

## Reaction Paper by Gabbi Bristow

Anaphylaxis is described as a severe allergic reaction, that can oftentimes be life threatening if not treated quickly. Anaphylaxis can occur from a multitude of things including food, insect stings, drugs, latex, and even exercise. One in five people suffer from allergies. Although we do not know exactly why allergies are developed, many scientist believe that allergies were developed in a person when an allergen was introduced at a time when the person's immune system was weakened. Another way people can become allergic to something or develop an allergy is due to genetics. When one parent has an allergy, the chances of their offspring developing that allergy is a one and three chance, and when both parents have an allergy, the chances of their child developing that allergy rises to a 4 and 5 chance of development. Anaphylaxis occurs when an allergen or "antigen" enters sensitive mast cell that are IgE bound. The allergen then binds to the IgE and activates the mast cells, resulting in degranulation. This occurrence results in a production of histamine, prostaglandins, leukotrienes, chemokines, platelet activating factors (PAF) or heparin production. When the production of these occurs, several adverse reactions can happen inside the human body. One of the effects that can occur is itching and hives. This is produced by increased vasodilation. Bradycardia/hypotension can also be cause by increased vasodilation. Another reaction that can occur is angioedema caused by increased vasculopermeability, and bronchoconstriction caused by contraction of the smooth muscles of the airway. To stop these reactions from further occurring, epinephrine otherwise known as the "Epi-Pen" is usually used first. An Epi-Pen contains a liquid coat adrenaline or Epinephrine, to temporarily stop anaphylactic shock or anaphylaxis, until the patient is able to seek medical help. Epinephrine is injected into the muscle and acts by binding to adrenergic receptors in the endothelium, to counteract histamine. If symptoms are not resolved within five minutes of injecting epinephrine into the muscle, a second dose may be administered. Another counteractive, mainly used in the regards to hives and itching, is oral medication. Oral medication for anaphylaxis reactions works by binding to H1 receptors to prevent histamine from doing the same. Antigens can enter through the skin, via injection, ingestion, or through inhalation. Although most symptoms appear within a few minutes of being exposed to the antigen, symptoms may not appear for one to two hours, and have a chance of recurring after treatment for one to twelve hours. Although hives, wheezing, swelling, congestion, watery, red, itchy eyes and nose, and difficulty breathing are very common traits of anaphylaxis, gastrointestinal reactions such as nausea, vomiting, and diarrhea, may occur as a results of an antigen as well.