

18 Things You Need to Know About Food Allergy Reactions

By GWEN SMITH

A food allergy reaction is a mysterious and potentially life-threatening response in which a person's immune system overreacts to what should be a perfectly harmless substance – a food eaten to fuel the body. Among the many questions our readers frequently ask are: Just when is it anaphylaxis? How common are severe reactions? When do you give an epinephrine shot? And when is it safe to presume a milder reaction?

Allergic Living decided it was time to learn more about both major concerns and what scientists are learning about the allergic response. With the helpful guidance of top allergy experts, we bring you a primer of 18 key points about allergic reactions.

It's not your imagination, an awful lot of us have food allergies.

1

This disease used to be called “rare” – no more! The prevalence of food allergies has risen sharply since the 1990s. Fifteen million Americans and 2.5 million Canadians now have food allergies, and a July 2011 study in the medical journal *Pediatrics* found the rate in children to be 8 percent.¹ That study was based on an analysis of almost 40,000 kids – from babies to youths up to 18 years old.





Dr. Ruchi Gupta:
A high level of
severe reactions.

2 Severe reactions: are they rare or frequent?

Experts are finding these are a lot more common than we knew. In that *Pediatrics* study, almost 40 percent of children with food allergies had had a severe reaction, known as anaphylaxis. “People often think of a few hives or mouth tingling, but the reactions can be much more severe and happen very fast,” says Dr. Ruchi Gupta, the study’s author and a pediatrician at Lurie Children’s Hospital in Chicago. “Almost one in every 2½ kids with food allergies has experienced something severe or even life-threatening,” says Gupta, a faculty member at Northwestern University’s school of medicine. The better news, probably due to better awareness, is that anaphylaxis remains, as the World Allergy Organization (WAO) says, “an uncommon cause of death.”

Meantime, the Anaphylaxis in America study² from October 2013 puts the rate of anaphylaxis in the general population within a range of 1.6 to 5 percent. “If you were to go to a gathering of 100 people, you would have at least three to four who have a history of anaphylaxis and that’s pretty remarkable,” says Dr. Robert Wood, the chief of pediatric allergy and immunology at Johns Hopkins Children’s Center.

3 Define anaphylaxis.

There has been considerable debate about what constitutes this severe, sometimes life-threatening response. In recent years, the U.S. National Institute of Allergy and Infectious Diseases (NIAID) has issued guidelines for food allergy management that arrived at this succinct definition: “Food-induced anaphylaxis is a serious allergic reaction that is rapid in onset and may cause death.”

The guidelines’ authors have additionally explained that having a food trigger just one symptom, such as hives, would be referred to as an allergic reaction. When more than one body system is involved, such as both hives (skin system) and wheezing (respiratory system), it is considered anaphylaxis. Less commonly, however, an anaphylactic reaction can occur with just one system engaged, such as when there are serious cardiovascular symptoms.

4 Is it what you call it – or how you treat it?

Perhaps those of us in the food allergy community can get too obsessed with the definition of anaphylaxis. Leading allergist Dr. Scott Sicherer makes an excellent point: “I would make a distinction between worrying about defining something as anaphylaxis and deciding when to *use* epinephrine.”

Clearly a person with known food allergies who is having classic symptoms, such as wheezing, hives and shortness of breath after eating, should be given an auto-injector shot of epinephrine. It’s the go-to medicine for anaphylaxis.

But Sicherer gives another example of when to use it: “Let’s say you have a child who has ingested peanut on five previous occasions and every time has had a terrible reaction and multiple doses of epinephrine, and ended up in the emergency room.” Now, Sicherer says to think of a scenario in which this high-risk child thought he’d grabbed sunflower spread butter but actually grabbed peanut butter. And he swallowed a mouthful.

“You could say if that child has just got two hives on his face, ‘I don’t have to give him epinephrine’ – because that’s in keeping with the definition” (of more than one body system). “But I would make the argument to give him epinephrine even without symptoms because I have confirmed he has eaten the food that caused him very severe reactions those five other times,” says Sicherer, the chief of allergy and immunology at the Icahn School of Medicine at Mount Sinai in New York. “It’s a safe medicine. Give the epinephrine promptly in this case, why wait for symptoms?”

5 When else would an allergist recommend the epinephrine shot?

“There are also other situations where I would give epinephrine before or without anaphylaxis,” says Sicherer. In the case of a child who has had bad reactions, though not as severe as in the previous example, he would tell a parent to give epinephrine for any symptoms if it was known that child had consumed his allergen.

Canadian allergist Dr. Susan Waserman says that, in children, watch for telltale signs like a change in personality after eating, accompanied by stomach pain or nausea. She sees a lot of kids have side effects during oral food challenges, and thinks we may count too much on symptoms like hives, which don’t always appear. “Context is so important,” she says. Since symptoms can turn serious quickly, she says to use your best judgment and, in case of doubt, go ahead – use the epinephrine.

6 If I am reacting, I'm going to feel the symptoms right away.

Quite often, but not always. Wood of Johns Hopkins says that almost all allergic reactions to a food will begin in the first 30 minutes. But there have been cases of delay up to two hours. Sometimes a person will realize they've eaten a forbidden food and spit it out, he says, "but there is still absorption of the allergen in the mouth and throat, and the absorption typically happens over a period of 10 to 40 minutes." In a highly sensitive person, that's still enough to cause a severe reaction.

7 When not to give epinephrine.

There's less consensus on this one. But Sicherer can offer some examples. For instance, a child says his throat hurts. "But what does that mean? Maybe there's strep throat around; he hasn't eaten anything but is starting to get that strep throat," he says. Another example is that of a food-allergic child who also has asthma. If she comes inside from playing and is wheezing and coughing, a parent might wonder: asthma or allergic reaction? "It's the same symptom pattern but, if she hadn't been eating, I'm going to treat with asthma medication," he says.

Sicherer cites one reason to leave an emergency care plan open to some flexibility to give an antihistamine and 'wait and see' with minor symptoms like a few hives – "I would be worried that a child might not report symptoms if he knows for certain that he's going to get a shot with any symptom he reports."

Some of the milder symptoms are tricky. Is vomiting a virus or an early indicator of anaphylaxis? You need to know what has been going on with the person before the symptoms started. Be sure to ask questions such as: Did you eat anything? Did anything happen before you started to feel your throat hurt or stomach ache?

"If the symptom is just a couple of hives on the face, I might be willing to just watch the person," says Sicherer. "But if the hives are going all over the body, it's time to be cautious and give the epinephrine."



Dr. Scott Sicherer: For tricky symptoms, ask questions.

8 When antihistamines don't measure up.

Antihistamines can help to stop itch and clear up a few hives. But in food allergy, that's the end of their purpose. They can't do anything to halt anaphylaxis. The auto-injector is the device and the drug for the serious symptoms. "Epinephrine opens up the airways, makes the heart beat stronger, supports the blood pressure and makes the blood vessels carry blood more effectively," says Sicherer.

9 Do I say something if the doctor in the emergency room isn't giving my child epinephrine?

At the ER, there are often reports of a patient having anaphylaxis being given other drugs (such as corticosteroids) instead of epinephrine. The allergy experts say go ahead and speak up. "They do a very good job," Wasserman says of ER doctors, "but if you think your child needs epinephrine, then say so." Your best bet is to have your child's emergency care plan, signed by your allergist, with you; it will say to give epinephrine in a serious reaction.

Sicherer says the ER professionals may feel they've got a good grip on monitoring a patient. "What they may be missing, however, is that epinephrine can often just make someone feel better." And by the way, if you were sent home with a prescription to continue on prednisone, Sicherer would speak to your doctor before filling it. If the anaphylaxis is over, there may be no need for these pills.

10 But I'm afraid of having a needle.

If you have food allergies, work on getting past this mental block. Think of your auto-injector as your friend and lifesaver, not a thing to be feared. Consider the experience of children who may have an allergic reaction during supervised feeding tests that requires epinephrine. What is interesting, is that this is often a good experience. "The child and the parent see that it's not such a big deal," says Sicherer. "The shot didn't hurt so much and the child felt better right away."

11 My child had a bad reaction, when is it safe to leave the hospital?

A reaction needs to have resolved, and you need to be mindful that a secondary or biphasic reaction can happen. Studies vary on the frequency of biphasic experiences – from almost finding them non-existent to finding them in 21 percent of anaphylaxis cases. That range is not too illuminating. "However, it does seem that the worse the reaction, the more likelihood there will be a recurrence of the symptoms," says Sicherer.

So how long should you stay at the hospital? If your child has had a severe reaction and is still experiencing symptoms, Sicherer says there's a good chance he'll be admitted to the hospital; he needs to be monitored. "If it was not quite so severe, I would recommend staying for about four hours just to make sure the child is symptom-free and it's OK," he says.

You do have to employ some judgment. For instance, if your daughter is feeling fine now, but still has swollen eyelids, you'll likely be told it's OK to go home. It can take a day for eyelid swelling to go down.

12

My child's IgE antibody count is high, so is her allergy more severe?

It ain't necessarily so. The blood test is not a precise tool, and a high number simply suggests she has a true IgE-mediated allergy, while a person's test with a low number might hint at a false positive. Sicherer says two people could have 50 kU_A/L on the test to a particular food, but the one person only has had mild symptoms or even no symptoms – and the other person has repeatedly had severe reactions.

"The blood test doesn't know how much you've eaten [of an allergen], it doesn't know if you have asthma, it doesn't know if you've exercised after eating," says Sicherer, citing some other influences on reaction severity. "The blood test only knows the amount of IgE antibody that your body is making." With a skin test, it's the same thing, a big response confirms an allergy, but won't offer accurate clues about reaction severity.

13 Peanut or milk, what are most kids allergic to?

In Gupta's study of U.S. children at various ages up to 18 years old, interesting patterns emerge. (See the chart). Peanut allergy was present in 25 percent of the allergic kids, making it the No. 1 allergy across-the-board. However, if you look only at babies and toddlers, milk allergy rose swiftly to the top of the list. And in the over 14 age group, shellfish allergy was the most common, as it also is in studies of adult food triggers.

FOOD ALLERGY VARIATIONS BY AGE

	Peanut	Shellfish	Tree Nut	Milk	Egg	Wheat
0-2 years	22.2	7.5	5.4	31.5	15.8	4.0
3-5 years	30.3	12.9	14.3	22.1	13.7	5.0
6-10 years	25.5	17.1	14.3	19.6	11.1	5.0
11-13 years	28.1	20.4	15.2	17.7	6.6	8.2
>14 years	20.2	23.8	13.4	18.4	4.1	3.3

Gupta RS, Springston EE, Warrier MR, Smith B, Kumar R, Pongratic J, Holl JL. The prevalence, severity, and distribution of childhood food allergy in the United States. Pediatrics 2011 Jul

14 Milk and egg allergies are usually outgrown, right?

The conventional wisdom used to be that milk and egg allergies were outgrown by the age of 3, but convention has gone out the window. Studies of the natural history of both these allergies show them to be holding on longer. But at least there's good news for half of kids affected: in the latest research, almost 50 percent of children outgrew a milk allergy by the age of 5½, and the same proportion outgrew an egg allergy by the age of 6.

Meanwhile in Gupta's population study (see chart previous page), egg allergy was dropping off nicely in the over 14 years old group, but while milk allergy decreased, it was persisting in 18 percent of older kids.



15 Peanut is the biggest culprit of the allergens.

It's not that simple. Peanuts and tree nuts are the most common triggers in food allergy fatalities, so there may be an inherent elevated risk with them. However, there certainly have also been deaths and dangerous reactions with other top allergens.

Think back to Gupta's study and the almost 40 percent of food-allergic kids who had a severe reaction. Examining the severity by the type of food in her data, Gupta found the highest level of bad reactions occurred with tree nut followed by peanut. "Both of those were about 52 percent," she says. But shellfish and soy were also high – 47 and 42 percent respectively. "People often think of milk, egg, soy or wheat as not as severe as allergies," says Gupta. "But you look at this and see a high rate of severe reaction to soy, and for wheat, it was 38 percent." And with milk and egg, "almost one in three were serious reactions." The moral of the data story: take no allergen for granted.

Sicherer adds that you can't just judge by type of food. Variables that influence a reaction's severity include: personal sensitivity, how much a person ate, whether the person has asthma, and that person's state of health at the time of the reaction.



16 Exercise, aspirin, even stress might make a reaction worse.

Speaking of variables, experts are learning more and more about certain "co-factors" – including exercise and non-steroidal anti-inflammatory drugs (or NSAIDs) – which can amplify or abet a reaction. So what might have been a mild reaction becomes severe. Doctors can say this won't happen to everyone – you seem to have an allergic co-factor or you don't – but a person can watch for patterns.

The WAO gives allergic co-factors prominent mention in its food allergy guidelines, while a well-reviewed European report indicates that, at least in Europe, "up to 30 percent of anaphylaxis cases involve a co-factor." The article, published in the journal *Allergy* in April 2013, concludes that these are "increasingly accepted to play a fundamental role in eliciting anaphylaxis."

It may not be easy to tell if you're susceptible to a co-factor; fortunately a severe reaction isn't an everyday occurrence. "Since anaphylaxis is very anxiety-provoking, a lot of times these details get lost or it's difficult to prove or disprove," says Dr. Dennis Ledford, a Tampa Bay allergist who was one of the authors of the WAO guidelines.

The professor of medicine at the University of South Florida explains that with NSAIDs (a class of drugs that includes aspirin, ibuprofen and naproxen), they seem to "pre-activate" mast cells in the body, the cells that are key in an allergic response. If the person susceptible to this co-factor then eats the allergen, the reaction would be more intense. Ledford stresses, though, that if exercise or taking an aspirin is a usual part of your life, don't become unduly concerned about co-factors.

Exercise is the most studied co-factor, and has been seen mostly alongside wheat and shellfish allergies. There's even an odd condition called Food-Dependent Exercise-Induced Anaphylaxis in which a person doesn't have an allergic response to a specific food unless that person has been exercising. Otherwise he or she can safely eat the food. Ledford says this one is quite manageable. If the person knows she will be eating the food in question, simply don't follow it with exercise.



17 Alcohol and your hormones as factors.

There are other, less-studied co-factors. The WAO guidelines mention drinking alcohol, having an infection or fever, even a woman’s premenstrual state as potential reaction co-conspirators. Any of these can amplify a food-allergic reaction, but there’s not a lot of understanding about how. “It helps to think about the body in a holistic way, as interconnected,” says Ledford. “The nervous system influences the immune system and the immune system influences the cardiovascular system – all these things are entwined. Presumably it’s because of this interaction that these things occur.”

18 Food allergy reactions remain mysterious, but knowledge is growing.

There are many children enrolled today in oral immunotherapy (OIT) studies, in the quest for a food allergy treatment. In OIT, gradually increasing amounts of an allergen are fed to allergic patients, with the aim of desensitization. While the scientists studying these patients are learning more about the immune system’s workings, they are also learning much about what brings on a severe reaction or makes it worse.

“There are people who don’t get much side effect from a daily dose in OIT,” notes Sicherer. “But then a person takes an aspirin or exercises and, all of a sudden, that person is getting symptoms.”

Gupta has funding for a study using the large pool of data collected from U.S. OIT trials. From it, she wants to see whether it’s possible to predict the course and severity of food reactions. She’s interested in the allergic disease relationships – what occurs when food allergy is present alongside rhinitis, asthma or eczema – but also in the co-factors, such as the menstrual cycle, medications and exercise. “My goal is to figure out if there are predictors,” says Gupta. “To see if we can make this a little clearer than simply telling people, ‘any allergic child having any amount of food can have any kind of reaction at any time.’”

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