Allergy Testing

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Specialists in Private Pathology since the 1920s
**ALLERGY TESTING AT QML PATHOLOGY**

The management of an allergic disorder firstly requires accurate diagnosis of the offending triggers or allergens which cause the condition. QML Pathology provides tests for allergy diagnosis including in vitro specific IgE (RAST) detection, and specific IgE for native and recombinant component allergens. Our exceptional methodology utilises world leading technology including Phadia ImmunoCAP and ISAC systems. The detection of specific IgE is integral to the assessment and management of allergic disorders including:

- Allergic rhinoconjunctivitis
- Atopic eczema
- Asthma
- Food allergy
- Stinging insect allergy
- Certain occupational allergies
- Certain drug allergies

**ALLERGEN-SPECIFIC IgE**

An allergen-specific IgE test is used to measure the amount of IgE antibody in the blood sample. In clinical practice, 0.35 kU/L has commonly been used as a cut-off for allergen-specific IgE to separate positive from negative results. Measurement of low levels of IgE (between 0.1 and 0.5 kU/L) have recently been shown to be important in some patients for particular allergens. In certain cases clinical reactivity has been associated with very low levels of IgE, particularly with drug and venom allergy.

Low level specific IgE (<0.1 kU/L) on the Phadia ImmunoCAP platform generally indicates low probability of clinical allergy to a specific allergen, whereas high antibody levels to an allergen show good correlation with clinical allergy to a specific allergen. Significance may also be affected by total IgE levels, which is a useful additional test to assist with interpretation. Very elevated levels of total IgE (e.g. > 5000 kU/L) may lead to false positive specific IgE results.

**Table a: Interpretive table for allergen-specific IgE**

<table>
<thead>
<tr>
<th>Allergen-specific IgE result (kUA/L)</th>
<th>IgE Ab Level</th>
<th>Symptom relation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0.1</td>
<td>undetectable</td>
<td>unlikely</td>
</tr>
<tr>
<td>0.1-0.5</td>
<td>very low</td>
<td>uncommon</td>
</tr>
<tr>
<td>0.5-2</td>
<td>low</td>
<td>possible</td>
</tr>
<tr>
<td>2-15</td>
<td>moderate</td>
<td>common</td>
</tr>
<tr>
<td>15-50</td>
<td>high</td>
<td>high</td>
</tr>
<tr>
<td>&gt; 50</td>
<td>very high</td>
<td>very high</td>
</tr>
</tbody>
</table>

*NOTE: Asymptomatic allergen sensitisation is not an indication for allergen avoidance.*

*Avoidance should be recommended only when clinical symptoms of reactivity to allergen exposure develop.*

**SELECTION OF ALLERGENS FOR TESTING FOR SPECIFIC IgE DIAGNOSIS**

Allergen selection is directed by the clinical scenario of the patient. The most common inhalant allergen sensitivities are house dust mite, grass pollens, mould spores and animal danders. The most common food allergen sensitivities are egg, nuts, seafood and milk. A full guide to allergen selection is included with this publication (overleaf) with clinical problem type and age suggestions provided below. Serum will be held for up to 12 months to allow for additional add-on testing. Other foods can be requested depending on clinical suspicion of their involvement (see list overleaf).

**SUGGESTIONS BASED ON CLINICAL PRESENTATION**

1. Infant-12 months: In this age group food allergens predominate with usually little sensitisation to inhalant allergens.

<table>
<thead>
<tr>
<th>Suspected Allergens</th>
<th>Recommendations for testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>Suspected allergens can be requested individually or request ‘food mix’ (milk, egg, soy, peanut, fish (cod), wheat) if triggers are unclear</td>
</tr>
<tr>
<td>Egg</td>
<td></td>
</tr>
<tr>
<td>Soy</td>
<td></td>
</tr>
<tr>
<td>Peanut</td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td></td>
</tr>
<tr>
<td>Nuts</td>
<td>Nut mix (peanut, almond, coconut, hazelnut, brazil)</td>
</tr>
<tr>
<td>Cereals</td>
<td>Cereal mix (wheat, oats, buckwheat, corn, sesame)</td>
</tr>
</tbody>
</table>

*Request the above tests OR Extended RAST panel – Allergenic Foods 20*
2. Early childhood: 1-5 years: In this age group both food and inhalant allergy occurs. Test choice should be determined by the clinical picture.

<table>
<thead>
<tr>
<th>Suspected Allergens</th>
<th>Recommendations for testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>Suspected allergens can be requested individually or request 'food mix' (milk, egg, soy, peanut, fish (cod), wheat) if triggers are unclear</td>
</tr>
<tr>
<td>Egg</td>
<td></td>
</tr>
<tr>
<td>Soy</td>
<td></td>
</tr>
<tr>
<td>Peanut</td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td></td>
</tr>
<tr>
<td>House dust mite</td>
<td>House dust mite (D. pteronyssinus)</td>
</tr>
<tr>
<td>Grass pollens</td>
<td>Grass pollen mix (couch, timothy, johnson, rye, paspalum, meadow)</td>
</tr>
<tr>
<td>Animal allergens</td>
<td>Animal mix (cat, dog, horse, cow)</td>
</tr>
</tbody>
</table>

*Request the above tests OR Extended RAST panel(s) – Childhood allergy 15, Inhalant allergy 10*

3. Older children and adults: In this age group environmental (inhalant) allergy predominates with lesser frequency of food allergy. Test choice should be determined by the clinical picture.

**Environmental (inhalant) allergy**

<table>
<thead>
<tr>
<th>Suspected Allergens</th>
<th>Recommendations for testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>House dust mite</td>
<td>House dust mite (D. pteronyssinus)</td>
</tr>
<tr>
<td>Grass pollens</td>
<td>Grass pollen mix (couch, timothy, johnson, rye, paspalum, meadow)</td>
</tr>
<tr>
<td>Danders</td>
<td>Animal mix (cat, dog, horse, cow)</td>
</tr>
<tr>
<td>Moulds</td>
<td>Mould mix (penicillium, cladosporium, alternaria, aspergillus)</td>
</tr>
</tbody>
</table>

*Request the above tests OR Extended RAST panels – Inhalant allergy 10, Moulds and Mites 10*

**Nut allergy**

<table>
<thead>
<tr>
<th>Suspected Allergens</th>
<th>Recommendations for testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peanut</td>
<td>Peanut</td>
</tr>
<tr>
<td>Nuts</td>
<td>Cashew, walnut, macadamia + nut mix (peanut, almond, coconut, hazelnut, brazil)</td>
</tr>
<tr>
<td>Soy</td>
<td>Soy</td>
</tr>
<tr>
<td>Sesame</td>
<td>Sesame</td>
</tr>
</tbody>
</table>

*Request the above tests OR Extended RAST panels – Childhood allergy 15, Allergenic foods 20*

**Seafood allergy**

<table>
<thead>
<tr>
<th>Suspected Allergens</th>
<th>Recommendations for testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish</td>
<td>Cod, salmon, tuna, hake</td>
</tr>
<tr>
<td>Crustaceans</td>
<td>Shrimp, crab, lobster</td>
</tr>
<tr>
<td>Molluscs</td>
<td>Oyster, mussel, squid, scallop</td>
</tr>
<tr>
<td>Uncertain seafood</td>
<td>Crab, squid, lobster + seafood mix (cod, shrimp, tuna, blue mussel, salmon)</td>
</tr>
</tbody>
</table>

*Request the above tests OR Extended RAST panels – Childhood allergy 15, Allergenic foods 20*

**EXTENDED SPECIFIC IGE (EXTENDED RAST) PANELS FOR ALLERGY DIAGNOSIS**

For patients who are willing to pay a gap fee, QML Pathology is able to provide more extensive panels of allergen testing when needed. Certain patients may benefit from testing more than 4 allergens or allergen mixes at a time. To aid in requesting allergy tests, QML Pathology has developed the following panels:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>House dust mite</td>
<td>House dust mite</td>
<td>Milk</td>
<td>Dust mite (D. pteronyssinus)</td>
</tr>
<tr>
<td>Blomia tropicalis (mite)</td>
<td>Grass pollen mix</td>
<td>Banana</td>
<td>Dust mite (D. farinae)</td>
</tr>
<tr>
<td>Cockroach</td>
<td>Cat</td>
<td>Fish (cod)</td>
<td>Blomia tropicalis</td>
</tr>
<tr>
<td>Mould mix</td>
<td>Dog</td>
<td>Egg white</td>
<td>Acarus siro</td>
</tr>
<tr>
<td>Weed pollen mix</td>
<td>Horse</td>
<td>Soy</td>
<td>Apergillus fumigatus</td>
</tr>
<tr>
<td>Tree pollen mix</td>
<td>Mould mix</td>
<td>Wheat</td>
<td>Alternaria alternata</td>
</tr>
<tr>
<td>Grass pollen mix</td>
<td>Milk</td>
<td>Sesame seed</td>
<td>Cladosporium herbarum</td>
</tr>
<tr>
<td>Cat</td>
<td>Egg white</td>
<td>Rice</td>
<td>Penicillium notatum</td>
</tr>
<tr>
<td>Dog</td>
<td>Soy</td>
<td>Peanut</td>
<td>Botrytis cinerea</td>
</tr>
<tr>
<td>Horse</td>
<td>Wheat</td>
<td>Cashew</td>
<td>Mucor racemosus</td>
</tr>
</tbody>
</table>
COMPONENT ALLERGY TESTING

QML Pathology offers a broad array of component (sometimes called molecular allergy) tests. Component-resolved diagnosis based on well-characterised individual allergen molecules is a major advance in allergy diagnosis.

Table b: Recombinant and component allergens (subject to out-of-pocket charges as per table c)

<table>
<thead>
<tr>
<th>Name</th>
<th>Common request term</th>
<th>Name</th>
<th>Common request term</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUXF3, CCD (bromelain)</td>
<td>CCD, bromelain, MUXF3</td>
<td>Paper wasp</td>
<td>(rPol d 5 recombinant protein antigen 5)</td>
</tr>
<tr>
<td>nGal d 1, ovomucoid (egg)</td>
<td>Ovomucoid</td>
<td>Peach (rPru p 4 Profilin)</td>
<td>Peach profilin</td>
</tr>
<tr>
<td>nAsp o 21 (enzyme alpha-amylase)</td>
<td>Alpha amylase, amylase</td>
<td>Peanut (rAra h 2)</td>
<td>Ara h 2</td>
</tr>
<tr>
<td>Enzyme savinase</td>
<td>Savinase</td>
<td>Peanut (rAra h 9, LTP)</td>
<td>Ara h 9</td>
</tr>
<tr>
<td>rApi m 1 - phospholipase A2 (honey bee)</td>
<td>Api m 1; phospholipase A2</td>
<td>Prawn or shrimp (rPen a 1, Tropomyosin)</td>
<td>Tropomyosin</td>
</tr>
<tr>
<td>rHev b 5 (latex)</td>
<td>Latex Hev b 5</td>
<td>Wheat (rTri a 19, Omega-5 Gliadin)</td>
<td>Omega 5 gliadin</td>
</tr>
<tr>
<td>Gal-alpha-1,3-gal thyroglobulin bovine</td>
<td>Alpha-gal; Gal-alpha-1,3-Gal</td>
<td>Wasp (rVes v 5, Vespula)</td>
<td>Ves v 5</td>
</tr>
</tbody>
</table>

IMMUNOCAP ISAC® AT QML PATHOLOGY

ImmunoCAP ISAC® is a multiplex immunoassay platform based on modern biochip technology that allows for rapid, simultaneous measurement of specific IgE to over 100 allergen components in a single test. The ISAC® system tests well-characterised individual allergen molecules; either purified natural or recombinant allergen components, rather than crude whole allergen extracts. Specific IgE to allergen components correlate better with the presence and nature of clinical reactions to allergen exposure than specific IgE to whole allergen extracts.

ISAC® testing offers a broad approach to investigation of disease-associated specific IgE. Clinical scenarios where ISAC® is likely to be most beneficial include assessment of complex patients such as those with inconsistent histories, refractoriness to conventional therapy, multi-sensitised patients with symptoms due to allergen cross-reactivity or patients with anaphylaxis without a definable cause. For further information please consult the QML Pathology Immunocap ISAC brochure.

HOW TO ORDER

Specific IgE: Request ‘specific IgE (RAST)’ on a QML Pathology request form, followed by the individual allergens or mixes required for testing. In the case of the lab receiving unspecified requests for specific IgE, allergen testing will be based on the patient’s age and any clinical information supplied. In this scenario, the standard number of allergens/mixes tested is three.

A measurement of total IgE is useful in the interpretation of the significance of specific IgE and may be requested at the same time.

Extended Specific IgE (Extended RAST): Write the name of the panel from the table above e.g. ‘Extended RAST panel 1’ or ‘Extended sIgE panel 1’ in the ‘Tests Requested’ area of your QML Pathology request form.

Component Allergy Testing: Please request individual component allergens by name for specific IgE testing. For example, ‘specific IgE for Ara h2’ or ‘RAST for Ara h2’.

ISAC Testing: Please request ‘ISAC’ on your QML Pathology request form.

TURNAROUND TIME

RAST, Extended RAST and Component Testing: RAST testing is performed daily (Mon - Fri). Results are normally available within 48 hours from the time of collection.

ISAC Testing: Approximately 4 weeks.
SPECIFIC IgE (RAST) ALLERGEN LIST

SINGLE ALLERGENS
Grasses
- Cultivated wheat
- Couch (Bermuda)
- Johnson grass
- Meadow grass
- Paspalum
- Perennial rye grass
- Timothy

Weeds
- Common ragweed
- Marguerite, Daisy
- Plantain
- Western ragweed

Trees
- Australian Pine
- Common Silver Birch
- Eucalyptus
- Melaleuca
- Privet
- Queen Palm
- Wattle, Acacia

Dust & Mites
- Acarus siro
- Blomia tropicalis
- House dust mite
- D. pteronyssinus
- House dust mite
- D. farinae
- House dust

Moulds
- Alternaria alternata
- Aspergillus fumigatus
- Botrytis cinerea
- Candida albicans
- Cladosporium herbarum
- Mucor racemosus
- Penicillium notatum

Epithelia & Animal Proteins
- Budgerigar feathers
- Cat
- Chicken feathers
- Cow dander
- Dog dander
- Duck feathers
- Guinea pig
- Horse dander
- Mouse epithelium, serum & urine
- Rat epithelium, serum & urine
- Sheep epithelium

Insects
- Cockroach
- Fire Ant
- Honey bee venom
- Mosquito (Aedes)
- Paper wasp venom
- Yellow jacket wasp venom

Drugs
- Amoxycillin
- Ampicillin
- Cefaclor
- Morphine
- Penicillloy-G
- Penicillloy-V
- Pholcodine
- Suxamethonium

Miscellaneous
- Chlorhexidine
- Latex
- Latex rHev b 5
- Cross-reactive carbohydrate determinant (CCD)
- Cochineal extract
- Gal-alpha-1, 3-Gal

Foods
- Almond
- Apple
- Aubergine
- Avocado
- Banana
- Barley
- Beef
- Blue mussel
- Brazil nut
- Buckwheat
- Cashew
- Cheddar cheese
- Chicken meat
- Chilli pepper (Capsicum)
- Cocoa
- Coconut
- Coffee
- Corn (maize)
- Crab
- Egg white
- Egg yolk
- Fish (cod)
- Garlic
- Gluten
- Goat milk
- Grape
- Hake
- Hazelnut
- Honey
- Kiwi fruit
- Lobster
- Lupin
- Melons (rockmelon and honeydew)
- Macadamia
- Mango
- Milk
- Mushroom
- Mutton
- Oat
- Omega 5 gliadin (Wheat)
- Onion
- Orange
- Oyster
- Parvalbumin (fish)
- Peach
- Profilin, peach
- Peanut
- Peanut recombinant ara h2
- Peanut recombinant ara h9
- Pecan
- Pineapple
- Pine nut
- Pistachio
- Pork
- Potato
- Rice
- Rye
- Salmon
- Scallop
- Sesame seed
- Shrimp
- Soya bean
- Squid
- Strawberry
- Sunflower seed
- Tomato
- Tropomysosin (prawn)
- Tuna
- Walnut
- Wheat
- Yeast

MULTIPLE ALLERGENS
Grass Pollen Mix
- Couch (Bermuda)
- Timothy
- Meadow
- Johnson
- Rye
- Paspalum

Tree Pollen Mix
- Wattle
- Olive
- Willow
- White pine
- Eucalyptus
- Melaleuca

Weed Pollen Mix
- Common ragweed
- Mugwort
- Saltwort (prickly)
- Plantain
- Goosefoot

Mould Mix
- Penicillium
- Aspergillus
- Cladosporium
- Alternaria

House Insects Mix
- House dust mite
- D. pteronyssinus
- House dust mite
- D. farinae
- House dust
- Cockroach

Food Mix
- Egg white
- Milk
- Wheat
- Soybean
- Peanut
- Fish (cod)

Cereal Mix
- Wheat
- Oat
- Buckwheat
- Corn
- Sesame seed

Citrus Mix
- Orange
- Lemon
- Grapefruit

Fruit Mix
- Apple
- Pear
- Peach
- Cherry
- Plum

Tropical Fruit Mix
- Peach
- Kiwi fruit
- Pineapple
- Rockmelon

Nut Mix
- Peanut
- Hazelnut
- Almond
- Brazil nut
- Coconut

Meat Mix
- Beef
- Chicken
- Pork

Seafood Mix
- Cod
- Blue mussel
- Shrimp
- Salmon
- Tuna

Vegetable Mix
- Pea
- Carrot
- Potato

Animal Dander Mix
- Cat
- Horse
- Cow

Caged Bird Mix
- Budgerigar
- Parakeet
- Canary
- Parrot
- Finch

Disinfectant Agent Mix
- Ethylene oxide
- Phthalic anhydride
- Formalin/formaldehyde
- Chloramine T

Reactive Chemical Mix
- Isocyanate TD1
- Isocyanate MD1
- Isocyanate HD1
- Phthalic anhydride

INHALANT SCREEN (PHADIATOP)
Grasses
- Weeds
- Moulds
- House dust mite
- Animal epithelia
COST FOR ALLERGY TESTING

Specific IgE (RAST): The Medicare benefit for specific IgE testing allows 4 testing episodes in a 12 month period. If a request contains more than 4 allergens, or allergen mixes; initial testing will be done on 4 allergens with additional allergy tests being processed at fortnightly intervals, up to a maximum of 4 episodes per 12 month period. If it is required that more than 4 allergens or mixes be tested together in a single episode, an out-of-pocket charge will apply. Charges will also apply if there are more than 4 episodes of allergy testing within 12 months, or if component allergens are included in a request. Out-of-pocket charges are summarised in Table c.

Extended Specific IgE (Extended RAST): These panels are not fully funded by Medicare and attract an out-of-pocket fee. The standard Medicare rebate for RAST testing is applicable. Please enquire through your local collection centre or medical liaison officer for costs.

Component Allergy Testing: These panels are not funded by Medicare and attract an out-of-pocket fee. In order to provide a comprehensive repertoire of these useful tests an out-of-pocket gap fee applies to each component allergen requested – please see Table c.

ISAC Testing: Testing will incur an out-of-pocket cost of $350.00*.

Table c: Gap payment scenarios for allergy testing at QML Pathology

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Gap payment</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 4 allergens or mixes in a single episode</td>
<td>$40.00</td>
<td>Non-specialist referrals only</td>
</tr>
<tr>
<td>&gt; 4 episodes within 12 months</td>
<td>$60.00 per episode</td>
<td>All referrals</td>
</tr>
<tr>
<td>Component allergens</td>
<td>$40.00 per component allergen</td>
<td>All referrals</td>
</tr>
<tr>
<td>ISAC</td>
<td>$350.00</td>
<td>No Medicare rebate available</td>
</tr>
</tbody>
</table>

WHERE ALLERGY TESTS ARE PERFORMED

For a list of QML Pathology collection centres that perform allergy testing, please visit qml.com.au

FURTHER INFORMATION

For further information please call (07) 3121 4909

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