

# Asthma and Anaphylaxis

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# Outline

- \* Definition of food allergic conditions
  - \* Epidemiology
  - \* Management in Schools
- \* Asthma
  - \* Epidemiology
  - \* Pathophysiology
  - \* Medications and devices
  - \* Management in Schools
- \* Resources



# Anaphylaxis

# Epidemiology of IgE-mediated Food Allergy

- \* Prevalence of Food Allergy
  - Patient/Parent self report: 12-14%
  - Based upon history & testing: 3%
  - Data from CDC (children < 18 years): 5.1%
- \* Why are food allergies increasing?
  - Hygiene hypothesis?
    - Affluence
    - Western culture
  - Food genetics/chemicals/processing?
  - Unknown

# IgE-mediated Food Allergy

- \* Hypersensitivity reaction that occurs quickly (seconds/minutes to 1-2 hrs) following food ingestion
- \* Can be life-threatening
- \* Occurs reproducibly
- \* Can occur with tiny amounts of food protein exposure (250 mcg)
- \* Demonstrable food-specific IgE (via skin prick testing or serum IgE)

# Symptoms of Food Allergic Reaction

- \* Skin

  - hives, angioedema, atopic dermatitis

- \* Gastrointestinal

  - oral itching & swelling, nausea, vomiting, diarrhea

- \* Respiratory

  - laryngeal edema, wheezing, cough

- \* Cardiovascular

  - tachycardia, hypotension

- \* Ocular & rhinitis symptoms

  - rare as isolated symptoms

# Natural History of Food Allergy

## \* Dependent on allergen

- Most children outgrow milk, egg, soy & wheat allergy
- Less common to outgrow peanut or tree nuts (seafood, seeds)

## \* Age

- Food allergy that starts in adults is unlikely to resolve

# Diagnosis of Food Allergy

## \* Medical History

- Anaphylaxis
  - Timing (seconds to minutes)
  - Organ systems: Skin - GI - respiratory - shock
- Identify specific food
  - Base on history and reproducibility
  - Screening panels should not be done

## \* Physical Exam (urticaria, AD)

# Risk Factors For Severe Reactions

- \* Asthma
- \* Delayed epinephrine administration
- \* Prior anaphylaxis
- \* Peanut & Tree Nut allergy
- \* Level of food specific IgE
- \* Amount of food ingested
- \* Cardiovascular disease
- \*  $\beta$ -blocker or ACE inhibitor use

# Management of Food Allergy

- \* Avoidance
- \* Extensive education
- \* Nutrition monitoring
- \* Reading food labels
- \* For accidental ingestion & reaction:
  - 1) Injectable epinephrine IM
  - 2) Antihistamines
  - 3) Emergency care
- \* Allergy evaluation with long-term follow up

# Treatment of Reactions

- \* For reactions isolated to the skin (“mild reactions”):
  - Antihistamine (cetirizine or diphenhydramine - syrup)
  - Close monitoring for additional symptoms
  
- \* For signs of anaphylaxis:
  - Epinephrine IM
    - Switch to 0.3 mg at 66 # or 30 kg (due to underdosing: ~55#)
- Delayed epi administration is a risk factor for death***
  - Seek immediate care
  - Late phase reactions occur up to 20% of the time  
(at least 4 hrs of observation recommended in ED)

# EpiPen4Schools™ Program

- \* Online form needs to be completed by school staff person
- \* Need to submit a prescription
- \* Can obtain two 2 packs:
  - \* Junior or 0.3 mg
- \* Each school can obtain 4 Epi Pens: not for any specific child
- \* <http://www.epipen4schools.com/>

# Injectable Epinephrine

## \* Epi Pen<sup>®</sup>



## \* Auvi-Q<sup>®</sup>



## \* Adrenaclick<sup>®</sup> generic



# Summary: IgE Mediated Food Allergy

- \* Potentially life-threatening condition affecting ~3-5% of the US population
- \* Diagnosis is based on multiple factors including:
  - Reproducible history
  - Food-specific IgE
- \* Treatment:
  - Avoidance & education
  - Early administration of epinephrine IM for systemic reactions
  - Long-term follow-up as many children outgrow food allergies

# Asthma

# Asthma

## Morbidity & Mortality – Wisconsin

### Annually\*:

- \* 19,548 ED visits (6,000 for children\*\* in 2011)
- \* 4,746 hospitalizations (1,246 for children\*\* in 2011)
  - \* Children < 5 years: highest rates both ED & Hosp.
  - \* AA hospitalization rates highest
  - \* seasonal variability
- \* Charges:
  - \* \$63 million (Hospitalizations)
  - \* \$24.5 million (ED visits)
- \* Deaths: average 65 annually
  - \* AA four times more likely to die from asthma

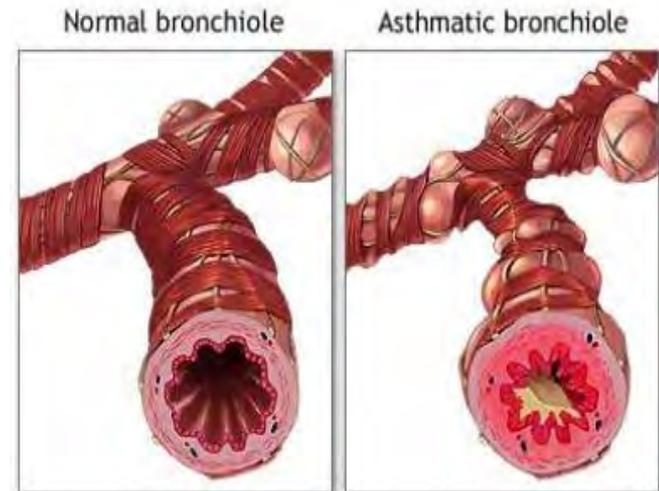
# Asthma

## Morbidity & Mortality

- \* Affects 25 million Americans\*
  - \* 7 million children or 9.4%
- \* 17 million asthma related outpatient visits to private physicians' offices annually \*
- \* 13 million missed school days
- \* 10 million missed workdays
- \* Affects 300 million people world wide

# Pathophysiology

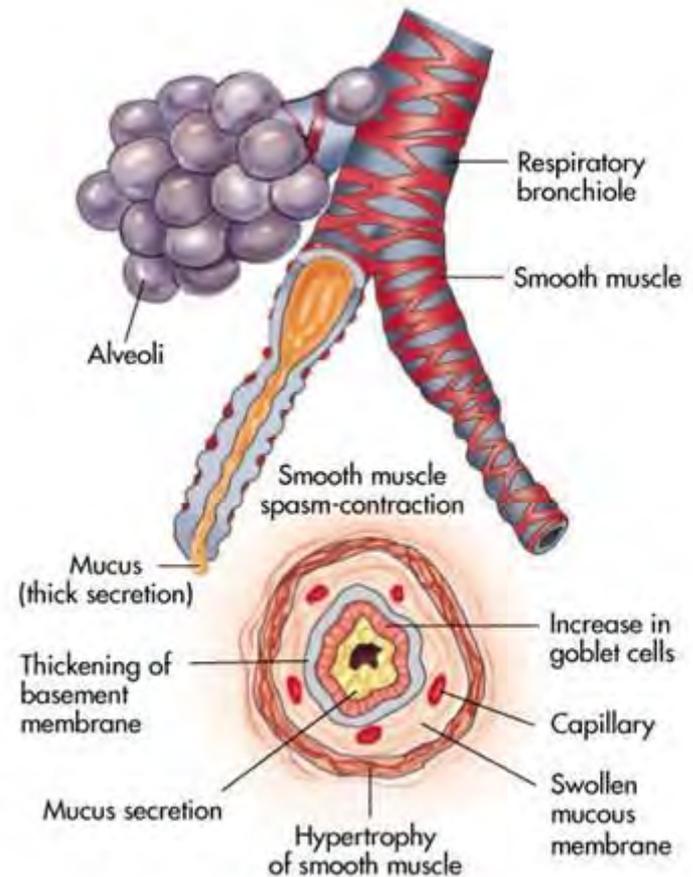
- \* Occurs in acute episodes
- \* Characterized by reversible airflow obstruction caused by:
  - \* Smooth muscle contraction
  - \* Mucus resulting in bronchial plugging
  - \* Inflammatory changes in the bronchial walls



# Pathophysiology

- \* With an acute attack, bronchioles are obstructed on expiration
- \* With a severe attack, bronchioles are obstructed during both inspiration AND expiration

**BE VERY AFRAID OF THE SILENT  
ASTHMA PATIENT!!**



# Classifying Asthma Severity in Well-Controlled Patients (All Ages)

## Classify Severity by Lowest Level of Treatment Required to Maintain Control

Intermittent	Persistent		
	Mild	Moderate	Severe
<b>Step 1</b>	<b>Step 2</b>	<b>Step 3 or 4</b>	<b>Step 5 or 6</b>

# Signs of Respiratory Distress

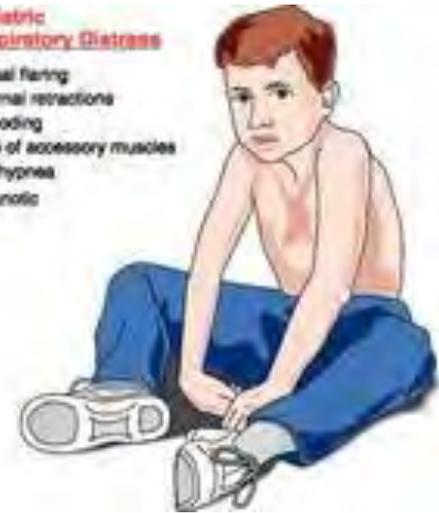
- \* Increased work of breathing
  - \* Cough, wheezing
  - \* Respiratory rate
  - \* Color changes
  - \* Grunting
  - \* Nasal flaring
  - \* Retractions/neck muscle use
  - \* Stridor or drooling
  - \* Sweating

# Signs of Respiratory Distress

- \* Prolonged expiratory phase
- \* ↑'d heart rate
- \* Abdominal accessory muscle use
- \* Tripod position
- \* O<sub>2</sub> sats < 91% (cyanosis is a late sign)

## Pediatric Respiratory Distress

- Nasal flaring
- Sternal retractions
- Tripoding
- Use of accessory muscles
- Tachypnea
- Cyanotic



# Severe Asthma

## Risk Factors Asthma-Related Death

- \* Past history of sudden, severe exacerbations
- \* Prior intubation or ICU admission
- \* Current systemic CS (corticosteroid) use or just completed CS burst
- \*  $\geq 2$  hospitalizations/year
- \*  $\geq 3$  ER visits/year
- \* Hospitalization/ER visit in the past month

# Severe Asthma

## Risk Factors for Asthma-Related Death

- \* Use of > 2 short acting beta<sub>2</sub>agonist MDI's/month
- \* Difficulty perceiving asthma severity
- \* Low SES or inner-city residence
- \* Serious psychiatric/psychological problems
- \* Illicit drug use
- \* Co-morbid conditions (CV disease, COPD)

# Asthma Triggers

- \* Allergens
- \* Infections (upper respiratory & sinusitis)
- \* Irritants (pollution, tobacco smoke)
- \* Exercise
- \* Emotions
- \* Gastroesophageal reflux
- \* Weather (humidity, temperature extremes)

# Asthma Medications

## Controller and Rescue

# Asthma Medications

## Controllers:

- \* Anti-inflammatories: reduce swelling and mucus production in the airways
  - As a result, airways are less sensitive and less likely to react to triggers
    - Corticosteroids (oral & inhaled)
    - Leukotriene modifiers
- \* Long-acting beta-agonists (LABA): relax the muscle bands that surround the airways
- \* Combination products: contain both an anti-inflammatory and LABA



# Asthma Medications

## Rescue Medications: Dilate the bronchioles

- Short-acting bronchodilators are used as a "quick relief" or "rescue" medication
- Albuterol (R & S isomers)
- Levalbuterol (no S isomer)
- Albuterol and ipratropium combined:
  - Duoneb (nebulized)
  - Combivent Respimat (inhaler)

# Asthma Medications

## Delivery Devices:

- \* Nebulizer
- \* Spacer with face mask
- \* Spacer with mouth piece
- \* Dry powder diskus
- \* Flexhaler
- \* TwisthalerAerolizer



# Asthma Medications: HFA

## HFA inhaler facts:

- \* Shake for 5 seconds before use
- \* Need to check information about priming and cleaning for each MDI
  - Ventolin® & Proventil®: not used for 2 weeks, re-prime 4 sprays; wash actuator once a week under warm water (not the canister)
  - Flovent HFA®: not used in 1 week, re-prime with 1 spray; clean mouthpiece with cotton swab weekly



Generic	Brand	Expiration	Priming puffs/repeat	Actuations/inhaler
albuterol	ProAir	as labeled (24 months)	3/2 weeks	200
	Proventil	as labeled (24 months)	4/2 weeks	200
	Ventolin	12 months after removing from foil pouch	4/2 weeks or after dropping	200
levalbuterol	Xopenex	as labeled (18 months)	4/3 days	200
pirbuterol	Maxair	as labeled	2/48 hours	400
beclomethasone	Qvar	as labeled	2/10 days	100
budesonide	Pulmicort Flexhaler	as labeled	prior to initial use	90mcg/60 doses 180mcg/120 doses
	Pulmicort Respules	within 2 weeks of opening foil packet	N/A	per 2 ml: 0.25mg, 0.5 mg, or 1mg 30/carton
fluticasone	Flovent HFA	as labeled	4/7 days or after dropping	124
	Flovent diskus	6 weeks (50mcg) - 2 months	N/A	50mcg/ 100mcg, 250mcg 60 doses
mometasone	Asmanex	45 days after removing from foil pouch	N/A	110mcg/30 doses 220mcg/30,60 Or 120 doses
triamcinolone	Azmacort	as labeled	2/3days	
fluticasone/salmeterol	Advair Diskus	1 month after removing from foil pouch	N/A	100/50, 250/50 or 500/50 60 doses
	Advair HFA	as labeled	4/4 weeks	45/21, 115/21 or 230/21 120 doses
budesonide/fomoterol	Symbicort HFA	3 months after removing from foil pouch	2/7days	80/4.5, 160/4.5 120 doses
formoterol	Foradil	use immediately after removing	N/A	60
salmeterol	Serevent diskus	6 weeks after removing from foil pouch	N/A	60
ipratroium	Atrovent	as labeled	2/3 days	200
ipratroium/albuterol	Combivent	as labeled	3/24 hours	200
tiotropium	Spireva	immediately after removing from blister	N/A	30

# Caring for Students Who Have Asthma and Allergies

# Ensuring a Safe School Environment

## What Every School Should Have:

- \* A confidential list of students with medically diagnosed chronic health conditions including asthma and allergies
- \* Policies and procedures for administering medications
  - \* Including protocols for emergency response to a severe asthma episode or anaphylaxis
- \* A written action plan for every student with asthma and allergies
- \* Yearly education for staff and students about asthma and allergies



# Role of the School Nurse

- \* Identify students with asthma and allergies
  - \* Evaluate the severity of the condition
    - \* Was the asthma or allergy diagnosed as a healthcare provider
    - \* Did they have an inhaler once because of a cold
    - \* Do they use a daily controller medication and prn albuterol
    - \* Have they had a previous anaphylactic reaction
    - \* Do certain foods give them a rash



# Role of the School Nurse

- \* Ensure that students who require medication administration at school have the proper orders from a healthcare provider on file
- \* Ensure that students have their required medication(s) at school
  - Including emergency medications
- \* Develop an individualized health plan (IHP) for each student
- \* Inform school personnel who have a “need to know” about the IHP and plan of care



# Action Plans

# Asthma Action Plan

## Zones:

- \* **Green:** doing well
- \* **Yellow:** worsening asthma symptoms/viral respiratory infection
- \* **Red:** significant asthma symptoms

**Asthma Action Plan** Updated On: \_\_\_\_\_

*(To be completed by Health Care Provider)*

Name: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

Address: \_\_\_\_\_ Emergency Contact Phone: \_\_\_\_\_

Health Care Provider Name: \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Asthma Severity:  Mild Intermittent  Mild Persistent  Moderate Persistent  Severe Persistent

Asthma Triggers:  Colds  Exercise  Animals  Dust  Smoke  Food  Weather  Other \_\_\_\_\_

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**If Feeling Well** **Every Day Medicines**

Child feels good:  
 • Breathing is good  
 • No cough or wheeze  
 • Can work / play  
 • Sleeps all night

Peak flow in this area: \_\_\_\_\_ to \_\_\_\_\_

MEDICINE:	HOW MUCH:	WHEN TO TAKE IT:

*20 minutes before exercise use this medicine:*

---

**If Not Feeling Well** **Take Every Day Medicines and Add these Rescue Medicines**

Child has any of these:  
 • Cough  
 • Wheeze  
 • Tight chest

Peak flow in this area: \_\_\_\_\_ to \_\_\_\_\_

MEDICINE:	HOW MUCH:	WHEN TO TAKE IT:

*Call doctor if these medicines are used more than two days a week.*

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**If Feeling Very Sick Get help from Doctor NOW!** **Take These Medicines**

Child has any of these:  
 • Medicine is not helping  
 • Breathing is hard and fast  
 • Nose runs white  
 • Can't walk or talk well  
 • Ribs show

Peak flow below: \_\_\_\_\_

MEDICINE:	HOW MUCH:	WHEN TO TAKE IT:

**SEEK EMERGENCY CARE or CALL 911 NOW if: Lips are bluish, Getting worse after 2 hours of medicine, Can't talk or cry because of hard breathing or has passed out.**

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Health Care Provider Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Patient Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**NYC Health** New York City Department of Health and Mental Hygiene  
 Michael E. Bloembergen, Mayor  
 Thomas D. Spade, Ruler, Health Commissioner  
 nyc.gov/health

New York City Childhood Asthma Initiative  
 Adapted from Finger Lakes Asthma Action Plan and NHLB (10)

www.nyc.gov  
 www.nyc.gov/health  
 www.nyc.gov/health

## Plan de Acción para el Asma

Nombre:  
 Fecha:  
 Doctor: Kathleen K Shanovich, NP  
 Número de teléfono: 608-263-6180

**Alergias/Desencadenadores:** infección respiratoria (respiratory infection) and polen del pasto (grass pollens), ácaros del polvo (dust mites), gatos (cats), perros (dogs) and cockroaches



### Zona Verde

- Respira con facilidad
- No tiene tos ni sibilancia al respirar
- Puede caminar, jugar y dormir a lo largo de la noche



**Tome este(os) medicamento(s) para seguir respirando con facilidad:**

- Nombre del/de los medicamento(s): Loratadine (Claritin o Alavert) 10 mg una vez al día
- Para los inhaladores, use un espaciador
- Para la tos y wheezing, toma Inhalador de Albuterol (Ventolin) 2 bocanadas (puffs) con espaciador cada 4 horas según sea necesario.

### Zona Amarilla

- No se siente bien
- Primeros signos de un resfriado
- Tose o tiene sibilancia por la noche o al trabajar o jugar



**Cuando no se sienta bien, añada medicamento(s) para el alivio rápido y aumente el/los medicamento(s) de control para evitar que el asma empeore:**

- Tome el medicamento para el alivio rápido cada 4 horas para los síntomas del asma: Inhalador de Albuterol 2-4 bocanadas (puffs) con espaciador cada 4 horas según sea necesario.
- Si no mejora o si permanece en la Zona Amarilla durante más de 2 días, llame a la clínica al 608-263-6180.

### Zona Roja

- Se siente muy mal
- El medicamento no le está ayudando
- Respira con dificultad y de forma rápida
- No puede dormir, trabajar, ni jugar debido a la tos o sibilancia



**Cuando se sienta muy mal, tome el/los medicamento(s) para el alivio rápido, añada o aumente los esteroides, y llame ahora a su doctor/proveedor:**

- Tome el medicamento para el alivio rápido cada 4 horas para los síntomas del asma: Inhalador de Albuterol 2-4 bocanadas (puffs) con espaciador cada 4 horas según sea necesario.
- Llame a nuestra clínica al 608-263-6180 para hablar sobre cómo empezar a tomar esteroides orales.

Si observa alguno de los siguientes, llame al 911 o vaya ahora a la Sala de Emergencia:

- Retracción del cuello y las costillas cuando respira
- Problemas para caminar o hablar debido al asma
- No hay resultados con el medicamento para el alivio rápido
- Los labios o las uñas tienen un color morado o gris

Fecha de la Próxima Visita: Seguimiento con Kathleen K Shanovich en 3 mes(es).

## Asthma Action Plan

Name:  
 Date:  
 Doctor/Provider: Kathleen K Shanovich, NP  
 Phone Number: 608-263-6180

**Allergies/Triggers:** common cold and mold, grass pollens, tree pollens, dust mites, cats and dogs



### Green Zone

- Breathing is easy
- No cough or wheeze
- Can walk, play and sleep through the night



**Take these controller medication(s) to keep breathing easy:**

- Name of medicine(s):
- Asmanex 220 mcg/inh 1 inhalation once a day. Rinse mouth after use.
- Fluticasone furoate (Veramyst) nasal susp 1 squirt each nostril once a day
- Cetirizine (Zyrtec) 10 mg once a day
- For inhalers use a spacer
- 5-15 minutes before exercise you can take
- Albuterol inhaler 2 puffs with spacer every 3-4 hours as needed or Combivent HFA using a spacer, 2 puffs every 6 hours as needed

### Yellow Zone

- Not feeling Well
- First signs of a cold
- Cough or wheeze at night or with work or play



**When not feeling well, add quick relief medicine(s) and step up controller medicine(s) to keep asthma from getting worse:**

- Take quick-relief medicine every 4 hours for asthma symptoms: Albuterol inhaler 2 puffs with spacer every 3-4 hours as needed or Combivent HFA using a spacer, 2 puffs every 6 hours as needed
- Add/Change to the following medicines: Asmanex 220 mcg 2 inhalations one time a day. Rinse mouth after use.
- Continue yellow zone medicines for 5-7 days then go back to green zone medicines.
- If not better or if remain in yellow zone for more than 2 days, call the clinic at 608-263-6180.

### Red Zone

- Feeling Awful
- Medicine not helping
- Breathing is hard and fast
- Can't sleep, work or play because of cough or wheeze



**When feeling awful, take quick relief medicine(s), and call your doctor/provider now:**

- Take quick-relief medicine: (repeat in 15 minutes if needed) Albuterol inhaler 2 puffs with spacer every 3-4 hours as needed or Combivent HFA using a spacer, 2 puffs every 6 hours as needed
- Continue green zone medicines.
- Call our office at 608-263-6180 to talk about starting oral steroids.

If you see any of the following call 911 or go to the **EMERGENCY ROOM** now:

- Pulling in neck and ribs during breaths
- Trouble walking or talking because of asthma
- No response to quick relief medicine
- Lips or finger nails look blue or grey

Date of Next Visit: Follow up with Kathleen K Shanovich in 3 month(s).

# Food Allergy Action Plans



WEST CLINIC ALLERGY  
451 Junction Rd  
Madison WI 53717  
608-263-6180

## SCHOOL EMERGENCY PLAN - INSECT STING / FOOD ALLERGY

Name: Jane Doe

DOB: 3/5/0000

Allergy: egg, milk (cow's), soybean, wheat, peanut, shell fish, fish, tree nuts and sesame

In this student, an insect sting or ingestion of an allergy producing food(s), even in small amounts, could lead to a severe, life-threatening reaction. Any suspected or known reaction requires close monitoring and immediate treatment of symptoms as set forth below.

### DO NOT HESITATE TO GIVE EMERGENCY TREATMENT IF UNCERTAIN OF SYMPTOMS OR SEVERITY.

#### SEVERE SYMPTOMS (one or more):

LUNG: short of breath, wheeze, repetitive cough  
HEART: pale, blue, faint, weak pulse, confused  
THROAT: tight, hoarse, trouble breathing or swallowing  
MOUTH: swelling of tongue or lips  
SKIN: many hives over body, facial swelling  
GUT: vomiting, cramping pain, nausea

1. **INJECT EPINEPHRINE IMMEDIATELY (outer thigh)**  
*EpiPen 0.3 mg or Auvi-Q 0.3 mg*  
*(See label on auto-injector for directions)*
2. *Always call 911 after giving epinephrine.*
3. *Have child lie on back with feet raised.*
4. *Stay with student and monitor closely.*
5. *Alert parents.*
6. *For worsening symptoms, give second dose after 5 minutes; for persistent symptoms, give second dose of epinephrine after 10 minutes.*

#### MILD SYMPTOMS ONLY (one or more):

MOUTH: itchy mouth  
SKIN: a few hives\* around mouth/face; mild itch  
GUT: mild nausea/discomfort

1. **GIVE oral ANTIHISTAMINE: cetirizine (ZYRTEC) 10 mg or 10 ml**
2. *Contact parent to pick up student. Monitor closely until parent arrives.*
3. **IF SYMPTOMS PROGRESS, INJECT EPINEPHRINE: (see above)**

\*raised, itchy bumps that appear suddenly

**This student had a previous life-threatening allergic reaction: Yes**

Give EPINEPHRINE immediately for any symptom following ingestion of her food allergens

**This student also has asthma: Yes**

In addition to emergency medication: Give rescue medication albuterol inhaler (PROAIR, VENTOLIN, PROVENTIL) 4 puffs with spacer.

**MEDICATION(S) MUST BE AVAILABLE TO STUDENT AT ALL TIMES, INCLUDING OFF CAMPUS ACTIVITIES**

-----  
School Use Only:

I give my permission to the nurse or delegate(s) to administer medication to my child and to follow the written instructions provided by the Health Care Providers as indicated on my child's School Emergency Plan - Insect Sting / Food Allergy. I also give my permission to the school nurse to communicate with my child's Health Care Provider regarding health and safety in the school environment as it relates to his/her allergies.

\_\_\_\_\_  
Signature of Parent/Legal Guardian

\_\_\_\_\_  
Date

\_\_\_\_\_  
Phone

\_\_\_\_\_  
Alternate

\_\_\_\_\_  
Emergency contact name / relationship / phone

\_\_\_\_\_  
Emergency contact name / relationship / phone

# Food Allergy Action Plans

## FARE FOOD ALLERGY & ANAPHYLAXIS EMERGENCY CARE PLAN

Name: \_\_\_\_\_ D.O.B.: \_\_\_\_\_  
 Allergy to: \_\_\_\_\_  
 Weight: \_\_\_\_\_ lbs. Asthma:  Yes (higher risk for a severe reaction)  No

PLACE PICTURE HERE

NOTE: Do not depend on antihistamines or inhalers (bronchodilators) to treat a severe reaction. USE EPINEPHRINE.

Extremely reactive to the following foods: \_\_\_\_\_  
 THEREFORE:  
 If checked, give epinephrine immediately for ANY symptoms if the allergen was likely eaten.  
 If checked, give epinephrine immediately if the allergen was definitely eaten, even if no symptoms are noted.

FOR ANY OF THE FOLLOWING:

### SEVERE SYMPTOMS

 <b>LUNG</b> Short of breath, wheezing, repetitive cough	 <b>HEART</b> Pale, blue, faint, weak pulse, dizzy	 <b>THROAT</b> Tight, hoarse, trouble breathing/swallowing	 <b>MOUTH</b> Significant swelling of the tongue and/or lips
 <b>SKIN</b> Many hives over body, widespread redness	 <b>GUT</b> Repetitive vomiting, severe diarrhea	 <b>OTHER</b> Feeling something bad is about to happen, anxiety, confusion	<b>OR A COMBINATION</b> of symptoms from different body areas.

### MILD SYMPTOMS

 <b>NOSE</b> Itchy/runny nose, sneezing	 <b>MOUTH</b> Itchy mouth	 <b>SKIN</b> A few hives, mild itch	 <b>GUT</b> Mild nausea/discomfort
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FOR MILD SYMPTOMS FROM MORE THAN ONE SYSTEM AREA, GIVE EPINEPHRINE.

FOR MILD SYMPTOMS FROM A SINGLE SYSTEM AREA, FOLLOW THE DIRECTIONS BELOW:

1. Antihistamines may be given, if ordered by a healthcare provider.
2. Stay with the person; alert emergency contacts.
3. Watch closely for changes. If symptoms worsen, give epinephrine.

### MEDICATIONS/DOSES

Epinephrine Brand: \_\_\_\_\_  
 Epinephrine Dose:  0.15 mg IM  0.3 mg IM

Antihistamine Brand or Generic: \_\_\_\_\_  
 Antihistamine Dose: \_\_\_\_\_

Other (e.g., inhaler-bronchodilator if wheezing): \_\_\_\_\_

1. **INJECT EPINEPHRINE IMMEDIATELY.**
2. **Call 911.** Tell them the child is having anaphylaxis and may need epinephrine when they arrive.
  - Consider giving additional medications following epinephrine:
    - Antihistamine
    - Inhaler (bronchodilator) if wheezing
  - Lay the person flat, raise legs and keep warm. If breathing is difficult or they are vomiting, let them sit up or lie on their side.
  - If symptoms do not improve, or symptoms return, more doses of epinephrine can be given about 5 minutes or more after the last dose.
  - Alert emergency contacts.
  - Transport them to ER even if symptoms resolve. Person should remain in ER for at least 4 hours because symptoms may return.

PARENT/GUARDIAN AUTHORIZATION SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_ PHYSICIAN/HCP AUTHORIZATION SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

FORM PROVIDED COURTESY OF FOOD ALLERGY RESEARCH & EDUCATION (FARE) (WWW.FOODALLERGY.ORG) 5/2014

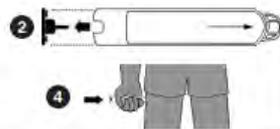
## FARE FOOD ALLERGY & ANAPHYLAXIS EMERGENCY CARE PLAN

PARENT/GUARDIAN AUTHORIZATION SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_ PHYSICIAN/HCP AUTHORIZATION SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_  
 FORM PROVIDED COURTESY OF FOOD ALLERGY RESEARCH & EDUCATION (FARE) (WWW.FOODALLERGY.ORG) 5/2014

## FARE FOOD ALLERGY & ANAPHYLAXIS EMERGENCY CARE PLAN

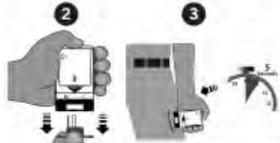
### EPIPEN® (EPINEPHRINE) AUTO-INJECTOR DIRECTIONS

1. Remove the EpiPen Auto-Injector from the plastic carrying case.
2. Pull off the blue safety release cap.
3. Swing and firmly push orange tip against mid-outer thigh.
4. Hold for approximately 10 seconds.
5. Remove and massage the area for 10 seconds.



### AUVI-Q™ (EPINEPHRINE INJECTION, USP) DIRECTIONS

1. Remove the outer case of Auvi-Q. This will automatically activate the voice instructions.
2. Pull off red safety guard.
3. Place black end against mid-outer thigh.
4. Press firmly and hold for 5 seconds.
5. Remove from thigh.



### ADRENACLICK®/ADRENACLICK® GENERIC DIRECTIONS

1. Remove the outer case.
2. Remove grey caps labeled "1" and "2".
3. Place red rounded tip against mid-outer thigh.
4. Press down hard until needle penetrates.
5. Hold for 10 seconds. Remove from thigh.



OTHER DIRECTIONS/INFORMATION (may self-carry epinephrine, may self-administer epinephrine, etc.): \_\_\_\_\_

Treat the person before calling emergency contacts. The first signs of a reaction can be mild, but symptoms can get worse quickly.

### EMERGENCY CONTACTS — CALL 911

RESCUE SQUAD: \_\_\_\_\_  
 DOCTOR: \_\_\_\_\_ PHONE: \_\_\_\_\_  
 PARENT/GUARDIAN: \_\_\_\_\_ PHONE: \_\_\_\_\_

### OTHER EMERGENCY CONTACTS

NAME/RELATIONSHIP: \_\_\_\_\_  
 PHONE: \_\_\_\_\_  
 NAME/RELATIONSHIP: \_\_\_\_\_  
 PHONE: \_\_\_\_\_

PARENT/GUARDIAN AUTHORIZATION SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

FORM PROVIDED COURTESY OF FOOD ALLERGY RESEARCH & EDUCATION (FARE) (WWW.FOODALLERGY.ORG) 5/2014

# Anaphylaxis Allergy Management\*

- \* 25% of anaphylaxis occurs in schools without previous diagnosis
  - RX for unassigned Epi should be considered
- \* Emergency action plans:
  - PCP → Parent → School Health → School Staff
- \* Antihistamines: “adjunctive therapy” – not to treat anaphylaxis
- \* Epinephrine safe: **“when in doubt, inject”**
- \* Medical alert ID (young children)

# Individualized Health Plan

## Asthma

**Assessment Data: (check or circle if applicable)**

### Signs/symptoms

- wheezing
- difficulty breathing
- chest tightness
- cough
- other (describe)

### Triggers

- exercise
- cold air
- dust
- stress
- infection
- allergies
- chalk/markers
- perfumes
- smoke
- air fresheners
- animals

### Attendance Issues

- Y/N school
- Y/N physical ed.
- Y/N classroom
- Y/N recess

### Student's Strengths

- has developed age appropriate self management skills
- good problem solving ability
- communicates needs
- accepts diagnosis
- effective coping skills
- good social skills
- other \_\_\_\_\_

# Medication Administration

# Role of the School Nurse

- \* In collaboration with administrator, identify who will be administering daily and/or as needed medications
- \* Provide training on medication administration
  - Ensure competency and willingness of staff
- \* Ensure that all school staff who will have contact with the student understand the plan of care and have been trained and are **competent and willing** to administer emergency medications

<http://docs.legis.wisconsin.gov/statutes/statutes/118/29>



# Case Management and Education

# Role of the School Nurse

- \* Provide case management for students with chronic health conditions
  - \* Evaluate a student's ability to self-carry and administer medications
    - \* Albuterol, Epinephrine
  - \* Determine where emergency meds will be stored
  - \* Alert school personnel to monitor for increased symptoms and absences
    - \* Evaluate students who may be having increased symptoms and absences



# Role of the School Nurse

- \* Outreach to families to encourage participation in managing students' asthma and allergies at school
- \* Professional development for teachers and staff to enhance their effectiveness in asthma and allergy management and their skills in communicating with families
- \* Good communication among physicians, school staff, and families, such as an ongoing exchange of information, agreement on goals and strategies, and a sharing of responsibilities

# Education for a Partnership in Asthma Care

Teach & reinforce at every opportunity:

- \* Basic facts about asthma
- \* Role of medications: controller & quick-relief
- \* Patient skills
  - Taking meds correctly
  - Environmental exposures
  - Self-monitoring (symptoms; asthma control)
  - Using a written asthma action plan
  - Seeking medical care when needed
- Transition planning



# Individualized Health Plan

<b>Student Education</b>	<b>Date</b>	<b>Date</b>	<b>Date</b>	<b>Date</b>	<b>Date</b>
Asthma Action Plan – knows zones and action					
Signs and symptoms, warning signs					
Correct inhaler technique					
Knowledge of Triggers					

## IS THE ASTHMA ACTION PLAN WORKING? A Tool for School Nurse Assessment

Assessment for: \_\_\_\_\_ Completed by: \_\_\_\_\_ Date: \_\_\_\_\_  
(Student) (Nurse or Parent)

This tool assists the school nurse in assessing if students are achieving good control of their asthma. Its use is particularly indicated for students receiving intensive case management services at school.

With good asthma management, students should:

- Be free from asthma symptoms or have only minor symptoms:
  - no coughing or wheezing
  - no difficulty breathing or chest-tightness
  - no waking at night due to asthma symptoms.
- Be able to go to school every day, unhampered by asthma.
- Be able to participate fully in regular school and daycare activities, including play, sports, and exercise.
- Have no bothersome side effects from medications.
- Have no emergency room or hospital visits.
- Have no missed class time for asthma-related interventions or missed class time is minimized.

### Signs that a student's asthma is not under good control:

Indicate by checking the appropriate box whether any of the signs or symptoms listed below have been observed or reported by parents or children within the past 6 months. If any boxes are marked, this suggests difficulty with following the treatment plan or need for a change in treatment or intervention (e.g., different or additional medications, better identification or avoidance of triggers).

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> Asthma symptoms more than twice a week that require quick-relief medicine (short-acting beta<sub>2</sub>-agonists, e.g. albuterol)</li> <li><input type="checkbox"/> Symptoms get worse even with quick relief meds</li> <li><input type="checkbox"/> Waking up at night because of coughing or wheezing</li> <li><input type="checkbox"/> Frequent or irregular heartbeat, headache, upset stomach, irritability, feeling shaky or dizzy</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Missing school or classroom time because of asthma symptoms</li> <li><input type="checkbox"/> Having to stop and rest at PE, recess, or during activities at home because of symptoms</li> <li><input type="checkbox"/> Symptoms require unscheduled visit to doctor, emergency room or hospitalization</li> <li><input type="checkbox"/> 911 call required</li> </ul> |
|--|--|

If "yes" to any of the above, use the following questions to more specifically ascertain areas where intervention may be needed.

Probes	Responsible Person/site	Yes	No	N/A	
* Are appropriate forms completed and on file for permitting medication administration at school?	By school staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Self-carry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
* Has a daily long-term-control medication(s) (controller*) been prescribed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
* Is controller medication available to use as ordered?	Home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	School	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
* Is the student taking the controller medication(s) as ordered?	Home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	School	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
* Has a quick-relief (short-acting B <sub>2</sub> -agonist) medication been prescribed?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
* Is quick-relief medication easily accessible?	Home	<input type="checkbox"/>	<input type="checkbox"/>		
	Personal inhaler (s) at school health office	<input type="checkbox"/>	<input type="checkbox"/>		
	Self-carry	<input type="checkbox"/>	<input type="checkbox"/>		
* Is the student using quick-relief medication(s) as ordered... ○ Before exercise?	Home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	School	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	○ Immediately when symptoms occur?	Home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		School	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Medication Administration:</b>					
* Does the student use correct technique when taking medication?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
* Does the person administering the medication use correct technique?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

# Policy and Procedure

# Management in Schools\*

- \* Reducing risk of accidental exposure:
  - No food sharing
  - Education of parents/staff
    - (injectable epinephrine use, when to call EMS/911)
  - Plans for field trips
  - Label-reading
  - No eating on school bus
- \* Harassment/bullying

# Management in Schools\*

- \* Peanut butter vapors ≠ protein
- \* Foods can be vaporized through heating → respiratory symptoms
- \* Cleaning in classroom: soap/water; NOT antibacterial gels
  - \* *“standard cleaning & lack of visible contamination should suffice...”*
- \* Care not to ostracize/physically separate FA child

# Stock Epinephrine

- \* Wisconsin State Legislature: 2013 WISCONSIN ACT 239
- \* School plan
  - \* The governing body of a school **may** adopt a plan for the management of pupils attending the school who have life-threatening allergies
  - \* Governing body shall specify in the plan the training necessary
  - \* Plan must be approved by a physician
  - \* Plan must be available on the governing body's Internet site or the Internet site of each school under its jurisdiction or, if an Internet site does not exist, give a copy of the plan to any person upon request

<https://docs.legis.wisconsin.gov/2013/related/acts/239>

# Resources

# Food Allergy Resources

- \* Voluntary Guidelines for Managing Food Allergies In Schools and Early Care and Education Programs  
[http://www.cdc.gov/healthyyouth/foodallergies/pdf/13\\_243135\\_A\\_Food\\_Allergy\\_Web\\_508.pdf](http://www.cdc.gov/healthyyouth/foodallergies/pdf/13_243135_A_Food_Allergy_Web_508.pdf)
- \* Food Allergy Research & Education (FARE) <http://www.foodallergy.org/>
- \* Consortium of Food Allergy Research (CoFAR)  
<https://web.emmes.com/study/cofar/>
- \* American Academy of Allergy Asthma & Immunology (AAAAI)  
[www.aaaai.org](http://www.aaaai.org)
- \* Guidelines for the Diagnosis & Management of Food Allergy in the US: Report of the NIAID-Sponsored Expert Panel. Dec. 2010
- \* Clinical Report – Management of Food Allergy in the School Setting. AAP. 2010

# Food Allergies: Managing and Preventing Acute Reactions in the School Setting

## **Recommendations**

- \* Staffing
- \* Preparedness
- \* Policy
- \* Medication
- \* Training and Education
- \* Food Management
- \* Classroom Management

# Medication

## Medication

1. Emergency medications should be stored in a reasonably accessible location:
  - a. Medication should be kept in a secure but unlocked area that is clearly labeled “EpiPens for “Severe Allergic Reactions”
  - b. Staff should be aware of the storage locations, and of any back-up supply , and all of these should be labeled as above.
  - c. Students may be allowed to carry their own emergency medication (injectable epinephrine) when appropriate\* and school-provided back-up epinephrine should always be available.
  - d. Students should have access to emergency medications (injectable epinephrine) during field trips, school sponsored events (sporting, before and after school, summer school) and school-provided back-up epinephrine should be available.

(2,4,5,7,8,9,10,12,13,14,15,19,20,21,23,25,26,28,35,39,41,43,45,47,49,51)

# Preparedness

## Preparedness:

1. Implement a process to collect health related information from students on at least a yearly basis (such as registration form) <sup>(2,7,9,10,25)</sup>
2. Students with known food/insect or anaphylactic allergy should have [individualized health plan](#) (IHP) which includes prevention (allergen avoidance) and [emergency preparedness](#) (anaphylactic plan developed by student's healthcare provider including field trip management) <sup>(2,3,4,5,7,9,10,12,13,14,15,19,20,21,22,23,24,25,26,27,33,34,35,37,39,41,43,44,45,46,47,48,49,50)</sup>

# Sample Policies and Procedures

- \* Administering Medications to Students
- \* Staff Administration of Non-Student Specific Epinephrine
- \* Student Self-Administration of Emergency Medications

# Resources

## WISHeS Resources:

- \* [Nebulizer Procedure](#)
- \* <http://schoolnurseresources.wordpress.com/asthma-resources/>
- \* [http://www.wpha.org/About-WPHA/Grants---  
Projects/Resources\\_Tools](http://www.wpha.org/About-WPHA/Grants---Projects/Resources_Tools)

## Other Resources:

- \* [http://www.cdc.gov/asthma/tools\\_for\\_control.htm](http://www.cdc.gov/asthma/tools_for_control.htm)
- \* <https://www.nasn.org/ToolsResources/Asthma>
- \* <http://www.lung.org/lung-disease/asthma/becoming-an-advocate/guide-to-asthma-policy-for-housing-and-schools/asthma-policy-for-schools.html>

# References

1. Healthy Learners Asthma Initiative / Minneapolis Public Schools. Asthma Individual Health Plan. Available at: [http://www.health.state.mn.us/asthma/documents/Form\\_sF1-F34/f17.pdf](http://www.health.state.mn.us/asthma/documents/Form_sF1-F34/f17.pdf)
2. National Asthma Education and Prevention Program, et. Al. (2003). Managing Asthma: A Guide for Schools. Available at: [www.nhlbi.nih.gov/health/prof/lung/asthma/asth\\_sch.pdf](http://www.nhlbi.nih.gov/health/prof/lung/asthma/asth_sch.pdf)

# Asthma Medications

# Asthma Medications

## Inhaled Corticosteroids:

- \* Flovent<sup>®</sup> (fluticasone):  $\geq 4$  years
- \* Pulmicort<sup>®</sup> Flexhaler:  $\geq 6$  years
- \* Pulmicort Respules<sup>®</sup> (budesonide):  $\geq 1$  year
- \* QVAR<sup>®</sup> (beclomethasone):  $\geq 5$  years
- \* Asmanex 220<sup>®</sup> (mometasone) Twisthaler:  $\geq 12$  years (110 mcg pediatric: 4-11)
- \* Alvesco<sup>®</sup> (ciclesonide):  $\geq 12$  years

# Asthma Medications

## Leukotriene modifiers:

- \* Singulair<sup>®</sup> (montelukast):  $\geq 1$  year
- \* Accolate<sup>®</sup> (zafirlukast):  $\geq 5$  years

# Asthma Medications



## Combination products:

- \* Advair Diskus<sup>®</sup> (fluticasone & salmeterol):  $\geq 4$  years
- \* Advair HFA<sup>®</sup>:  $\geq 4$  years



- \* Symbicort HFA<sup>®</sup> (budesonide & formoterol):  $\geq 12$  years
- \* Dulera HFA<sup>®</sup> (mometasone & formoterol):  $\geq 12$  years



# Asthma Medications

## Rescue:

- \* Albuterol (R & S isomers)
  - HFA MDI: ProAir<sup>®</sup>, Proventil<sup>®</sup>, & Ventolin<sup>®</sup>
  - Nebulized: 2.5mg
- \* Levalbuterol (no S isomer)
  - HFA MDI: Xopenex<sup>®</sup>
  - Nebulized: .31mg, 0.63mg & 1.25mg
- \* Albuterol and ipratropium combined:
  - Combivent Respimat<sup>®</sup>
  - Nebulized: Duoneb<sup>®</sup> (albuterol 2.5mg & ipratropium 500mcg)

