

INVESTMENT IN RESEARCH SAVES LIVES AND MONEY

Allergies

An allergy is a chronic illness involving an abnormal immune system reaction to an ordinarily harmless foreign substance called an allergen. When an allergen comes into contact with a human, certain people's immune systems attack the allergen as if it was a harmful bacterium, virus, or other microorganism that can cause disease.¹ This immune system response often causes coughing, sneezing, itching, and congestion. In more severe cases, an allergic reaction can result in low blood pressure, breathing issues, and even death.² Allergies can be triggered by a wide range of allergens, some of the most common being specific medications, insects, mold, animals, pollen, and latex.³ Allergies to pollen and other inhaled allergens rarely cause anaphylactic reactions, but allergies to medications, foods, and insect stings are common causes of anaphylaxis.⁴ For more information on food allergies, see our food allergies fact sheet.

TODAY

19.2 million adults in the United States were diagnosed with allergic rhinitis, known as hay fever, in 2018.⁵

Allergic reactions on the skin, known as contact dermatitis, resulted in **335,000** emergency room visits in the United States in 2016.⁶

As of 2017, **15.2%** of children in the United States have hay fever or another respiratory allergy.⁵

Research Delivers Solutions

During allergen-specific immunotherapy, small doses of an allergen are administered to a patient over time so that the immune system becomes less sensitive to the presence of that allergen. These doses can be administered via injections or oral tablets. One randomized controlled trial showed a 30% decrease in seasonal allergy symptoms after receipt of allergen-specific immunotherapy, and the process can also help prevent systemic anaphylactic reactions to allergens like insect stings. However, there is a small risk that the immunotherapy itself could trigger a severe allergic reaction.⁹ Research is ongoing to reduce this risk using a molecule that can stop the cells that signal the immune system to attack an allergen from being activated.¹⁰

Epinephrine, also known as adrenaline, has become the standard first-line drug for use during anaphylaxis. A dose of epinephrine can reverse the symptoms of an allergic reaction by strengthening cardiac contractions and preventing the airway from closing.¹¹ However, the intramuscular administration of epinephrine during anaphylaxis, including the long term outcomes and potential side effects of this form of administration, has not been rigorously studied.¹² Research is being conducted to better understand best practices for this kind of administration of epinephrine.¹³

Until the 1980s, first-generation antihistamines were the most popular kind of medication for treating allergies. Histamines are molecules that are released when the immune system detects an allergen. These molecules signal the immune system to attack the antigen; antihistamines stop that signal from being transmitted. However, first-generation antihistamines often cause severe drowsiness because histamines in the central nervous system also signal for wakefulness and other functions. In response, researchers developed second-generation antihistamines that do not cause drowsiness for most people because they are unable to cross the blood-brain barrier into the central nervous system.¹⁴

COST

Among patients with persistent asthma, those also suffering from allergies incurred an additional **\$2,778** in average annual healthcare costs in comparison to patients without allergies.⁶

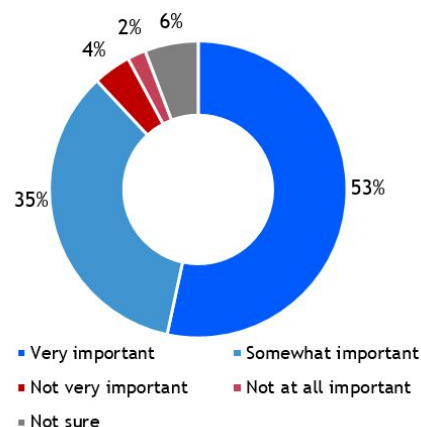
Inpatient care for people who are allergic to penicillin costs an

additional **\$1,145 - \$4,254** per hospitalization in comparison to patients who are not allergic to penicillin.⁷

\$18 billion:

Cost of annual medical expenses due to allergies in the United States as of 2018⁸

How important is it for the President and Congress to assign a high priority to ensuring faster medical progress?



Source: A Research!America poll of U.S. adults conducted in partnership with Zogby Analytics in January 2020.

Allergies

Then. Now. Imagine.

THEN

Before the development of epinephrine for medical use in humans, there was no treatment for the potentially fatal symptoms of anaphylaxis during an allergic reaction to medication, an insect sting, or food.¹¹

NOW

Prompt use of epinephrine during an allergic reaction can reverse the anaphylactic symptoms and save lives.¹¹

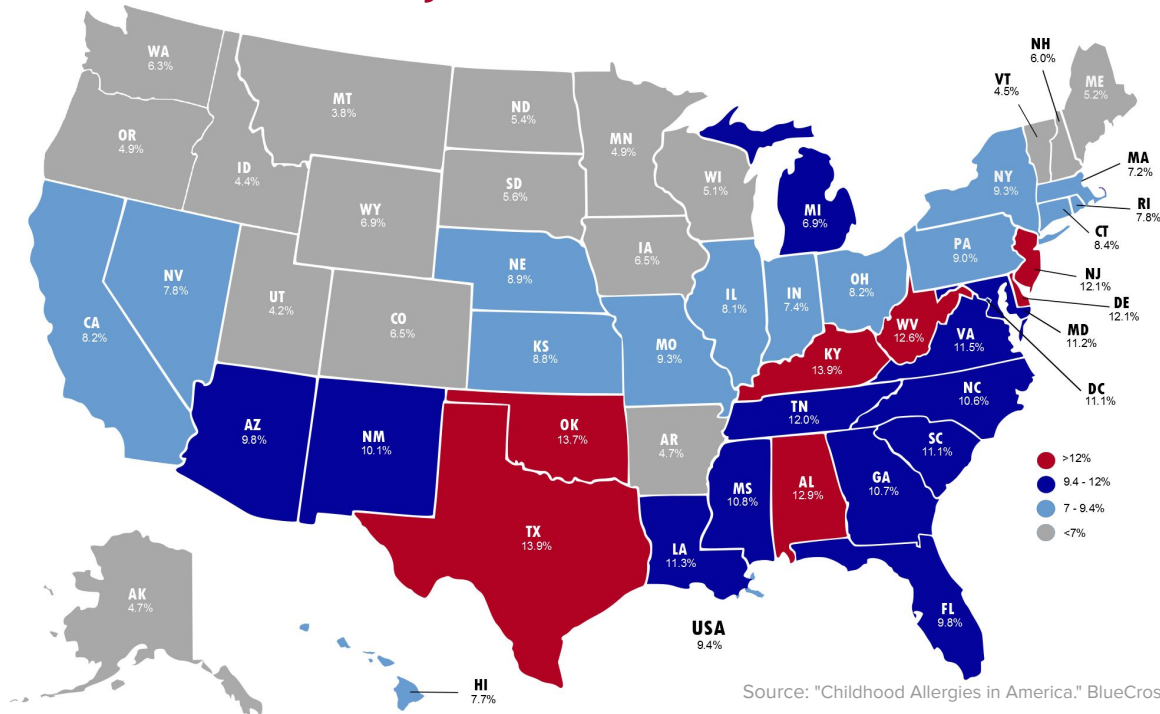
IMAGINE

A cure for all allergies.

Spotlight On: Climate Change

Scientists are studying the link between climate change and the increased prevalence of allergies. Some studies have indicated that rising temperatures have lengthened the duration of the pollen season.¹⁵ Researchers have also determined that air pollution can aggravate the human immune system and cause it to have more frequent and severe reactions to allergens.¹⁶ This means that, as climate change progresses, there could both be more allergens *and* people with allergies to those allergens. The National Wildlife Federation determined that climate change could worsen the respiratory allergies of up to 25 million Americans.¹⁷

Incidence of Allergic Rhinitis in Children from 2010 to 2016



Source: "Childhood Allergies in America." BlueCross BlueShield. 2018.

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