

# Anaphylaxis & Epinephrine at School



2016

**School Nurse Summer Institute**

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# Objectives

- Understand the impact of severe allergies in the school setting and the vital role of the school nurse
- Learn how to be prepared and the importance of training others
- Increase knowledge of anaphylaxis management, especially epinephrine administration
- Identify tools and training resources



# Emergencies happen at school!



The school nurse is the professional responsible to plan for a response to a health related **emergency**

***The work of School Nurses helps to save lives!***



# Food allergies are prevalent

1 in 13 kids has a food allergy



That's about two kids in every classroom!



# Facts & Statistics

Up to **15 million Americans** have food allergies

2013 CDC study found food allergies among **children increased approximately 50%** between 1997 and 2011.

Food allergy kids are **2-4x more likely** to have conditions such as **asthma** and other allergies

Food allergies may be a **trigger** for or associated with other allergic conditions, such as **eosinophilic gastrointestinal diseases.**



# School Risk Factors

## Exposure

79% of cases in classroom  
Playground is important site  
Only 12% in cafeteria  
Failure to read food labels  
Cross-contact w/ allergens  
Food sharing

## Social

- Stigma of carrying a medication/notifying teachers if ill
- Lack of trained responders
- Lack of epinephrine
- No prior history of an allergic reaction



# Psychological Impact on Kids

Fear of adverse events and death

Fear of ridicule

- Unpopular class room policies
- Carrying EpiPen
- Being unable to eat what others can

Social isolation

- Peanut free table

Limitations in schoolwork or activities

Behavioral problems

33% noted impact on school attendance

(Bollinger et al. Ann Allergy Asthma Immunol. 2006 Mar;96(3):415-21)

Marklund et al. Health and Quality of Life Outcomes 2006, 4:48)

Avery et. al. Pediatr Allergy Immunol 2003; 14:378-382)



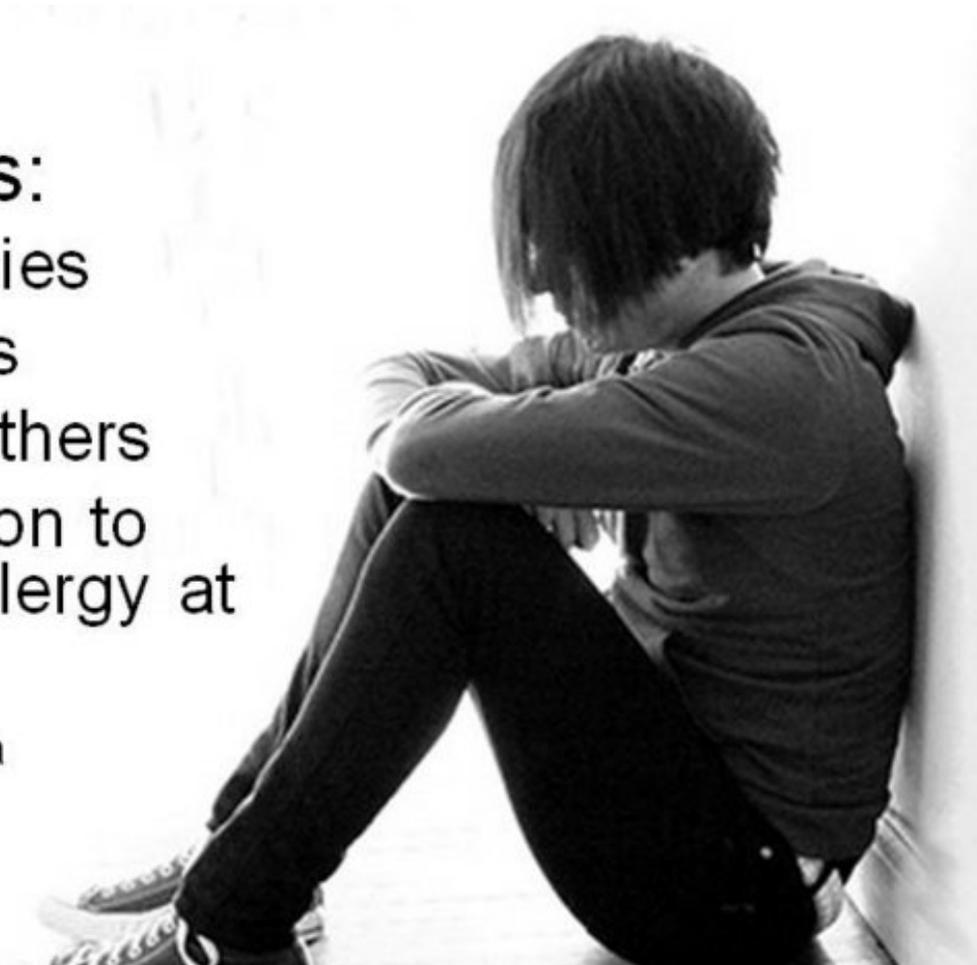
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# Emotional & Social Concerns of Teens

## Most Concerning Troubles/Limitations:

- Limited social activities
- Limited food choices
- Being a burden to others
- Not enough education to others about food allergy at school

Resnick et. al., Ann Allergy Asthma Immunol. 2010 Nov;105(5):364-8



# Bullying

**45% of children** (n=251) reported bullying  
Teased (42%), food waved (30%), criticized (25%),  
threatened (15%)  
Classmates (80%), other students (34%),  
teachers/staff (11%), siblings (13%), other relatives (4%).  
Associated with **decreased quality of life** and **increased distress** in parents and children, independent of reported severity of allergy



# Management

## Shared responsibility among schools, students, families, and healthcare providers

- Identify students at risk
- Create written, individualized health and emergency action plans

## Avoidance of food allergens

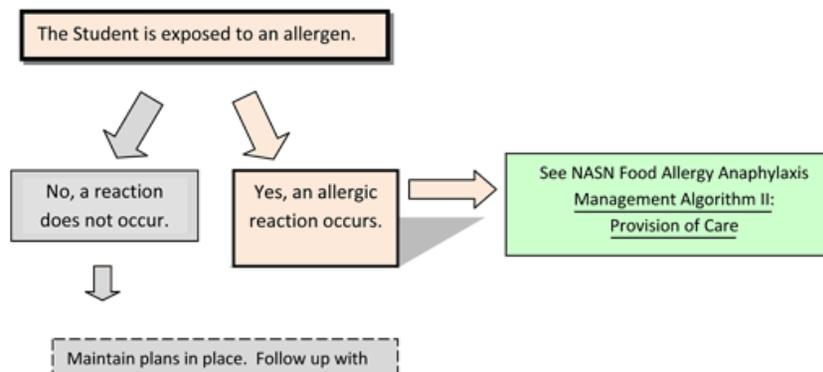
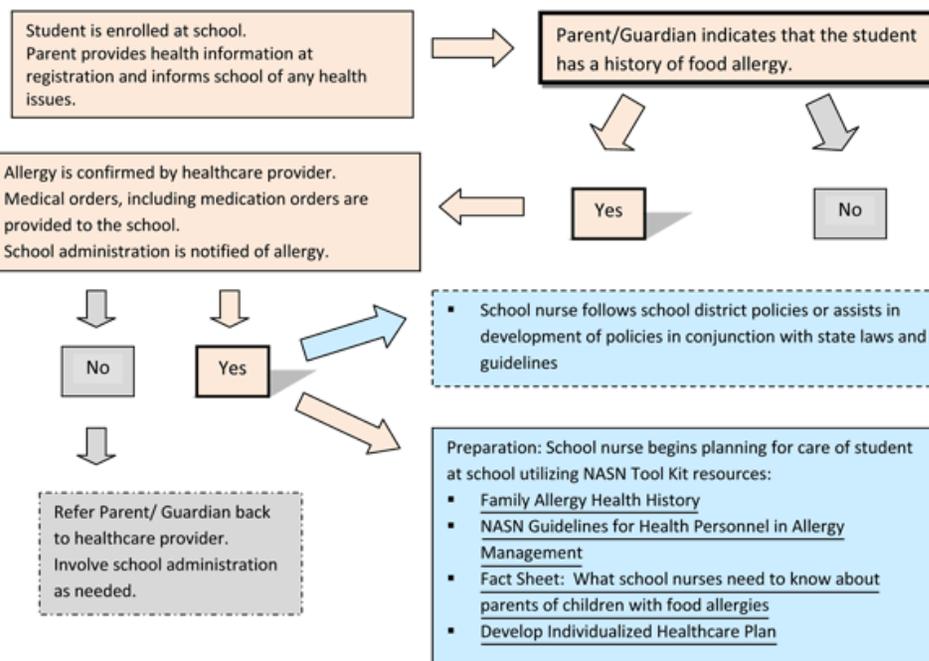
## Being prepared in case of a reaction

- Recognize symptoms of an allergic reaction
- Enact Food Allergy Action Plan / Emergency Care Plan



# Identify students at risk

## NASN Anaphylaxis Planning Algorithm



# Create management plans

## Resources

Care Planning

st

Food Allergy IHP

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## Individualized Healthcare Plan

- Make all caregivers aware of care plan and provide copies
- Teach to the IHP with specific training for each student
- Encourage parents to meet with teachers

## 504 Plan

- Know when a 504 Plan may be appropriate & work with admin/parents/teachers. These plans also usually include an IHP and Action Plan



## Food Allergy & Anaphylaxis Emergency Care Plan

[www.foodallergy.org/faap](http://www.foodallergy.org/faap)

- Available in English and Spanish

The image shows a sample of the FARE (Food Allergy Research and Education) Food Allergy & Anaphylaxis Emergency Care Plan form. The form is titled "FARE FOOD ALLERGY & ANAPHYLAXIS EMERGENCY CARE PLAN" and includes fields for Name, Address, and Phone. It also has a section for "Severe Symptoms" and "Mild Symptoms" with corresponding icons and instructions. The form is designed to be a quick reference for emergency care in case of a food allergy reaction.

# Laws & Liability

## **Life-threatening food allergy can be considered a disability under federal laws**

Rehabilitation Act of 1973, Section 504

The Individuals with Disabilities Education Act (IDEA)

The Americans with Disabilities Act (ADA), along with the ADA Amendments of 2008 (ADAA)

## **Assure compliance for privacy and confidentiality**

Family Educational Rights and Privacy Act (FERPA) and

Health Insurance Portability and Accountability Act of 1996 (HIPAA)

## **Civil rights claim on behalf of student**

Follow the laws or parents/caregivers can file a claim



# How you can help parents

## What School Nurses Need to Know about Parents of Children with Food Allergies

School nurses can decrease the stress and anxiety of parents through several approaches:

- Implementing evidence based strategies to preventing allergen exposure and preparing school personnel to respond to anaphylaxis
- Acknowledging parents' concerns
- Emphasizing the school takes food allergy seriously
- Suggest opportunities for parents to decrease their social isolation and to connect with other parents

*What School Nurses Need to Know about Parents of Children with Food Allergies (NASN)*

*Managing Food Allergies in the School Setting: Guidance for Parents (FARE)*

# Be prepared

Schools must be **prepared** to handle allergic reactions that require epinephrine

For students with a diagnosis

For students with unknown allergies experiencing their first episode of anaphylaxis at school

**> 15%**

kids with food allergies have had a **reaction in school**

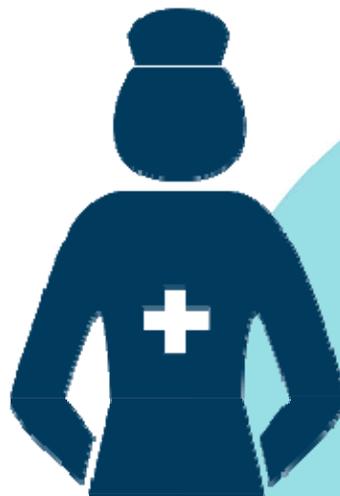
**20-25%**

of epi admin the allergy was **unknown** at the time of reaction

# Everyone needs to know

School staff need to know  
how to **save a child's life**

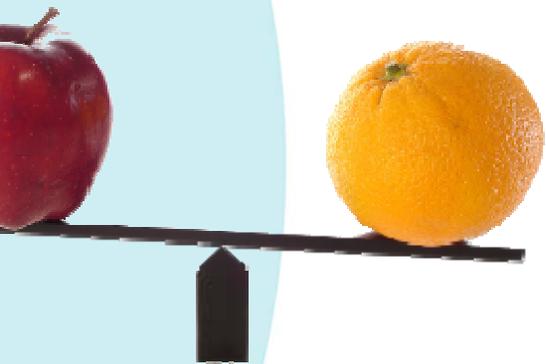
The School Nurse is the  
healthcare leader in the best  
position to **teach** them!



# Allergy vs. Intolerance

## Allergy

- Involves the **immune system**
- Can be **life-threatening**



## Intolerance

- Share some symptoms but **do not involve immune system**
- Cause great discomfort but are **not life-threatening**
- Lack enzymes to digest certain foods
- Chemical migraine triggers (aspartame, MSG, nitrates/nitrites, alcohol, coffee, chocolate, sulfites)

**NOTE:** The words “gluten intolerance” are sometimes used to describe Celiac disease. However, Celiac disease does involve the immune system and can cause serious complications if left

# Understanding food allergy



NIAID

National Institute of Allergy and Infectious Diseases

# Definition

## Life-Threatening Reaction: Anaphylaxis (an·a·phy·lax·is/ ,anəfə' laksis/)

- A **severe allergic reaction that is rapid** in onset and may cause death
- Is ***not*** always due to an obvious cause
- Is ***not*** always easy to avoid, even when the cause is known
- Is ***not*** always accompanied by hives

# Causes

Food

Insect venom

Medications

Latex

Less common causes

include:

- Exercise
- Idiopathic



# Food Allergens

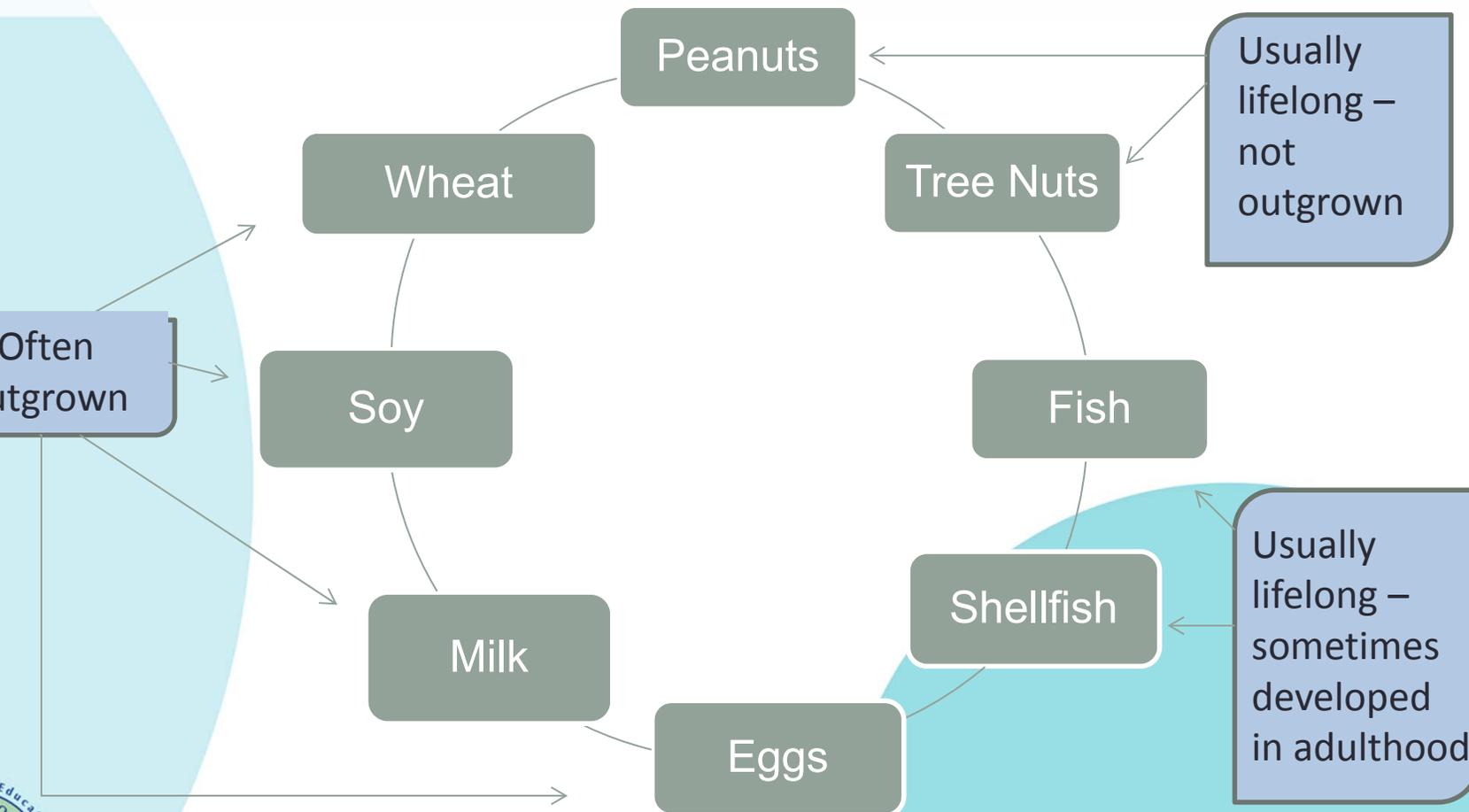
The most common food allergens are:

- cow's milk
- eggs
- peanuts
- wheat
- soy
- fish, shellfish
- tree nuts

responsible for 90% of food allergy reactions but a person can be allergic to **any** food



# Most Common Food Allergens



Often outgrown

Usually lifelong - not outgrown

Usually lifelong - sometimes developed in adulthood



# Avoiding Allergens

## Read food labels every time

## Effectively clean surfaces & hands



- Surfaces - common household cleaning agents
- Hands - soap & water, commercial wipes
- Hand Sanitizer **does not** effectively remove food particles from hands!



## Find hidden allergens in art supplies, soaps, lotions, toy stuffing

## Involve the school community

- Clearly and consistently communicate the school's policy/procedures to parents, students, and staff
- Educate peers in an age-appropriate manner
- Train all adults who supervise students annually



# Allergens in the environment

**General Rule:** ingestion is required for a systemic reaction or anaphylaxis to occur

**Casual exposure:** such as skin contact and inhalation to peanut butter is unlikely to elicit significant allergic reactions. Contact may cause superficial redness, itching or hives.

**Note:** *Casual exposure presents a **greater risk to young children** who frequently put their hands in their mouths. Depending on the amount and the location of the contact, these reactions are **occasionally more serious**.*

**Exposure:** food proteins released into the air from vapor or steam from foods being cooked (e.g., roasting nuts, boiling milk, steaming eggs/fish/shellfish, sifting flour) can potentially cause allergic reactions, but this is uncommon and has been noted mainly with fish. Reactions similar to hay fever/asthma symptoms.



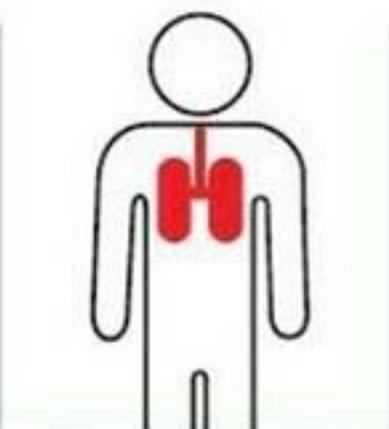
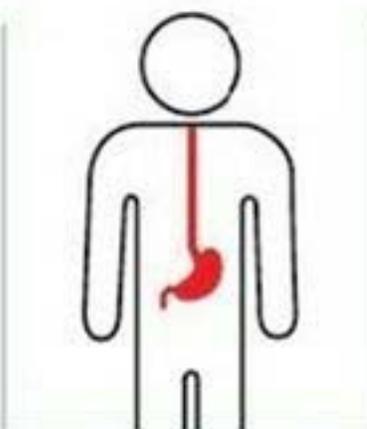
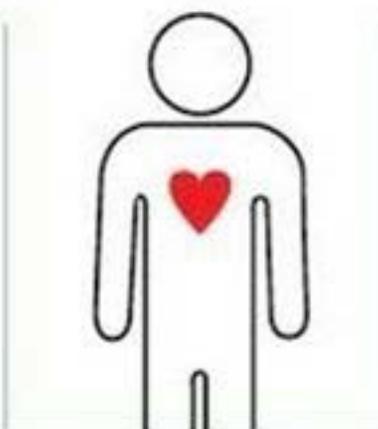
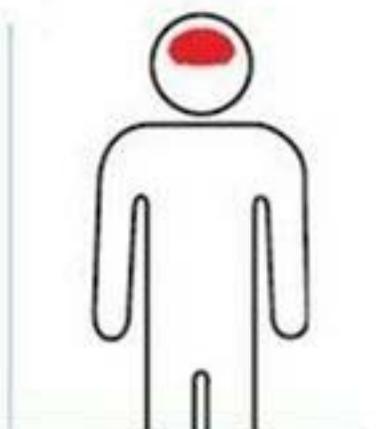
# Recognize a reaction

## Important Reminders

1. Medical research emphasizes that **early recognition and treatment saves lives.**
2. Allergic reactions are unpredictable; they **may present and progress differently** than previous reactions **AND** a seemingly mild reaction can turn serious very quickly.
3. A student experiencing anaphylaxis **may show *no skin symptoms*** – no hives, no rash, no swelling.



# Signs of anaphylaxis

				
<p><b>SKIN</b></p>	<p><b>RESPIRATORY</b></p>	<p><b>GASTROINTESTINAL</b></p>	<p><b>CARDIOVASCULAR</b></p>	<p><b>NEUROLOGICAL</b></p>
<p>swelling, warmth,</p>	<p>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)</p>	<p>nausea, stomach pain or cramps, vomiting, diarrhea</p>	<p>dizziness/ lightheadedness, pale/blue colour, weak pulse, fainting, shock, loss of consciousness</p>	<p>anxiety, feeling of "impending doom" (feeling that something really bad is about to happen), headache</p>
				<p><b>OTHER</b></p>
				<p>uterine cramps</p>

# Signs of anaphylaxis



[www.foodallergy.org](http://www.foodallergy.org)

For a suspected or active food allergy reaction:

FOR ANY OF  
THE FOLLOWING

## SEVERE SYMPTOMS

-  **LUNG:** Short of breath, wheezing, repetitive cough
-  **HEART:** Pale, blue, faint, weak pulse, dizzy
-  **THROAT:** Tight, hoarse, trouble breathing/swallowing
-  **MOUTH:** Significant swelling of the tongue and/or lips
-  **SKIN:** Many hives over body, widespread redness
-  **GUT:** Repetitive vomiting or severe diarrhea
-  **OTHER:** Feeling something bad is about to happen, anxiety, confusion

OR MORE  
THAN ONE

## MILD SYMPTOM

-  **NOSE:** Itchy/runny nose, sneezing
-  **MOUTH:** Itchy mouth
-  **SKIN:** A few hives, mild itch
-  **GUT:** Mild nausea/discomfort



- 1. INJECT EPINEPHRINE IMMEDIATELY.**
- 2. Call 911. Request ambulance with epinephrine.**

Do not depend on antihistamines. When in doubt, give epinephrine and call 911.

# Treatment of anaphylaxis



## Epinephrine First & Fast!

- Most deaths are secondary to delayed administration
- If in doubt, better to give than not
- 24% of the time >1 dose of epinephrine is

## Call 911

- Notify emergency medical services and report that epinephrine has been administered or that anaphylaxis is suspected so they will bring epinephrine
- follow-up care and observation in the emergency room for 4-6 hours

## Observation

- Even if epinephrine is administered promptly and symptoms seem to subside completely, the individual should always be taken to the emergency room for further evaluation and treatment
- Biphasic reactions

# Fatal risk factors

Risk factors for fatal food-induced anaphylaxis

- **failure or delay** to promptly (i.e., within minutes) treat food anaphylaxis with **epinephrine**
- history of **asthma**
- **teens** and young adults are the highest risk



# Epinephrine

**Epinephrine** (adrenaline) is the medication that can **reverse** the severe symptoms of **anaphylaxis**

It is given as a “shot” and is available as a self-injector, also known as an epinephrine auto-injector

Epinephrine is a highly effective medication, but it **must** be **administered promptly** during anaphylaxis to be most effective

**Delays can result in death**  
in as little as 30 minutes



# Epinephrine

**Narrows blood vessels and opens  
airways in lungs**

**Can reverse:**

- Severe low blood pressure
- Wheezing
- Severe itching
- Hives and other allergy reactions

**Good safety profile with no  
absolute contraindications**

- Cases of cardiac arrhythmias  
only tend to occur in elderly  
patients with pre-existing



# Epinephrine

People with a prescription for epinephrine **do not always carry** an auto-injector

- Studies show that they carry only 55% of the time
- People often unaware of the expiration dates
- 20 – 25% of epinephrine administration in schools involve children and youth whose allergy was unknown at the time of the episode



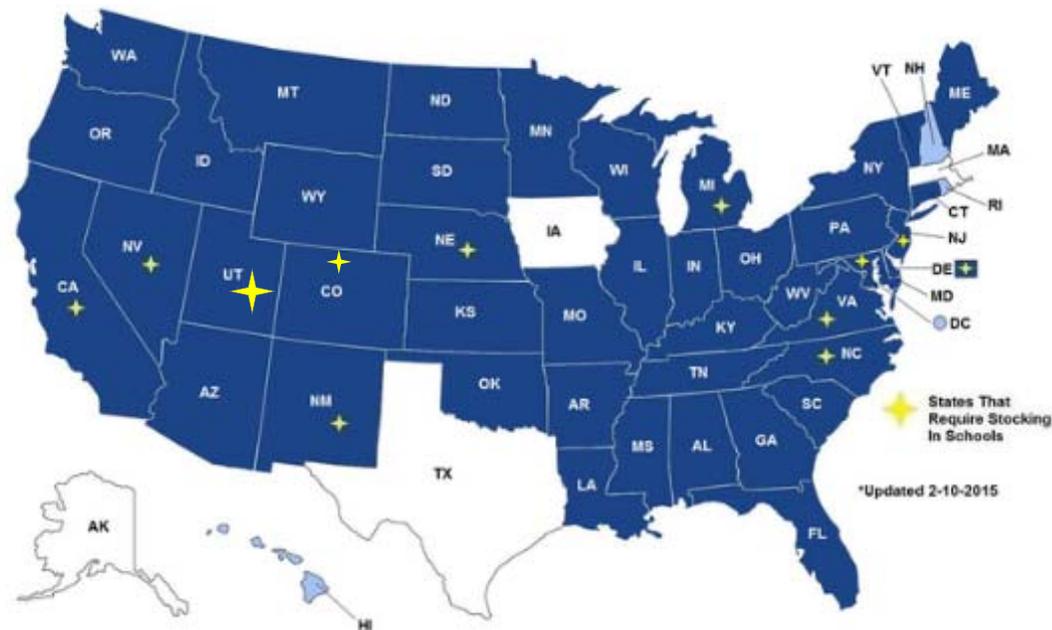
**16%**

people using  
epinephrine  
injectors  
correctly for a  
severe allergic  
reaction

# Stock epinephrine

Utah law **requires** schools to store **at least one epinephrine auto-injector** for a qualified and trained adult to use, and **allows** a school to obtain and store more than one device, if desired.

**Advocate**  
for stock  
epinephrine in  
Utah schools that  
are **not** in  
compliance!



# Stock epinephrine saves lives!

**2013-2014 school year, more than 1 in 10 schools had to respond to a severe allergic reaction on school grounds**

**70% of students who experienced anaphylaxis were in high school**

**a second epinephrine injection was given in 9% of cases**

**In 36% of schools, a limited number of adults (only the school nurse and select staff) were trained on how to recognize symptoms and administer**

**57 anaphylactic episodes were treated with antihistamines only instead of epinephrine**

**Only 20% of patients were not taken to the hospital, suggesting that further education is needed on this treatment step**

The **EpiPen4Schools program** is offered by Mylan Specialty and provides free epinephrine auto-injectors to qualifying schools in the U.S.

[www.epipen4schools.com](http://www.epipen4schools.com)



**10%**

of schools had  
1-2 cases of  
anaphylaxis occur  
on school grounds  
last year

# Epinephrine storage

**School personnel** must know where the medication is stored

store in a safe, appropriate, and secure, yet accessible location that will allow for rapid administration...**never store in a locked drawer or cupboard!**

location should be **carefully considered** and identified in a student's individual written management plan

obtain **permission** for students to carry and self-administer prescribed medications as developmentally appropriate



# Training programs

## NASN Get Trained© Program

[www.nasn.org/ToolsResources/FoodAllergyandAnaphylaxis/GetTrained](http://www.nasn.org/ToolsResources/FoodAllergyandAnaphylaxis/GetTrained)

Intended to provide training to unlicensed school staff to administer an epinephrine auto-injector

## A Shot to Live

[www.AShotToLive.org](http://www.AShotToLive.org)

- Website provides access to training resources designed for school health officials, faculty, staff and parents
- This training has been approved by the Utah Department of Health
- Needs some updates



**GET TRAINED**©



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*A program for school nurses to train school staff to administer epinephrine using an auto-injector*



UNIVERSITY OF UTAH SCHOOL OF MEDICINE | A Shot to Live

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School of Medicine Department of Pediatrics

# A SHOT TO LIVE

**Our Mission:** To educate school officials and community members in the prevention and management of school-related anaphylaxis and ensure every child in school has access to life-saving epinephrine.

**Project Goals**

1. Help schools identify children at risk for anaphylaxis due to food allergy.
2. Develop a Food Allergy Action Plan for each identified child in conjunction with parents, school nurses and physicians.
3. Train individuals when a school nurse is not physically present to know when and how to administer epinephrine.
4. Ensure that each school has access to life-saving epinephrine.

Contact Info: Pediatrics Residency Program, Primary Children's Medical Center, 1610 Basic Health Complex Drive, Salt Lake City, UT 84143

Quick Links: The University of Utah, Home, Disclaimer

Social Media: Facebook, Twitter, YouTube

THE UNIVERSITY OF UTAH

# Thank you!

**School Nurses** play a very vital role in keeping kids with food allergies safe at school and **we appreciate you!**

**utahfoodallergy.org**

**support@utahfoodallergy.org**

**801-949-0092**

