Paradigm Shift in Allergy Medicine
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Physician Consultant
Annual US Prevalence Statistics for Chronic Disease: Putting Allergy in Perspective

Asthma and Allergy Foundation of America, [www.aafa.org](http://www.aafa.org)
Growth in Allergy Testing by Specialty: 2008-2011

ACAAI Health Trends: Allergy Report 2011
Principle Practice Ownership Status A/I Physicians, 2004

ACAAI Health Trends: Allergy Report 2011
Reported GPs active diagnostic intervention in drug allergies

- Skin tests: 69%
- Blood tests: 67%
- I do not recommend: 10%
- Others: 7%

Allergy, Asthma & Clinical Immunology (AACI),
Allergen Testing

Goals

• Confirm the suspicion of allergy
• Identify the offending allergens
• Determine the degree of sensitivity

Limitations

• A positive test does not mean allergic disease is present.
• History must correlate 50% of the population when skin/blood test is positive.
The mechanism of allergic reaction involves the following steps:

1. **Allergen** binds to **Macrophage**, triggering the release of **Histamine, IL-4**.
2. Macrophage activates **Th2-Cell** which secretes **IL-5, IL-13**.
3. **IL-5, IL-13** stimulates the production of **IgE Synthesis**.
4. **Unbound IgE** binds to **Mast Cell**, leading to the release of inflammatory mediators such as **Histamine, IL-4**, **Basophils**, **Eosinophils**, **Basic Proteins**, **Leukotrienes**, **PAF, Cytokines**, and **Chronic Rhinitis**.
5. **Acute Rhinitis** results from the release of inflammatory mediators.
6. **Plasma Cell** is generated to produce more **IgE**.

This diagram illustrates the complex interaction between immune cells and allergens leading to the development of allergic reactions.
Situation A: A pet owner is exposed to dog dander and dust mites but does not have any allergy symptoms.

Situation B: It is hay fever season and he is exposed to pollen. He is now over his threshold and is symptomatic.

Situation C: The person found out what he is allergic to and reduced exposure to the dog dander by having the dog stay out of the bedroom. Putting dust mite covers on bedding, and removing curtains and carpeting from the bedroom also reduced dust mites. When pollen is added, he does not go over this threshold and remains asymptomatic.
The Allergy March

- Atopic Dermatitis
- GI disorders
- Allergic rhinitis
- Otitis media
- Asthma
- Adult asthma


Differential Diagnosis: Upper Respiratory Disease

Overlapping symptoms cause difficulties to differentiate and accurately diagnose URD:

- **Allergic Rhinitis**
  - Nasal Congestion
  - Rhinorrhea
  - Excess Secretions
  - Sneezing
  - Watery, Itchy Eyes

- **Sinusitis**
  - Nasal Congestion
  - Rhinorrhea
  - Excess Secretions
  - Postnasal Drip
  - Headache

- **Non-Allergic Rhinitis**
  - Nasal Congestion
  - Rhinorrhea
  - Excess Secretions
  - Postnasal Drip
  - Headache
The Face of Allergy

Allergic Shiners

Chelitis (Chapped Lips)

Nasal Salute

Nasal Crease
### Why Are Allergies Increasing?

Allergies are increasing. No one really knows why?

#### Contributing Factors:
- **Increased awareness**
- **Improved diagnostic tests**
- **Genetic susceptibility**
- **Increased allergen exposure**
- **Underlying disease**
- **Increased levels of pollutants**
- **Increased exposure to food additives**
- **Decreased immune system stimulation**
  - *The hygiene hypothesis*
The hygiene hypothesis states that a lack of early childhood exposure to bacterial and viral infections may increase the susceptibility to allergic diseases by modulating immune system development.
Common Seasonal/All Year- Around Allergens

- Venoms
- Trees
- Grasses
- Weeds
- Molds
- Dust-Mites
- Animals
- Drugs
# Common Occupational Allergens

## Occupational Asthma: 11 Million exposed workers

<table>
<thead>
<tr>
<th>Substance</th>
<th>People at Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene Oxide</td>
<td>Textile, Cosmetic, Solvent, Hospital (sterilization)</td>
</tr>
<tr>
<td>Isocyanates</td>
<td>Painters, Insulation(Installers), Plastics, Foam</td>
</tr>
<tr>
<td>Anhydrides</td>
<td>Users of Plastics, Epoxy resins</td>
</tr>
<tr>
<td>Latex</td>
<td>Health Care Professionals, Food Handlers</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>Hospital Staff, Handlers of preserved Specimen, Building materials, Cosmetics, textiles</td>
</tr>
<tr>
<td>Seafoods</td>
<td>Seafood processing Workers</td>
</tr>
<tr>
<td>Chloramine-T</td>
<td>Janitors, Cleaning Staff</td>
</tr>
<tr>
<td>Castor Beans</td>
<td>Coffee Handlers, Chemist, Oil Industry worker</td>
</tr>
<tr>
<td>Flour Dust</td>
<td>Farmers, Bakers, Plant Workers</td>
</tr>
</tbody>
</table>
Incidence of Food Allergies

<table>
<thead>
<tr>
<th>Food Allergies</th>
<th>Incidence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>19%</td>
</tr>
<tr>
<td>Shellfish</td>
<td>16%</td>
</tr>
<tr>
<td>Tree Nuts</td>
<td>16%</td>
</tr>
<tr>
<td>Peanuts</td>
<td>15%</td>
</tr>
<tr>
<td>Wheat</td>
<td>14%</td>
</tr>
<tr>
<td>Eggs</td>
<td>8%</td>
</tr>
<tr>
<td>Soy</td>
<td>6%</td>
</tr>
<tr>
<td>Fish</td>
<td>6%</td>
</tr>
</tbody>
</table>

Food Allergies (%)

- Milk
- Shellfish
- Tree Nuts
- Peanuts
- Wheat
- Eggs
- Soy
- Fish
Children Can Outgrow Some Food Allergies

<table>
<thead>
<tr>
<th>Food</th>
<th>Outgrown</th>
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</thead>
<tbody>
<tr>
<td>Milk</td>
<td>80%</td>
</tr>
<tr>
<td>Egg</td>
<td>60-70%</td>
</tr>
<tr>
<td>Peanut</td>
<td>20%</td>
</tr>
<tr>
<td>Tree Nut</td>
<td>20%</td>
</tr>
<tr>
<td>Fish</td>
<td>20%</td>
</tr>
<tr>
<td>Shellfish</td>
<td>20%</td>
</tr>
</tbody>
</table>

Sampson, J Allergy Clin Immunol 2004; 113:805-819
<table>
<thead>
<tr>
<th>Allergen</th>
<th>Potential Cross-reactive Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ragweed</td>
<td>Bananas, melons (watermelon, cantaloupe, honeydew), zucchini, cucumber, dandelions, chamomile tea</td>
</tr>
<tr>
<td>Birch</td>
<td>Apples, pears, peaches, apricots, cherries, plums, nectarines, prunes, kiwi, carrots, celery, potatoes, peppers, fennel, parsley, coriander, parsnips, hazelnuts, almonds, walnuts</td>
</tr>
<tr>
<td>Grass</td>
<td>Peaches, celery, melons, tomatoes, oranges</td>
</tr>
<tr>
<td>Mugwort</td>
<td>Celery, apple, kiwi, peanut, fennel, carrots, parsley, coriander, sunflower, peppers</td>
</tr>
<tr>
<td>Alder</td>
<td>Celery, pears, apples, almonds, cherries, hazelnuts, peaches, parsley</td>
</tr>
<tr>
<td>Latex</td>
<td>Bananas, avocado, kiwi, chestnuts, papaya</td>
</tr>
</tbody>
</table>
Oral Allergy Syndrome

About 70% of people who suffer from pollen allergies, especially ragweed allergy, experience oral allergy syndrome.

Oral allergy syndrome (OAS) is caused by cross-reactivity between proteins in fresh fruits vegetables and pollens.

The proteins in the fruits and vegetables causing OAS are easily broken down with cooking or processing.

Therefore, OAS typically does not occur with cooked or baked fruits and vegetables, or processed fruits such as applesauce.
Food Allergy or Intolerance?

Allergy symptoms
- Allergic rhinitis/Conjunctivitis
  - Nausea/Vomiting
  - Stomach pain
  - Diarrhea
  - Atopic dermatitis
  - Asthma/Wheezing/SOB
  - Chest pain
  - Swelling of the airways
  - Urticaria/Hives
  - Anaphylaxis

Intolerance symptoms
- Nausea/Vomiting
- Stomach pain
- Gas, cramps, or bloating
- Heartburn
- Diarrhea/Constipation-IBS
- Headaches/Migraines
- Irritability or nervousness
- Depression/Fatigue
- Joint pain/Non-specific aches
- Ear infection
Types of Adverse Reactions to Food: Non-IgE reaction (Delayed)

- **Food Poisoning:**
  - Bacterial Contamination
  - Heavy Metal Contamination

- **Histamine Toxicity:**
  - Fish that is not properly refrigerated (Mackerel, Tuna)
  - Cheese (Histamine can reach high levels in cheese)
  - Wines (Histamine in various types of wine may reach high levels)

- **Lactose Intolerance:**
  - Milk (Lack of Lactase enzyme in gut to digest Lactose)

- **Food Additives:**
  - Monosodium Glutamate, MSG (Preservative, taste enhancer)
  - Sulfites (May produce Sulfur dioxide gas by-product Ex. wines, light-colored dried fruits except prunes and raisins, dehydrated vegetables, and certain types of lemon, lime juice and butter flavouring materials).
The double-blind, placebo-controlled oral food challenge (DBPCFC) is the gold standard for diagnosing food allergy.

<table>
<thead>
<tr>
<th>Allergen</th>
<th>95% predictive level (kU_A/l)</th>
<th>Positive predictive value (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egg</td>
<td>7</td>
<td>98</td>
</tr>
<tr>
<td>Infants ≤ 2 years (34)</td>
<td>2</td>
<td>95</td>
</tr>
<tr>
<td>Milk</td>
<td>15</td>
<td>95</td>
</tr>
<tr>
<td>Infants ≤ 2 years (33)</td>
<td>5</td>
<td>95</td>
</tr>
<tr>
<td>Peanut</td>
<td>14</td>
<td>95</td>
</tr>
<tr>
<td>Fish</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Tree nuts (42)</td>
<td>~15</td>
<td>~95</td>
</tr>
<tr>
<td>Soybean</td>
<td>30</td>
<td>73</td>
</tr>
<tr>
<td>Wheat</td>
<td>26</td>
<td>74</td>
</tr>
</tbody>
</table>

Types of Adverse Reaction to Food

**IgE Antibody-Mediated**
- Urticaria/angioedema
- Immediate GI reaction
- Oral allergy syndrome
- Allergic rhinitis
- Anaphylaxis
- Atopic Dermatitis
- Asthma

**Non-IgE T Cell Mediated type IV**
- Dietary protein, enterocolitis
- Dietary protein, proctitis
- Dietary protein enteropathy (Pollen-related)
- Celiac disease
- Dermatitis herpetiformis
- Pulmonary hemosidrosis
- Food poisoning

**Eosinophilic Gastroenteropathy**
**Eosinophilic Esophagitis**
- Histamine toxicity
- Lactose Intolerance
- Food additives(MSG)
- Drug intolerance
Radiological Features of Eosinophilic Esophagitis
Endoscopic features of Eosinophilic Esophagitis
Microscopic Allergic Eosinophilic Esophagitis

Intense mucosal eosinophilic infiltrate

Eosinophilic microabscess

Source: Am J Gastroenterol © 2007 Blackwell Publishing
What Is the “Gold Standard” in Allergy Diagnosis?

American College of Allergy, Asthma and Immunology (ACAAI)
- Two key steps in the process of allergy diagnosis are the medical history and allergy test selection. Allergists use their skills in these areas to help more patients feel well, stay active during the day, and rest at night.

American Academy of Allergy, Asthma and Immunology (AAAAI)
- To determine if you have an allergy, your allergist will take a thorough medical history and do a physical exam. He or she may perform allergy skin testing, or sometimes blood testing, to determine which substance is causing your allergy.

European Academy of Allergy and Clinical Immunology (EAACI)
- The diagnosis of food allergy usually starts with a combination of an investigation into the patient’s clinical history, a clinical examination and a test for the detection of food-specific IgE antibodies.

National Institute of Allergy and Infectious Diseases (NIAID)
- IgE antibody measurements generated by any serologic assay method alone are not diagnostic of allergy. They must be ultimately interpreted within the context of the patient’s clinical history.
The Path For Allergists From Diagnosis To Treatment

Symptoms

Allergy specific history & physical

In vivo/vitro allergy testing
Allergy-specific History and Physical

Symptoms

Family History

Medical History

Hobbies

Occupation

Duration

Likely Causes

Environmental Factors
Who Can Benefit From Allergy Immunotherapy?

The patient and physician should base the decision regarding allergy shots on:

- Length of allergy season and severity of symptoms
- How well medications and/or environmental controls are helping allergy symptoms
- The desire to avoid long-term medication use
- Time available for treatment (allergy shots require a significant commitment)
- Cost, which may vary depending on region and insurance coverage

http://www.pennmedicine.org/health_info/allergy/000047.html
Oralair tablets are to be taken daily starting four months before grass pollen season to reduce allergic reactions to the grasses.

Oralair dissolves rapidly under the tongue. The first dose must be taken in the physician's office, so the patient can be monitored for any adverse reactions, but after that, doses can be taken at home.

Oralair contains freeze-dried extracts from pollens of grasses:
- Kentucky Bluegrass
- Orchard Grass
- Perennial Rye Grass
- Sweet Vernal Grass
- Timothy Grass
Who Should be Tested?

Patients complaining of allergy-like symptoms

Patients who chronically use antihistamines

Pediatric patients, especially those with a stubborn rash, chronic ear infections, or GI symptoms

Patients who may have obvious signs of an allergic reaction

Healthcare professionals

Family Practice

Dermatologists

Pediatricians

ENT Physicians

Pulmonologists

Allergists
When Should I Refer My Patients to an Allergist?

- Those with severe or uncontrolled asthma.
- Patients with serious comorbidities such as cardiovascular disease, neoplastic disorders, COPD, etc.
- Those with significant MAST cell and Eosinophilic disorders.
- Patients with immunodeficiency disorders or on immunomodulation medications.
- Patients who experience moderately severe collagen-vascular or systemic disorders or uncontrolled seizure disorders.
- Patients using beta blockers or other contraindicated medications.
- Women who are pregnant.
- Patients with previous anaphylaxis to aeroallergens.
**In Vivo Allergy Testing**

**Skin Prick Test (Subcutaneous)**
- Purified allergen extracts are pricked or scratched into your skin's surface
- ID-pollen, mold, dander, mites

**Intradermal Testing**
- Purified allergen injected into the skin of your arm
- Suspected insect venom or Rx penicillin
- Patch Test (Epicutaneous) - T-Cell mediated
- Purified allergen applied to a patch which is then placed on your skin of your arm
- Suspected contact dermatitis - Latex, hair, preservative, metals, resins

**Food Allergy Testing**
- Egg white, cows milk, peanuts, soy, wheat, tree nuts, fish
- and shell fish
Limitations of Skin Prick Testing

- The lack of uniform procedures for performing skin tests
- The lack of uniform criteria for grading skin test results as positive or negative
- The difference among natural, purified, and recombinant test allergen
- Results are variable—a positive reaction can be interpreted as a wheal from 3–5 mm.
- The differential sensitivity of individuals sensitized to the same allergen.
- Risk of systemic reaction.
- Patients taking tricyclic antidepressives, Antihistamines, Corticosteroid may give false negative results, while Beta blockers may give false positive
Situations in which Blood Testing May be Indicated over Skin Prick Testing

- Negative SPT test with a high clinical suspicion
- Patients with dermatopathology (Atopic Dermatitis, dermatographia, chronic urticaria, psoriasis)
- Patients taking tricyclic antidepressives, Antihistamines, Corticosteroid, Beta Blocker
- Very young or older patients that may have a reduced histamine response
- Patients with an increased risk of anaphylaxis
- Pregnant women
### Relationship between sIgE Levels and the Probability of Clinical Allergy

<table>
<thead>
<tr>
<th>Class</th>
<th>Concentration</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>&lt;0.1 kU/L</td>
<td>Absent or undetectable</td>
</tr>
<tr>
<td></td>
<td>0.1–0.34</td>
<td>Very low</td>
</tr>
<tr>
<td>I</td>
<td>0.35–0.69 kU/L</td>
<td>Low positive</td>
</tr>
<tr>
<td>II</td>
<td>0.70–3.49 kU/L</td>
<td>Moderate positive</td>
</tr>
<tr>
<td>III</td>
<td>3.50–17.49 kU/L</td>
<td>High positive</td>
</tr>
<tr>
<td>IV</td>
<td>17.5–52.49 kU/L</td>
<td>Very high positive</td>
</tr>
<tr>
<td>V</td>
<td>52.5–99.99 kU/L</td>
<td>Very high positive</td>
</tr>
<tr>
<td>VI</td>
<td>≥100 kU/L</td>
<td>Very high positive</td>
</tr>
</tbody>
</table>

Cut-off’s and Clinical Interpretation

Published evidence has documented a value for IgE cut-off’s in the diagnosis of food allergy

- Numeric values vary by the platform used
- Values are often population dependant
Potential Reasons for Difference in Cutoff Values

Many factors can contribute to alternate numeric cut-off values:

• Patient’s age

• Patient population

• Allergen preparation

• Assay methodology  
  - Liquid vs. dried allergens  
  - Detection method

  ▪ Cross-reactivity with other allergens/components
History of In Vitro sIgE Test

1st Gen.  
1970s

2nd Gen.  
1980s – 1990s

3rd Gen.  
2000s
# Allergy Testing Methods

<table>
<thead>
<tr>
<th>Features</th>
<th>1st Generation (RAST)</th>
<th>2nd Generation (ImmunoCAP)</th>
<th>3rd Generation (3g Allergy)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Features</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allergens</td>
<td>Solid Phase on Paper disk</td>
<td>Solid Phase on Cellulose Sponge</td>
<td>Liquid Phase Allergens</td>
</tr>
<tr>
<td>Detection antibody</td>
<td>Polyclonal</td>
<td>Monoclonal</td>
<td>Monoclonal</td>
</tr>
<tr>
<td>Signal detection</td>
<td>Isotopic</td>
<td>Fluorescent or Spectrophotometric</td>
<td>Enzyme-enhanced Chemiluminescence</td>
</tr>
<tr>
<td>Lowest calibrator</td>
<td>25 kU/L</td>
<td>0.35 kU/L</td>
<td>0.0 kU/L</td>
</tr>
<tr>
<td>Zero calibrator</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Detection limit</td>
<td>N/A</td>
<td>0.35 kU/L by default</td>
<td>0.1 kU/L by experiment</td>
</tr>
<tr>
<td>Functional sensitivity</td>
<td>Not determined</td>
<td>Not determined</td>
<td>0.2 kU/L</td>
</tr>
<tr>
<td>Results reported in</td>
<td>“Arbitrary units” &amp; classes</td>
<td>WHO standardized &amp; classes</td>
<td>WHO standardized &amp; classes</td>
</tr>
<tr>
<td>Time-to-first-result</td>
<td>2 overnights</td>
<td>3.5+ hours</td>
<td>65 minutes</td>
</tr>
<tr>
<td>Automation level</td>
<td>Manual</td>
<td>Batch</td>
<td>Walk-away operation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cont. Random Access</td>
</tr>
</tbody>
</table>
Liquid Allergen Technology

Streptavidin Coated Bead
Biotin Labeled Allergen
Specific IgE from Patient Serum
Alkaline Phosphatase Labeled Antibody to IgE
Advantages of: Liquid Allergen Technology

- Liquid allergen **maintains** the native protein characteristics of allergen molecules
- The broad range of epitopes **increases the sensitivity** of liquid allergen system
- Native proteins conformations in liquid phase results in a **greater binding capability**
- Liquid allergen **preserves** the three dimensional structure of allergen molecules
- Results in rapid binding kinetics and **allows for complete automation**
Types of Chemiluminescence

- Direct label Chemiluminescence
- Enzyme-Enhanced Chemiluminescence
The Separation Step: The Critical Component in a Heterogeneous Assay

Centrifugal Wash Technique

- Consistent separation for consistent assay performance
- Efficient separation results in low nonspecific binding and increased sensitivity

The Separation Step:

**Streptavirdin-coated bead are incubated with biotinylated specific allergens**

Sample & coated bead are automatically pipetted into test unit and incubated for 30 minutes at 37°C with intermittent agitation and washed. Then AP-labeled anti-IgE is added and incubated for 30 min at 37°C.

Following incubation, the test unit is spun at high speed about its vertical axis. Reaction fluid is forced up and completely captured in the sump chamber.

A series of washes efficiently removes unbound material from the bead and inner tube.

Chemiluminescent substrate is added to the test unit. Light emission is read with a high-sensitivity photon counter.

Chemiluminescent substrate is added to generate a light output that is measured by detector.
Allergen-Specific IgE Measured by a Continuous Random-Access Immunoanalyzer: Interassay Comparison and Agreement with Skin Testing

Markus Ollert,1,2* Stephanie Weissenbacher,1 Jürgen Rakoski,1 and Johannes Ring1,2

Interassay comparison of ImmunoCAP vs. IMMULITE® 2000 3gAllergy

Agreement of both methods with the skin prick test
In conclusion, laboratory testing for slgE in atopic or immediate-type allergies can be accomplished on a fully automated, random-access immunoanalyzer, such as the IML, at a diagnostic accuracy relative to clinical skin testing comparable to that of the widely used CAP technology for in vitro slgE measurement.
Utilizing IgE Results from Alternate Methods for Food Allergy Cut-Off’s

“These data indicate that specific IgE levels to egg white, milk and peanut are highly correlated and that differences between the systems are circumscribed and modest”

“…IMMULITE has a mean of 2-5-fold higher than ImmunoCAP”
Correlation Plots for Egg Whites, Milk & Peanut

“These data support the conclusions of the 2010 proficiency-based intermethod performance assessment that both assay methods detect IgE antibody to a comparable degree in serum of symptomatic allergic patients.”

### Immulite to ImmunoCAP Ratios

**Egg White**
- Egg White specific IgE: 4.85

**Milk**
- Cow’s Milk specific IgE: 2.33

**Peanut**
- Peanut specific IgE: 1.86

“The clinician may choose to translate published ImmunoCAP-based predictive data into comparable IMMULITE levels.... “

Molecular (Recombinant) allergens, led to the development of a new concept in allergy diagnosis called component resolved diagnosis.

Conclusions: A high diagnostic accuracy of the sIgE to allergen components measurement with Immulite 2000 and a high agreement with ImmunoCAP platforms were shown in this study.
Clinical Case#1:

Is it Cross-reactivity or Primary Allergy?

- Since she was 6 y/o, Emma, has had Rhinitis and conjunctivitis during pollen season. An allergy test confirmed that she has sensitization to birch.

- At 16, she suddenly experienced a local reaction from eating peanuts.

- Extract based test were positive for peanut and the Dr. told her to strictly avoid peanut.

- At a later visit to the clinic, a **component based analysis** was also performed and the results showed that Emma was sensitized to all three peanut specific component Ara h 1,2,3. This shows that Emma has a **primary peanut allergy** and recommendation of strict peanut avoidance and Auto Injector is necessary (such as EpiPen, Twinject, Auvi-Q).
Clinical Case#2:  

Is it Cross-reactivity or Primary Allergy?

- Since she was 6 y/o Caroline, has had Rhinitis and conjunctivitis during pollen season. An allergy test confirmed that she has sensitization to birch. At 16, she similarly, suddenly experienced a local reaction from eating peanuts.

- Extract based test were positive for peanut by SPT and blood testing and the Dr. told her to strictly avoid peanuts.

- At a later visit to the clinic, a component based analysis was also performed and the results showed that Caroline had no detectable levels to all three peanut specific component Ara h 1,2,3.

- Instead she had high levels of IgE antibody to Ara h 8 which is a cross reactive component and peanut which is very similar to the main allergen in birch.

- Thus Ara h 8 sensitization indicated that Caroline had a cross reactive pollen related food allergy which was confirmed by her food allergy.

- Her Diagnosis was Pollen-associated peanut allergy and she is suitable for peanut reintroduction and Auto injector is unnecessary.
Allergy Publications

Several important publications on 3rd Gen Allergy Blood Testing

- Dr. Ollert, Dr. Cobbaert, Dr. Li, Dr. Prates, Dr. Biagini

In vitro methods for specific IgE detection on cow’s milk allergy

S. Prates, M. Moraes-Almeida, V. Matos, V. Loureiro and J. Rosado-Pinto

Immunology Department, Dona Estelina Hospital, Lisbon, Portugal

Performance validation of a third-generation allergen-specific IgE assay in the clinical laboratory: Interlaboratory and intermethod comparison

Thomas M. Li 1,*, Paul Fu 1, Vlasta Zarsa 2,1

1Department of Clinical Chemistry, Amphia Hospital, Location Langenbeek, Breda, The Netherlands
2Department of Allergy, Amphia Hospital, Location Pasturaarum, Oosterhout, The Netherlands

Purpose: We aimed to evaluate the diagnostic performance of the IMMULITE 2000 Allergy System from Diagnostic Products Corporation (DPC) for the detection of inhalant and food allergens.

Methods: A selected pool of sera was used to generate a reference value for an allergen-specific IgE assay. Allergen-specific IgE levels were determined using the IMMULITE 2000 system and compared to the results obtained with the IMMULITE 2000 system.

Results: The performance of the IMMULITE 2000 system was evaluated by comparing the results obtained with the IMMULITE 2000 system to those obtained with previously validated methods for the detection of IgE.

Conclusions: We conclude that the IMMULITE 2000 system is effective in the diagnosis of cow’s milk allergy. Both methods can be used to obtain valid and consistent results.

Keywords: Cow’s milk allergy; food hypersensitivity; immunoglobulin E; infant formula; total IgE; specific IgE; IMMULITE 2000; IgE assay; CAP2

Background: Our aims were to evaluate the performance of a fully automated system for measuring allergen-specific IgE (IAEA) against established allergens, to determine the accuracy of the results, and to compare the performance of the IMMULITE 2000 system against previously validated methods for the detection of IgE.

Atopic allergy conditions such as asthma, allergic rhinoconjunctivitis, and atopic dermatitis, as well as other immune-related disorders, are characterized by an increase in IgE levels due to the production of specific IgE antibodies directed against environmental allergens.
What the future holds for Allergy Testing?

A. Expanding the menu in allergy testing for recombinant allergens that is biotechnologically produced allergen molecule originally identified from an allergen extract

The trend from extract-based to molecule-based allergy or component-resolved allergy diagnosis is gaining importance and being increasingly applied in routine care

B. Another area in which researchers have started working in the use of Multiplexing, or the quantitative measurement of specific IgEs to numerous allergens simultaneously using array technology, potentially may provide improved turn around time over monoplexing.
What the future holds for Allergy Testing?

C. A third area of research is to improve the cellular allergy tests, which use mast cell activity as a measure of histamine release in allergic responsiveness. These tests have the potential to improve the accuracy of food allergy diagnosis and may reduce the need for challenge testing.

The new technologies, combined with the use of pure allergens, will enable clinicians to obtain a complete picture and to better advise patients about the best way to manage their food allergy. This will be particularly useful for younger children from whom only small amount of blood may be taken for testing.
Thank You


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