

# Anaphylaxis in the Young Adult Population

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## ABSTRACT

It is critical that clinicians treating young adults understand the presentation and management of anaphylaxis. The most common trigger for anaphylaxis in this population is food. The prevalence of food allergy is growing, with 8% of US children and adolescents affected. All patients at risk for anaphylaxis should be prescribed epinephrine autoinjectors, as epinephrine is the only life-saving medication for a severe anaphylactic reaction. The presentation of anaphylaxis can involve multiple organ systems (eg, mucocutaneous, respiratory, cardiovascular, gastrointestinal) and, as such, patient education is needed to assist in prompt recognition. Appropriate training of patients and caregivers about how to identify anaphylaxis and what to do in an emergency is critical. Training of school and college staff also is essential, as 1 in 4 first-time reactions occurs outside the home. Additional counseling for adolescents at risk for anaphylactic reactions should address increased risk-taking behavior, decreased adult supervision, dating, and the transition of disease management from an adult to the patient.

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This article reviews several aspects of anaphylaxis in young adults. Although food allergy is the most common trigger of anaphylaxis in children and adolescents,<sup>1,2</sup> other triggers include drugs, chemicals, insect venom, and exercise.<sup>3,4</sup> Clinical manifestations most often involve the mucocutaneous, respiratory, cardiovascular, and gastrointestinal systems.<sup>5,6</sup> Key aspects of management include a consistent history, appropriate diagnostic tests, medications,

counseling about identifying reactions and management, and referral to an allergist.<sup>7</sup> The first-line medication for a patient experiencing an anaphylactic reaction is epinephrine, and patients should carry 2 epinephrine autoinjectors with them at all times.<sup>5,6,8</sup> Management of anaphylaxis in young adults also involves training school and college personnel and developing management protocols in these settings.<sup>9,10</sup>

## EPIDEMIOLOGY AND IMPACT

Anaphylaxis is defined as “a severe, potentially fatal, systemic allergic reaction that occurs suddenly after contact with an allergy-causing substance.”<sup>11</sup> Several studies have shown increases in the incidence of anaphylaxis in the population at large.<sup>3,12-16</sup> Common triggers include foods, drugs, chemicals, insect venom, and exercise. The top 8 food allergens associated with anaphylaxis are peanuts, cow's milk, shellfish, tree nuts, eggs, fin fish, wheat, and soy.<sup>17</sup> Common medications associated with anaphylaxis include penicillins, nonsteroidal anti-inflammatory drugs, and biologic response modifiers.<sup>6</sup>

## Food Allergy

Food allergy impacts up to 8% of children and adolescents in the US,<sup>18</sup> corresponding to nearly 6 million nationwide.<sup>17</sup> The National Center for Health Statistics of the Centers for

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Disease Control and Prevention reported an 18% increase from 1997 through 2007 in the national incidence of food allergy among individuals <18 years old.<sup>19</sup> Food allergy is the most common trigger for anaphylaxis treated in the outpatient setting.<sup>1,2</sup>

There is significant age-related variation in the prevalence of specific food allergens (Figure 1).<sup>17</sup> Milk and egg allergies are seen more commonly in younger children, while allergies to shellfish and fin fish are more frequent in teens. Peanut allergy has a high incidence and is consistent across all ages. Tolerance seems to develop more frequently to milk, egg, wheat, and soy, compared with peanuts, shellfish, tree nuts, and fin fish.<sup>17</sup>

## Drug Allergy

Anaphylaxis in young adults also may occur due to drug allergens, including medications, vaccines, natural rubber latex, radiocontrast media, and other chemicals. Skin tests and medication challenges can identify specific triggers. Once triggers have been identified, drug allergies can be managed using immunotherapy and desensitization.<sup>6</sup> The actual incidence of drug allergies remains unclear. Studies have several limitations, such as inconsistent definitions, a focus on subpopulations or dermatologic reactions alone, or a failure to distinguish between immunologic and non-immunologic reactions.<sup>20</sup>

Allergic reactions to vaccines may be due either to packaging (eg, latex stoppers) or the product itself.<sup>21</sup> Anaphylactic reactions occur in approximately 1 per million doses. If a patient experiences anaphylaxis, later doses of the same vaccine are contraindicated. However, if

a patient experiences only minor symptoms (eg, skin reaction alone), risk of reaction with subsequent doses is generally less than the benefits of full vaccination. Full guidelines regarding the use of vaccines in patients with allergy have been disseminated by the American Academy of Allergy, Asthma and Immunology (AAAAI); the American College of Allergy, Asthma and Immunology; and the Joint Council of Allergy, Asthma and Immunology.<sup>22</sup>

## Insect Venom Allergy

The third most common allergy trigger is insect venom. As with drugs, the true incidence of allergy to insect venom is unknown, due to many of the same limitations, and varies substantially by location. However, it is known that allergy to insect venom is less common among children and adolescents than adults, who have a far greater likelihood of holding outdoor jobs with consequent exposure to insects.<sup>3,23</sup>

Anaphylactic reactions in children and adolescents have been estimated to occur in 0.4%-0.8% of insect stings, with an estimated 40 fatalities annually in the US, although fatalities are likely significantly underestimated.<sup>24</sup> Venom-induced large local reactions have been reported in 2.4%-10.2% of all patients.<sup>23</sup> By definition, these reactions exhibit edema, pruritus, and erythema, have a diameter >10 cm, and peak at 1-2 days.<sup>23</sup>

## Costs of Anaphylaxis

The economic impact of anaphylaxis on society is not fully appreciated. Previous research has estimated the cost of food-induced allergic reactions in a combined pediatric and

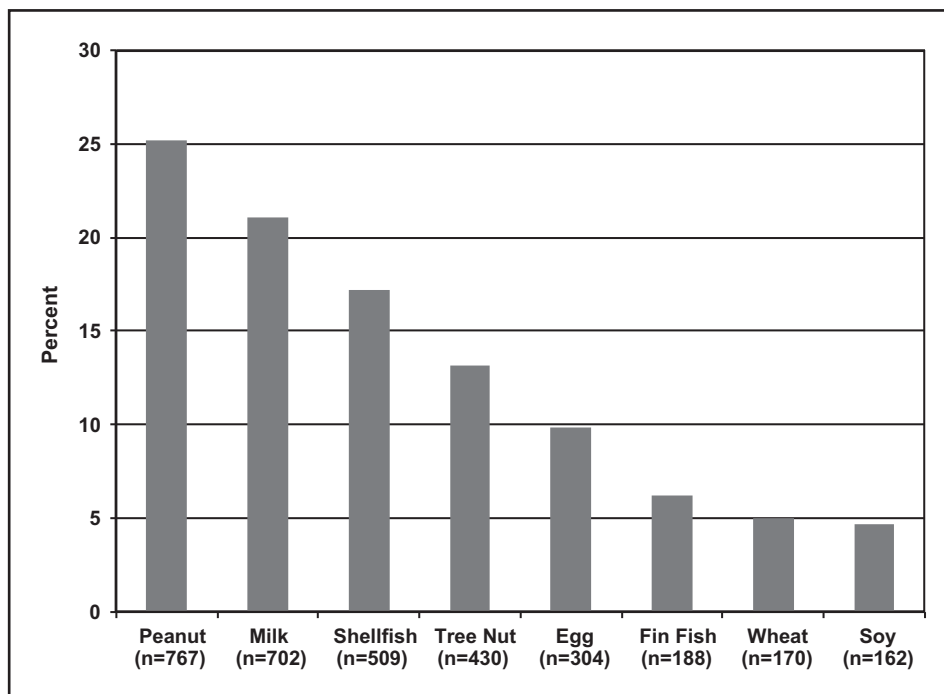


Figure 1 Prevalence of food allergens among children with food allergy.<sup>17</sup>

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