

# Allergic Reactions and Angioedema



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## KEYWORDS

• Allergy • Allergic reactions • Anaphylaxis • Angioedema

## HOSPITAL MEDICINE CLINICS CHECKLIST

1. Allergic reactions are immunoglobulin E (IgE) antibody mediated and cause an immediate hypersensitivity reaction. Anaphylaxis is a potentially fatal hypersensitivity reaction involving multiple organ systems that occurs seconds to minutes following exposure to the inciting antigen.
2. In adults, insect stings and medications are the most common triggers for anaphylaxis, whereas foods remain the most common triggers in children.
3. Skin features are the predominant examination finding in allergic reactions and may include flushing, urticaria, and pruritus.
4. Clinical findings for anaphylaxis include skin features as well as respiratory, gastrointestinal, and cardiovascular signs and symptoms.
5. Although diagnostic criteria exist to diagnose anaphylaxis, clinically it is important to recognize and treat anaphylaxis immediately.
6. Laboratory data are rarely needed to diagnosis allergic reactions or anaphylaxis.
7. Epinephrine is the keystone for management of anaphylaxis. For mast cell-mediated reactions, antihistamines and corticosteroids can be used.
8. In-hospital allergic reactions and anaphylaxis should be treated the same way, although these reactions should prompt clinicians to investigate specific triggers.
9. Patients with airway compromise or additional organ system involvement suggestive of anaphylaxis should be admitted for a minimum of 24 hours for close monitoring.

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## DEFINITIONS

### *How are allergic reactions defined?*

An allergic reaction is an overreaction by the immune system, producing immunoglobulin E (IgE) antibody to an otherwise harmless antigen or allergen. The antibody binds to high-affinity IgE receptors on the surface of mast cells and basophils, resulting in sensitization to that antigen. Repeated exposure to the allergen results in cross-linking of mast cell and basophil-bound IgE antibodies, triggering the release of inflammatory mediators (eg, histamine, tryptase, leukotrienes) that cause smooth muscle contraction, vasodilatation, increased vascular permeability, and edema.

### *What is anaphylaxis?*

Anaphylaxis is a potentially fatal hypersensitivity reaction involving multiple organ systems that occurs seconds to minutes following exposure to the inciting antigen.

### *What is an anaphylactoid reaction?*

Anaphylactoid reactions present with features that are clinically indistinguishable from anaphylaxis; however, the underlying mechanisms are nonimmunologic (not IgE mediated). Anaphylactoid reactions can be caused by opiates, angiotensin-converting enzyme (ACE) inhibitors, nonsteroidal antiinflammatory drugs (NSAIDs), and radiocontrast dye. Given their similar presentations and treatments, severe IgE-mediated immediate hypersensitivity reactions and anaphylactoid reactions are often grouped together under the general term anaphylaxis.

## EPIDEMIOLOGY

### *What is the prevalence of anaphylaxis?*

Estimates of anaphylaxis prevalence vary widely depending on the population being studied as well as the various trial designs used. Evidence suggests that the prevalence of anaphylaxis is increasing.<sup>1</sup> In the United States, the most recent estimation of lifetime prevalence of anaphylaxis is 1.6%. However, this number is thought to be an underestimation because many cases of anaphylaxis are undiagnosed or mistaken for other disease processes.<sup>2</sup>

### *What are the most common triggers of anaphylaxis?*

In adults, insect stings and medications are the most common triggers, whereas foods remain the most common triggers in children. Other triggers for anaphylaxis in adults include natural latex items, biologic medications, and occupational exposures. Anaphylaxis can also be caused by idiopathic agents, IgE-independent mechanisms, and direct activation of mast cells. **Box 1** lists common triggers of anaphylaxis.

### *Are there comorbidities that increase the risk of anaphylaxis?*

Asthma can increase the risk for anaphylaxis. Concurrent cardiovascular disease and chronic pulmonary conditions can increase the risk of death from anaphylaxis.

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