



Food Allergy Facts and Statistics for the U.S.

- Food allergy is a growing public health concern.
- As many as 15 million people have food allergies.^{1, 2, 3, 4, 5}
 - An estimated 9 million, or 4%, of adults have food allergies.^{2, 3, 5}
 - Nearly 6 million or 8% of children have food allergies with young children affected most.^{3, 4, 6, 7, 8}
- Boys appear to develop food allergies more than girls.⁵
- Food allergies may be a trigger for or associated with other allergic conditions, such as atopic dermatitis⁹ and eosinophilic gastrointestinal diseases.¹⁰
- Although childhood allergies to milk¹¹, egg¹², wheat¹³ and soy¹⁴ generally resolve in childhood, they appear to be resolving more slowly than in previous decades, with many children still allergic beyond age 5 years. Allergies to peanuts, tree nuts, fish, or shellfish¹⁵ are generally lifelong allergies.

Food Allergies are on the Rise

- The prevalence of food allergies and associated anaphylaxis appears to be on the rise.⁶
 - According to a study released in 2008 by the Centers for Disease Control and Prevention about an 18% increase in food allergy was seen between 1997 and 2007.¹
 - The prevalence of peanut allergy among children appears to have tripled between 1997 and 2008.¹⁶

Top Food Allergens

- Eight foods account for 90% of all food-allergic reactions: milk, eggs, peanuts, tree nuts (e.g., walnuts, almonds, cashews, pistachios, pecans), wheat, soy, fish, and shellfish.^{5, 15, 17, 18, 19, 20, 21, 22, 23, 61} Estimated prevalence⁹, some based on self-report, among the U.S. population:
 - Peanut: 0.6-1.3%
 - Tree nuts: 0.4-0.6%
 - Fish: 0.4%
 - Crustacean shellfish (crab, crayfish, lobster, shrimp): 1.2%
 - All seafood: 0.6% in children and 2.8% in adults

- Milk and egg: based on data within and obtained outside the United States, this rate is likely to be 1-2% for young children and 0.2-0.4% in the general population.

Managing Food Allergies

Cooking and Cleaning

- A study showed that peanut can be cleaned from the hands of adults by using running water and soap or commercial wipes, but not antibacterial gels alone. In addition, peanut was cleaned easily from surfaces by using common household spray cleaners and sanitizing wipes but not dishwashing liquid alone.²⁴
- Some studies have shown that most individuals with peanut and soy allergies can safely eat highly refined oils made from these ingredients. However, cold-pressed, expeller-pressed, or extruded oils should be avoided. Talk to your doctor about avoiding oils made from ingredients to which you are allergic.^{25, 26, 27, 28, 29, 30}
- Casual exposure, such as skin contact and inhalation, to peanut butter is unlikely to elicit significant allergic reactions.^{31, 32}
 - *Note: Casual exposure presents a greater risk to young children who frequently put their hands in their mouths. Depending on the amount of contact and the location of the contact, these reactions are occasionally more serious.*^{31, 32}
- Food proteins released into the air from vapor or steam from foods being cooked (e.g., fish, milk) can potentially cause allergic reactions, but this is uncommon and has been noted mainly with fish. Reactions from vapor or steam are similar to what you would expect from pollen or animal dander exposures, for example hay fever or asthma symptoms.^{8, 33, 34}

Conventionally Packaged Food Labels

- According to the Food Allergen Labeling and Consumer Protection Act (FALCPA) the major eight allergens must be declared in simple terms, either in the ingredient list or via a separate allergen statement. However, FALCPA does not regulate the use of advisory/precautionary labeling.³⁵
 - *Note: Advisory/precautionary labeling (e.g., “may contain”, “in a facility that also processes”) is voluntary. The terms do not reflect specific risks and random products tested for allergens have shown a range of results from none to amounts that can cause reactions.*^{9, 36}

Dining Away From Home

- Eating away from home can pose a significant risk to people affected by food allergy. Research suggests that close to half of fatal food allergy reactions are triggered by food served by a restaurant or other food service establishment.^{37, 38, 39}
- One study looking at peanut and tree nut allergy reactions in restaurants and other food establishments found that reactions were frequently attributed to desserts, that Asian restaurants and take-out dessert stores (bakeries, ice cream shops) were common sources of foods that triggered reactions, and that the food establishment was often not properly notified of a food allergy by the customer with the allergy.⁴⁰

Travel

- Research on self reported reactions occurring on commercial airlines show that reactions to peanuts and tree nuts do occur on airlines via ingestion, contact, and inhalation. Ingestion of an allergen remains the main concern for severe reactions.^{41, 42, 43}

Food Allergy Reactions and Anaphylaxis

- The CDC reported that food allergies result in more than 300,000 ambulatory-care visits a year among children under the age of 18.¹
 - From 2004 to 2006, there were approximately 9,500 hospital discharges per year with a diagnosis related to food allergy among children under age 18 years.¹
- Even small amounts of a food allergen can cause a reaction.^{44, 45, 46, 47, 48, 49}
- Most allergic reactions to foods occurred to foods that were thought to be safe. Allergic reactions can be attributed to a form of mislabeling or cross-contact during food preparation.^{37, 38, 39}
- Food allergy is the leading cause of anaphylaxis outside the hospital setting.⁵⁰
 - Every 3 minutes a food allergy reaction sends someone to the emergency department—that is about 200,000 emergency department visits per year, and every 6 minutes the reaction is one of anaphylaxis.⁵¹
- Teenagers and young adults with food allergies are at the highest risk of fatal food-induced anaphylaxis.^{37, 38, 39}
- Symptoms of anaphylaxis may recur after initially subsiding and experts recommend an observation period of about 4 hours to monitor that the reaction has been resolved.^{52, 53}
- Individuals with food allergies who also have asthma may be at increased risk for severe/fatal food allergy reactions.^{37, 39}
- Children with food allergy are 2-4 times more likely to have other related conditions such as asthma and other allergies, compared with children without food allergies.¹
- It is possible to have anaphylaxis without any skin symptoms (no rash, hives).¹
- Failure to promptly (i.e., within minutes) treat food anaphylaxis with epinephrine is a risk factor for fatalities.^{37, 38}

Food Allergy Treatment

- There is no cure for food allergies. Strict avoidance of food allergens and early recognition and management of allergic reactions to food are important measures to prevent serious health consequences.⁵⁴

- Prompt administration (e.g., within minutes of symptoms of anaphylaxis) of epinephrine (adrenaline) is crucial to successfully treating anaphylactic reactions. Epinephrine is available by prescription in a self-injectable device (EpiPen[®] or Twinject[®] or Adrenaclick[®], depending on local availability).⁵⁵
- There are a number of promising food allergy therapies under study, although none are yet proven for general use.

Food Allergies in School

- Approximately 20-25% of epinephrine administrations in schools involve individuals whose allergy was unknown at the time of the reaction.⁵⁶
- More than 15% of school aged children with food allergies have had a reaction in school.^{57, 58} Food allergy reactions happen in multiple locations throughout the school, and are not limited to the cafeteria. Care must be exercised regarding bake sales, classroom parties, and snacks outside of the cafeteria.^{39, 59, 60}

¹Branum A, Lukacs S. Food allergy among U.S. children: Trends in prevalence and hospitalizations. *National Center for Health Statistics Data Brief*. 2008. Retrieved from <http://www.cdc.gov/nchs/data/databriefs/db10.htm>

²National Institute of Allergy and Infectious Diseases, National Institutes of Health. *Report of the NIH Expert Panel on Food Allergy Research*. 2006. Retrieved from

<http://www3.niaid.nih.gov/topics/foodAllergy/research/ReportFoodAllergy.htm>

³U.S. Census Bureau. *State and County QuickFacts*. 2010. Retrieved from <http://quickfacts.census.gov/qfd/states/00000.html>

⁴Gupta RS, Springston, MR, Warriar BS, Rajesh K, Pongracic J, Holl JL. The prevalence, severity, and distribution of childhood food allergy in the United States. *J Pediatr*.2011; 128.doi: 10.1542/peds.2011-0204

⁵Liu AH, Jaramillo R, Sicherer SH, Wood RA, Bock AB, Burks AW, Massing M, Cohn RD, Zeldin DC. National prevalence and risk factors for food allergy and relationships to asthma: Results from the National Health and Nutrition Examination Survey 2005-2006. *J Allergy Clin Immunol*.2010; 126: 798-806.

⁶Centers for Disease Control and Prevention. *QuickStats: Percentage of children aged <18 years with food, skin, or hay fever/respiratory allergies --- National health interview survey, United States, 1998—2009*. 2011. Retrieved from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6011a7.htm?s_cid+mm6011a7_w

⁷U.S. Census Bureau. *State and County QuickFacts*.2010. Retrieved from <http://quickfacts.census.gov/qfd/states/00000.html>

⁸Sampson HA. Update on food allergy. *J Allergy Clin Immunol*.2004; 113(5): 805-19.

⁹NIAID-Sponsored Expert Panel. Guidelines for the diagnosis and management of food allergy in the United States: Report of the NIAID-sponsored expert panel. *J Allergy Clin Immunol*.2010; 126(6):S1-S58.

¹⁰Liacouras CA, Furtura GT, Hirano I, Atkins D, Attwood SE, Bonis PA, et al. Eosinophilic esophagitis: Updated consensus recommendations for children and adults. *J Allergy Clin Immunol*.2011.doi: 10.1016/j.jaci.2011.02.040

¹¹Skripak JM, Matsui EC, Mudd K, Wood RA. The natural history of IgE-mediated cow's milk allergy. *J Allergy Clin Immunol* 2007; 120(5):1172-7.

¹²Savage JH, Matsui EC, Skripak JM, Wood RA. The natural history of egg allergy. *J Allergy Clin Immunol* 2007; 120(6):1413-7.

¹³Keet CA, Matsui EC, Dhillon G, Lenehan P, Paterakis M, Wood RA. The natural history of wheat allergy. *Ann Allergy Asthma Immunol* 2009; 102(5):410-5.

¹⁴Savage JH, Kaeding AJ, Matsui EC, Wood RA. The natural history of soy allergy. *J Allergy Clin Immunol* 2010; 125(3):683-6.

¹⁵Sicherer SH, Munoz-Furlong, A, Sampson HA. Prevalence of seafood allergy in the United States determined by a random telephone survey. *J Allergy Clin Immunol*.2004; 114: 159-165.

¹⁶Sicherer SH, Muñoz-Furlong A, Godbold JH, Sampson HA. US prevalence of self-reported peanut, tree nut, and sesame allergy: 11-year follow-up. *J Allergy Clin Immunol*. 2010.

¹⁷May CD. Objective clinical and laboratory studies of immediate hypersensitivity reactions to food in asthmatic children. *J Allergy Clin Immunol*.1976; 58: 500-515.

¹⁸Bock SA, Buckley J, Holst A, May CD. Proper use of skin tests with food extracts in diagnosis of hypersensitivity to food in children. *J Allergy Clin Immunol*.1977; 7: 375.

- ¹⁹ Bock SA, Lee W-Y, Remigo LK, et al. Appraisal of skin tests with food extracts for diagnosis of food hypersensitivity. *J Allergy Clin Immunol.*1978; 8: 559.
- ²⁰ Sampson HA, Albergo R. Comparison of results of skin tests, RAST and double-blind, placebo-controlled food challenges in children with atopic dermatitis. *J Allergy Clin Immunol.*1984; 74: 26-33.
- ²¹ Sampson HA, McCaskill CM. Food hypersensitivity and atopic dermatitis: evaluation of 113 patients. *J Pediatr.*1985; 107: 669-75.
- ²² Bock SA, Sampson HA, Atkins FM, et al. Double blind placebo controlled food challenge (DBPCFC) as an office procedure: A manual. *J Allergy Clin Immunol.*1988; 82: 986-997.
- ²³ Bock SA, Atkins FM. Patterns of food hypersensitivity during 16 years of double-blind placebo-controlled food challenges. *J Pediatr.*1990; 117: 561-567.
- ²⁴ Perry TT, Conover-Walker MK, Pomes A, Chapman MD, Wood RA. Distribution of peanut allergen in the environment. *J Allergy Clin Immunol.*2004; 113(5): 973-976.
- ²⁵ Bush RK, Taylor SL, Nordlee JA, Busse WW. Soybean oil is not allergenic to soybean-sensitive individuals. *J Allergy Clin Immunol.*1985; 76: 242-245.
- ²⁶ Taylor SL, Busse WW, Sachs M1, Parker JL, Yunginger JW. Peanut oil is not allergenic to peanut-sensitive individuals. *J Allergy Clin Immunol.*1981; 68: 372-5.
- ²⁷ Hoffman DR, Collins-Williams C. Cold-pressed peanut oils may contain peanut allergen. *J Allergy Clin Immunol.*1994; 93: 801-2.
- ²⁸ Keating MU, Jones RT, Worley NJ, Shively A, Yunginger JW. Immunoassay of peanut allergens in food-processing materials and finished foods. *J Allergy Clin Immunol.*1990; 86: 41-4.
- ²⁹ Crevel RW, Kerkhoff MA, Koning MG. Allergenicity of refined vegetable oils. *Food and Chemical Toxicology.*2000; 38(4): 385-393.
- ³⁰ Hefle SL, Taylor SL. Allergenicity of edible oils. *Food Technol.* 1999; 53: 62-70
- ³¹ Simonte SJ, Sonhui M, Shideh M, Sicherer S. Relevance of casual contact with peanut butter in children with peanut allergy. *J Allergy Clin Immunol, 2003*(112):180-182.
- ³² Wainstein BK, Kashef S, Ziegler M, Jelley D, Ziegler JB. Frequency and significance of immediate contact reactions to peanut in peanut-sensitive children. *Clin Exp Allergy.* 2007; 37(6): 839-845.
- ³³ Crespo JF, Pascual C, Dominguez C, Ojeda I, Munoz FM, Estaban MM. Allergic reactions associated with airborne fish particles in IgE-mediated fish hypersensitive patients. *Allergy.*1995; 50: 257-61.
- ³⁴ Roberts G, Golder N, Lack G. Bronchial challenges with aerosolized food in asthmatic, food-allergic children. *Allergy.*2002; 57: 713-7.
- ³⁵ U.S. Food and Drug Administration. Food allergen labeling and consumer protection act of 2004 (public law 108-282, title II). Retrieved from <http://www.fda.gov/food/labelingnutrition/FoodAllergensLabeling/GuidanceComplianceRegulatoryInformation/ucm106187.htm>
- ³⁶ Ford LS, Taylor SL, Pacenza R, Niemann LM, Lambrecht DM, Sicherer SH. Food allergen advisory labeling and product contamination with egg, milk, and peanut. *J Allergy Clin Immunol.*2010; 126(2): 384-5.
- ³⁷ Bock SA, Muñoz-Furlong A., Sampson H. Further fatalities caused by anaphylactic reactions to food, 2001-2006. *J Allergy Clin Immunol.* 2007; 119(4): 1016-8.
- ³⁸ Bock SA, Muñoz-Furlong A, Sampson HA. Fatalities due to anaphylactic reactions to foods. *J Allergy Clin Immunol.*2001; 107(1): 191-3.
- ³⁹ Sampson HA, Mendelson L, Rosen J. Fatal and near-fatal anaphylactic reactions to food in children and adolescents. *N Engl J Med.* 1992; 327(6): 380-4.
- ⁴⁰ Furlong TJ, DeSimone J, Sicherer SH. Peanut and tree nut allergic reactions in restaurants and other food establishments. *J Allergy Clin Immunol.*2001; 108: 867-70
- ⁴¹ Sicherer SH, Furlong TJ, DeSimone J, Sampson HA. Self-reported allergic reactions to peanut on commercial airliners. *J Allergy Clin Immunol.*1999; 103(103):186-189.
- ⁴² Comstock SS, DeMera R, Vega L, Boren EJ, Deanne S, Haapanen LA, Teuber SS. Allergic reactions to peanuts, tree nuts, and seeds aboard commercial airliners. *Ann Allergy Asthma Immunol,* 2008; 101: 51-56.
- ⁴³ Greenhawt MJ, McMorris MS, Furlong TJ. Self-reported allergic reactions to peanut and tree nuts on commercial airlines. *J Allergy Clin Immunol,* 2009;124(3): 598-599. doi: 10.1016.jaci.2009.06.039
- ⁴⁴ Laoprasert N, Wallen N, Joes R, et al. Anaphylaxis in a milk-allergic child following ingestion of lemon sorbet containing trace quantities of milk. *Journal of Food Protection.*1998; 61: 1522-4.
- ⁴⁵ Gern, J, Yang E, Evrard H, Sampson HA. Allergic reactions to milk-contaminated 'non-dairy' products. *N Engl J Med.* 1991; 324: 976-9.
- ⁴⁶ Yunginger J, Gauerke, M, Joes R, et al. Use of radioimmunoassay to determine the nature, quantity and source of allergenic contamination of sunflower butter. *Journal of Food Protection.*1983; 46: 625-8.

-
- ⁴⁷ Jones R., Squillace, D., Yunginger, J. Anaphylaxis in a milk-allergic child after ingestion of milk contaminated kosher-pareve-labeled 'dairy-free' dessert. *Annals of Allergy*.1992; 68: 223-7.
- ⁴⁸ Hourihane J, Kilbrun S, Nordlee J, et al. An evaluation of the sensitivity of subjects with peanut allergy to very low doses of peanut: a randomized, double-blind, placebo-controlled food challenge study. *J Allergy Clin Immunol*.1997; 100: 596-600.
- ⁴⁹ U.S. Food and Drug Administration. Approaches to establish thresholds for major food allergens and for gluten in food. 2006.
- ⁵⁰ Sampson HA. Anaphylaxis and emergency treatment. *J Pediatr*.2004; 111: 1601–1608.
- ⁵¹ Clark S, Espinola J, Rudders SA, Banerji, A, Camargo CA. Frequency of US emergency department visits for food-related acute allergic reactions. *J Allergy Clin Immunol*. 2011; 127(3): 682-683.
- ⁵² Ellis AK, Day JH. Incidence and characteristics of biphasic anaphylaxis: a prospective evaluation of 102 patients. *Annals of Allergy, Asthma & Immunology*.2007: 64-69.
- ⁵³ Korenblat P, Lundie MJ, Danker RE, Day JH. A retrospective study of epinephrine administration for anaphylaxis: how many doses are needed? *Allergy Asthma Proc*. 1999; 20: 383-386.
- ⁵⁴ U.S. Food and Drug Administration, Center for Food Safety and Applied Nutrition. Food allergies: What you need to know. 2008. Retrieved from <http://www.cfsan.fda.gov/~dms/ffalrgn.html>
- ⁵⁵ American Academy of Allergy, Asthma and Immunology, and American College of Allergy, Asthma and Immunology. Joint Task Force on Practice Parameters; Joint Council of Allergy, Asthma and Immunology. *J Allergy Clin Immunol*. 2005; 115: S483-523.
- ⁵⁶ McIntre CL, Sheetz AH, Carroll CR, Young MC. Administration of epinephrine for life-threatening allergic reactions in school settings. *J Pediatr*. 2005; 116(5): 1134-1140.
- ⁵⁷ Nowak-Wegrzyn A, Conover-Walker MK, Wood RA. Food-allergic reactions in schools and preschools. *Arch Pediatr Adolesc Med*. 2001; 155(7): 790-795.
- ⁵⁸ Sicherer SH, Furlong TJ, DeSimone J, Sampson HA. The US peanut and tree nut allergy registry: characteristics of reactions in schools and day care. *J Pediatr*. 2011; 128(4): 560-565.
- ⁵⁹ McIntre CL, Sheetz AH, Carroll CR, Young MC. Administration of epinephrine for life-threatening allergic reactions in school settings. *J Pediatr*.2005; 116(5): 1134-1140.
- ⁶⁰ Gold MS, Sainsbury R. First aid anaphylaxis management in children who were prescribed an epinephrine autoinjector device (EpiPen). *J Allergy Clin Immunol*. 2000; 106(1 pt 1): 171-176.
- ⁶¹ Sicherer, SH. Epidemiology of food allergy. *J Allergy Clin Immunol*. 2011; 127: 594-602.