



FIGHT

Allergies used to conjure up images of changing seasons and sneezing fits, but today, eight major foods can trigger fatal side effects in an increasing number of Americans. **Mark Hawthorne** explores the science behind America's growing allergy epidemic.

IT BEGAN BENIGNLY ENOUGH: JUST AN occasional itch in her throat after eating. Tonya Whitehouse wasn't concerned; she'd never had an adverse reaction to food as a child. As an adult, though, she gradually noticed certain foods, especially wheat, irritated her throat. Then one day five years ago, the experience suddenly grew from prickly to panic. Eating a sandwich made with wheat bread, she felt her throat swelling shut. Frantic family members called 911. "That began my run of ER visits," says Whitehouse, now 32. "At one point, I was going to the hospital every other day because

my throat had closed. We just could not figure it out." She consulted one doctor after another: "Rheumatologists, family physicians, gastrointestinal specialists, you name it," she says, each one subjecting her to a different test. One doctor suggested she might have lupus, while another worried she had cancer and even ordered a bone-marrow biopsy. Incredibly, there was one test Whitehouse did not undergo. "No one ever tested me for food allergies."

If Whitehouse's initial emergency room visit had happened today, it's likely a food

allergy would have been among the first culprits doctors suspected. "Though reasons for this are poorly understood, the prevalence of food allergies and associated anaphylaxis appears to be on the rise," Jennifer Roeder of the non-profit Food Allergy and Anaphylaxis Network says. Anaphylaxis is a life-threatening, whole-body allergic reaction that can kick in within minutes or even seconds after exposure to an allergen.

The surge in food-triggered allergy attacks has been especially evident among people under the age of 18. A 2008 report by the

In the UK, hospitalizations for food allergies among children have jumped by 500 percent since 1990.



the world's population—a glass of cow's milk or a dish of dairy ice cream can result in severe gastrointestinal distress. Food intolerance may be unpleasant, but it is rarely dangerous.

A food allergy, on the other hand, can be life-threatening. An allergic reaction to food is caused when the body's immune system mistakenly identifies something eaten—generally a protein—as a foreign invader and sends in a special platoon of Immunoglobulin E (IgE) antibodies to fight it. These IgE antibodies attach themselves to mast cells, which make the chemical histamine in the connective tissue. Allergy symptoms occur when a given allergen enters the body and the IgE antibodies stimulate the mast cells to release their histamines. The results can range from a mild case of hives to full-blown anaphylactic shock—an extremely serious reaction that can cause loss of consciousness, heart failure, and even death. The US Food and Drug Administration (FDA) estimates anaphylaxis to food results in 30,000 trips to the emergency room and 150 fatalities each year.

But confusion over definitions doesn't explain why more and more people are allergic to non-toxic edibles. "There are quite a few competing theories attempting to explain the dramatic increase in allergies," allergist Henry Legere, MD says. "There is probably a component of environmental exposures that has modulated the way our immune system reacts to harmless things. Some people have suggested that our immune systems have become more primed toward producing allergic responses due in part to pediatric vaccinations." Another theory points the finger at foods derived from genetically modified organisms, because imported genes might provoke an attack. Still another speculates that over-diagnosis is to blame:

Centers for Disease Control and Prevention (CDC) concluded that the number of children with food allergies rose 18 percent between 1997 and 2007. According to the CDC, four percent of children in the US—3 million kids—now have a food allergy, while cases requiring hospital admission have more than tripled. The situation is even more alarming in the UK, where hospitalizations for food allergies among children have jumped by 500 percent since 1990.

While current estimates approximate that 12 million people in the US suffer from food allergies, a report published in the *Journal of the American Medical Association* in 2010 suggests that number could actually be as high as 30 million—nearly 10 percent of the population. Those who *think* they have a food sensitivity are even higher, says Margaret

Maglione, associate director of the Southern California Evidence-Based Practice Center, and an author of the study. "A recent scientific survey found that 13 percent of Americans self-reported that they had a food allergy," she says. "In reality, the number could be as low as two percent."

Allergy—or Intolerance?

One reason it's so difficult to accurately assess the incidence of a food allergy is that people often mistake a food intolerance for an allergic reaction. Intolerance occurs when the digestive system cannot produce enough enzymes or chemicals to absorb a specific food. Milk is a classic example. People with lactose intolerance lack the enzyme lactase, which is needed to digest the milk sugar lactose. For these people—about 75 percent of

AllergenAlert

Pinning down exactly how many Americans have food allergies is no easy task, but reports range from two percent of the population to 10 percent. Here is the breakdown of the top eight allergens afflicting the US.



Eggs

1.2 million young children (most will outgrow the allergy by age seven)



Fish

6.5 million adults



Milk

1.5 million adults (globally, lactose intolerance is 75 percent)

Too many tests simply do not discriminate between food allergies and other food-related disorders.

One of the most intriguing explanations for the rise in food allergies hypothesizes that it is partly our own fault. According to the hygiene hypothesis, a push for cleanliness bordering on the extreme has removed even harmless germs—the kind found in soil and soiled diapers—from our lives, affecting the human body’s ability to develop healthy immune responses. Jessica Snyder Sachs, former managing editor of *Science Digest* and author of *Good Germs, Bad Germs: Health and Survival in a Bacterial World*, believes that it’s

inspiring more patients to report possible food allergies to their doctors. “People are much more educated these days about the importance of healthy eating and the potential problems associated with a poor diet,” she says. “We’re exposed to so much more information in general, and nutrition is a pretty hot topic. So, I think that allergies are just one of many diet-related topics that people think about more than they used to.” Not so fast, says Legere. “While I do think there is more awareness among physicians and the general public, that alone is not responsible for the increase in the prevalence of allergic disorders. The same allergists using the same

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no coincidence that indoor plumbing and the allergy epidemic both originated in Northern Europe. “Nobody has proven that it’s indoor plumbing that did it, but the hygiene hypothesis indicates that allergies very closely followed the adoption of indoor plumbing and public sanitation,” she says, adding, “I’m not saying sanitation is a bad thing.” Scientists have found a protective, immune-calming effect associated with living apart from modern conveniences and sanitation, Sachs says. “I have a Nigerian neighbor who calls allergies ‘citizenship disease,’ because about the time you’ve been in the States long enough to get your citizenship—three to five years—you start developing allergies.”

Ginny Messina, a registered dietitian and public health nutritionist, believes today’s heightened awareness of what we eat is

diagnostic tools—who are being sent patients from other physicians or acquiring patients from self-referrals—are finding a dramatic increase in the percentage of patients tested who do indeed have allergies.”

Recipe for Safety

The good news is that while more than 160 foods can cause allergic reactions, 90 percent of food allergies are rooted in just eight foods: eggs, fish, dairy, peanuts, soy, crustacean shellfish, tree nuts, and wheat (gluten). The bad news, especially for vegans, is that half of these are plant-based foods—as are many of the other sources, including strawberries, melons, corn products, and tomatoes. Moreover, peanuts and tree nuts are the foods most likely to result in a lethal bout of anaphylaxis.

Suspecta FoodAllergy?

If you think you or your child might have a food allergy, start a food diary right away, keeping track of all food consumed, the amount eaten, and what reactions occurred. Make an appointment with an allergist, who will take a complete medical history. Be prepared to answer a variety of questions, including:

- ❖ What symptoms does the suspected allergen produce?
- ❖ How much food needs to be eaten to trigger a reaction?
- ❖ What other foods were eaten at the same time?
- ❖ How much time elapses between eating the food and the onset of symptoms?
- ❖ How many times has eating the food caused a reaction?
- ❖ When was the last time there was a reaction to the food?
- ❖ Does anyone else in your family have allergies or other allergy-related conditions, such as eczema or asthma?
- ❖ Has any medical treatment been applied?

Because the only way to prevent an allergic reaction is to avoid the offending foods, Congress passed the Food Allergen Labeling and Consumer Protection Act (FALCPA) of 2004, which went into effect in 2006. Regulated by the FDA, this law requires that all food products sold in the US clearly



Peanuts

4 million adults



Tree Nuts

1.8 million adults (tree nuts include pistachios, almonds, cashews, coconut, Brazil nuts, and walnuts)



Shellfish

6.5 million adults



Soy

3 million adults



Wheat

1 million adults (wheat intolerance affects 46 million)

Yep, It's a Food Allergy

Symptoms of a genuine food allergy—as opposed to a food sensitivity—involve the skin and intestines, and generally begin immediately after eating, though some may take more than two hours to appear.

Common symptoms include:

- ❖ Hives, itching, or eczema
- ❖ Swelling of the lips, face, eyelids, tongue, or throat
- ❖ Abdominal pain, diarrhea, nausea, or vomiting
- ❖ Tingling in the mouth
- ❖ Wheezing or nasal congestion

Extreme reactions demand *immediate* medical attention and may include:

- ❖ Rapid swelling of the throat and difficulty swallowing
- ❖ Difficulty breathing
- ❖ Shock, with a drop in blood pressure
- ❖ Blue color to the skin and nails

state on the packaging if they contain one or more of the eight major allergens. “Even then, you can’t always be sure,” says Mary Jane Marchisotto, executive director of the non-profit Food Allergy Initiative. “For example, a label may say that a product ‘may contain’ peanuts or tree nuts.”

FALCPA also mandates that food producers jettison jargon in favor of plain language. If an ingredient includes protein from egg whites, the label must disclose that the product contains “eggs,” not “albumin,” which sounds more like something on the periodic table of elements. The same goes for milk proteins such as casein and lactoglobulin (whey), which now must be identified as “milk” on product labels.

All the focus on safety has been a boon to allergen-free foods, which have gone from marginal to mainstream in the past decade. Once found almost exclusively in health-food stores or online, allergy-friendly products now populate the aisles of most grocery stores, and sales continue to grow. “Allergen-free specialty foods are definitely a service to families with food allergies,” Marchisotto says. “It’s a win-win situation

for both the consumer and the company. Quite a few of these businesses were founded by parents with food-allergic children who were frustrated because they couldn’t find products that were safe for their kids to eat.”

Going G-Free

No dietary boogeyman has fueled the “free-from” market like gluten, a protein in wheat and other grains. In part, that’s because an estimated 15 percent of people cannot tolerate gluten and it is so ubiquitous, found in everything from bagels and beer to soups and soy sauce. In addition to those with a sensitivity or outright allergy to gluten, there’s a small percentage who suffer from celiac disease, a chronic inflammatory disorder. “People who have celiac disease develop an autoimmune reaction to part of their digestive tract if they eat gluten—that is, if the

sources as well. Some proponents say that removing gluten from the diets of autistic children lowers the presence of gluteomorphines, a protein by-product that can increase confusion and reduce a child’s desire for social interaction. And let’s not underestimate the power of celebrity. In a bid to stay trim, Jennifer Aniston, Zooey Deschanel, and Gwyneth Paltrow have all been reported on the no-gluten bandwagon, passing on bread and pasta as a way to drop pounds. Oprah Winfrey gave g-free a go in 2008 when she jump-started an inner makeover with a 21-day cleanse spurred by Kathy Freston’s book *Quantum Wellness*, which eliminated gluten along with meat, eggs, dairy products, caffeine, and alcohol. “Part of the popularity of eating gluten-free may be related to weight loss, since it is a low-carbohydrate diet and people do lose weight,” says allergist

“I’m seeing a trend toward more people being conscientious about what’s going into their mouths and figuring out that the cheapest food isn’t really the healthiest.”

person eats gluten-containing food, his or her immune system attacks his or her own body, especially the lining of the gut,” explains allergist Rebecca Piltch, MD. “The gluten-free market, however, seems much larger than one would expect, given that celiac disease affects approximately one in 133 people.”

One of those people is Janell Farnsworth, who quickly realized the challenge she was up against. “When I was diagnosed with celiac disease in 2008, the first lesson I learned is that it’s very overwhelming to go shopping once you can’t eat wheat, barley, or rye,” says Farnsworth, owner of Janell’s Gluten-Free Market in Everett, Wash. She opened her store in November 2009, and it attracts new customers every day. “They are amazed to finally find a store dedicated to gluten-free products,” she says. “There’s a lot online, but people still want to touch the products and read the labels.” Farnsworth believes such hands-on shopping is part of a consumer awakening. “I’m seeing a trend toward more people being conscientious about what’s going into their mouths and figuring out that the cheapest food isn’t really the healthiest.”

The market is getting a boost from other

Paul V. Williams, MD. “But it is a very unpalatable and difficult diet to maintain, so it is probably self-limiting.”

Still, it’s hard to argue with numbers. US sales of gluten-free foods have more than doubled since 2005 to nearly \$1.6 billion, and the consumer-research firm Packaged Facts expects the market to reach \$2.6 billion by 2012. Even Major League Baseball has gotten in on the action with its first-ever gluten-free concession stand at Coors Field in Denver.

Better quality is a big reason these products have been so eagerly embraced by consumers. “I’ve heard hundreds of complaints about how horrible-tasting many gluten-free foods and cookies are,” says Rey Ortega, founder of Sun Flour Baking Company. “It’s almost the same stigma vegetarian food once had of tasting like cardboard.” Not only is every product from Sun Flour dairy- and egg-free, but the Sacramento, Calif.-based company uses a blend of pinto bean and rice flour instead of wheat in a full line of cookies and shortbreads. Ortega says these items have become so popular that he’s expanded to gluten-free brownies, cupcakes, muffins, and doughnuts.



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PackageWarnings

In the world of food production, it's called "unintentional cross-contamination"—at some point in the supply chain, an allergen finds its way into the ingredients of another product. That is, a box of soda crackers may not be made with milk, but a minuscule amount of casein ends up in the product because the crackers are created in a plant that also manufactures yogurt. Consequently, many processed foods carry labels with blanket statements that read "may contain (insert your dietary irritants here)," "made in a facility that processes (equally dangerous allergens)," or some variation thereof. Surveys have shown that an increasing number—now about 25 percent—of allergic consumers and parents of children with food allergies seem to have label fatigue, preferring to disregard precautionary alerts when the risk appears low.

As tempting as it is to ignore these labels, new research suggests that products with such warnings are actually more likely to be contaminated with allergens than foods without labels. The study, funded by the Food Allergy Initiative and published in the July 2010 issue of the *Journal of Allergy and Clinical Immunology*, found that about five percent of foods with advisory statements had traces of peanuts, egg, or milk, compared to two percent of unlabeled foods. Bottom line: Heed the warning to avoid even the slimmest chance of an allergic reaction.

"Across the board, the quality and taste of gluten-free items has improved dramatically in the past five years—so much so that many of our shoppers can't tell the difference between the original and gluten-free version of a product," says Errol Schweizer, senior global grocery coordinator for Whole Foods Market. The retailer offers a wide range of gluten-free products from several manufacturers, and Schweizer adds that "gluten-free is one of our top trends across several of our grocery categories, not just bakery items." Whole Foods even opened its own dedicated gluten-free bakehouse near Raleigh, NC, in October 2004. The facility creates more than 30 products—from cookies and cakes to pizza crusts and scones.


Living with Food Allergies

Addressing the daily challenges of food allergies can be a daunting task, and diligent research is required to steer clear of the inherent pitfalls. "We don't yet have a cure for food allergies, and there are no therapies that can prevent anaphylaxis," says Marchisotto. "So if you have a food allergy, total avoidance of problem foods is the only way to protect yourself. You constantly have to be on the alert, asking questions in restaurants, and reading food labels very carefully."

Vigilance is essential, but that does not mean allergy sufferers can't enjoy what they

eat, and even thrive, especially on a diet that is both healthy and compassionate. Laura Bruno struggled with food allergies for years while trying to go vegetarian, and she had decided to eat whatever her body didn't reject. "By then I met some vegans," she says. "I thought they were crazy, but I liked them a lot. They seemed to radiate health, and they weren't plagued by my constant need to apologize to animals." Bruno took the plunge, embracing a plant-based diet. "Cutting out meat and wheat, I also cut out dairy and figured I might as well forego eggs, too. I expected to fall into respiratory or digestive shock after every single meal, but something bizarre happened: I actually felt good!"

A positive attitude like Bruno's—even regarding food allergies as an opportunity—can go a long way toward successfully confronting what is clearly a life-altering condition. Tonya Whitehouse's renewed health and buoyant enthusiasm are still tempered with the precautions she must take while navigating a world filled with potential threats. "I have a horrible time flying," she says, offering one example. "I have to wear a mask because they have peanuts on airplanes. People without food allergies just don't understand." Five years after her first experience with food allergies, Whitehouse is now enjoying the best physical and mental condition of her life. "I am now a personal

trainer and yoga instructor," she says between classes in her hometown of Denver. "I lost and have kept off 70 pounds. I feel fantastic. I don't take any medicines, and I avoid all of the allergens. I eat so clean—wonderful, colorful food. I just decided that I can change the way my life is going and I can get on a healthy track." 

Mark Hawthorne's next book, *Bleating Hearts: Exposing the Hidden World of Animal Suffering*, will be published in 2012.