li> <li>Meds: albuterol neb, H1 blocker, H2 blocker, steroids</li> <li>Administer 2nd dose of IM epinephrine</li> </ul>	<ul style="list-style-type: none"> <li>RN to prompt, "Did you want to give any additional meds?" if no steroids or H1/H2 blockers ordered.</li> <li>RN to prompt, "Did you want to give epi? Looks like he may be having an allergic reaction" if no epinephrine ordered</li> </ul>	<ul style="list-style-type: none"> <li>Ordered adjunctive medications?</li> <li>I P N</li> <li>Ordered 2nd dose of epi?</li> <li>I P N</li> <li>Ordered IV fluids?</li> <li>I P N</li> </ul>

### PHASE 3: REASSESSMENT, TERTIARY INTERVENTION, RESULTS, RESOLUTION

TIME	CLINICAL PROMPT	EXPECTED MANAGEMENT	CONSEQUENCES	CRITICAL ACTIONS
6:01-10:00	<b>Repeat Vital Signs (after 2 doses epi; otherwise use previous VS)</b> BP: 105/72 HR: 98 RR: 18 T: 97.9F Pox: 100% on NRB	<ul style="list-style-type: none"> <li>Reassessment of vital signs and clinical status</li> <li>Update parent</li> <li>Call admit to PICU</li> </ul>	<ul style="list-style-type: none"> <li>RN to prompt, “Parents are here” at 6:30</li> <li>RN to prompt, “Do we have any vital sign goals?” if no interventions</li> <li>RN to prompt, “Who’s admitting the patient?” if no admit called</li> </ul>	Ordered appropriate medications? I P N Presented case to specialist succinctly and directly? I P N Updated patient’s family at any point? I P N

### PHASE 4: CONCLUSION & DEBRIEFING

TIME	ACTIONS
10:00-20:00	Debrief Q&A Session/Teaching Evaluations

### DEBRIEFING POINTS

GENERAL POINTS	SCENARIO-SPECIFIC POINTS
<ul style="list-style-type: none"> <li>What went well?</li> <li>What are some opportunities for improvement?</li> <li>Did you identify any gaps in knowledge?</li> <li>Was there any delay in treatment?</li> <li>How was communication between team members?</li> </ul>	<ul style="list-style-type: none"> <li>Medication choices and delivery in anaphylaxis</li> <li>Appropriate escalation of care in anaphylaxis</li> <li>Differential diagnosis</li> </ul>

### ORAL BOARDS PEARLS

- Have a format for how you would like to approach each case
- Remember how to dose pediatric medications
- Remember to make the patient NPO, re-assess the vital signs, re-assess after each intervention, and follow up on any studies.
- Remember to explain to the patient/family the same way you would in real life
- If the examiner attempts to cue you or ask “anything else”, take a moment to synthesize what has been done to help organize your thoughts (this may be your final chance to correct something you forgot!) and ensure the examiner recorded all of your intended actions