Managing allergic rhinitis in people with asthma

Approximately 15% of Australians have allergic rhinitis, and approximately 10% have current asthma. Asthma and allergic rhinitis frequently co-exist. At least 75% of patients with asthma also have rhinitis, although estimates vary widely. Allergic rhinitis is an independent risk factor for developing asthma in children and adults. The presence of allergic rhinitis is associated with worse asthma control in children and adults. Both rhinitis and asthma can be triggered by the same factors, whether allergic (e.g. house dust mite, pet allergens, pollen, cockroach) or non-specific (e.g. cold air, strong odours, environmental tobacco smoke).

Diagnosis

When to suspect allergic rhinitis

Symptoms and signs of allergic rhinitis can be local (e.g. nasal discharge, congestion or itch), regional (e.g. effects on ears, eyes, throat or voice), and systemic (e.g. sleep disturbance and lethargy).

Most people with allergic rhinitis experience nasal congestion or obstruction as the predominant symptom, while some experience mainly ocular symptoms (e.g. tearing and itch).

Practice points

- Allergic rhinitis that starts early in life is usually due to a classical immunoglobulin E hypersensitivity. Adult-onset asthma or inflammatory airway conditions typically have more complex causes.
- Chronic rhinosinusitis with nasal polyps is not a simple allergic condition and generally needs specialist care.
- Food allergies do not cause allergic rhinitis. Nasal symptoms in reaction to food (e.g. spicy foods, wine) are not due to allergy but may indicate irritation or a chemical intolerance. Rhinitis in response to fumes (e.g. fragrances and paints) is not an allergic reaction.
Other people with allergic rhinitis are unaware of allergic symptoms, so consider the possibility of allergic rhinitis in a patient with any of the following:

- symptoms that suggest continuous or recurrent upper respiratory tract infections
- frequent sore throats
- hoarse voice
- persistent mouth breathing, especially in children
- snoring
- feeling of pressure over sinuses
- recurrent headaches
- recurrent serous otitis media, especially in children
- coughing, especially in children (e.g. persistent throat-clearing, or habitual cough soon after lying down at night)
- halitosis
- poor sleep and daytime fatigue or poor concentration
- persistent respiratory symptoms despite stable, well controlled asthma, appropriate treatment and good lung function on spirometry.

History
Ask about:

- symptoms (runny nose, sneezing, blocked nose, itchy/runny eyes)
- impact on sleep
- onset, duration and pattern of symptoms over the day or year (Table 1)
- family and personal history of allergic conditions (e.g. asthma, atopic dermatitis)
- factors that trigger or relieve symptoms
- use of medicines (including non-prescription and complementary medications) and response
- home, work and leisure environments
- any systemic symptoms (e.g. daytime fatigue).

Pharmacy practice points
Advise people with asthma to consult their GPs for thorough investigation if:

- rhinitis symptoms are not well controlled by self-management with over-the-counter medicines (e.g. S2 intranasal corticosteroids, oral antihistamines)
- they need to take rhinitis treatment for more than 4 weeks at a time
- there are any complications (e.g. pain, loss of hearing or sense of smell, persistent cough).

Table 1. Classification of allergic rhinitis

<table>
<thead>
<tr>
<th>Pattern of symptoms</th>
<th>Intermittent</th>
<th>Persistent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Either of:</td>
<td>Symptoms present</td>
</tr>
<tr>
<td></td>
<td>• symptoms present</td>
<td>• symptoms present</td>
</tr>
<tr>
<td></td>
<td>&lt; 4 days per week</td>
<td>&lt; 4 consecutive weeks</td>
</tr>
</tbody>
</table>

Severity

<table>
<thead>
<tr>
<th>Moderate-to-severe</th>
<th>Mild</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any of:</td>
<td>No features of moderate-to-severe allergic rhinitis</td>
</tr>
<tr>
<td>• sleep disturbance</td>
<td></td>
</tr>
<tr>
<td>• impairment of daily activities, leisure, physical activity</td>
<td></td>
</tr>
<tr>
<td>• impairment of school or work</td>
<td></td>
</tr>
<tr>
<td>• troublesome symptoms</td>
<td></td>
</tr>
</tbody>
</table>

Source: Allergic Rhinitis and its Impact on Asthma (2008)

Practice points

- The absence of classical symptoms does not rule out the diagnosis of allergic rhinitis. It may present as any combination of rhinorrhea, itching or sneezing, and blockage, including blockage alone.
- Patients can mistake symptoms of allergic rhinitis for asthma. Allergic rhinitis is sometimes more easily recognised only after asthma has been stabilised.

Post-nasal drip syndrome

- Post-nasal drip has not been shown to be a significant cause of cough, but might contribute to cough. Coughing in people with post-nasal drip or discharge is most likely to be due to coexisting upper airway disease.
- Aspiration to the lower airways is not a feature of allergic rhinitis.
Physical examination and investigations

Examine the upper and lower airway, nasal cavity (including inspection of mucosa and septum), eyes and orbital areas, ears and oropharynx. The absence of abnormal findings does not exclude intermittent allergic rhinitis.

Review asthma control, including spirometry before and after bronchodilator. Consider arranging allergy tests (skin prick test or allergen-specific IgE/RAST blood test†):

- if the diagnosis is not certain
- before advising allergen avoidance
- before considering specific allergen immunotherapy (desensitisation).

Allergy tests should be interpreted by a doctor trained in their interpretation. False negative and false positive results can occur.

Consider further investigations or referral for specialist assessment for patients with any of the findings listed in Table 2.

Table 2. When to consider further investigation or referral*

<table>
<thead>
<tr>
<th>Finding</th>
<th>Suggested action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poorly controlled asthma despite appropriate treatment and good adherence</td>
<td>Refer to allergist or clinical immunologist</td>
</tr>
<tr>
<td>Difficult-to-treat eczema</td>
<td>Refer to allergist or clinical immunologist</td>
</tr>
<tr>
<td>Food allergies</td>
<td>Refer to allergist or clinical immunologist</td>
</tr>
<tr>
<td>Persistent rhinitis symptoms (including nasal obstruction) that have not responded to a trial of intranasal corticosteroid treatment</td>
<td>Refer to allergist, clinical immunologist or ENT</td>
</tr>
<tr>
<td>Persistent nasal obstruction, congestion, post-nasal drip and a reduced sense of smell for ≥ 12 weeks (suggests chronic sinusitis)</td>
<td>Arrange computed tomography scan Refer to allergist, clinical immunologist or ENT</td>
</tr>
<tr>
<td>Persistent unilateral nasal obstruction (suggests foreign body or tumour)</td>
<td>Refer to ENT</td>
</tr>
<tr>
<td>Persistent unilateral bleeding (suggests tumour, a granulomatous condition or vasculitis)</td>
<td>Refer to ENT</td>
</tr>
<tr>
<td>Suspected diffuse nasal polyps (with or without asthma)</td>
<td>Refer to allergist, clinical immunologist or ENT</td>
</tr>
</tbody>
</table>

*In regions where referral access is limited, consider consultation with a specialist.

ENT: ear, nose and throat surgeon with a specialist interest in this condition

Treatment trial

If signs and symptoms are consistent with allergic rhinitis and there are no findings that require further investigation or referral, treat with intranasal corticosteroids (see Prescribing notes).

Before starting a treatment trial with an intranasal corticosteroid:

- consider non-allergic causes (Table 3). Both allergic and non-allergic components can contribute to rhinitis in an individual
- check for contraindications to intranasal corticosteroids (e.g. severe nasal infection including candidiasis, haemorrhagic diatheses, history of recurrent nasal bleeding).

If symptoms do not resolve within 3-4 weeks, consider allergy testing and review the diagnosis.

Note that both allergic and non-allergic rhinitis can respond to intranasal corticosteroids.

Table 3. Non-allergic causes of nasal symptoms

**Common**

- Non-allergic rhinopathy (also known as vasomotor rhinitis or intrinsic rhinitis)
- Bacterial and viral respiratory infections
- Overuse of topical decongestant sprays (rhinitis medicamentosa)

**Uncommon**

- Adverse effects of medicines
- Hormonal effects
- Chronic rhinosinusitis with nasal polyps
- Anatomical abnormalities
- Foreign bodies
- Sensitivity to drugs or occupational irritants
- Cocaine abuse
- Gastroesophageal or laryngo-oesophageal reflux
- Cerebrospinal rhinorrhoea (unilateral discharge)

**Rare**

- Tumours
- Granulomatous conditions
- Vasculitic disease
- Ciliary defects
- Atrophic rhinitis (very rare in humid regions)

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**Management**

**Avoid tobacco smoke**

Advise patients not to smoke and to avoid environmental tobacco smoke. Smoking may worsen both asthma and rhinitis, and reduce the effectiveness of treatment.18, 19

**Start intranasal corticosteroid treatment or alternative**

If continuous treatment is required, an intranasal corticosteroid is the first-choice treatment unless contraindicated.

For adults and children† with persistent allergic rhinitis or moderate-to-severe intermittent allergic rhinitis, prescribe or recommend intranasal corticosteroids (even if the person is already using regular inhaled corticosteroids for asthma). For those with troublesome symptoms, consider initially adding an agent with a more rapid onset of action (e.g. oral H1-antihistamine or short-term intranasal decongestant). For patients with mild intermittent allergic rhinitis, consider targeting predominant symptoms (Table 4). For young children† with mild allergic rhinitis or intermittent allergic rhinitis, or those who will not tolerate intranasal medicines, consider an oral H1-antihistamine. Avoid older, sedating antihistamines.

Refer to the Prescribing notes for more information about specific medicines or classes. Some allergic rhinitis medicines have a pregnancy category A rating (e.g. intranasal budesonide and intranasal sodium cromoglycate). Refer to pregnancy safety information before prescribing for pregnant or breastfeeding women.

**Assess response and adjust treatment**

If a patient using an intranasal H1-antihistamine or oral H1-antihistamine does not experience symptom relief, switch to an intranasal corticosteroid.

If symptoms are not adequately controlled by continuous intranasal corticosteroid treatment alone, consider adding oral H1-antihistamines, either as needed or as a course started pre-emptively before a period of predicted worsening of symptoms (e.g. pollen season).

For children who are taking an inhaled corticosteroid for asthma and who have persistent allergic rhinitis symptoms despite treatment with an intranasal corticosteroid, consider adding either montelukast or an oral H1-antihistamine.

**Explain duration of treatment**

People who experience allergic rhinitis symptoms all year round may need to continue treatment indefinitely. Most patients will need to continue treatment for at least several months.

---

**Table 4. Targeting specific symptoms for intermittent treatment**

<table>
<thead>
<tr>
<th>Predominant symptom or sign</th>
<th>Effective options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Itching and sneezing</td>
<td>Intranasal corticosteroids&lt;sup&gt;3&lt;/sup&gt; Oral H1-antihistamines&lt;sup&gt;20&lt;/sup&gt; Intranasal H1-antihistamines Intranasal cromolyn sodium</td>
</tr>
<tr>
<td>Rhinorrhea</td>
<td>Intranasal corticosteroids&lt;sup&gt;3&lt;/sup&gt; Intranasal ipratropium bromide&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>Nasal congestion</td>
<td>Intranasal corticosteroids&lt;sup&gt;3&lt;/sup&gt; Intranasal H1-antihistamines&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

**Emphasise correct technique for intranasal medicines**

Patients need careful training to use intranasal sprays correctly. Health professionals should demonstrate correct technique (Table 5) and recheck the person’s technique from time to time.

Detailed information and instructional videos for health professionals and patients are available on the National Asthma Council Australia website (www.nationalasthma.org.au).

**Table 5. How to use intranasal sprays for allergic rhinitis**

Follow the manufacturer’s directions for the specific product.

1. Prime the spray device according to the manufacturer’s instructions (the first time and after a period of non-use, as instructed).
2. Shake the bottle before each use.
3. Blow nose before spraying (if blocked by mucus) or use saline irrigation.
4. Tilt head slightly forward and gently put nozzle into nostril. Avoid pushing it in hard to avoid damaging the septum.
5. Aim the spray away from the septum (e.g. tilt spray bottle away from midline using the opposite hand). At the same time, aim nozzle inwards towards nasal cavity, not just directly upwards into tip of nose (e.g. hold the nozzle parallel to roof of mouth).
6. Avoid sniffing hard during or after spraying. Sniffing could force the spray into the back of the throat instead of inside the nose where it needs to work.
7. Wipe the tip of the spray device with a dry handkerchief or tissue, and put the cap back on.

**Managing ocular symptoms**

- Ocular symptoms are usually due to co-existing allergic conjunctivitis.21
- If a topical medicine is needed to manage ocular symptoms, consider topical antihistamines<sup>17</sup> or topical sodium cromoglycate.<sup>3</sup>
- Intranasal corticosteroids<sup>3, 22</sup> and oral H1-antihistamines<sup>20, 22</sup> are also effective.

<sup>†</sup>For all products, refer to product information for age restrictions.
Practice points (prescribers and pharmacists)

- Explain to patients that asthma and allergic rhinitis are part of the same condition that involves airway inflammation and sensitivity throughout the respiratory system – this means it is important to treat the nose as well as the lungs.
- Emphasise that intranasal corticosteroids should be used continuously where indicated – just like inhaled corticosteroids for asthma.
- Explain to patients beginning intranasal corticosteroid treatment that blocked or runny nose may start to improve within the first day, but it may take several days of treatment before gaining full benefit.
- Reassure patients that intranasal corticosteroids are well tolerated. They do not cause atrophy of nasal epithelium, and clinically significant systemic effects have not been reported in long-term studies.

Consider non-pharmacological management options

**Nasal irrigation**

Nasal irrigation with saline solution (via a syringe, rinse bottle or other device) can help manage symptoms of allergic rhinitis in adults and children, and can be used in addition to drug treatment.22-24

Patients can use either commercially manufactured saline solutions or home-made normal saline: 1 teaspoon (5g) rock or sea salt in 500 mL of water (preferably bottled or boiled).

There is not enough evidence to determine:

- whether solutions should be hypertonic or isotonic, buffered or non-buffered, sterile or non-sterile, or whether various additives provide any advantage
- whether inhaling steam or an irritant decongestant (e.g. eucalyptus, menthol) before saline irrigation provides any extra benefit. However, patients are more likely to adhere to simple and convenient regimens, regardless of theoretical advantages.

If patients are using saline irrigation and an intranasal corticosteroid or intranasal H1-antihistamine concomitantly, they should perform saline irrigation first.

**Allergen avoidance**

Before contemplating allergen avoidance measures (Table 6), confirm which allergens are clinically important. Consider referral to an allergist for detailed allergy assessment.

<table>
<thead>
<tr>
<th>Type of allergen</th>
<th>Avoidance options</th>
<th>Evidence and notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grass pollens</td>
<td>Sealing the home against outside air</td>
<td>Sealing the home may be impractical</td>
</tr>
<tr>
<td></td>
<td>Face masks</td>
<td>Face masks and glasses are generally unacceptable to patients</td>
</tr>
<tr>
<td></td>
<td>Glasses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Staying indoors during periods of high airborne pollen concentration (including 7-9 am, 4-6 pm and during thunderstorms)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drying bed sheets indoors</td>
<td></td>
</tr>
<tr>
<td>House dust mite</td>
<td>Washing bedding in hot water (&gt;55 degrees Celsius)</td>
<td>Clinical benefits uncertain for single or multiple, physical or chemical measures</td>
</tr>
<tr>
<td></td>
<td>Mite-proof cases for mattresses and pillows</td>
<td>Combination of all measures may help reduce rhinitis symptoms.</td>
</tr>
<tr>
<td></td>
<td>High-efficiency particulate air (HEPA) filter vacuum cleaners</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acaricide sprays</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Home dehumidifiers</td>
<td></td>
</tr>
<tr>
<td>Pet allergens</td>
<td>Removal of pet from home, followed by thorough cleaning of walls and floorings is to remove adherent allergens.</td>
<td>For patients with demonstrated allergy to cats or other pets, adequate control of allergic symptoms highly unlikely while the pet remains in the house.</td>
</tr>
<tr>
<td>Moulds (indoor and outdoor)</td>
<td>Cleaning</td>
<td>Allergic symptoms may not resolve promptly despite these measures.</td>
</tr>
</tbody>
</table>

The house dust mite is a very common allergen source in humid areas of Australia. Warn patients that house dust mite avoidance measures can be expensive and time consuming, and may not be effective in individuals.

Exposure to airborne pollens is highest in the morning, on windy days and after thunderstorms.

Table 6. Evidence for allergen avoidance in allergic rhinitis
Specific allergen immunotherapy (desensitisation)

Consider specific allergen immunotherapy (sublingual immunotherapy and subcutaneous immunotherapy) only for patients with a clinical history of allergy and documented positive allergen-specific IgE test. It should only be prescribed by an allergy specialist (allergist or clinical immunologist). Both forms of specific allergen immunotherapy require 3–5 years of treatment.

Sublingual immunotherapy (self-administered at home) is effective for the treatment of allergic asthma in adults22, 28 and for allergic rhinitis in adults and children aged 5 years and over,22, 29 especially in those with allergies to temperate grass pollens or house dust mite.27 However, it is unclear which patients will benefit most.3 Sublingual immunotherapy is better tolerated than subcutaneous immunotherapy.27 Local adverse effects can occur27 and are common in children receiving sublingual immunotherapy.3 Systemic adverse reactions, such as anaphylaxis, are very rare (estimated as 1.4 serious adverse events per 100,000 doses).3, 27 The majority of adverse events occur soon after beginning treatment.27

Subcutaneous immunotherapy (administered at a doctor’s office) is effective for the treatment of allergic asthma25, 30 and allergic rhinitis, especially in adults with allergies to pollens.2 It may also be effective in allergies to animal dander, house dust mite and some fungi.27 Subcutaneous immunotherapy is associated with local adverse effects (e.g. injection-site swelling) and, less frequently, serious systemic adverse effects.1, 27

Review

At each review, check adherence to medications and topical therapy technique, as for asthma.

Inspect nasal mucosa at least twice per year for resolution of turbinate hypertrophy and any evidence of local crusting or bleeding. Refer to an ear, nose and throat surgeon if turbinate hypertrophy does not respond to initial intranasal corticosteroid treatment.31

Offer referral to a specialist if:31

• symptoms are persistent, severe or unresponsive
• the patient is contemplating expensive or significant life-changing measures (e.g. moving house, changing jobs) due to allergic rhinitis
• the diagnosis is uncertain.

Prescribing notes

Intranasal corticosteroids

Intranasal corticosteroids are effective in reducing congestion, rhinorrhea, sneezing and itching in adults and children with allergic rhinitis,3 and are also effective against ocular symptoms of allergic rhinitis.32

Intranasal corticosteroids are more effective in reducing nasal symptoms than other treatments,3, 22 including oral H1-antihistamines22, 33 and montelukast,1, 22 and are at least as effective as intranasal H1-antihistamines.3, 33

Intranasal corticosteroids must be taken for up to 2 weeks before maximal efficacy is achieved.34 They are most effective when taken continuously, but may provide significant relief of symptoms when used on an as-needed basis.22

The use of intranasal corticosteroids in patients with concomitant allergic rhinitis and asthma may improve asthma control.22, 35

Mometasone furoate is licensed for use in children over 3 years of age and fluticasone furoate is licensed for use in children over 2 years in Australia.

Adverse effects

Intranasal corticosteroids are generally well tolerated in long-term use. In comparative studies, the most frequent adverse effects were nosebleed, headache, altered taste and pharyngitis.3 Nose bleeds are usually due to poor spray technique or crusting. Intranasal corticosteroids do not thin the nasal epithelium36-38 in the same way that topical corticosteroids cause skin atrophy.

Intranasal corticosteroids are not generally associated with clinically significant systemic adverse effects in adults or children when given in recommended doses.22

Studies in adults and in children have not reported consistent, clinically significant effects on the hypothalamic-pituitary-adrenal axis, ocular pressure, cataract formation or bone density.22

Transient growth suppression has been reported in children, but appears to depend on the particular corticosteroid, the dose, the technique used to measure growth, and concomitant use of oral corticosteroids or inhaled corticosteroids:22

• Growth suppression has been reported with long-term beclomethasone dipropionate use in toddlers or at doses exceeding recommended doses.22
• Placebo-controlled studies of intranasal fluticasone propionate, mometasone furoate, and budesonide have shown no effect on growth at recommended doses or at doses higher than recommended.22

Availability and dose

Budesonide, fluticasone propionate, beclomethasone dipropionate and triamcinolone acetonide are available over the counter. Ciclosporine, mometasone furoate and higher-dose budesonide are available on prescription.

In patients with asthma already taking inhaled corticosteroids, the intranasal corticosteroid dose should be taken into account when determining the total daily corticosteroid dose. Consider prescribing intranasal corticosteroid formulations with lower bioavailability (e.g. budesonide, ciclosporine, mometasone or fluticasone).

Alternative and adjunctive options

Intranasal antihistamines

Intranasal antihistamines reduce all symptoms of allergic rhinitis.33 Some have a more rapid onset of action than intranasal corticosteroids.33

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Allergic Rhinitis and Asthma
Intranasal antihistamines are as effective as newer, less sedating oral H1-antihistamines, but are generally less effective than intranasal corticosteroids for the treatment of allergic rhinitis. Oral antihistamines

Second-generation, less sedating oral H1-antihistamines are effective in managing allergic rhinitis symptoms of rhinorrhoea, sneezing, nasal itching and ocular symptoms, but are less effective for congestion.

Second-generation, less sedating antihistamines (e.g. cetirizine, desloratadine, fexofenadine, levocetirizine or loratadine) should be used in preference to older, more sedating antihistamines. All appear to be equally effective overall.

For very young children, cetirizine and loratadine are appropriate first-line treatment (suitable for children over 12 months old). Fexofenadine and desloratadine can be used in children aged 6 years and over. Before prescribing, check the individual agent for potential cardiac effects and interactions with other drugs, food supplements or complementary products.

Montelukast

Consider a treatment trial of montelukast (as an alternative to oral H1-antihistamines) in children whose allergic rhinitis symptoms are not well controlled on intranasal corticosteroids, or in preschool children who will not tolerate intranasal medicines. Assess response after 2–4 weeks’ treatment and stop montelukast if there is no definite response.

Montelukast is approximately as effective as oral H1-antihistamines, and less effective than intranasal corticosteroids in the management of allergic rhinitis.

Intranasal ipratropium bromide

Ipratropium bromide spray is effective in managing persistent rhinorrhoea, but not blockage or itch. It can be used in combination with intranasal corticosteroid.

Cromolyn sodium

Intranasal cromolyn sodium is effective in some patients for prevention and treatment of allergic rhinitis and is associated with minimal adverse effects. It is less effective than intranasal corticosteroids in most patients.

Not recommended for allergic rhinitis

Intranasal decongestants

Intranasal decongestants have a limited role in the management of allergic rhinitis because they should only be used for very short courses (up to 5 days maximum). Repeated or long-term use can cause rebound swelling of nasal mucosa necessitating dose escalation (rhinitis medicamentosa), with a risk of atrophic rhinitis.

Intranasal decongestants might be considered for a patient with severe nasal congestion to gain rapid relief of symptoms until the full effect of intranasal corticosteroids is achieved.

Oral decongestants

Oral decongestants (e.g. pseudoephedrine or phenylephrine) should not generally be used in the management of allergic rhinitis. They are indicated for short-term use only (e.g. acute infectious rhinitis).

They are associated with adverse effects including palpitations, tachycardia and insomnia.

Oral corticosteroids

Oral corticosteroids should be avoided as a treatment for allergic rhinitis. In exceptional circumstances, their use might be considered in consultation with an allergy specialist.

Complementary therapies

Capsaicin nasal spray is intended for use in non-allergic rhinitis only. It has not been shown to be effective in allergic rhinitis in adults.

Helminth therapy is under investigation for various immunological conditions, but there is currently insufficient evidence on its efficacy and tolerability to recommend it for allergic rhinitis.

Overall, clinical trials of traditional Chinese herbal medicine for the treatment of persistent allergic rhinitis do not demonstrate significant benefit.

Information on other complementary therapies recommended for allergies is available from the Australasian Society of Clinical Immunology and Allergy (www.allergy.org.au).

References


Allergic Rhinitis and Asthma


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Associate Professor Ian Carlton, general practitioner
Ms Debbie Rigby, pharmacist

For more information about asthma, visit the website: www.nationalasthma.org.au

For more information about allergy, visit the website of the Australasian Society of Clinical Immunology and Allergy: www.allergy.org.au

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