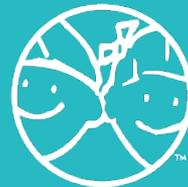


FOOD ALLERGY AND ANAPHYLAXIS IN INFANTS AND TODDLERS



Asthma and Allergy
Foundation of America



**KIDS WITH
FOOD ALLERGIES**
A Division of the Asthma and Allergy
Foundation of America

WELCOME

- May is Asthma and Allergy Awareness Month
- May 9-15 is Food Allergy Awareness week
- Today's webinar is being recorded



SPEAKERS



Melanie Carver

Chief Mission Officer
Asthma and Allergy Foundation of America



Sanaz Eftekhari

Vice President, Research
Asthma and Allergy Foundation of America



Michael Pistiner, MD, MMSc

Mass General Hospital for Children
Harvard Medical School

FOOD ALLERGY DEFINITIONS

A food allergy is an adverse reaction to an ingested food that is the result of an abnormal immune response

- Triggered by antibodies known as Immunoglobulin E (IgE)

The symptoms of a food allergy reaction typically involve:

- Skin: itchiness, hives, swelling of the skin/lips/throat
- Stomach/gut: nausea, vomiting, diarrhea
- Respiratory: cough, wheezing, short of breath, tightness in throat

Anaphylaxis is a serious allergic reaction that is rapid in onset and may cause death if not treated promptly

COMMON FOOD ALLERGIES



Infants

Milk, Egg
Peanut, Tree nut,
Wheat

Children

Milk, Egg,
Peanut, Tree nut

Adults

Peanut, Tree nut,
Shellfish, Fish

PREVALENCE (RATE) OF FOOD ALLERGIES

The prevalence of food allergy is increasing in the U.S.

- Peanut allergy tripled between 1997-2008; recent data demonstrated a 21% increase since 2010
- Food allergies estimated to affect 8% of children in U.S. (approximately 5.6 million)

Food allergy can frequently cause anaphylaxis

- 83% of anaphylaxis cases in infants are caused by food allergies
- Food allergies are the most common cause of anaphylaxis in children presenting to emergency rooms

INFANT FEEDING GUIDELINES

2000

American Academy of Pediatrics (AAP) and United Kingdom recommended avoidance of peanut and other food allergens until 3 years of life in children with familial risk for allergy

2008

AAP and UK partially reversed these guidelines, stating there is insufficient data to support delayed introduction of foods beyond 4 to 6 months

2013

AAAAI guidelines recommended introduction of allergenic foods once a few complementary foods have been tolerated; consistent with Canadian guidelines

2017

Australia - suggested peanut, cooked egg, wheat, dairy be introduced to infants in first year of life without screening; NIAID guidelines suggest peanut introduction depending on the degree of risk; recommend allergy testing prior to introduction of peanut

2020

AAP recommends early introduction of peanut and to not delay the starting any specific food after 4 - 6 months of age; USDA on board with this recommendation; pre-introduction screening for food allergy not required but remains an option in select situations

EARLY INTRODUCTION OF FOOD ALLERGENS

There is increasing evidence that early food allergen introduction during infancy helps prevent the development of food allergies

EarlyNuts

PETIT

SPADE

EAT

LEAP

HealthNuts

Feeding foods to babies 4-6 months old teaches their immune system to tolerate the foods!

KEY POINTS

- Most national guidelines currently recommend to *not* delay foods
- Expose infants to eating diverse foods!
- There are barriers to overcome for early introduction of foods to infants
- For infants who have already developed food allergies, parents and caregivers need to be prepared to treat allergic reactions



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ANAPHYLAXIS IN INFANTS AND TODDLERS

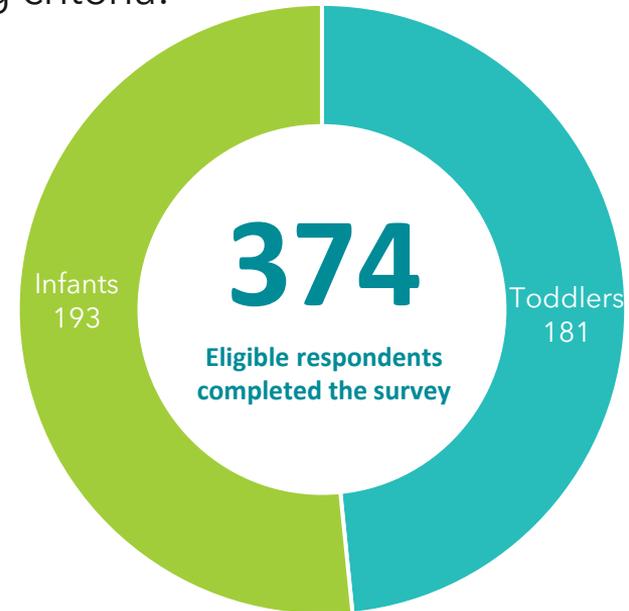
OBJECTIVES

- Describe and understand symptoms and signs observed by primary caregivers of infants and toddlers during severe food-induced allergic reactions
- Help the medical community better serve infants and toddlers by learning the parent perspective on needs for collaboration, access, and consistent education.

STUDY DESIGN

Online survey of caregivers who met the following criteria:

- They are the parent or other primary caregiver of a child under the age of 5 at time of the survey
- Their child experienced an allergic reaction to food when under 3 years old
- They were present during that allergic reaction



STUDY DESIGN

Caregivers were asked about signs and symptoms they noticed during their child's most severe allergic reaction under the age of 3.

We categorized these signs into five organ systems:

- Skin
- Respiratory (airways)
- Cardiovascular (heart, blood pressure)
- Gastrointestinal (stomach, gut)
- Neurological (brain, behavior)

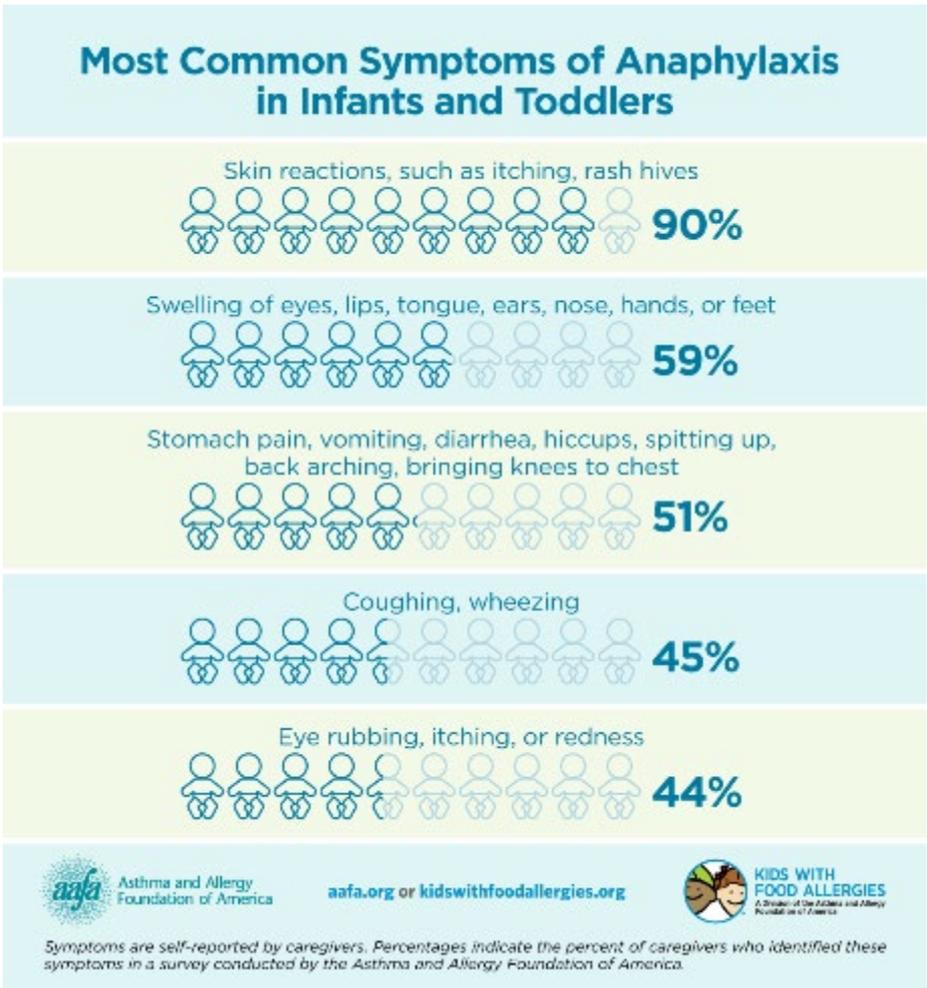
KEY FINDINGS

- The most common symptoms in infants and toddlers were skin reactions, swelling, vomiting, and diarrhea.
- Compared to adults, infants/toddlers are more likely than other ages to have skin and gastrointestinal-related reactions, and less likely to have problems with breathing.
- Nearly half of caregivers surveyed said that they recognized signs and symptoms of an allergic reaction in retrospect, but not during the reaction.

COMMON SIGNS IN INFANTS/TODDLERS

The most common symptoms in infants and toddlers were skin reactions, swelling, vomiting, and diarrhea.

Signs related to the cardiovascular system - like blue-grey appearance and poor head control - were not as common as skin or gastrointestinal issues. However, these symptoms are important to look for.



COMPARISON WITH ADULT POPULATION

We compared the infant and toddler symptoms to a previous study by AAFA of the general population (Anaphylaxis in America 2014). The comparison found that infants are more likely than other ages to have skin and gastrointestinal-related reactions, and less likely to have problems with breathing.

Compared to older children and adults, infants and toddlers are...

More likely to have

Itching, rash, or hives
Vomiting
Diarrhea
Hoarse voice/cry
Sudden behavioral changes

Less likely to have

Increased breathing rate
Difficulty breathing
Itchy throat

RECOGNIZING SYMPTOMS IN HINDSIGHT

Parents were asked: “In looking back, were there any symptoms that you didn’t think were related to an allergic reaction but you later realized were caused by the allergic reaction?”

The most reported symptoms realized in retrospect were:

- Sudden behavioral change
- Skin reactions
- Gastrointestinal symptoms
- Coughing and wheezing

48%

of caregivers reported that they recognized 1 or more symptoms only in retrospect after the allergic reaction.

Anaphylaxis is highly likely when any 1 of the following 3 criteria fulfilled:

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

And at least one 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**)

Two 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., **crampy abdominal pain**, vomiting)

Reduced BP after exposure to 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 90 mm Hg or greater than 30% decrease from that person's baseline

AAFA's Recommended Language for Signs and Symptoms of Food Allergy Reactions in Infants and Toddlers

Medical Term	Common Term	What to look for: <i>(Adjusted language for symptoms specific to infants and toddlers)</i>	
 Pruritis	• Itchiness	• Tongue thrusting • Tongue pulling • Repetitive lip licking or licking of hands or objects	• Throat itching • Ear pulling, scratching or putting fingers in the ears • Eye rubbing, eye itching
 Dyspnea	• Shortness of breath • Difficulty breathing	• Bally breathing • Fast breathing	• Nasal flaring (nostrils open wide) • Chest or neck "tugging"
 Stridor	• Noisy breathing • High-pitched sound while breathing (whistling sound)	• Hoarse voice, hoarse cry • Barky/croup-like cough	• Noisy breathing, especially when inhaling
 Reduced blood pressure	• Shock	• Wobbly appearance • Lethargic • Floppy or limp • Poor head control • Difficult to wake up • Crankiness	• Withdrawn or clingy • Inconsolable crying • Subdued or less active • Lace-like appearance of the skin • Blue/grey skin around mouth/lips or hands/feet
 Hypotonia, Syncope	• Poor muscle tone • Fainting (fainting out*)	• Wobbly appearance • Lethargic • Floppy or limp • Poor head control • Difficult to wake up	• Crankiness • Withdrawn or clingy • Inconsolable crying • Less active
 Persistent gastrointestinal symptoms	• Gastrointestinal symptoms that are significant	• Abdominal pain • Diarrhea • Hiccups	• Spitting up • Back arching • Vomiting



nfa.org or kidswithfoodallergies.org



Adapted from Flanagan, Michalek, et al. "Clinical Report: Presentation of Severe Food-Induced Allergic Reactions in Infants and Toddlers." *The Journal of Allergy and Clinical Immunology: In Practice*, vol. 6, no. 1, 2021, pp. 31-32.e2.

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Dyspnea

- Shortness of breath
- Difficulty breathing

- Belly breathing
- Fast breathing

- Nasal flaring
(nostrils open wide)
- Chest or neck “tugging”



Stridor

- Noisy breathing
- High-pitched sound while breathing
(whistling sound)

- Hoarse voice, hoarse cry
- Barky/croup-like cough

- Noisy breathing, especially when inhaling



Reduced blood pressure

- Shock

- Wobbly appearance
- Lethargic
- Floppy or limp
- Poor head control
- Difficult to wake up
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- Withdrawn or clingy
- Inconsolable crying
- Subdued or less active
- Lace-like appearance of the skin
- Blue/grey skin around mouth/lips or hands/feet



Hypotonia,
Syncope

- Poor muscle tone
- Fainting (“passing out”)

- Wobbly appearance
- Lethargic
- Floppy or limp
- Poor head control
- Difficult to wake up

- Crankiness
- Withdrawn or clingy
- Inconsolable crying
- Less active



**Persistent
gastrointestinal
symptoms**

- **Gastrointestinal symptoms that are significant**

- **Abdominal pain**
- **Diarrhea**
- **Hiccups**

- **Spitting up**
- **Back arching**
- **Vomiting**

WHAT TO DO IN CASE OF SEVERE ALLERGIC REACTION

Epinephrine is first line treatment of anaphylaxis

- Can babies receive epinephrine?
- What to do if this is the first severe allergic reaction?
- What to do if baby has been diagnosed with food allergies?

WHY DOES THIS RESEARCH MATTER?

- Help parents and caregivers gain confidence in recognizing severe allergic reactions in young children
- Contribute to health education; give pediatricians and allergists language they can use when training families on anaphylaxis
- Help pediatricians and allergists recognize some of the less obvious signs and symptoms when evaluating young children
- AAFA's recommended language for signs and symptoms of allergic reactions in young children can be useful for developing action plans, future clinical guidelines, etc.

RESEARCH

- AAFA focuses on supporting patient-centered research
- Gives patients and caregivers a stronger voice in research, which will lead to improved treatments based on what is important to patients and their families!
- Stay up-to-date on latest findings, get involved in research studies, or become a research advisor by joining one of our communities:

For food allergies: kidswithfoodallergies.org/join

For asthma and other allergic conditions: aafa.org/join

RESOURCES

kidswithfoodallergies.org

- Food allergy prevention
- Allergy-friendly recipes and food finds
- Cooking tips and help
- Online support
- School plans
- Training for babysitters
- Digital courses and much more!



THANK YOU