Dear Supporter

The Role of Laboratory Investigations in the Diagnosis of Inhalant Allergies: New South African Guidelines

A special interest group, the Allergy Diagnostic Working Group (ADWG), has identified the need to provide guidelines for the most appropriate laboratory investigation of inhalant allergies. The ADWG consists of representatives of the Allergy Society of South Africa (ALLSA), the National Pathology Group (NPG) and the South African Rhinitis Working Group (SARWG). Due to the immense number of laboratory investigations available to identify sensitisation to inhalant allergens, the focus of the guidelines was to establish the most cost-effective approach to allergy testing with the view to ensure optimal patient management. An updated consensus guideline for the laboratory diagnosis of allergies was published during September 2014 in the *Current Allergy & Clinical Immunology Journal*\(^1\). The most notable changes from the first guidelines\(^2\) were the refinement of the *in vitro* inhalant allergy test protocol.

The ADWG concluded that the Phadiatop® (ThermoFisher, Sweden) inhalant allergen mix was still the best screening test for inhalant sensitisation in the South African setting. Data from the three largest private pathology groups in South Africa indicated that approximately 50% of all positive Phadiatop® tests were not followed up with further investigations. This indicates possible sub-optimal diagnosis, management and possible re-testing on specialist level of approximately half of Phadiatop®-test positive patients presenting with clinical symptoms.

The recommended allergen specific-IgE follow-up profile for all patients with a positive Phadiatop® screening test is listed in figure 1. The new breakdown of nine individual allergen specific-IgE tests (cat, dog, three moulds, two grass pollens, two mites) replaces the old recommended profile of house dust mite *D. pteronyssinus*, Bermuda and Timothy grass pollen, a mould mix, a weed pollen mix, two tree pollen mixes, cat and dog dander. The new profile was selected on the basis of information available on the most common aeroallergens causing sensitisation in the South African population, taking into account cross-reactivity between related allergens, and therapy or avoidance measures available for a specific allergen related allergy. The new profile therefore is more directed towards primary health care testing, in order to treat or refer the patient for optimal focussed treatment e.g. avoidance or desensitisation therapy. This profile will also be more cost-effective for the patient in terms of information gained from the test. PathCare will adopt the new recommended inhalant profile breakdown of positive Phadiatop® test results.

Skin Prick Tests (SPT) for inhalant allergens is also acceptable as an initial screening test, provided that it is performed on suitable patients only and that the allergens included mirror the recommended profile. Due to the fact that that there is a small but definite risk of anaphylaxis with SPTs, the test should only be performed in a setting where the personnel are trained in the SPT procedure and where resuscitation equipment is available. Only standardised commercial extract should be used.

Other Laboratory Allergy information: Unavailability of the ISAC® test

The Immuno Solid Allergen Chip comprehensive allergen component test is currently not available world-wide due to a reagent problem. ThermoFisher Scientific promises to resolve the problem as soon as possible. Individual ImmunoCAP® specific-IgE allergen components are available for some allergens, confirm with your laboratory.

Allergy test request form

An updated allergy test request form is available, please contact your local PathCare representative for request forms.
History and clinical picture suggestive of inhalant allergy:
Allergic rhinitis, Asthma and/or Conjunctivitis
Please note seasonality and region/area specificity of symptoms

Screen - In vitro test: Phadiatop® or in vivo test: Skin Prick Test (SPT)
The Phadiatop test serves as a highly sensitive and specific screening test for inhalant allergen sensitisation. The choice of test depend on availability and suitability of test per patient. Note: If a clear history to a suspected allergen is available e.g. Cat, then proceed to individual specific-IgE test.

Phadiatop® POSITIVE

**BASIC BREAKDOWN** of a positive Phadiatop® test as recommended by the ADWG:
1. Bermuda grass pollen (g2)
2. Rye grass pollen (g5)
3. House dust mite D. pteronyssinus (d1)
4. House dust mite B. tropicalis (d201)
5. Mould Alternaria alternata (m6)
6. Mould Aspergillus fumigatus (m3)
7. Mould Cladosporium herbatum (m2)
8. Cat epidermal (e1)
9. Dog epidermal (e5)

Phadiatop® or SPT NEGATIVE

Consider differential diagnosis or other than IgE-mediated mechanism for allergic-like symptoms

**ALLERGEN INFORMATION**
1. Bermuda grass (Kweek) is prevalent in South Africa especially in drier areas. Bermuda pollen is a potent allergen that cross-reacts with other grass pollens including Buffalo and Kikuyu grass pollens.
2. Rye grass is a bunchgrass growing up to 1.5 metres, usually in meadows, in temperate climates. Cross reactions between Rye-, Canary-, Meadow-, Cocksfoot- and Timothy grass pollen is common.
3. Dermatophagoides pteronyssinus is a house dust mite that occur commonly in humid regions and cross reacts with D. farinae that occurs more commonly in drier areas.
4. Blomia tropicalis is also a major mite allergen most prominent in tropical regions, previously classified as a storage mite, now considered a dust mite.
5. Alternaria alternata is an outdoor mould that commonly grows on vegetation with dispersion of spores during dry periods. Sensitisation to Alternaria is an important risk factor for development and persistence and exacerbation of asthma.
6. Aspergillus fumigatus is a thermo-tolerant fungus occurring in soil, plant litter and indoor areas. Aspergillus have lower concentrations of airborne spores but remains an important allergen.
7. Cladosporium herbatum occurs in compost and decaying vegetation. It is the most prominent mould in air-spora in temperate climates.
8. Dog and cat dander is the material shed by the animal into the environment through hair and “dandruff”. The minute dander-dust is difficult to remove from furniture, curtains and carpets and may cause “indirect” allergy reactions, even months after removal of the animal from the environment.

**ADDITIONAL TESTS – SEASON /REGION SPECIFIC:**
If seasonal symptoms (spring) consider adding:
- Region specific tree or weed pollens

If residing in **Western Cape** consider adding:
- Mould Epicoccum purpurascens (m14)
- German cockroach (i6)

If residing in **KwaZulu Natal** consider adding:
- Oriental cockroach (i207)

If residing in the **drier provinces** (Highveld, Free State, Northern Cape, North West) consider adding:
- Maize pollen (g202)
- Eucalyptus tree pollen (t18)
- Weed pollen mix (wx7)

**Farming regions**, consider adding:
- History specific animal dander e.g. horse/cow/chicken etc

**Grain industry** workers, consider adding:
- Storage mites, wheat, rye

Figure 1. Recommended updated algorithm for laboratory diagnosis of inhalant allergies.