The prevalence of allergic diseases is rising worldwide and certainly in South Africa (SA). Every few weeks the major allergy journals list new allergens identified as triggering allergic reactions. There have recently been significant advances in the diagnosis and management of allergic disorders. It may be prudent to consider diagnostic and management advances for the SA generalist in two ways. There are a host of new SA guidelines for the diagnosis and management of all the allergic diseases; these might be considered as the 'practical advances'. There are also new diagnostic and therapeutic approaches that may be considered as the 'possible advances.' Possible because even though these advanced tests and therapies are available they should not be utilised without proper cause.

This article focuses on these two approaches, the latest guideline suggestions and some of the new ideas regarding diagnosis in the laboratory and therapy in the clinic.

Practical advances
A number of SA 'guidelines' have been published in the past year and should form the basis of any rational decision-making in the diagnosis and management of allergic disorders.

Table 1. Requirements for the management of chronic rhinitis (CR) in South Africa (SA)

- Consider CR as a multifactorial condition of which allergic rhinitis is but one cause
- Long-term studies of change in prevalence of CR in relation to climate change are needed
- The allergic rhinitis Essential Medicine List for SA should be updated to reflect safe and effective therapy – sedating antihistamine therapy must not be recommended
- Medical aid organisations must be encouraged to allow CR therapy as a chronic benefit
- Medication should be tailored to individual patients
- Patient education regarding CR is very important

Possible advances
There have been a number of advances in allergy diagnostics and therapy. Two of these are the development of a new diagnostic modality, the multiplex microarray chip, and in the therapeutic realm new progress in immunotherapy.
CONTINUING MEDICAL EDUCATION

Immuno-solid-phase allergen chip (ISAC) microarray test

The ISAC is a multiplex microarray chip test in which immunoglobulin (Ig) E is detected to multiple recombinant allergen components. The current ISAC microchip is a miniaturised immunoassay platform using only 20 µl of serum to measure specific IgE to 112 different recombinant allergen components. It should not be used as a screening test in patients with a history of a low suspicion of allergy, but should be used as a diagnostic tool in patients with suspected allergen cross-reactivity such as combined food and pollen allergies or in patients with multiple allergies.

Clinical value of IgE testing to allergen components

One of the major advantages of component testing is the ability to distinguish between primary, species-specific sensitisation, and cross-reactivity to proteins with similar protein structures, which may contribute towards evaluating the risk of reaction on exposure to different allergens. Protein structure and stability to heat and digestion may affect tolerance to raw or cooked foods and the severity of clinical reactions. This information can be used to individualise patient management by including advice on targeted allergen exposure reduction, selection of suitable allergens for specific immunotherapy or need to perform food selection of suitable allergens for specific allergen exposure reduction, patient management by including advice on targeted allergen exposure reduction, selection of suitable allergens for specific immunotherapy or need to perform food

Table 2. Self-injectable adrenaline devices and indications for their prescription in the community

<table>
<thead>
<tr>
<th>Absolute indications</th>
<th>Relative indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous anaphylaxis to a food, an insect sting, latex or unavoidable aeroallergen</td>
<td>Mild to moderate peanut and/or tree nut allergy in persons &gt;5 years of age</td>
</tr>
<tr>
<td>Food-dependent exercise-induced anaphylaxis</td>
<td>Food allergy in a teenager or young adult</td>
</tr>
<tr>
<td>Idiopathic anaphylaxis</td>
<td>Great distance to a medical facility</td>
</tr>
<tr>
<td>Coexistent unstable or moderate to severe, persistent asthma and a food allergy</td>
<td>Reactions to small amounts of food, such as air-borne food allergens or contact via skin only</td>
</tr>
</tbody>
</table>

Table 3. Summary of prevalence to individual food allergens

<table>
<thead>
<tr>
<th>Allergen</th>
<th>Prevalence in young children</th>
<th>Prognosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cow’s milk</td>
<td>0.3 - 3.5% (&lt;0.5% in adults)</td>
<td>&gt;80% outgrown by 16 years</td>
</tr>
<tr>
<td>Hen’s egg</td>
<td>0.5 - 8% (&lt;0.5% in adults)</td>
<td>&gt;80% outgrown by 16 years</td>
</tr>
<tr>
<td>Wheat</td>
<td>&lt;1%</td>
<td>Majority outgrow – 65% by 12 years</td>
</tr>
<tr>
<td>Fish</td>
<td>&lt;0.2% (children) and &lt;0.5% (adults)</td>
<td>Usually allergic for life</td>
</tr>
<tr>
<td>Shellfish</td>
<td>&lt;0.5% (children) and &lt;2.5% (adults)</td>
<td>Usually allergic for life</td>
</tr>
<tr>
<td>Peanut</td>
<td>0.06 - 5.9%</td>
<td>20% outgrown</td>
</tr>
<tr>
<td>Tree nut</td>
<td>0.2 - 1.4%</td>
<td>10% outgrown</td>
</tr>
<tr>
<td>Plant food</td>
<td>0.1 - 4.3%</td>
<td></td>
</tr>
</tbody>
</table>

Egg allergy

Egg white is the most important source of egg allergy and contains 23 different proteins. The most important allergens are ovomucoid (Gal d 1), ovalbumin (Gal d 2), ovotransferrin/conalbumin (Gal d 3) and lysozyme (Gal d 4). Although ovomucoid comprises only 10% of the total egg white protein, it has been shown to be the dominant allergen and is allergenic in minute amounts. This protein is very stable to heat and digestion; therefore, allergic patients cannot tolerate egg in baked products. High levels of IgE to Gal d 1 are also associated with persistent egg allergy. However, absence or low levels of IgE antibodies to Gal d 1 are associated with an increased probability of tolerance to ingestion of cooked egg. This may guide clinicians in when they should perform a cooked egg challenge. Gal d 3 is present as the protein egg livetin in egg yolk and in chicken as chicken serum albumin and may cause ‘bird-egg syndrome’, where patients

Milk allergy

The major allergens are casein (Bos d 8), alpha-lactalbumin (Bos d 4) and beta-lactoglobulin (Bos d 5), although allergies to minor proteins such as bovine serum albumin (BSA) (Bos d 6) and lactoferin (Bos d lactoferrin) have been reported. Casein, the most important and abundant allergen in milk and hard cheese, is heat stable. Patients with high levels of IgE to casein are at risk for severe reactions and are less likely to outgrow their milk allergy. Note that there is a high homology between casein of different species, and patients with casein reactivity have a high risk of reacting to the milk of other animal species. Whey proteins (alpha-lactalbumin and beta-lactoglobulin) are heat labile and patients reacting to these proteins may often tolerate heated or fermented milk products. BSA is a serum albumin that is a main protein in mammalian blood and an important allergen involved in milk, meat and epithelia allergy. Sensitised patients may react to different meats (beef, lamb and pork), epithelia (cat and dog) and cow’s milk.
may react to egg yolk, chicken meat and feathers.

Immunotherapy
Allergen immunotherapy has been used to treat allergic diseases, such as asthma, allergic rhinitis, and venom allergy for more than a century. Subcutaneous immunotherapy involves the administration of clinically relevant allergens for several months, building up to eventual monthly injections – typically for 3 - 5 years.

Recent advances have improved the safety and efficacy of immunotherapy. The addition of omalizumab or toll-like receptor agonists to standard subcutaneous immunotherapy has proved beneficial. Altering the extract itself,
either through chemical manipulation producing allergoids or directly producing recombinant proteins or significant peptides, has been evaluated – with promising results. The use of different administration techniques, such as sublingual immunotherapy, is common in SA. Other methods of administering allergen immunotherapy have been studied, including epicutaneous, intralymphatic, intranasal, and oral immunotherapy.\textsuperscript{[10]}

For patients with certain allergic profiles, immunotherapy may be an important treatment modality. Such patients include those with bee venom anaphylaxis, allergic rhinitis and mild asthma.

New in this arena is that immunotherapy no longer requires receiving injections for years. For aeroallergen allergy oral and sublingual immunotherapy is now available. The indications for immunotherapy are listed in Table 4.\textsuperscript{[11]}

**Conclusion**

This article summarises the important facts present in SA guidelines, which summarise current trends in the management of common allergic diseases and have locally relevant practice suggestions.

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**References**