Allergy testing: Clinician FAQs

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Analytical

What are the available testing options for diagnosing allergic diseases?

Two major types of tests can be used to aid in an initial allergy diagnosis:

- In vitro blood test
- In vivo skin test

For many years, skin prick testing by an allergy specialist was the only method available. Today, blood testing provides reliable clinical evidence to aid in your diagnosis.[1]

Are in vivo and in vitro tests comparable?

Opinion leaders have determined that both types offer accurate and reliable diagnostic results.[1]

How is in vitro blood testing performed?

Using a small serum sample, the laboratory measures specific IgE antibodies to many different allergens.

What are the most common types of in vitro blood tests?

The most commonly used in vitro blood test methods detect specific IgE antibodies to the allergen in patient's serum.

Enzyme-linked immunosorbent assay (ELISA)—introduced in the early 1980s.

Automated solid-phase immunoassay—introduced in 1980.

Automated liquid-phase immunoassay, IMMULITE® 2000/XPi 3gAllergy™—introduced in 2003.

What is the guideline for diagnosing allergy?

The guideline for allergy diagnosis includes the following elements:

- Patient's clinical history
- Physical examination
- Testing by either an in vitro method (such as 3gAllergy) or an in vivo method (skin prick testing) to aid in diagnosis.[2]

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Clinical

What are the clinical advantages of in vitro blood testing?

- It is easy to perform, with one simple blood draw to obtain multiple determinants
- No risk of anaphylaxis
- No skin reactions
- No need to stop patient's medications, as there is no interference with medications such as antihistamine H1 blockers, H2 antagonists, or tricyclic antidepressants[2]
- Good correlation with patient clinical history and skin tests
- Convenient method for monitoring decreases in sensitization resulting from medical intervention such as allergen avoidance
- Valuable diagnostic tool for following development and prognosis of sensitization in childhood
- Readily available to primary care physicians
- Convenient for patients suffering from eczema, atopic dermatitis, and other skin conditions
- Practical for geriatric and pediatric patients affected by dermatographism
- Convenient method for pediatric and geriatric patients

What are the clinical advantages of detecting IgE levels at concentrations lower than 0.35 kU/L?

Studies indicate that earlier detection of allergies in children allows for prompt intervention, which may stop the progression of allergies to more morbid conditions such as allergic asthma.[3]

Detection of IgE below 0.35 kU/L is also useful in monitoring a patient's allergic threshold. Allergic sensitization is based on a cumulative process. When the allergen load accumulates beyond the patient's threshold, clinical allergic symptoms appear. In polysensitized patients, it is important to monitor accumulations of low-level allergens to prevent allergic symptoms. Timely identification of allergens and subsequent avoidance therapy are important for maintaining a patient's allergic threshold.[4,5]

At what age can you use an in vitro blood test to assess children for allergies?

There is no specific age limit for in vitro allergy testing. The formation of IgE antibodies starts early in life, and these antibodies can be detected before clinical symptoms appear. Clinical researchers have concluded that the presence of antibodies to egg white in 6-month-old infants is a strong predictor of future dust mite allergies. Experts recommend serum IgE testing for young children with a family history or clinical signs of allergy.[6]

What is the common term used to describe the progression of allergy in children?

IgE-mediated allergic disease often progresses in a predictable manner from mild conditions, such as atopic dermatitis and rhinitis, to morbid conditions such as allergic asthma. This progression has been termed the allergy march. Typically, food allergies evolve into inhalant allergies, and clinical symptoms usually correlate to age, with eczema being found in infancy, followed by gastrointestinal distress in infancy or childhood. Rhinitis is commonly seen in later childhood, and respiratory symptoms are manifested by allergic asthma in the preteen and teenage years.[7]

What are the most common types of food allergies in children?

Ninety percent of food allergies in children are caused by the following foods: cow's milk, egg (white), peanuts, wheat, soybean, and tree nuts (almond, cashew, etc.).[7]

What are the most common food allergies in adults?

Peanuts, fish, tree nuts (almond, cashew, etc.), shellfish.[2]

What are the most common aeroallergens that cause allergies in children?

Cat dander-epithelium, dog dander, cockroach, *Dermatophagoides pteronyssinus* and *Dermatophagoides farinae* (house dust mites), *Aspergillus fumigatus,* and *Alternaria alternata*.[8]

What are the most common types of allergic conditions in infants?

The most common types of allergic conditions in infants are skin problems (atopic dermatitis) and gastrointestinal symptoms (colic). Both typically stem from food allergies.[8]

How important is it to identify the specific allergens that are causing a patient's symptoms, and how critical is an early diagnosis?

Timely identification of allergens may directly influence the course of treatment and proper management of the allergic patient. This is particularly true in children, as interventions are instituted both to mitigate symptoms and to stop the progression of the allergy march. Ignoring adult-onset allergies is no trivial matter either, as chronic allergic inflammation can lead to acute tissue damage in critical organs, such as the lungs.[3,9]

What are the treatments of choice for allergy?

Avoidance. This entails the conscious removal of allergens from the diet and environment and a hygiene and skin-care regimen. This is the mainstay treatment for food or chemical allergies, for which there is no known cure.[10]

Pharmacotherapy. This includes second-generation antihistamines, known as nonsedative antihistamines (NSA). The primary advantage of most of these second-generation allergy drugs is that they do not cross the blood–brain barrier and, unlike those of the first generation, do not cause sedation and drowsiness. Both first- and second-generation antihistamines have been shown to be effective in controlling typical allergy symptoms, such as rhinorrhea, congestion, itch, skin rashes, hives, and watery eyes.[10]

Immunotherapy. This is an effective treatment option for insect venoms and many kinds of aeroallergens. While results vary with the individual, immunotherapy is the only treatment that has been effectively used to cure certain types of allergic diseases. Historically, only allergists/allergologists performed immunotherapy. In recent years, however, a few pharmaceutical companies have begun offering an innovative prescription service, which has enabled general practitioners to offer immunotherapy to their allergy patients.[10]

What is cross-reactivity?

Cross-reactivity takes place when different allergens that contain similar binding sites (epitopes) become bound to the same specific IgE antibodies. Allergens that cross-react may or may not be biologically similar, but they always have certain molecular similarities.

What are the clinical ramifications of allergen cross-reactivity on the patient?

As a result of cross-reactivity, patients with a history of shrimp allergy, for example, often (but not always) test positive for crustaceans such as crab, lobster, and crawfish and should avoid these foods. Other common examples of cross-reactivity include birch pollen/apple, ragweed/cantaloupe, latex/banana, mugwort/celery, and grass/soybean.[11]

Why is laboratory testing important in the diagnosis of allergic diseases?

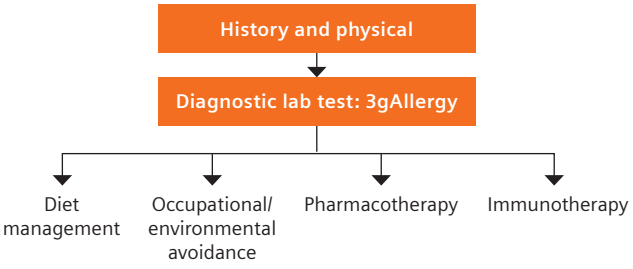
The American Academy of Allergy, Asthma and Immunology (AAAAI) has concluded that:

1) "missing and misdiagnosing allergy can delay appropriate therapy"
2) "specific allergen avoidance and treatment measures should be based on positive history and diagnostic testing." The AAAAI further states that a diagnostic evaluation should include specific testing to confirm a diagnosis of allergy, distinguish allergic disorders from other diseases, identify previously unsuspected allergens, and guide treatment.[12]

Why test for allergy?

Addressing the underlying cause is important to differentiate allergy from other diseases. A study in a managed care organization by Heffler et al. concluded that more than half of patients with allergic symptoms may be misdiagnosed.[13] Automatically treating allergic disease symptomatically by means of pharmacotherapy is not always the best course of treatment.

Allergic Disease Management Paradigm



Do higher levels of IgE correlate with severity of patient symptoms?

Since each patient's symptomatic threshold varies, a high or low specific IgE level may not necessarily correspond to the severity of symptoms. Like other medical conditions, a definitive clinical diagnosis should not be based on the results of any single diagnostic test. The definitive diagnosis should be made only after all clinical and diagnostic results have been properly evaluated.

What clinical utility does 3gAllergy offer?

3gAllergy provides a quantitative measurement of specific IgE for the purpose of:

- Identifying offending allergens
- Predicting future allergy development[3]
- Instituting precise and timely therapeutic intervention
- Improving patient diagnosis and management

What is the significance of total IgE?

High levels of total IgE are usually associated with allergy. In certain types of allergic diseases, such as those caused by occupational or environmental allergens, the presence of total IgE will have a direct impact on the differential diagnosis. On the other hand, total IgE does not necessarily indicate allergy. The following are examples of common medical conditions associated with elevated total IgE:[14]

Parasitic Infections	Miscellaneous Conditions
• Schistosomiasis	• Leprosy
• Ascariasis	• Wiskott–Aldrich syndrome
• Hookworm	• Job–Buckley syndrome
• Trichinosis	• *Staphylococcus aureus* infection

What are the most common allergic symptoms?

Allergic rhinitis (itchy, runny nose)
Rhinosinusitis (sinus pressure, pain)
Conjunctivitis (red, itchy, watery eyes)
Urticaria (hives, itchy rashes)
Otitis media (middle-ear pain, discomfort)
Allergic asthma (partial or complete blockage of airways)
Eosinophilic gastroenteritis (bloated feeling, discomfort in abdominal region)
Atopic dermatitis (eczema; itchy, red rash)
Eosinophilic rhinitis (difficulty breathing through nose)
Anaphylaxis (systemic allergic reaction that can lead to difficulty breathing; inflammation of eyes, lips, and/or throat; unconsciousness; and death)

Patient testing with 3gAllergy

What are the 3gAllergy serum sample requirements?

The sample requirement is 0.05 mL serum per test.

Does the patient need to follow any special procedures or meet any requirements prior to 3gAllergy testing?

- **NO** need to discontinue antihistamines
- **NO** possibility of an anaphylactic reaction during 3gAllergy testing
- **NO** fasting required
- **NO** age restrictions
- **NO** testing restrictions during pregnancy

How are 3gAllergy test results reported?

3gAllergy results are available in the following formats:

- Quantitative values based on kU/L (kilounits per liter)
- Standard scoring method—class reporting
- Extended scoring method—class reporting

When should allergic diagnostic testing be considered?

3gAllergy testing should be considered:

- When symptoms are sufficiently chronic or recurrent to impact quality of life
- To identify avoidance measures
- To distinguish between allergic, nonallergic, and mixed diseases
- To limit and prevent unnecessary use of antihistamines
- To select the most effective therapy (pharmacotherapy, immunotherapy, avoidance therapy)
- To identify complex cases for referral to an allergologist
- When symptoms are not controlled by avoidance and medication

Product availability may vary from country to country and is subject to varying regulatory requirements. Please contact your local representative for availability.

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