Allergy testing in primary care
A quick reference guide to allergy and specific IgE testing

Providing information on:
- Types of allergy
- Clinical history taking
- Selecting the right allergen IgE tests
- Interpreting the IgE results
- When to refer the patient to a specialist
A quick reference of allergy definitions

**Total IgE:** a raised total IgE level may indicate the presence of allergy but some patients can have a raised IgE but no specific allergy (atopic non-allergic), parasitic infection or other rarer causes such lymphoma or hyper-IgE syndrome. An adult’s normal level is 81 kU$_a$/L. However it is still possible to be allergic with normal level of total IgE, particularly if the patient is only allergic to one or a few allergens.

**Mixed tests:** are mixes of allergen tests manufactured together in one test giving a single result. For example a positive result to a nut mix does not determine exactly which nut is testing positive, just that one or more nuts within the mix is testing positive.

**Panel tests:** common individual allergens are grouped together for convenience for specific diseases such as asthma (aero-allergens: dust mite, cat, dog, timothy pollen, birch pollen). An individual result for each allergen test is reported. Common panels are listed in this guide.

**Single tests:** single allergens e.g. house dust mite. There are over 650 allergens available to test.

**Food intolerance and non-IgE mediated food allergy:** are caused by mechanisms other than that IgE such as enzyme deficiency e.g. lactose intolerance (milk), wheat intolerance (coeliac disease). An IgE test will assist in ruling out IgE mediated allergy.
Introduction

Allergic patients are increasing in numbers and complexity. One in three people in the UK now are affected by some sort of allergy.

Common allergic diseases such as asthma, rhinitis or food allergy can sometimes be difficult to differentiate from non-allergic conditions, even when a careful history is taken.

What does specific IgE allergy testing measure?
Specific IgE is essentially a modern version of the old RAST test and measures the amount of IgE that binds only to one particular allergen.

Why test?
Specific IgE together with a clinical history can help confirm or refute suspected triggers for typical allergy such as allergic rhinitis, allergic asthma and food allergy.

A positive IgE to a specific allergen shows that the allergen MAY cause symptoms and with higher levels may become clinically relevant.
Diagnosing allergy – taking a history

The patient will sometimes have a very clear idea of the trigger for allergic symptoms.

Other things to consider

Age – typically allergic eczema occurs in the first year of life, food allergy in toddlers, allergic rhinitis in early teenage years and allergic asthma in late teenage years.

Family history – a family history of allergy in close relatives confers a risk of allergy.

What symptoms? (See types of allergy).

When do symptoms occur? For example at night, in the day, at work, at home, outside, what time of year, after exercise, etc.

Do they smoke? Smoke exacerbates allergic rhinitis and asthma and is a pre-and peri-natal risk for developing allergy.

Any previous physician diagnosis or allergy testing? – any history?

Timing of symptoms – typical allergic symptoms occur within minutes to an hour of exposure.

Straightforward allergy: for example if a patient starts to get lip and tongue swelling within minutes of eating a peanut, peanut allergy is highly likely.

More complex allergy – for example a patient with urticaria; a more complete history of exacerbating factors including time and place, drug history, other medical conditions, family history is usually required.
What should you test for?

Always test for the most likely cause, bearing in mind the timing of symptoms from exposure and the reproducibility of symptoms – allergy does not come and go.

**FOOD RELATED ALLERGY**

**Common food allergens:** Milk, eggs (especially in children), nuts, fish, fruit, grains and soy.

**Symptoms:** usually occur within minutes to an hour of eating and usually involve the mouth, tongue and throat with itching or swelling. Mild symptoms occurring in the mouth is often due to Oral Allergy Syndrome (OAS).

**Food intolerance:** often patients get confused with food intolerance and food allergy. Food intolerance is non-IgE mediated. IgE tests can assist to rule out allergy from food intolerance.

**Food allergy:** affects 2% of adults and 6% of children in the UK.

**Common symptoms**

**Oral Allergy Syndrome:** typically itching mouth, oral tingling, lip and/or tongue swelling, itching or swollen throat, most common and often associated with birch/grass pollen sensitisation.

**Less common:** Digestive pain, Abdominal cramps, Rash, Wheezing, Shortness of breath.

**Related allergy:** Hayfever, Eczema, Asthma, Anaphylaxis.

**Recommended IgE test panels if there is no obvious cause**

**Paediatric:** Egg, Milk, Soya bean, Peanut, Hazelnut, Wheat, Fish.

**Adult:** Peanut, Hazelnut, Wheat, Fish, Shrimp.

**Oral allergy syndrome:** Birch, Apple, Peach, Hazelnut, Melon.
AERO-ALLERGY, RHINITIS

Grass and tree pollen allergies are usually easy to diagnose by a history of mid or early season rhinitis respectively.

House Dust Mite (HDM) allergy improves in arid countries and is usually worse at night. If IgE testing for common aero-allergens is negative, consider vasomotor rhinitis as a diagnosis.

Common symptoms
Runny nose, Watering eyes, Swelling around eyes, Itching nose, Blocked nose.

Recommended IgE tests
Dust mite, Cat, Dog, Timothy grass, Birch, Mould.

AERO-ALLERGY, ASTHMA

Allergic asthma is commonly triggered by similar allergens to rhinitis. One airway: the nose (rhinitis) and the lungs (asthma) are directly linked, therefore, improvement in rhinitis control can also improve asthma symptoms.

Common symptoms
Tight chest, Wheezing, Shortness of breath, Coughing, Difficulty breathing.

Recommended IgE tests
Dust mite, Cat, Dog, Timothy grass, Birch, Mould.
ECZEMA

Eczema has many triggers and IgE mediated allergy can have a major, or no, role in a given patient. Food can exacerbate eczema by a non-IgE mediated mechanism. If there is a good history to suggest avoidance improves symptoms and food exposure worsens symptoms, then simple avoidance advice or referral to a dietician is indicated.

Acute flares and/or urticaria or angioedema suggest an IgE mediated component may be present. Allergy testing when there are no acute symptoms can be problematic. False positive results are common and patients can end up practising unnecessary avoidance.

Common symptoms
Dryness and recurring skin rashes found particularly noticeable on the head and scalp, neck, inside of elbows, behind knees and buttocks. Redness, skin oedema (swelling), itching and dryness, crusting, flaking, blistering, cracking, oozing or bleeding.

Recommended IgE tests
House dust mite, Egg, Milk, Soya bean, Wheat, Fish.

DRUG ALLERGY

A negative result does not exclude drug allergy. A positive result strongly suggests the drug should be avoided.

Suspected multiple and complex drug allergy or significant management problems referral to a specialist centre is recommended.

Common symptoms
Hives or welts, blisters or eczema are amongst the most common symptoms. Coughing, wheezing, runny nose, difficulty in breathing. Anaphylaxis.

Recommended IgE tests
Penicillin.
URTICARIA

**Allergic urticaria** is uncommon but consider house dust mite allergy (worse in bed, better in arid countries). **A negative IgE food panel** can often help convince a patient that food is not a trigger. If a patient is taking an NSAID, consider temporary withdrawal to see if symptoms improve.

**Common symptoms**
Skin rash, pale or red itchy bumps, wheals. Related conditions: Idiopathic urticaria can be associated with anti-thyroid antibodies in some cases.

**Recommended IgE tests**
House dust mite, Egg, Milk, Soya bean, Wheat, Fish.

ANAPHYLAXIS

Refer the patient to a specialist allergy centre* if severe forms of allergy are suspected. **Anaphylaxis can be caused by any allergen** but common triggers include: insect bites or stings, foods, medication and natural rubber latex. Consider referral if cause unknown.

**Common symptoms**
Reduced blood pressure, light headedness, loss of consciousness, angioedema difficulty breathing, sudden feeling of anxiety, nausea. Related allergy types and symptoms: see food allergy, asthma, rhinitis, urticaria, eczema.

**Recommended IgE tests**
In cases of Idiopathic anaphylaxis: Mixed Nuts, Mixed seafood, Bee and Wasp Venoms

In cases where clinical history indicates potential specific allergens or groups of allergens that could cause anaphylaxis order allergen panels and/or single tests, for example:

**Paediatric Food Panel** (Egg, Milk, Soya bean, Peanut, Hazelnut, Wheat, Fish)

**Adult Food Panel** (Peanut, Hazelnut, Wheat, Fish, Scrimp)

Latex, Venoms (Bee and Wasp), Nut Panel.

* A list of specialist allergy centres is available from BSACI website www.bsaci.org
Pitfalls in allergy testing

Additives

Allergic reactions to additives are very rare but the more natural the substance, the more likely it is to cause allergic symptoms. IgE testing to colourings or preservatives is unlikely to help but advice from a dietician can be helpful.

False positive results

Common allergens have many proteins that can react with IgE but some are more relevant than others. Conventional IgE testing does not determine which protein(s) are involved and a history of exposure causing symptoms is necessary to confirm an IgE result’s relevance in a particular patient.

Lactose intolerance

This is not milk allergy (IgE vs cow’s milk protein) but an inability to split lactose into glucose and galactose due to lactase deficiency. Patients typically experience dose related abdominal pain and diarrhoea an hour or so after consuming dairy products and the diagnosis requires a hydrogen breath test.
Interpretation – what do the results mean?

Results are reported in kilo units of IgE per litre of blood or kUₐ/L.

0.35 kUₐ/L has commonly been used as a negative cut-off level. A detailed clinical history plus a specific IgE test should improve diagnosis accuracy.

IgE antibody levels vs allergic disease

The chart above can be used as a reference guideline for food allergens and inhalant allergens. It demonstrates allergy symptom probability versus IgE antibody concentration.

The higher the specific IgE result the more likely that the patient will experience symptoms on exposure to a particular allergen.
Referral

Appropriate referrals to a specialist allergy centre can should include:

- Suspicion of anaphylaxis
- Undiagnosed severe allergy
- When a clinical history and allergy results conflict and diagnosis has not been possible
- Multiple positivity – the patient has many positive allergen results and diagnosing the cause is difficult
- Most straightforward allergy should be managed in a primary care using history taking and specific IgE diagnostic tests.
- The National Institute of Clinical Excellence (NICE) has released guidelines for:
  - paediatric food allergy: http://guidance.nice.org.uk/CG116
  - atopic eczema in children: http://guidance.nice.org.uk/CG57
  - coeliac disease: http://www.nice.org.uk/CG86
How to request specific IgE allergy Profiles or Single Allergens from The Doctors Laboratory (TDL)

How to request

Profiles and Single Allergens are listed in the Laboratory Guide. Please use the Profile Codes as shown in the Laboratory Guide.

If a request is being made for Individual/Single Allergens, with or without profiles, these need to be requested by name, for example:

Single Allergens for
- Cat e1
- Dog e5
- Egg white f1
- Egg yolk f75
- Milk f2
- Milk (goat) f300

To avoid confusion with single allergens, it is helpful to specify the Allergen and its individual code. Single Allergens and Codes are given in the Allergy section of the Laboratory Guide.

Sample type: SST/GOLD

Volume: 1 x Gold tube will cover all TDL allergy profiles, with the exception of 1A which needs 2 x Gold tubes

Assume one Gold tube will cover 5 single allergens.

NB: IgG Food Intolerance Testing, Vegatest, Hair Analysis, Iridology, NuTron test, Kineasthiology are not validated in testing for clinical allergy.

If you need help or advice when ordering allergy tests, please call The Doctors Laboratory (TDL) 020 7307 7373 ext Allergy Bench or email allergy@tdlpathology.com