

# Walker Veterinary Hospital

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## ANAPHYLAXIS AND ANAPHYLACTIC REACTIONS

### ***What is an anaphylactic reaction?***

An anaphylactic reaction or anaphylaxis is an immediate hypersensitivity (allergic) reaction to a foreign substance, especially a foreign protein.

### ***What causes an anaphylactic reaction?***

Before an anaphylactic reaction can occur, the pet must have a previous exposure to the offending substance. A common example is a dog that is stung by a bee and later develops a hypersensitivity to bee stings. The first time the dog is stung, a short-term localized reaction called a humoral response occurs. This causes the immune system to produce a substance called Immunoglobulin E (IgE) that binds to the surface of mast cells. Mast cells are responsible for the redness and swelling (hives) that you observe. At this point, the patient is said to be sensitized to the bee's toxin. The second time the dog is stung, the sensitized cells will recognize the foreign protein (bee toxin) and release their contents in a process known as degranulation and activation. In severe reactions, this causes further release of the contents of mast cells throughout the body, resulting in systemic anaphylaxis. Localized hypersensitivity reactions such as extreme swelling at the site of the bee sting are common while systemic anaphylaxis is rare.



Theoretically, any foreign substance can produce an anaphylactic reaction. The most common substances to cause anaphylaxis are foods, insect bites, medications, vaccines, environmental pollutants and chemicals.

It is important to note that this is an abnormal reaction. The body's immune system over-reacts to the foreign protein or substance resulting in the reaction. Most cases of anaphylaxis are thought to have a hereditary or familial basis.

### ***What are the clinical signs of anaphylaxis?***

Clinical signs are dependent on the route of exposure (mouth, skin, inhalation, injection, etc.), the amount of antigen and the level of the pet's IgE response.

The most common clinical signs of anaphylaxis include itching, red skin swellings called wheals or hives, a swollen face or muzzle, difficulty breathing including cyanosis (bluish color of the tongue and gums), excessive salivation or drooling, vomiting, and diarrhea.

### ***How is it diagnosed?***

Anaphylaxis is diagnosed by a medical history of recent exposure to an offending substance and the characteristic clinical signs. Intradermal skin testing and IgE blood tests may be performed to identify specific allergens.

### ***How is anaphylaxis treated?***



Dog with Hives.

An anaphylactic reaction is considered to be a medical emergency and immediate treatment is required. The first step is removal of the inciting substance whenever possible. Next, the pet is stabilized to prevent or minimize systemic shock, ensuring that the airway is open and that blood pressure and circulation are maintained. Intravenous fluids, placement of a breathing tube and administration of emergency drugs such as epinephrine, corticosteroids, atropine and aminophylline is often necessary. In mild cases, it may be sufficient to administer anti-histamines

and perhaps corticosteroids, followed by close monitoring for twenty-four to forty-eight hours.

### ***What is the prognosis?***

The initial prognosis is always guarded. It is impossible to know if a localized or minor reaction will progress to a major crisis. Since anaphylactic reactions often worsen with each episode, the main goal is to prevent subsequent exposure to the offending substance.