

## What is immunotherapy and how does it work?

Allergen immunotherapy, also known as allergy shots, is a form of treatment that is aimed at decreasing sensitivity to substances called allergens. Allergens are the substances that trigger allergy symptoms when someone is exposed to them.

Immunotherapy has been shown to prevent the development of new allergies and, in children, it can prevent the progression of the allergic disease from allergic rhinitis to asthma. Allergen immunotherapy can lead to the long-lasting relief of allergy symptoms after treatment is stopped.

Immunotherapy is recommended for people with allergic asthma, rhinitis, conjunctivitis and allergies to stinging insects. Immunotherapy for food allergies is not recommended. The best option for people with food allergies is to strictly avoid that food.

Children can receive immunotherapy as well. Five is the youngest recommended age to start immunotherapy in the United States for several reasons, including the difficulties younger children may have in cooperating with the immunotherapy program.

There is no upper age limit for receiving immunotherapy. In considering immunotherapy in older persons, consideration must be given to the other medical conditions (such as cardiac disease) that are more frequent in older individuals, which could potentially make immunotherapy more risky.

An allergist/immunologist will base the decision to begin immunotherapy on:

- Length of allergy season and severity of symptoms.
- How well medications and/or environmental controls control allergy symptoms.
- Desire to avoid long-term medication use.
- Time: immunotherapy will require a significant time commitment.
- Cost: may vary depending on region and insurance coverage.



Immunotherapy should be given under the supervision of a physician in a facility equipped with proper staff and equipment to identify and treat adverse reactions to allergy injections. Ideally, immunotherapy should be given in the prescribing allergist/immunologist's office but if this is not possible, the patient's allergist/immunologist should provide the supervising physician with comprehensive instructions about their immunotherapy treatment.



### How does immunotherapy work?

Allergen immunotherapy works like a vaccine. Patients receiving allergen immunotherapy are injected with increasing amounts of an allergen over several months. The body responds to the injected amounts of the allergen by developing an immunity or tolerance to it. As a result, allergy symptoms can be decreased or minimized when the patient is exposed to that allergen in the future.

There generally are two phases to immunotherapy:

- **Build-up phase:** This involves receiving injections with increasing amounts of the allergens, generally about 1 to 2 times per week, though a more rapid build-up schedule is sometimes used. The length of this phase depends on how often the injections are received, but generally ranges from three to six months.
- **Maintenance phase:** This phase begins once the effective therapeutic dose is reached. The effective maintenance dose depends on the patient's level of allergen sensitivity and his or her response to the immunotherapy build-up phase. During the maintenance phase, there will be longer periods of time between immunotherapy treatments, ranging from two to four weeks. Your allergist/immunologist will decide what range is best for you.

Patients may notice decreasing symptoms during the build up phase but it may take as long as 12 months on the maintenance dose to see an improvement. The effectiveness of immunotherapy

#### This Topic of the Month answers:

1. What are allergens?
2. Who is immunotherapy recommended for?
3. How an allergist/immunologist will determine if immunotherapy is right for you?
4. Can children receive immunotherapy?
5. How does immunotherapy work?
6. What are possible risks for immunotherapy?
7. When you should see an allergist/immunologist?

treatments appears to be related to how long the treatment lasts and the dose of the allergen.

Failure to respond to immunotherapy may be due to several factors including:

- Inadequate dose of allergen in the allergy vaccine.
- Missing allergens not identified during the allergy evaluation.
- High levels of allergen in environment (i.e. inadequate environmental control).
- Significant exposure to non-allergic triggers (i.e. tobacco smoke).



If a patient hasn't seen improvement after a year of maintenance therapy, he or she should work with their allergist/immunologist to discuss possible reasons treatment failed and other treatment options.

If immunotherapy is successful, maintenance treatment is generally continued for 3 to 5 years. The decision to stop immunotherapy should be discussed with the allergist/immunologist after 3 to 5 years of treatment. Some individuals may experience lasting remission of their allergy symptoms but others may relapse after discontinuing immunotherapy. Therefore, the decision to stop immunotherapy must be individualized.

### Possible risks with immunotherapy

There are two types of adverse reactions that can occur with immunotherapy:

- Local reactions: are fairly common and present as redness and swelling at the injection site. This can happen immediately, or several hours after the treatment.
- Systemic reactions: are much less common than local reactions. Systemic reactions are usually mild and respond rapidly to medications. Symptoms can include increased allergy symptoms such as sneezing, nasal congestion or hives. Rarely, a serious systemic reaction, called anaphylaxis, can develop after an immunotherapy injection. In addition to the symptoms associated with a mild systemic reaction, symptoms of an anaphylactic reaction can include swelling in the throat, wheezing or a sensation of tightness in the chest, nausea, dizziness or other symptoms.

Systemic reactions require immediate treatment. Most serious systemic reactions develop within 30 minutes of the allergy injections and this is why it is recommended you wait in the office for 30 minutes after your allergy injections.

Your allergist/immunologist is trained to monitor for such reactions and his or her staff is trained to identify and treat systemic reactions.

### When to see an allergy/asthma specialist

If you believe immunotherapy could be beneficial to you, you should be examined by an allergist/immunologist. To find an allergist/immunologist in your area or to find additional information on allergy shots, go to [www.aaaai.org](http://www.aaaai.org), or call the AAAAI's Physician Referral and Information Line at (800) 822- 2762.

The AAAAI's *How the Allergist/Immunologist Can Help: Consultation and Referral Guidelines Citing the Evidence* provide information to assist patients and health care professionals in determining when a patient may need consultation or ongoing specialty care by the allergist/immunologist. Patients should see an allergist/immunologist if they:

- Have a clear relationship between asthma, rhinitis, or conjunctivitis and exposure to an unavoidable aeroallergen to which specific IgE antibodies have been demonstrated and have:
  - Poor response to pharmacotherapy or avoidance measures.
  - Unacceptable side effects of medications.
  - Desire to avoid long term pharmacotherapy.
  - Long duration of symptoms (perennial or major portion of the year).
- Are a child with allergic rhinitis, because of the potential preventive role of allergen immunotherapy in the progression of allergic disease.

### Additional Resources:

- [Topic of the Month: February 2005: Getting a Jump Start on Your Immunotherapy Treatment](#)
- [Tips to Remember: What are "Allergy Shots?"](#)

- [Tips to Remember: "Role of an Allergist/Immunologist"](#)
- [Quiz: How much do you know about allergen immunotherapy?](#)
- [Find an allergist/immunologist](#)

This topic was reviewed on 11/1/2006 by Stuart Friedman, MD, FAAAAI, Patients & Consumers Web Editor