

Presented in partnership with
Allergy and Asthma Network



Confident and Competent Care for Students at Risk for Anaphylaxis at School

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Indiana School Health Network

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Presenter Disclosures


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The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No relationships to disclose.

Objectives

- Identify the top eight food allergens and the symptoms of anaphylaxis when these allergens cause a life-threatening allergic reaction.
- Discuss school safety strategies to practice allergy exposure prevention strategies and respond to an anaphylactic emergency when necessary
- Identify educational needs of clinic and school staff and review appropriate training tools.



What do you need to
know to keep students
safe at school?

- o Allergy 101
- o School Safety
Guidance for Allergy
Management
- o Educational
Resources for
Student & Staff
Instruction



Allergy 101

Anaphylaxis

- Occurs in 1 in 50 people
- May be higher
- May begin in seconds after exposure, may be hours
- Epinephrine First, Epinephrine FAST!

Average time to respiratory or cardiac arrest due to anaphylaxis:

Food allergy =



Venom allergy =



Medication allergy =



Source: *Clinical & Experimental Allergy*, Volume 30, Issue 8

1

Acute onset of an illness (minutes to several hours) **with involvement of the skin, mucosal tissue, or both** (e.g. generalized hives, pruritis or flushing, swollen lips-tongue-uvula) **and at least 1 of the following:**

- a. **Respiratory compromise** (e.g. dyspnea, wheeze-bronchospasm, stridor, reduced PEF[†], hypoxemia)
- b. **Reduced BP[‡]** or associated symptoms of end-organ dysfunction (e.g. hypotonia [collapse], syncope, incontinence)

2

2 or more of the following that occur rapidly after exposure to a likely allergen for that patient (minutes to several hours):

- a. **Involvement of the skin-mucosal tissue** (e.g. generalized hives, itch-flush, swollen lips-tongue-uvula)
- b. **Respiratory compromise** (e.g. dyspnea, wheeze-bronchospasm, stridor, reduced PEF, hypoxemia)
- c. **Reduced BP** or associated symptoms (e.g. hypotonia [collapse], syncope, incontinence)
- d. **Persistent gastrointestinal symptoms** (e.g. painful abdominal cramps, vomiting)

3

Reduced BP after exposure to a known allergen for that patient (minutes to several hours):

- a. **Infants and children:** Low systolic BP (age-specific) or greater than 30% decrease in systolic BP[§]
- b. **Adults:** Systolic BP of less than 90mmHg or greater than 30% from that person's baseline

Top 8 Allergens

Tree Nuts

Almonds, brazil nuts, cashews, hazelnuts, macadamia nuts, pine nuts, pistachio, trail mix or mixed nuts, walnuts



Peanuts

Peanut butter, trail mix or mixed nuts



Eggs

Batter-fried foods, breads and baked goods, crepes, ice cream, mayonnaise, pancakes, pastas, quiche, waffles



Fish

Anchovies, catfish, cod, salmon, tuna



Dairy

Cheese, cow's milk, creams, custard, ice cream, pudding, yogurt



Wheat

Barley, bran, breads, cookies, crackers, croutons, doughnuts and muffins, pancakes, pizza, rye, waffles, wheat-based cereals, flour and pastas



Soy

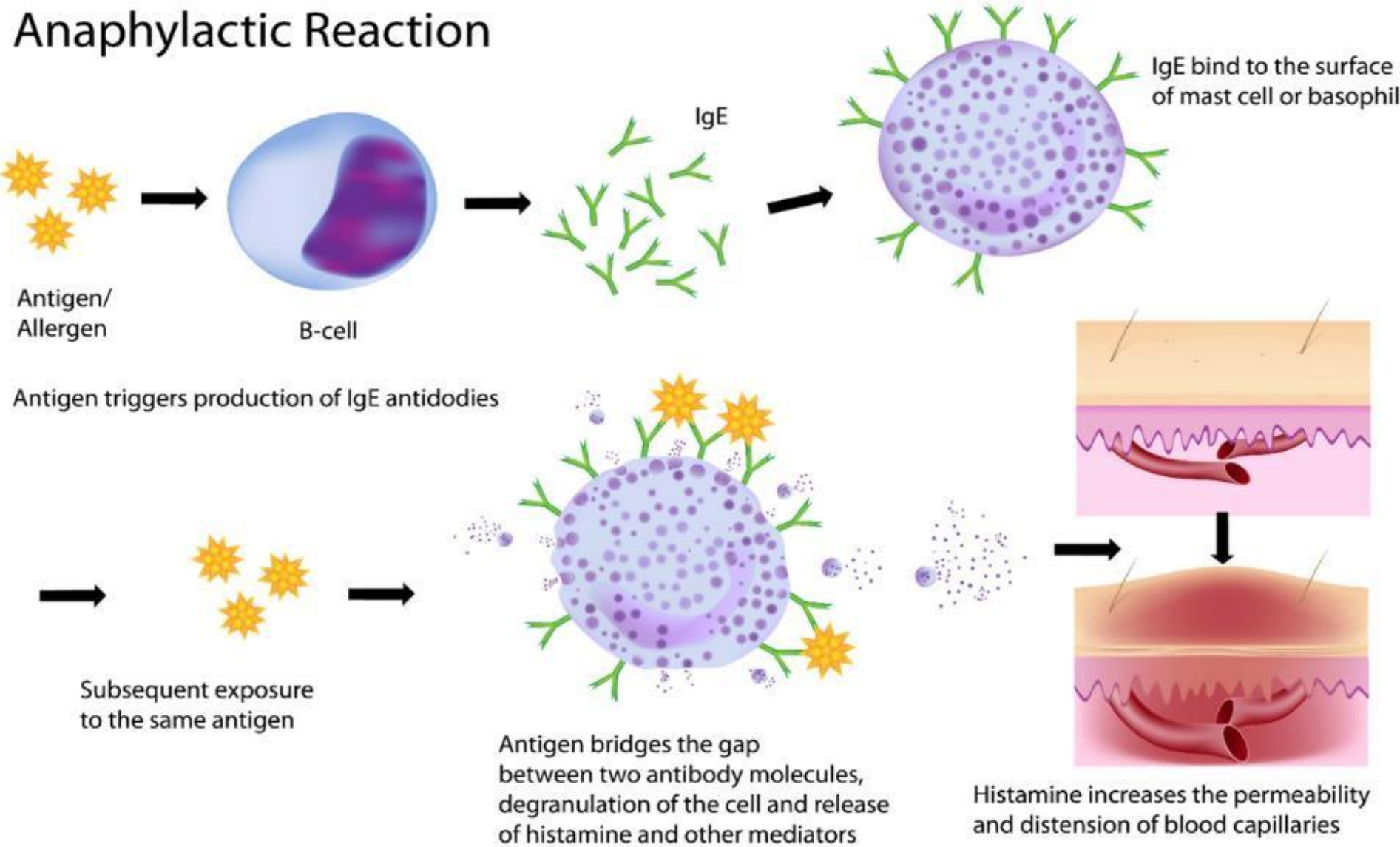
Edamame, soy milk, soy sauce, tofu

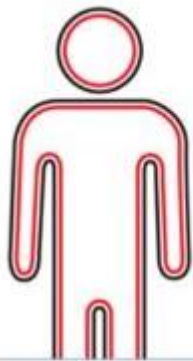


Shellfish

Crab, lobster, shrimp

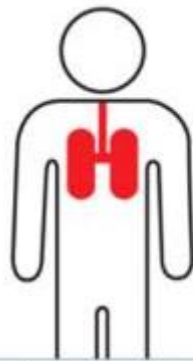
Anaphylactic Reaction





SKIN

hives, swelling, itching, warmth, redness



RESPIRATORY

coughing, wheezing, shortness of breath, chest pain or tightness, throat tightness, trouble swallowing, hoarse voice, nasal congestion or hay fever-like symptoms, (sneezing or runny or itchy nose; red, itchy or watery eyes)



GASTROINTESTINAL

nausea, stomach pain or cramps, vomiting, diarrhea



CARDIOVASCULAR

dizziness/ lightheadedness, pale/blue colour, weak pulse, fainting, shock, loss of consciousness



NEUROLOGICAL

anxiety, feeling of "impending doom" (feeling that something really bad is about to happen), headache

OTHER

uterine cramps

Kids say the darnedest things...



Kids will say the darnedest things...

- It feels like something is poking my tongue.
- My tongue (or mouth) is tingling (or burning).
- My tongue (or mouth) itches.
- My tongue feels like there is hair on it.
- My mouth feels funny.
- There's a frog in my throat; there's something stuck in my throat.
- My tongue feels full (or heavy).
- My lips feel tight.
- It feels like there are bugs in there (to describe itchy ears).
- It (my throat) feels thick.
- It feels like a bump is on the back of my tongue (throat).

(The Food Allergy & Anaphylaxis Network, 2003)

5 Myths about Food Allergies

- o **Myth:** Severe food allergy reactions can be treated with antihistamines.
- o **Myth:** Children younger than 3 years old can't be tested for food allergies.
- o **Myth:** Parents should not introduce common food allergens into their child's diet before age 3.
- o **Myth:** Children with egg allergy should not get the flu shot or the MMR (measles, mumps, rubella) vaccine.
- o **Myth:** Gluten is a food allergen and eliminating it from my diet will help me feel better.

Is it a Food Allergy or Food Intolerance?

Lactose Intolerance or Milk Allergy?!?

	Food Intolerance	Food Allergy
Where reaction takes place	Digestive System	Immune system
Intensity of reaction	Mild to moderate discomfort	Can be life-threatening
Symptoms	Gastrointestinal	Multiple body systems: skin, respiratory, heart and/or gastrointestinal
Reaction time	May be delayed	Usually immediate (within 30 – 60 minutes)
Action to take	See healthcare provider	Call 911 if anaphylaxis occurs

Is it Oral Allergy Syndrome?



Contact allergic reaction that occurs upon contact of the mouth and throat with raw fruits or vegetables.

Apples/Pears = Birch

Cantaloupe/Honeydew = Ragweed

Orange/Tomato = Timothy and Orchard Grass

Bell Peppers/Broccoli = Mugwort

Insect Venom Allergies

- o **What to do if stung**
- o Flick the insect away from your skin.
- o Walk (don't run) away from the area. Some insects will be threatened by quick movements and running may increase your body's absorption of the venom.
- o If a stinger is left in the skin (the telltale mark of a honeybee), scrape it off with a flat surface, like a credit card; do not use tweezers or your fingertips, as that could squeeze more venom into the sting area.

Insect Sting Allergies

- o Apply ice to reduce swelling.
- o Expect local redness and swelling.
- o Watch for these symptoms indicating an anaphylactic reaction:
 - o – Hives or generalized itching other than at the site of the sting
 - o – Swelling of the throat or tongue
 - o – Difficulty breathing
 - o – Dizziness
 - o – Severe headache
 - o – Stomach cramps, nausea or diarrhea
- o These symptoms indicate need for immediate treatment with an epinephrine auto-injector, followed by medical assistance at an emergency facility.



Latex Allergy

1 – 6% of general population

33.8% of dental care workers

10 – 17% of healthcare workers

17% of restaurant workers

Students who undergo multiple surgeries are at increased risk



Latex Allergy

- o Reaction to proteins from the Hevea brasiliensis rubber tree sap, the milky fluid used to manufacture more than 40,000 products, including surgical gloves and helium balloons.
- o Symptoms range from skin irritation to respiratory symptoms to life-threatening anaphylaxis – and there's no way to predict which will occur if exposed.
- o Strict avoidance is only way to prevent a reaction.

Latex Allergy

Common Allergens

- o Latex balloons
- o Rubber gloves
- o Rubber bands
- o Stethoscopes
- o Blood pressure cuffs
- o Mouse pads
- o Goggles

Cross-Reactive Foods

- | | |
|------------|--------|
| o Apple | Melons |
| o Avocado | Papaya |
| o Banana | Potato |
| o Carrot | Tomato |
| o Celery | |
| o Chestnut | |
| o Kiwi | |



Additional Types of Allergies

- o Unknown
- o Medication
- o Exercise



Developmental Skills

- o Early elementary:
 - o Learn to trust & communicate with caregivers
- o Upper elementary:
 - o Recognize symptoms, request or use meds
- o Middle school:
 - o Develop medication routine
- o Teens:
 - o Take responsibility for daily meds (supervised by parents)
- o Older teens:
 - o Demonstrate ability to complete self-care & healthcare appointments



School Safety Guidance for Allergy Management

4 Components of Allergy Management at School

- ① Planning & Coordination of Care
- ② Educating Staff, Students & Parents
- ③ Providing a Safe Environment
- ④ Prompt Emergency Response

Education of School Staff

- o Emergency response
- o Federal laws
 - o ADA
 - o Section 504
 - o FERPA
- o State laws
 - o Regulations
 - o District policies
- o Epinephrine administration
 - o Delegation
- o Encourage self-management
- o Effects behavior and ability to learn

Education of School Staff

- o Emotional support
 - o Children with food allergies
 - o Children who might witness a severe food allergy reaction
- o Common risk factors, triggers, and areas of exposure to food allergens in schools
- o Fully integrate children with allergies into school and class activities
 - o Reduce risk of exposure to allergens in classrooms and:
 - o During meals
 - o During nonacademic outings, field trips
 - o During official activities before and after school programs
 - o During events sponsored by schools programs that are held outside of regular hours.



Does Peanut-Free Equal
Certainty?

Peanut-free schools had higher rates of epinephrine administration compared to non-peanut-free.



- Schools with peanut-free tables had lower rates of epinephrine administration compared to schools without peanut-free tables.
- Elementary schools with peanut-free classrooms had lower rates of epinephrine administration compared to schools without peanut-free classrooms.

https://www.neusha.org/includes/files/DPH_Updates_2_13_14.pdf

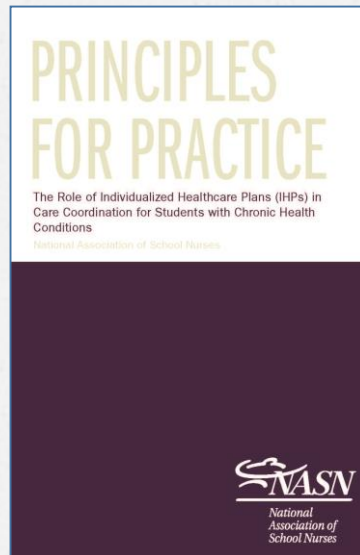
Allergy Emergency Response at School

- Develop a School-wide Emergency Response
 - Assign roles to staff
- Response & Administration of Emergency Care Plan
- Debriefing the Emergency Incident



Student Healthcare Plans

- o Individualized Healthcare Plan (IHP)



(NASN, 2017)

- o Emergency Action or Care Plan (ECP)
 - o AAP Plan
- o Individualized Education Plan (IEP)
- o Section 504 Plan

Allergy and Anaphylaxis Emergency Plan

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN®



Child's name: _____ Date of plan: _____

Date of birth: ___/___/___ Age ___ Weight: _____ kg

Child has allergy to _____

- Child has asthma. Yes No (If yes, higher chance severe reaction)
Child has had anaphylaxis. Yes No
Child may carry medicine. Yes No
Child may give him/herself medicine. Yes No (If child refuses/is unable to self-treat, an adult must give medicine)

Attach
child's
photo

IMPORTANT REMINDER

Anaphylaxis is a potentially life-threatening, severe allergic reaction. If in doubt, give epinephrine.

For Severe Allergy and Anaphylaxis

What to look for

If child has ANY of these severe symptoms after eating the food or having a sting, **give epinephrine**.

- Shortness of breath, wheezing, or coughing
- Skin color is pale or has a bluish color
- Weak pulse
- Fainting or dizziness
- Tight or hoarse throat
- Trouble breathing or swallowing
- Swelling of lips or tongue that bother breathing
- Vomiting or diarrhea (if severe or combined with other symptoms)
- Many hives or redness over body
- Feeling of "doom," confusion, altered consciousness, or agitation

SPECIAL SITUATION: If this box is checked, child has an extremely severe allergy to an insect sting or the following food(s): _____. Even if child has MILD symptoms after a sting or eating these foods, **give epinephrine**.

Give epinephrine!

What to do

1. Inject epinephrine right away! Note time when epinephrine was given.
2. Call 911.
 - Ask for ambulance with epinephrine.
 - Tell rescue squad when epinephrine was given.
3. Stay with child and:
 - Call parents and child's doctor.
 - Give a second dose of epinephrine, if symptoms get worse, continue, or do not get better in 5 minutes.
 - Keep child lying on back. If the child vomits or has trouble breathing, keep child lying on his or her side.
4. Give other medicine, if prescribed. Do not use other medicine in place of epinephrine.
 - Antihistamine
 - Inhaler/bronchodilator

For Mild Allergic Reaction

What to look for

If child has had any mild symptoms, **monitor child**.

Symptoms may include:

- Itchy nose, sneezing, itchy mouth
- A few hives
- Mild stomach nausea or discomfort

Monitor child

What to do

Stay with child and:

- Watch child closely.
- Give antihistamine (if prescribed).
- Call parents and child's doctor.
- If symptoms of severe allergy/anaphylaxis develop, use epinephrine. (See "For Severe Allergy and Anaphylaxis.")

Medicines/Doses

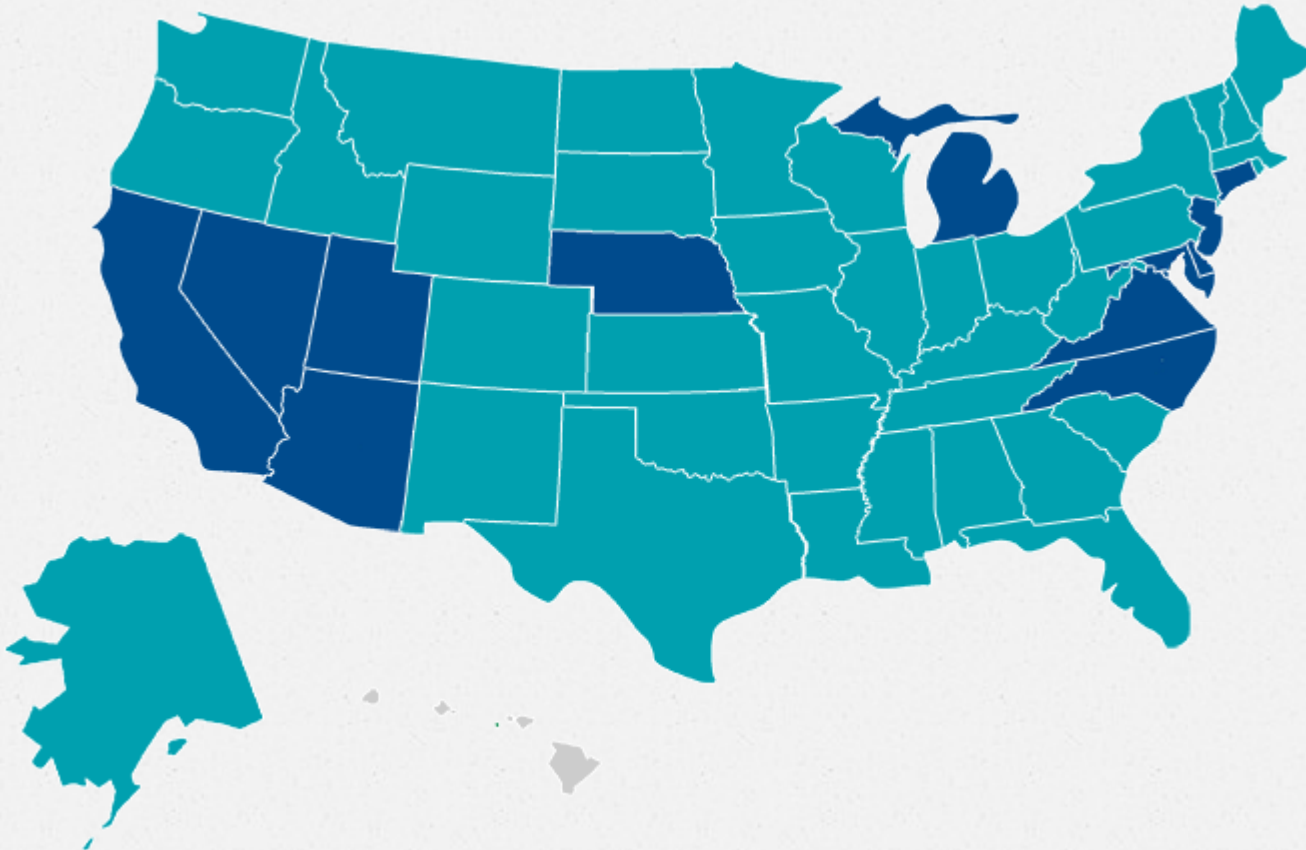
Epinephrine, intramuscular (list type): _____ Dose: 0.10 mg (7.5 kg to 15 kg)
 0.15 mg (15 kg to 25 kg)
 0.30 mg (25 kg or more)

https://www.aap.org/en-us/Documents/AAP_Allergy_and_Anaphylaxis_Emergency_Plan.pdf

Emergency Procedures

- o Epinephrine **first**, Epinephrine **FAST**
 - o Staff considerations
 - o Policies & Protocols– NASN resource
- o Epinephrine storage
 - o Expiration issues
- o Calling an ambulance
 - o Staff should know how!





<https://www.foodallergy.org/education-awareness/advocacy-resources/advocacy-priorities/school-access-to-epinephrine-map>

Table Top Drills

- o School Staff meets to discuss an emergency response to an episode of anaphylaxis
- o Led by the school nurse
- o 3 scenarios available
 - o Elementary – food allergy
 - o Middle school – latex allergy
 - o High school – venom allergy
- o Notes provided

Example: Elementary

- o Olivia, a 2nd grade student begins coughing in the classroom. The teacher notes there is some swelling around Olivia's eyes and lips.
- o The teacher keeps Olivia calm and calls the school nurse. Olivia begins to wheeze and starts grabbing her neck. She is gasping for air and cannot speak.

- o What do you see? What signs & symptoms of anaphylaxis are present?
- o What do you do first?
- o What steps should you follow next?

Questions for Consideration

- o Is there an Emergency Care Plan for this student? If so, always initiate the plan immediately.
- o Reactions happen away from the school health office - Who is trained in your school to respond to an allergic emergency?
- o How is your school prepared for responding to students who exhibit signs and symptoms of anaphylaxis but have no previously known allergy?
- o Is epinephrine immediately available?
 - o Do you have stock epinephrine?
 - o Where is the student's epinephrine stored?
 - o Who in your school can administer epinephrine?

School Staff Roles in an Anaphylaxis Emergency

More information on school staff roles can be found in the CDC's "Voluntary Guidelines for Managing Food Allergies in Schools and Early Care and Education Programs"

- o School nurse or designee
- o School Administrator
- o Teacher
- o School Counselor / Mental Health Staff
- o School Secretary

Adjust roles as appropriate to your school's unique staffing pattern and school layout.



Educational Resources for Student & Staff Instruction

What Staff Should Know

- o How to Use an Epinephrine Auto-Injector
- o Epinephrine or Antihistamine?
- o How to Read a Food Label

HIDE & SEEK

Ingredients derived from common food allergens can be listed under many different names on the food label.

Dairy

- Casein
- Curds
- Ghee
- Lactalbumin
- Sodium caseinate
- Tagatose
- Whey

Egg

- Albumin
- Lysozyme
- Meringue
- Ovalbumin
- Surimi

Peanut

- Cold-pressed peanut oil
- Goobers
- Legumes
- Marzipan
- Nut meat
- Nougat

Sesame

- Benne
- Gingilly
- Sesamol
- Sim Sim
- Tahini

Soy

- Miso
- Natto
- Shoyu
- Soya
- Tamari
- Tempeh
- Textured vegetable protein

Wheat

- Farro
- Food starches
- Graham flour
- Malt
- Semolina
- Spelt

Prevention = Reading Labels

- FDA requires all packaged food to list the eight major food allergens in plain (clear and understandable) language.
- Major 8 Allergens: Milk, Egg, Fish, Crustacean Shellfish, Peanuts, Tree Nuts (walnut, almond, hazelnut, cashew, pistachio, and Brazil nuts), Wheat, and Soy. These allergens account for over 90 percent of all food allergies in the U.S.
- These allergens must be stated if found in flavorings, colorings, or other additives.

Prevention = Reading Labels

Cocoa Crispers Bar
Chocolate Candy with Crisped Rice

Nutrition Facts

	Amount/serving	%DV*	Amount/serving	%DV*
Serving Size 1 Bar (60g)	Total Fat 12g	18%	Potassium 230mg	3%
Calories 230	Saturated Fat 7g	36%	Total Carb. 29g	10%
Fat Cal. 100	Trans Fat 0g		Fiber <1g	3%
*Percent Daily Values (DV) are based on a 2,000 calorie diet.	Cholesterol 10mg	0%	Sugars 24g	
	Sodium 65mg	3%	Protein 2g	
	Vitamin A 0%	Vitamin C 0%	Calcium 6%	Iron 0%

Ingredients: Milk Chocolate (Sugar, Milk, Cocoa Butter, Chocolate, Vanilla), Corn Syrup, Whey, Cocoa Powder, Crisped Rice (Rice, Sugar, Salt, Malt), Flour, Soy Protein, Ovalbumin, Natural Flavor.

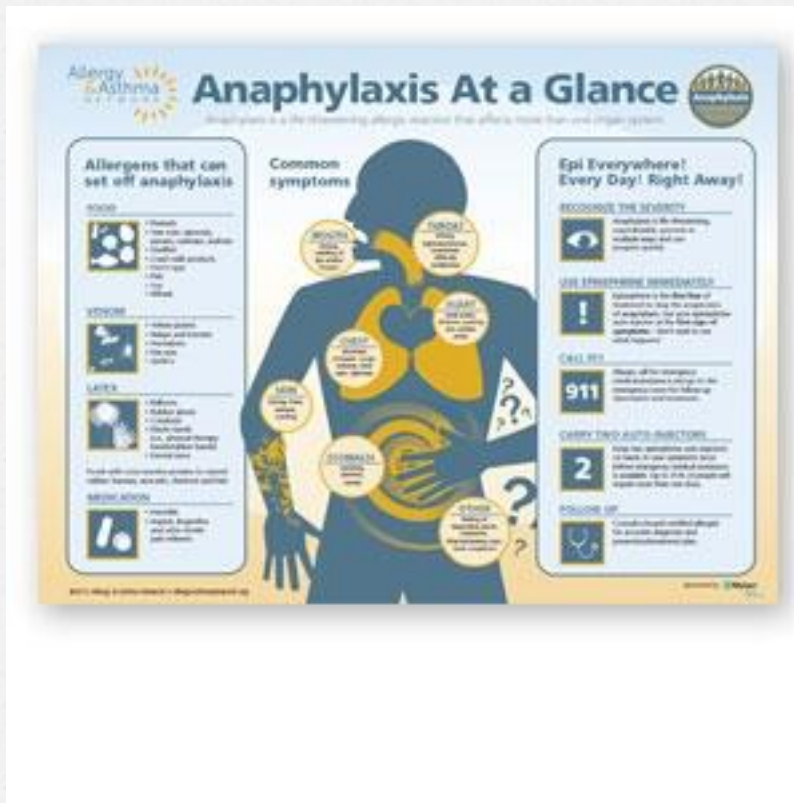
Manufactured by: Sweetz Inc.
101 Main Street, Baltimore, MD 21201

Ingredients: Milk Chocolate (Sugar, Milk, Cocoa Butter, Chocolate, Vanilla), Corn Syrup, Whey, Cocoa Powder, Crisped Rice (Rice, Sugar, Salt, Malt), **Wheat** Flour, Soy Protein, Ovalbumin (**Egg**), Natural **Peanut** Flavor.

OR

Ingredients: Milk Chocolate (Sugar, Milk, Cocoa Butter, Chocolate, Vanilla), Corn Syrup, Whey, Cocoa Powder, Crisped Rice (Rice, Sugar, Salt, Malt), Flour (**Wheat**), Soy Protein, Ovalbumin (**Egg**), Natural Flavor (**Peanut**).

Posters for Schools



Resources for Training

- o American Academy of Pediatrics
 - o Clinical Report (Wang & Sicherer, 2017)

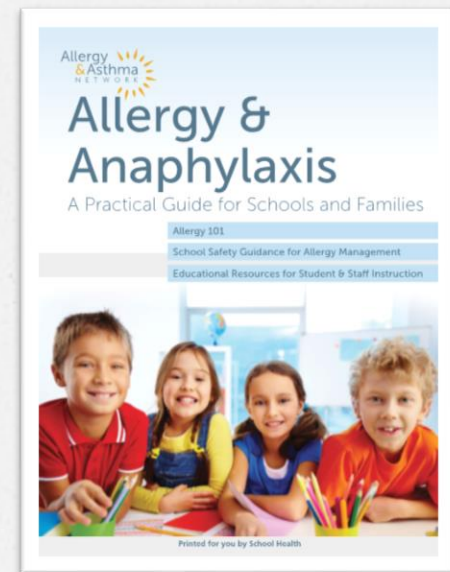


- o AllergyHome.org
 - o School staff training module
 - o Certificate available
- o FAME
 - o St. Louis Children's Hospital
 - o Content for whole school community

Allergy & Anaphylaxis: A Practical Guide for Schools and Families

o Available for a FREE download at:

Allergyasthmanetwork.org –
Healthcare Professionals – Outreach
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Questions?

Resources at www.allergyasthmanetwork.org