CONSIDERING AND MANAGING ALLERGIES IN PEOPLE WITH ASTHMA
## ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFC</td>
<td>chlorofluorocarbon</td>
</tr>
<tr>
<td>COPD</td>
<td>chronic obstructive pulmonary disease</td>
</tr>
<tr>
<td>COX</td>
<td>cyclo-oxygenase</td>
</tr>
<tr>
<td>ED</td>
<td>emergency department</td>
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<tr>
<td>EIB</td>
<td>exercise-induced bronchoconstriction</td>
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<tr>
<td>FEV₁</td>
<td>forced expiratory volume over one second</td>
</tr>
<tr>
<td>FVC</td>
<td>forced vital capacity</td>
</tr>
<tr>
<td>FSANZ</td>
<td>Food Standards Australia and New Zealand</td>
</tr>
<tr>
<td>GORD</td>
<td>gastro-oesophageal reflux disease</td>
</tr>
<tr>
<td>HFA</td>
<td>formulated with hydrofluoralkane propellant</td>
</tr>
<tr>
<td>ICS</td>
<td>inhaled corticosteroid</td>
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<tr>
<td>ICU</td>
<td>intensive care unit</td>
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<tr>
<td>IgE</td>
<td>Immunoglobulin E</td>
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<tr>
<td>IV</td>
<td>intravenous</td>
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<tr>
<td>LABA</td>
<td>long-acting beta₂-adrenergic receptor agonist</td>
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<tr>
<td>LAMA</td>
<td>long-acting muscarinic antagonist</td>
</tr>
<tr>
<td>LTRA</td>
<td>leukotriene receptor antagonist</td>
</tr>
<tr>
<td>MBS</td>
<td>Medical Benefits Scheme</td>
</tr>
<tr>
<td>NIPPV</td>
<td>non-invasive positive pressure ventilation</td>
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<tr>
<td>NSAIDs</td>
<td>nonsteroidal anti-inflammatory drugs</td>
</tr>
<tr>
<td>OCS</td>
<td>oral corticosteroids</td>
</tr>
<tr>
<td>OSA</td>
<td>obstructive sleep apnoea</td>
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<tr>
<td>PaCO</td>
<td>carbon dioxide partial pressure on blood gas analysis</td>
</tr>
<tr>
<td>PaO</td>
<td>oxygen partial pressure on blood gas analysis</td>
</tr>
<tr>
<td>PBS</td>
<td>Pharmaceutical Benefits Scheme</td>
</tr>
<tr>
<td>PEF</td>
<td>peak expiratory flow</td>
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<tr>
<td>pMDI</td>
<td>pressurised metered-dose inhaler or 'puffer'</td>
</tr>
<tr>
<td>SABA</td>
<td>short-acting beta₂-adrenergic receptor agonist</td>
</tr>
<tr>
<td>LAMA</td>
<td>long-acting muscarinic antagonist</td>
</tr>
<tr>
<td>TGA</td>
<td>Therapeutic Goods Administration</td>
</tr>
</tbody>
</table>

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## ENDORSEMENT

The *Australian Asthma Handbook* has been officially endorsed by:

- The Royal Australian College of General Practitioners (RACGP)  
- The Australian Primary Health Care Nurses Association (APNA)  
- The Thoracic Society of Australia and New Zealand (TSANZ)

## SPONSORS

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Allergies and asthma

Overview

Asthma and allergies are closely linked. Most people with asthma have allergic asthma. Allergy testing is not mandatory as part of the diagnostic process for patients with suspected asthma, but may be indicated when identifying allergens will guide management or when other clinically significant allergies are suspected (e.g. food allergies). It may also be useful when considering the prognosis for wheezing infants.

The appropriate investigation of allergies depends on the individual’s risk. For patients with severe or unstable asthma, or a history of anaphylaxis, referral to a specialist for investigation is recommended to minimise risk.

In addition to the principles of asthma management that generally apply to all patients with asthma, effective management of allergic asthma involves:

- management of allergies, including investigating and treating allergic rhinitis if present
- avoidance of relevant allergic triggers, where practical and shown to be effective
- specific allergen immunotherapy, where indicated and shown to be effective.

In this section

- Assessing allergies
- Managing allergies
- Allergic rhinitis
- Allergen avoidance

See:
- Diagnosing asthma in children
- Diagnosing asthma in adults
- Managing asthma in children
- Managing asthma in adults
Assessing allergies to guide asthma management

Recommendations

When taking a history in a patient with suspected asthma, ask about allergies, and the circumstances and timing of symptoms.

How this recommendation was developed
Consensus
Based on clinical experience and expert opinion (informed by evidence, where available).

When performing a physical examination in a patient with suspected asthma, inspect the upper airway for signs of allergic rhinitis (e.g. swollen turbinates, transverse nasal crease, reduced nasal airflow, mouth breathing, darkness and swelling under eyes caused by sinus congestion).

How this recommendation was developed
Consensus
Based on clinical experience and expert opinion (informed by evidence, where available).

Consider allergy testing as part of diagnostic investigations if you suspect allergic triggers, or to guide management.

How this recommendation was developed
Consensus
Based on clinical experience and expert opinion (informed by evidence, where available).

Consider allergy tests for children with recurrent wheezing when the results might guide you in (either of):

- assessing the prognosis (e.g. in preschool children, the presence of allergies increases the probability that the child will have asthma at primary school age)
- managing symptoms (e.g. advising parents about management if avoidable allergic triggers are identified).

Note: Allergy tests are not mandatory in the diagnostic investigation of asthma in children.

How this recommendation was developed
Consensus
Based on clinical experience and expert opinion (informed by evidence, where available).

If allergy testing is needed, refer to an appropriate provider for skin prick testing for common aeroallergens.

Notes
If staff are trained in the skin prick test procedure and its interpretation, skin prick testing can be performed in primary care. If not, refer to an appropriate provider.

When performing skin prick testing, follow Australasian Society of Clinical Immunology and Allergy (ASCIA) guidance: Skin prick testing for the diagnosis of allergic disease. A manual for practitioners.

How this recommendation was developed
Adapted from existing guidance
Based on reliable clinical practice guideline(s) or position statement(s):
Blood test (immunoassay for allergen-specific immunoglobulin E) can be used if skin prick testing is (any of):

- unavailable
- impractical (e.g. a patient who is unable to cooperate with test procedure, a patient taking antihistamines when these cannot be withdrawn, or a patient taking tricyclic antidepressants or pizotifen)
- contraindicated (e.g. patients with severe dermatographism, extensive skin rash, or those at risk of anaphylaxis including patients with occupational asthma due to latex sensitivity).

\[ Question \] How this recommendation was developed

Adapted from existing guidance
Based on reliable clinical practice guideline(s) or position statement(s):
- Australasian Society of Clinical Immunology and Allergy, 2013

To investigate allergies in a person with severe or unstable asthma, or a history of anaphylaxis, refer to a specialist allergist for investigation to minimise risk.

\[ Question \] How this recommendation was developed

Adapted from existing guidance
Based on reliable clinical practice guideline(s) or position statement(s):
- Australasian Society of Clinical Immunology and Allergy, 2013

Consider offering referral to an appropriate specialist (e.g. respiratory physician, occupational physician or allergist) for patients with:

- suspected or confirmed work-related asthma
- other significant allergic disease (e.g. suspected food allergies or severe eczema).

\[ Question \] How this recommendation was developed

Consensus
Based on clinical experience and expert opinion (informed by evidence, where available).

If patients are likely to visit practitioners who offer alternative diagnostic tests, explain that none of the following alternative diagnostic practices should be used in the diagnosis of asthma or allergies:

- cytotoxic testing (Bryans’ or Alcat testing)
- hair analysis
- iridology
- kinesiology
- oral provocation and neutralisation
- pulse testing
- radionics (psionic medicine, dowsing)
- tests for ‘dysbiosis’
- vega testing (electrodermal testing)
- VoiceBio.

\[ Question \] How this recommendation was developed

Adapted from existing guidance
Based on reliable clinical practice guideline(s) or position statement(s):
- Australasian Society of Clinical Immunology and Allergy, 2007

\[ 1 \]

\[ 2 \]
### Allergies and asthma: links

There is a strong link between asthma and allergies:

- The majority of people with asthma have allergies.
- Immunoglobulin E-mediated sensitisation to inhalant allergens is an important risk factor for developing asthma, particularly in childhood.
- In individuals with asthma, exposure to relevant allergens can worsen asthma symptoms and trigger flare-ups, including severe acute asthma.
- Allergens are a common cause of occupational asthma.

Although atopic sensitisation increases the risk of developing asthma, most people who are allergic to inhalant allergens or food allergens do not have asthma. Among people with food allergies, asthma may be a risk factor for fatal anaphylaxis due to food allergens. However, foods are rarely a trigger for asthma symptoms.

Neither asthma nor allergy is a single disease – each has multiple phenotypes and is a complex of several different diseases with different aetiologies, genetic risk factors and environmental risk factors.

► See: [Work-related asthma](#)

Go to: National Asthma Council Australia's [Asthma and allergy](#) information paper

### Allergic rhinitis and asthma: links

#### Prevalence, aetiology and symptoms

Asthma and allergic rhinitis frequently coexist. At least 75% of patients with asthma also have rhinitis, although estimates vary widely.

Allergic rhinitis that starts early in life is usually due to a classical IgE 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.

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. Ocular symptoms (e.g. tearing and itch) in people with allergic rhinitis are usually due to coexisting allergic conjunctivitis.

Patients may mistake symptoms of allergic rhinitis for asthma. Allergic rhinitis is sometimes more easily recognised only after asthma has been stabilised.

► Go to: National Asthma Council Australia's [Allergic Rhinitis and Asthma](#) information paper

### Effects on asthma

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). Food allergies do not cause allergic rhinitis. Most people with allergic rhinitis are sensitised to multiple allergens (e.g. both pollens and house dust mite), so symptoms may be present throughout the year. Pollens (e.g. grasses, weeds, trees) and moulds are typically seasonal allergens in southern regions, but can be perennial in tropical northern regions. Pollen calendars provide information on when airborne pollen levels are likely to be highest for particular plants.

► Go to: ASCIA's [Pollen Calendar](#)

### Allergic rhinitis and asthma: treatment

#### Intranasal corticosteroids

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

► Go to: [Pollen Calendar](#)
Corticosteroids are more effective in reducing nasal symptoms than other treatments,\textsuperscript{7,14} including oral H\textsubscript{1}-antihistamines\textsuperscript{14,16} and montelukast,\textsuperscript{7,14} and are at least as effective as intranasal H\textsubscript{1}-antihistamines.\textsuperscript{7,16} The use of intranasal corticosteroids in patients with concomitant allergic rhinitis and asthma may improve asthma control.\textsuperscript{14,17} Intranasal corticosteroids are generally well tolerated in long-term use. In patients with asthma already taking inhaled corticosteroids, the intranasal corticosteroid dose should be taken into account when determining the total daily corticosteroid dose.

Patients need careful training to use intranasal sprays correctly. Detailed information and instructional videos for health professionals and patients are available on the National Asthma Council Australia website.

\textbf{Antihistamines}

Intranasal antihistamines reduce all symptoms of allergic rhinitis.\textsuperscript{16} Some have a more rapid onset of action than intranasal corticosteroids.\textsuperscript{16} Intranasal antihistamines are as effective as newer, less sedating oral H\textsubscript{1}-antihistamines,\textsuperscript{7} but are generally less effective than intranasal corticosteroids for the treatment of allergic rhinitis.\textsuperscript{14} Second-generation, less sedating oral H\textsubscript{1}-antihistamines (e.g. cetirizine, desloratadine, fexofenadine, levocetirizine or loratadine) are effective in managing allergic rhinitis symptoms of rhinorrhea, sneezing, nasal itching and ocular symptoms,\textsuperscript{16} but are less effective for congestion.\textsuperscript{19} They are also effective for managing co-occurring ocular symptoms of allergy.\textsuperscript{14,20}

\textbf{Specific allergen immunotherapy}

Specific allergen immunotherapy (desensitisation) is effective in reducing allergic rhinitis symptoms (See separate topic).\textsuperscript{7,21}

\textbf{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.

\textbf{Allergy tests in adults with asthma}

Allergy tests have a very limited role in the clinical investigation of asthma. They may be useful to guide management if the patient is sensitised to aeroallergens that are avoidable and avoidance has been shown to be effective, or in the investigation of suspected occupational asthma.

The Australasian Society of Clinical Immunology and Allergy (ASCIA) recommends skin prick testing as the first-choice method for investigating allergies in a person with asthma.\textsuperscript{1} Patients who need allergy tests are usually referred to a specialist for investigation. GPs with appropriate training and experience can also perform skin prick tests for inhalant allergens, if facilities to treat potential systemic allergic reactions are available, or arrange for allergy tests (skin prick testing or blood tests) to be performed by an appropriate provider. Skin prick testing for food allergens should only be performed in specialist practices. Asthma, particularly uncontrolled or unstable asthma, may be a risk factor for anaphylaxis during skin prick testing;\textsuperscript{7} however, anaphylaxis due to skin prick testing is extremely rare. As a precaution, ASCIA advises that skin prick testing in people with severe or unstable asthma should be performed only in specialist practices.\textsuperscript{1} ASCIA’s manual on skin prick testing lists other risk factors.\textsuperscript{1}

\textbf{Allergy tests in children}

Skin-prick testing

- Go to: National Asthma Council Australia's "Allergic rhinitis treatments chart"
- Go to: Australian Society of Clinical Immunology and Allergy Skin Prick Testing Working Party's "Skin prick testing for the diagnosis of allergic disease: A manual for practitioners"
- Go to: National Asthma Council Australia's "Asthma and allergy" information paper
Allergy tests have a very limited role in the clinical investigation of asthma. They may be useful to guide management if the child is sensitised to aeroallergens that are avoidable (e.g. advise parents against getting a cat if skin-prick testing has shown that the child is sensitised to cat allergens, or advise parents that there is no need to remove a family pet if the child is not sensitised).

Skin-prick testing is the recommended test for allergies in children.

Risk factors for anaphylaxis during skin prick testing are thought to include asthma (particularly uncontrolled or unstable asthma), age less than 6 months, and widespread atopic dermatitis in children.¹ As a precaution, the Australasian Society of Clinical Immunology and Allergy (ASCIA) advises that skin prick testing should be performed only in specialist practices for children under 2 years and children with severe or unstable asthma.¹ ASCIA’s manual on skin prick testing lists other risk factors.¹

Total serum IgE testing

In children aged 0–5 years, total serum immunoglobulin E measurement is a poor predictor of allergies or asthma.²²

Specific serum IgE testing

Among children aged 1–4 years attending primary care, those with raised specific IgE for inhaled allergens (e.g. house dust mite, cat dander) are two-to-three times more likely to have asthma at age 6 than non-sensitised children.²² Sensitisation to hen’s egg at the age of 1 year (specific IgE) is a strong predictor of allergic sensitisation to inhaled allergens at age 3 years.²²

Pet allergens

Contact with pets (e.g. cats, dogs and horses) can trigger asthma, mainly due to sensitisation to allergens in sebum or saliva. Exposure can trigger flare-ups or worsen symptoms.³ The amount of allergen excreted differs between breeds.³ Although some breeders claim that certain breeds of dogs are less likely to trigger asthma (‘hypoallergenic’ breeds), allergen levels have not been shown to be lower in the animal’s hair or coat,²³ or in owner’s homes²⁴ with these breeds than other breeds.

Cat allergens easily spread on clothing and are found in places where cats have never been.³ The most effective method of allergen avoidance for people with asthma who are allergic to cats or dogs is to not have these pets in the home. However, the allergen can persist for many months, or even years, after the pet has been removed.³

There is not enough clinical trial evidence to determine whether or not air filtration units are effective to reduce allergen levels in the management of pet-allergic asthma.²⁵

Other strategies for reducing exposure to pet allergens include:

- washing hands and clothes after handling pets
- washing clothes and pet bedding in hot water (> 55°C)
- frequent vacuuming of the home using a vacuum with a HEPA filter
- cleaning hard floors with a damp/antistatic cloth or a steam mop, and cleaning air-conditioning or heating ducts
- grooming pets regularly (where possible, the patient should be absent while this occurs), and washing pets regularly, but no more than the vet recommends.

House dust mite

Exposure to house dust mite (mainly Dermatophagoides pteronyssinus) is a major asthma trigger in Australia.³ These microscopic mites live indoors, feed on skin scales, and thrive in temperate and humid climates such as coastal Australia.

Strategies that have been proposed for reducing exposure to house dust mites include:³

- encasing bedding (pillows, mattresses and doonas) in mite-impermeable covers
- weekly washing bed linen (pillow cases, sheets, doona covers) in a hot wash (> 55°C)
• using pillows manufactured with anti-microbial treatments that suppress fungal growth and dust mites
• removing unnecessary bedding such as extra pillows and cushions where dust mites might live and breed
• removing soft toys, or washing them in a hot wash (> 55°C) every week
• vacuuming rugs and carpets weekly using a vacuum with a high-efficiency particulate air (HEPA) filter, while allergic person is absent
• cleaning hard floors weekly with a damp or antistatic cloth, mop or a steam mop and dusting weekly using a damp or antistatic cloth
• regularly washing curtains or replacing curtains with cleanable blinds
• spraying the area with chemicals that kill mites (acaricides), such as benzyl benzoate spray or liquid nitrogen. Acaricide sprays are not commonly used in Australia.

Some clinical trials assessing the dust mite avoidance strategies (e.g. the use of allergen-impermeable mattress and pillow covers, acaricide sprays, air filters, or combinations of these) have reported a reduction in levels of house dust mite. However, reduced exposure may not improve symptoms. Overall, clinical trials assessing dust mite avoidance for patients with asthma do not show that these strategies are effective in improving asthma symptoms, improving lung function or reducing asthma medication requirements in adults or children, compared with sham interventions or no interventions. The use of allergen-impermeable mattress covers, as a single mite-reduction intervention in adults, is unlikely to be effective in improving asthma.

Use of mite allergen-impermeable covers for bedding (e.g. mattress covers, pillow covers, doona covers) was a component of some of the multi-component strategies for reducing house dust mite exposure that have been shown to be effective for improving asthma symptoms or control.

**Pollen**

Allergy to airborne pollen grains from certain grasses, weeds and trees is common in people with asthma in Australia. The highest pollen counts occur on calm, hot, sunny days in spring or early summer, or during the dry season in tropical regions.

**Exposure to pollen:**

- may worsen asthma symptoms during the pollen season
- can cause outbreaks of asthma flare-ups after thunderstorms
- is usually caused by imported grasses, weeds and trees (which are wind pollinated) – the pollen can travel many kilometres from its source
- is not usually caused by Australian native plants (although there are exceptions, such as Cypress Pine)
- is not usually caused by highly flowered plants as they produce less pollen (which is transported by bees) than wind pollinated plants.

Completely avoiding pollen can be difficult during the pollen season. Strategies that have been proposed for avoiding exposure to pollens include:

- avoiding going outdoors on days with high pollen counts (particularly 7–9 am and 4–6 pm), on windy days or after thunderstorms
- keeping car windows closed, ensuring the vehicle has a pollen cabin air filter and setting the cabin air to recirculate
- showering (or washing face and hands thoroughly) after being outside with exposure to pollen
- drying bed linen indoors during the pollen season
- holidaying out of the pollen season or at the seaside
- not mowing the grass, and staying inside when it is being mown
- wearing a facemask and/or glasses in special situations where pollen can’t be avoided, e.g. if mowing is unavoidable
- removing any plants the patient is sensitive to from their garden.

Daily pollen indices and forecasts are available from news media websites (e.g. www.weatherzone.com.au).

**Moulds**

Building repairs to reduce dampness in homes (e.g. leak repair, improvement of ventilation, removal of water-damaged materials) may reduce asthma symptoms and the use of asthma medicines. A systematic review and meta-analysis found that damp remediation of houses reduced asthma-related symptoms including wheezing in adults, and reduced acute care visits in children. In children living in mouldy houses, remediation of the home may reduce symptoms and flare-ups, compared with cleaning advice about moulds.
Other strategies that have been proposed for avoiding exposure to moulds include:\(^\text{3}\)

- removing visible mould by cleaning with bleach or other mould reduction cleaners (patients should avoid breathing vapours)
- using high-efficiency air filters
- removing indoor pot plants
- drying or removing wet carpets
- treating rising damp as soon as it is detected
- avoiding the use of organic mulches and compost.

See: Asthma triggers

**Triggers in the workplace**

A wide range of occupational allergens has been associated with work-related asthma. Investigation of work-related asthma is complex and typically requires specialist referral.

<table>
<thead>
<tr>
<th>Agent</th>
<th>Occupations</th>
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<tbody>
<tr>
<td><strong>Low molecular weight agents</strong></td>
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<tr>
<td>Wood dust (e.g. western red cedar, redwood, oak)</td>
<td>Carpenters, Builders, Model builders, Sawmill workers, Sanders</td>
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<tr>
<td>Isocyanates</td>
<td>Automotive industry workers, Adhesive workers, Chemical industry, Mechanics, Painters, Polyurethane foam production workers</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>Cosmetics industry, Embalmers, Foundry workers, Hairdressers, Healthcare workers, Laboratory workers, Tanners, Paper, plastics and rubber industry workers</td>
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<tr>
<td>Platinum salts</td>
<td>Chemists, Dentists, Electronics industry workers</td>
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<tr>
<td>Agent</td>
<td>Occupations</td>
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<td><strong>Low molecular weight agents</strong></td>
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<td></td>
<td>• Metallurgists</td>
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<td>• Photographers</td>
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<td><strong>High molecular weight agents</strong></td>
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<tr>
<td><strong>Latex</strong></td>
<td>• Food handlers</td>
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<td></td>
<td>• Healthcare workers</td>
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<td></td>
<td>• Textile industry workers</td>
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<td></td>
<td>• Toy manufacturers</td>
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<tr>
<td><strong>Flour and grain dust</strong></td>
<td>• Bakers</td>
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<td></td>
<td>• Combine harvester drivers</td>
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<td></td>
<td>• Cooks</td>
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<td>• Farmers</td>
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<td></td>
<td>• Grocers</td>
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<tr>
<td></td>
<td>• Pizza makers</td>
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<tr>
<td><strong>Animal allergens (e.g. urine, dander)</strong></td>
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<tr>
<td></td>
<td>• Animal breeders</td>
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<td></td>
<td>• Animal care workers</td>
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<td>• Jockeys</td>
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<td></td>
<td>• Laboratory workers</td>
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<td>• Pet shop workers</td>
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<td>• Veterinary surgery workers</td>
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Alternative diagnostic tests for asthma and allergy

The Australasian Society of Clinical Immunology and Allergy (ASCIA) recommends against the following techniques for the diagnosis and treatment of allergy, asthma and immune disorders because they have not been shown to be reliable or accurate:

- cytotoxic testing (Bryans’ or Alcat testing)
- hair analysis
- iridology
- kinesiology
- oral provocation and neutralisation
- pulse testing
ASCIA also recommends against the use of conventional tests in the investigation of allergies in inappropriate clinical situations, or where the results are presented in a manner amenable to misinterpretation, e.g.:  

- food-specific IgE (RAST, ImmunoCap testing)
- food-specific IgG, IgG4
- lymphocyte subset analysis.

Go to: Unorthodox Techniques for the Diagnosis and Treatment of Allergy, Asthma and Immune Disorders, ASCIA Position Statement

References


Managing allergies as part of asthma management

Recommendations

Manage allergic asthma according to the principles of asthma management in children or adults, with these considerations:

- Identify clinically relevant allergic triggers and manage, or advise avoidance as appropriate.
- Manage co-occurring allergic rhinitis.
- Consider specific immunotherapy for patients who meet all the criteria.

How this recommendation was developed

Consensus Based on clinical experience and expert opinion (informed by evidence, where available).

Consider specific allergen immunotherapy (sublingual immunotherapy or subcutaneous immunotherapy) in patients with allergic rhinitis or allergic asthma who have a history of proven, clinically important sensitisation to a particular allergen that cannot feasibly be avoided and for which for specific allergen immunotherapy is available.

Make sure the patient or parents understand that long-term treatment (at least 3 years) is necessary, and understand the cost and risks of the treatment.

Notes

Both forms of specific allergen immunotherapy require at least 3 years of treatment and should initially be prescribed by an allergy specialist (allergist or clinical immunologist) where possible. Sublingual therapy for house dust mite allergic asthma is only approved for patients who also have allergic rhinitis, and whose asthma is not well controlled with inhaled corticosteroids.

For patients with unstable asthma (e.g. frequent symptoms, marked variability in airflow measured by spirometry or peak flow monitor), the risks of treatment should be considered, and they will need specialist supervision during treatment.

How this recommendation was developed

Consensus Based on clinical experience and expert opinion (informed by evidence, where available), with particular reference to the following source(s):

- Australasian Society of Clinical Immunology and Allergy, 2013
- Australasian Society of Clinical Immunology and Allergy, 1997

Omalizumab treatment can be considered for adults and adolescents aged 12 years and over, with moderate-to-severe allergic asthma despite inhaled corticosteroid treatment, and raised IgE levels.

Note: For adults and adolescents with severe allergic asthma who may be eligible for PBS subsidy, whose asthma is not well-controlled despite optimal inhaled therapy, refer immediately for specialist assessment, because patients only become eligible for PBS subsidisation for omalizumab after at least 12 months' care by a specialist experienced in the management of severe asthma.

After treatment is established, ongoing treatment with omalizumab may be administered by a GP, with 6-monthly review of ongoing eligibility at the specialist clinic.

How this recommendation was developed

Adapted from existing guidance Based on reliable clinical practice guideline(s) or position statement(s):

- Katelaris et al. 2009
- Chung et al. 2014
Omalizumab treatment can be considered for children aged 6 to 11 years with severe allergic asthma (documented exacerbations despite daily high-dose inhaled corticosteroids) and raised IgE levels.

Note: PBS status as at October 2016: For children aged 6 to 11 years, omalizumab treatment is not subsidised by the PBS.

How this recommendation was developed
Adapted from existing guidance
Based on reliable clinical practice guideline(s) or position statement(s):

- Chung et al. 2014
- Katelaris et al. 2009

Mepolizumab can be considered as an add-on treatment for patients aged 12 years and over with severe refractory eosinophilic asthma.

Note: PBS status as at October 2016: Mepolizumab is not subsidised by the PBS.

How this recommendation was developed
Consensus
Based on clinical experience and expert opinion (informed by evidence, where available), with particular reference to the following source(s):

- Menzella et al. 2016
- Powell et al. 2015

Consider offering referral to an allergy specialist for:

- patients with poorly controlled asthma or allergic rhinitis, despite appropriate treatment, good adherence and good inhaler technique
- patients considering specific immunotherapy.

How this recommendation was developed
Consensus
Based on clinical experience and expert opinion (informed by evidence, where available).

For children with allergies and family history of asthma, offer referral to a clinical immunologist or allergist for assessment for specific allergen immunotherapy.

How this recommendation was developed
Consensus
Based on clinical experience and expert opinion (informed by evidence, where available), with particular reference to the following source(s):

- Canonica et al. 2009
- Marogna et al. 2008
- Novembre et al. 2004

More information

Allergies and asthma: links
There is a strong link between asthma and allergies:\(^{10,11}\)

- The majority of people with asthma have allergies.
- Immunoglobulin E-mediated sensitisation to inhalant allergens is an important risk factor for developing asthma, particularly in childhood.
- In individuals with asthma, exposure to relevant allergens can worsen asthma symptoms and trigger flare-ups, including severe acute asthma.
- Allergens are a common cause of occupational asthma.

Although atopic sensitisation increases the risk of developing asthma, most people who are allergic to inhalant allergens or food allergens do not have asthma.\(^{11}\) Among people with food allergies, asthma may be a risk factor for fatal anaphylaxis due to food allergens.\(^{12,13}\) However, foods are rarely a trigger for asthma symptoms.

Neither asthma nor allergy is a single disease – each has multiple phenotypes and is a complex of several different diseases with different aetiologies, genetic risk factors and environmental risk factors.\(^{10}\)

See: Work-related asthma
Go to: National Asthma Council Australia’s Asthma and allergy information paper

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**Allergic rhinitis and asthma: links**

**Prevalence, aetiology and symptoms**

Asthma and allergic rhinitis frequently coexist. At least 75% of patients with asthma also have rhinitis, although estimates vary widely.\(^{14}\)

Allergic rhinitis that starts early in life is usually due to a classical IgE 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.\(^{15}\)

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. Ocular symptoms (e.g. tearing and itch) in people with allergic rhinitis are usually due to coexisting allergic conjunctivitis.\(^{16}\)

Patients may mistake symptoms of allergic rhinitis for asthma. Allergic rhinitis is sometimes more easily recognised only after asthma has been stabilised.

Go to: National Asthma Council Australia’s Allergic Rhinitis and Asthma information paper

**Effects on asthma**

The presence of allergic rhinitis is associated with worse asthma control in children and adults.\(^{17,18,19,20}\)

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). Food allergies do not cause allergic rhinitis. Most people with allergic rhinitis are sensitised to multiple allergens (e.g. both pollens and house dust mite), so symptoms may be present throughout the year. Pollens (e.g. grasses, weeds, trees) and moulds are typically seasonal allergens in southern regions, but can be perennial in tropical northern regions.\(^{15}\) Pollen calendars provide information on when airborne pollen levels are likely to be highest for particular plants.

Go to: ASCIA’s Pollen Calendar

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**Allergic rhinitis and asthma: treatment**

**Intranasal corticosteroids**

Intranasal corticosteroids are effective in reducing congestion, rhinorrhea, sneezing and itching in adults and children with allergic rhinitis.\(^{14}\) and are also effective against ocular symptoms associated with allergic rhinitis.\(^{14,21,22}\) Intranasal corticosteroids are more effective in reducing nasal symptoms than other treatments,\(^{14,21}\) including oral H\(_1\)-antihistamines\(^{21,23}\) and montelukast,\(^{14,21}\) and are at least as effective as intranasal H\(_1\)-antihistamines.\(^{14,23}\) The use of intranasal corticosteroids in patients with concomitant allergic rhinitis and asthma may improve asthma control.\(^{21,24}\)

Intranasal corticosteroids are generally well tolerated in long-term use. In patients with asthma already taking inhaled corticosteroids, the intranasal corticosteroid dose should be taken into account when determining the total daily corticosteroid dose.
Patients need careful training to use intranasal sprays correctly. Detailed information and instructional videos for health professionals and patients are available on the National Asthma Council Australia website.

Go to: National Asthma Council Australia information on intranasal delivery technique, including How-to videos

Antihistamines

Intranasal antihistamines reduce all symptoms of allergic rhinitis. Some have a more rapid onset of action than intranasal corticosteroids. 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. Second-generation, less sedating oral H1-antihistamines (e.g. cetirizine, desloratadine, fexofenadine, levocetirizine or loratadine) are effective in managing allergic rhinitis symptoms of rhinorrhea, sneezing, nasal itching and ocular symptoms, but are less effective for congestion. They are also effective for managing co-occurring ocular symptoms of allergy.

Specific allergen immunotherapy

Specific allergen immunotherapy (desensitisation) is effective in reducing allergic rhinitis symptoms (See separate topic).

Go to: ASCIA’s Allergen Immunotherapy fact sheet for patients

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.

Go to: National Asthma Council Australia’s Allergic rhinitis treatments chart

Specific allergen immunotherapy (desensitisation)

Options available in Australia

Two forms of specific allergen immunotherapy are available:

- sublingual immunotherapy
- subcutaneous immunotherapy.

Both forms of specific allergen immunotherapy require at least 3 years of treatment and should be prescribed by an allergy specialist (allergist or clinical immunologist) where possible.

Once immunotherapy has been successfully initiated by the specialist, co-management with the patient’s GP can be considered.

Commercial allergen preparations for immunotherapy are available in Australia for aeroallergens including house dust mite, pollens (e.g. grass, tree and weed pollens), animal dander and moulds.

Go to: ASCIA’s Allergen Immunotherapy fact sheet for patients

Go to: ASCIA’s Allergen immunotherapy e-training for health professionals

Sublingual immunotherapy

Sublingual immunotherapy is effective in:

- reducing asthma symptoms in adults and children
- reducing allergic rhinitis symptoms in adults and children
- improving disease-specific quality of life in patients with asthma or allergic rhinitis
- reducing medication requirements, particularly in patients allergic to grasses or house dust mite.

However, most studies have been in mild asthma, and few studies have compared immunotherapy with inhaled corticosteroid therapy, or have assessed standardised outcomes such as flare-ups.

Local adverse effects include an unpleasant taste, localised swelling in the mouth, and abdominal pain and nausea. Local adverse effects are common in children receiving sublingual immunotherapy. Anaphylaxis is extremely rare. The rate of serious systemic adverse reactions has been estimated at 1.4 serious adverse events per 100,000 doses. The majority of adverse events occur soon after beginning treatment.
The extract must be held under the tongue without swallowing for 2 minutes (liquid extracts) or 1 minute (tablets).

**Asthma**

Acarizax (house dust mite) is indicated for adults 18–65 years with house dust mite allergic asthma that is not well controlled by inhaled corticosteroids and is associated with mild-to-severe house dust mite allergic rhinitis. It is contraindicated in patients with FEV$_1$ < 70% predicted after adequate treatment, and for patients who have experienced a severe flare-up within the previous 3 months.

**Allergic rhinitis**

Several commercial preparations of aeroallergens for sublingual immunotherapy in patients with allergic rhinitis are used in Australia, including:

- **Acarizax** (house dust mite) – indicated for adults 18–65 years with persistent moderate to severe house dust mite allergic rhinitis despite symptomatic treatment.

- **Actair** (house dust mite) – indicated for the treatment of house dust mite allergic rhinitis with or without conjunctivitis in adults and adolescents over 12 years diagnosed with house dust mite allergy.

- **Oralair** tablets (mix of grass pollens) – indicated for adults and children over 5 years with grass pollen allergic rhinitis.

Various single allergens and/or multiple allergen mixes are available for use as advised by the treating allergist, available as liquid extracts. Age restrictions vary between products.

**Note:** PBS status as at October 2016: Treatment with sublingual immunotherapy specific allergen preparations is not subsidised by the PBS.

**Subcutaneous immunotherapy**

Subcutaneous immunotherapy involves injections in which the dose is gradually increased at regular intervals (usually weekly), or until a therapeutic/maintenance dose is reached. This can take approximately 3–6 months. Subcutaneous immunotherapy is administered under medical supervision, either in a hospital or at a doctor’s office where appropriate facilities to manage potential systemic reactions are available. Subcutaneous immunotherapy is associated with local adverse effects which may occur in up to 10% of patients (e.g. injection-site swelling) and, less frequently, serious systemic adverse effects (e.g. anaphylaxis). Subcutaneous immunotherapy is generally not suitable for younger children (e.g. less than 7 years) because they may not be able to tolerate frequent injections.

Several commercial preparations of aeroallergens for subcutaneous immunotherapy are available in Australia, including various single allergens and/or multiple allergen mixes for use as advised by the treating allergist. Age restrictions vary between products.

**Note:** PBS status as at October 2016: Treatment with subcutaneous specific allergen immunotherapy preparations is not subsidised by the PBS.

**Omalizumab**

Omalizumab is a treatment option for some adults and children aged 6 years and over with difficult-to-treat asthma. It is approved by the Therapeutic Goods Administration for use in:

- adults and adolescents aged 12 years and over with moderate-to-severe allergic asthma that is not controlled while taking inhaled corticosteroid and who have raised IgE levels.

- children aged 6 to 11 years with severe allergic asthma who have documented exacerbations despite daily high-dose inhaled corticosteroids and who have raised IgE levels.

When given in addition to inhaled corticosteroids, omalizumab is effective in helping control asthma in patients with severe asthma, particularly those with asthma that is not controlled despite regular treatment with inhaled corticosteroid at medium-to-high dose plus long-acting beta$_2$ agonist, with or without other add-on treatments. Clinical trials have shown that omalizumab reduces the rate of asthma flare-ups, enables a reduction in inhaled corticosteroid dose, improves symptoms, reduces short-acting beta$_2$ agonist reliever requirement, improves quality of life and achieves a small increase in FEV$_1$.

Omalizumab treatment is generally well tolerated, but is associated with injection site reactions. It has been associated with anaphylactoid reactions, which can occur more than 2 hours after injection, so patients must carry adrenalin for self-administration (e.g. EpiPen) at all times. Early reports suggested that omalizumab may be associated with an increased risk
of malignancy.\textsuperscript{3} However, subsequent pooled results indicate that a causal relationship between omalizumab therapy and malignancy is unlikely.\textsuperscript{34}

Note: Omalizumab treatment in adults and adolescents is subsidised through the PBS for use in patients with severe allergic asthma who meet certain criteria, including monitoring for at least 12 months by a specialist (respiratory physician, clinical immunologist, allergist or general physician) experienced in the management of patients with severe asthma. PBS criteria for continuation of treatment include demonstration of a therapeutic response by recording asthma symptom control, at baseline and after 6 months of treatment, using the 5-item Asthma Control Questionnaire (ACQ-5).

As at October 2016, omalizumab treatment is not subsidised by the PBS for children aged 6 to 11 years.

\textbf{Mepolizumab}

Mepolizumab is a biological humanised anti-interleukin-5 (IL-5) monoclonal antibody (human IgG1) which reduces the number of eosinophils in sputum and blood. It is indicated for add-on treatment of severe refractory eosinophilic asthma in patients aged 12 years or over and is administered by subcutaneous injection once every 4 weeks.\textsuperscript{35}

In people with severe eosinophilic asthma, mepolizumab treatment has been shown to improve health-related quality of life, reduce the rate of asthma flare-ups and reduce the need to systemic corticosteroids.\textsuperscript{6, 5, 36}

Adverse effects include hypersensitivity reactions such as urticaria, angioedema, rash, bronchospasm, hypotension. These generally occur within hours of administration, but reactions up to days after administration have been recorded.\textsuperscript{35} No cases of anaphylaxis were recorded in a 52-week open-label study of subcutaneous mepolizumab, conducted among patients who had participated in two randomised controlled trials.\textsuperscript{37}

Note: PBS status as at October 2016: Mepolizumab is not subsidised by the PBS.

\section*{References}


Managing allergic rhinitis in people with asthma

Recommendations

Prescribe or recommend intranasal corticosteroids for adults and children with persistent allergic rhinitis or moderate-to-severe intermittent allergic rhinitis, even if the person is already taking regular inhaled corticosteroids for asthma.

Table. Classification of allergic rhinitis

<table>
<thead>
<tr>
<th>Pattern of symptoms</th>
<th>Intermittent</th>
<th>Persistent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Either of:</td>
<td>• symptoms present &lt;4 days per week</td>
<td>• symptoms present ≥4 days per week</td>
</tr>
<tr>
<td></td>
<td>• symptoms present &lt;4 consecutive weeks</td>
<td>• symptoms present ≥4 consecutive weeks</td>
</tr>
<tr>
<td>Severity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>No features of moderate-to-severe allergic rhinitis</td>
<td>Any of:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• sleep disturbance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• impairment of daily activities, leisure, physical activity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• impairment of school or work</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• troublesome symptoms</td>
</tr>
</tbody>
</table>


Asset ID: 54

How this recommendation was developed

Adapted from existing guidance

Based on reliable clinical practice guideline(s) or position statement(s):

- Brożek et al. 2010

If symptoms are troublesome to the patient, consider initially adding an agent with a more rapid onset of action (e.g. oral or intranasal H1-antihistamine or short-term intranasal decongestant).

Note: Warn patients not to take intranasal decongestants for more than 5 days, and only occasionally.
For patients with mild intermittent allergic rhinitis, consider targeting predominant symptoms.

**Table. Targeting specific symptoms for intermittent treatment of allergic rhinitis**

<table>
<thead>
<tr>
<th>Predominant symptom or sign</th>
<th>Effective options</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Itching and sneezing</em></td>
<td>Intranasal corticosteroids</td>
</tr>
<tr>
<td></td>
<td>Oral H\textsubscript{1}-antihistamines</td>
</tr>
<tr>
<td></td>
<td>Intranasal cromolyn sodium</td>
</tr>
<tr>
<td><em>Rhinorrhea</em></td>
<td>Intranasal corticosteroids</td>
</tr>
<tr>
<td></td>
<td>Ipratropium bromide</td>
</tr>
<tr>
<td><em>Nasal congestion</em></td>
<td>Intranasal corticosteroids</td>
</tr>
<tr>
<td></td>
<td>Intranasal H\textsubscript{1} - antihistamines</td>
</tr>
</tbody>
</table>

**Sources**


Asset ID: 55

**How this recommendation was developed**

Consensus

Based on clinical experience and expert opinion (informed by evidence, where available).

For young children with mild allergic rhinitis or intermittent allergic rhinitis, or those who will not tolerate intranasal medicines, consider an oral H\textsubscript{1}-antihistamine. Avoid older, sedating antihistamines.

**How this recommendation was developed**

Consensus

Based on clinical experience and expert opinion (informed by evidence, where available).

If allergic rhinitis symptoms do not resolve within 3–4 weeks, consider allergy testing and review the diagnosis.
For patients with asthma who need long-term regular medication for allergic rhinitis, explain to patients that effective management of allergic rhinitis is part of their asthma care. Emphasise the need to take intranasal corticosteroids consistently, and reassure patients that these medicines have a good safety profile when taken long term.

Demonstrate correct technique for using intranasal sprays and check patients’ technique regularly.

Consider specialist referral for patients with allergic rhinitis who have:

- poorly controlled asthma, despite appropriate treatment, good adherence and good inhaler technique
- other significant allergic disease (e.g. food allergies or severe eczema)
- symptoms that suggest an alternative diagnosis (e.g. unilateral nasal symptoms, persistent nasal obstruction that does not respond to intranasal corticosteroids, or suspected chronic sinusitis).

In pharmacies, advise people with co-occurring asthma and allergic rhinitis to consult their GP 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).

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

Inspect nasal mucosa one month after starting treatment then every 6 months for resolution of turbinate hypertrophy and any evidence of local crusting or bleeding.
Allergic rhinitis and asthma: links

Prevalence, aetiology and symptoms
Asthma and allergic rhinitis frequently coexist. At least 75% of patients with asthma also have rhinitis, although estimates vary widely.\(^1\)

Allergic rhinitis that starts early in life is usually due to a classical IgE 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.\(^7\)

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. Ocular symptoms (e.g. tearing and itch) in people with allergic rhinitis are usually due to coexisting allergic conjunctivitis.\(^8\)

Patients may mistake symptoms of allergic rhinitis for asthma. Allergic rhinitis is sometimes more easily recognised only after asthma has been stabilised.

▶ Go to: National Asthma Council Australia’s [Allergic Rhinitis and Asthma](#) information paper

Effects on asthma
The presence of allergic rhinitis is associated with worse asthma control in children and adults.\(^9,10,11,12\)

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). Food allergies do not cause allergic rhinitis. Most people with allergic rhinitis are sensitised to multiple allergens (e.g. both pollens and house dust mite), so symptoms may be present throughout the year. Pollens (e.g. grasses, weeds, trees) and moulds are typically seasonal allergens in southern regions, but can be perennial in tropical northern regions.\(^7\) Pollen calendars provide information on when airborne pollen levels are likely to be highest for particular plants.

▶ Go to: ASCIA’s [Pollen Calendar](#)

Allergic rhinitis and asthma: treatment

Intranasal corticosteroids
Intranasal corticosteroids are effective in reducing congestion, rhinorrhea, sneezing and itching in adults and children with allergic rhinitis,\(^1\) and are also effective against ocular symptoms associated with allergic rhinitis.\(^1,6,13\) Intranasal corticosteroids are more effective in reducing nasal symptoms than other treatments,\(^1,6\) including oral H\(_1\)-antihistamines\(^6,5\) and montelukast,\(^1,6\) and are at least as effective as intranasal H\(_1\)-antihistamines.\(^1,5\) The use of intranasal corticosteroids in patients with concomitant allergic rhinitis and asthma may improve asthma control.\(^6,14\)

Intranasal corticosteroids are generally well tolerated in long-term use. In patients with asthma already taking inhaled corticosteroids, the intranasal corticosteroid dose should be taken into account when determining the total daily corticosteroid dose.

Patients need careful training to use intranasal sprays correctly. Detailed information and instructional videos for health professionals and patients are available on the National Asthma Council Australia website.

▶ Go to: National Asthma Council Australia information on intranasal delivery technique, including [‘How-to’ videos](#)

Antihistamines
Intranasal antihistamines reduce all symptoms of allergic rhinitis.\(^5\) Some have a more rapid onset of action than intranasal corticosteroids.\(^5\) Intranasal antihistamines are as effective as newer, less sedating oral H\(_1\)-antihistamines,\(^1\) but are generally less effective than intranasal corticosteroids for the treatment of allergic rhinitis.\(^6\)
Second-generation, less sedating oral H1-antihistamines (e.g. cetirizine, desloratadine, fexofenadine, levocetirizine or loratadine) are effective in managing allergic rhinitis symptoms of rhinorrhea, sneezing, nasal itching and ocular symptoms, but are less effective for congestion. They are also effective for managing co-occurring ocular symptoms of allergy.

**Specific allergen immunotherapy**
Specific allergen immunotherapy (desensitisation) is effective in reducing allergic rhinitis symptoms (See separate topic).

- Go to: ASCIA's [Allergen Immunotherapy](#) fact sheet for patients

**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.

- Go to: National Asthma Council Australia’s [Allergic rhinitis treatments chart](#)

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**Specific allergen immunotherapy (desensitisation)**

**Options available in Australia**
Two forms of specific allergen immunotherapy are available:

- sublingual immunotherapy
- subcutaneous immunotherapy.

Both forms of specific allergen immunotherapy require at least 3 years of treatment and should be prescribed by an allergy specialist (allergist or clinical immunologist) where possible.

Once immunotherapy has been successfully initiated by the specialist, co-management with the patient’s GP can be considered.

Commercial allergen preparations for immunotherapy are available in Australia for aeroallergens including house dust mite, pollens (e.g. grass, tree and weed pollens), animal dander and moulds.

- Go to: ASCIA’s [Allergen Immunotherapy](#) fact sheet for patients
  - Go to: ASCIA’s [Allergen immunotherapy e-training for health professionals](#)

**Sublingual immunotherapy**
Sublingual immunotherapy is effective in:

- reducing asthma symptoms in adults and children
- reducing allergic rhinitis symptoms in adults and children
- improving disease-specific quality of life in patients with asthma or allergic rhinitis
- reducing medication requirements, particularly in patients allergic to grasses or house dust mite.

However, most studies have been in mild asthma, and few studies have compared immunotherapy with inhaled corticosteroid therapy, or have assessed standardised outcomes such as flare-ups.

Local adverse effects include an unpleasant taste, localised swelling in the mouth, and abdominal pain and nausea. Local adverse effects are common in children receiving sublingual immunotherapy.

Anaphylaxis is extremely rare. The rate of serious systemic adverse reactions has been estimated at 1.4 serious adverse events per 100,000 doses. The majority of adverse events occur soon after beginning treatment.

The extract must be held under the tongue without swallowing for 2 minutes (liquid extracts) or 1 minute (tablets).

**Asthma**
**Acarizax** (house dust mite) is indicated for adults 18–65 years with house dust mite allergic asthma that is not well controlled by inhaled corticosteroids and is associated with mild-to-severe house dust mite allergic rhinitis. It is contraindicated in patients with FEV1 <70% predicted after adequate treatment, and for patients who have experienced a severe flare-up within the previous 3 months.

**Allergic rhinitis**
Several commercial preparations of aeroallergens for sublingual immunotherapy in patients with allergic rhinitis are used in Australia, including:

- **Acarizax** (house dust mite) – indicated for adults 18–65 years with persistent moderate to severe house dust mite allergic rhinitis despite symptomatic treatment.\(^1\)
- **Actair** (house dust mite) – indicated for the treatment of house dust mite allergic rhinitis with or without conjunctivitis in adults and adolescents over 12 years diagnosed with house dust mite allergy.\(^1\)
- **Oralair** tablets (mix of grass pollens) – indicated for adults and children over 5 years with grass pollen allergic rhinitis.\(^1\)

Various single allergens and/or multiple allergen mixes are available for use as advised by the treating allergist, available as liquid extracts. Age restrictions vary between products.

**Note:** PBS status as at October 2016: Treatment with sublingual immunotherapy specific allergen preparations is not subsidised by the PBS.

### Subcutaneous immunotherapy

Subcutaneous immunotherapy involves injections in which the dose is gradually increased at regular intervals (usually weekly), or until a therapeutic/maintenance dose is reached. This can take approximately 3–6 months.\(^2\)

Subcutaneous immunotherapy is administered under medical supervision, either in a hospital or at a doctor’s office where appropriate facilities to manage potential systemic reactions are available.

Subcutaneous immunotherapy is associated with local adverse effects which may occur in up to 10% of patients (e.g. injection-site swelling) and, less frequently, serious systemic adverse effects (e.g. anaphylaxis).\(^1,\)\(^1\)

Subcutaneous immunotherapy is generally not suitable for younger children (e.g. less than 7 years) because they may not be able to tolerate frequent injections.

Several commercial preparations of aeroallergens for subcutaneous immunotherapy are available in Australia, including various single allergens and/or multiple allergen mixes for use as advised by the treating allergist. Age restrictions vary between products.

**Note:** PBS status as at October 2016: Treatment with subcutaneous specific allergen immunotherapy preparations is not subsidised by the PBS.

### References


Considering allergen avoidance where feasible

Recommendations

Advise allergen avoidance or reduction measures only if all the following apply:

- the patient has proven sensitivity to the allergen
- the allergen is a clinically significant asthma trigger
- the patient or carer is motivated to apply reduction measures long term and can afford them.

How this recommendation was developed
Consensus
Based on clinical experience and expert opinion (informed by evidence, where available).

Advise patient or parents that single interventions to reduce exposure to house dust mites are unlikely to be effective in improving asthma symptoms or control.

How this recommendation was developed
Evidence-based recommendation (Grade C)
Based on systematic literature review.
Clinical question for literature search:
Is allergen avoidance effective in improving asthma control? Which allergen avoidance strategies are most effective in controlling symptoms of asthma?
Key evidence considered:
- Gøtzsche and Johansen, 2008
- van den Bemt et al. 2007
- Brehler and Kniest, 2006

See: Systematic review of allergen avoidance strategies and asthma outcomes

Advise patient or parents that a combination of allergen reduction strategies may improve asthma symptoms or control for some patients sensitised to house dust mites.

How this recommendation was developed
Evidence-based recommendation (Grade C)
Based on systematic literature review.
Clinical question for literature search:
Is allergen avoidance effective in improving asthma control? Which allergen avoidance strategies are most effective in controlling symptoms of asthma?
Key evidence considered:
- Gøtzsche and Johansen, 2008
- Hayden et al. 1997

See: Systematic review of allergen avoidance strategies and asthma outcomes
Explain that the use of mite allergen-impermeable covers for bedding (e.g. mattress covers, pillow covers, doona covers) was a component of some of the multi-component strategies for reducing house dust mite exposure that have been shown to be effective for improving asthma symptoms or control.

**How this recommendation was developed**
Evidence-based recommendation (Grade C)

**Clinical question for literature search:**
Is allergen avoidance effective in improving asthma control? Which allergen avoidance strategies are most effective in controlling symptoms of asthma?

**Key evidence considered:**
- Dorward *et al.* 1988
- Hayden *et al.* 1997
- Shapiro *et al.* 1999
- Walshaw and Evans, 1986

See: Systematic review of allergen avoidance strategies and asthma outcomes

If a person has proven allergy to an animal, and symptoms that correlate with exposure to the particular animal, advise avoidance of the animal. If it is not possible to avoid the animal, consider premedicating with an antihistamine 20–30 minutes before predicted exposure.

**How this recommendation was developed**
Consensus

If the trigger animal is a family pet, advise removal of the pet from the home. If this is not feasible, advise keeping the pet outside or in a limited part of the house, and not allowing the pet into the allergic person’s bedroom.

**How this recommendation was developed**
Consensus

Advise patients who are sensitised to pollens (or parents) that some people try pollen avoidance measures during pollen season, but there is no reliable evidence that these are effective.

**Strategies that may be helpful include:**
- staying indoors during and after thunderstorms
- staying indoors on high-pollen days and windy days, if possible
- wearing sunglasses (which may help prevent allergens from depositing onto the conjunctivae)
- washing and drying clothing inside to help prevent deposition of pollen allergen on clean clothes
- keeping windows closed where possible.

**How this recommendation was developed**
Consensus

Advise patients or parents to focus mould avoidance measures on reducing or preventing dampness of the home to prevent mould growth.

**How this recommendation was developed**
Based on selected evidence

Based on a limited structured literature review or published systematic review, which identified the following relevant evidence:

- Sauni et al. 2011

More information

**Allergy tests in adults with asthma**

Allergy tests have a very limited role in the clinical investigation of asthma. They may be useful to guide management if the patient is sensitised to aeroallergens that are avoidable and avoidance has been shown to be effective, or in the investigation of suspected occupational asthma.

The Australasian Society of Clinical Immunology and Allergy (ASCIA) recommends skin prick testing as the first-choice method for investigating allergies in a person with asthma.9

Patients who need allergy tests are usually referred to a specialist for investigation. GPs with appropriate training and experience can also perform skin prick tests for inhalent allergens, if facilities to treat potential systemic allergic reactions are available, or arrange for allergy tests (skin prick testing or blood tests) to be performed by an appropriate provider. Skin prick testing for food allergens should only be performed in specialist practices.

Asthma, particularly uncontrolled or unstable asthma, may be a risk factor for anaphylaxis during skin prick testing;9 however, anaphylaxis due to skin prick testing is extremely rare. As a precaution, ASCIA advises that skin prick testing in people with severe or unstable asthma should be performed only in specialist practices.9 ASCIA’s manual on skin prick testing lists other risk factors.

Go to: Australasian Society of Clinical Immunology and Allergy Skin Prick Testing Working Party’s [Skin prick testing for the diagnosis of allergic disease. A manual for practitioners](https://doi.org/10.1016/j.jaci.2011.05.011)

Go to: National Asthma Council Australia’s [Asthma and allergy information paper](https://doi.org/10.1016/j.jaci.2011.05.011)

**House dust mite**

Exposure to house dust mite (mainly *Dermatophagoides pteronyssinus*) is a major asthma trigger in Australia.10 These microscopic mites live indoors, feed on skin scales, and thrive in temperate and humid climates such as coastal Australia.

Strategies that have been proposed for reducing exposure to house dust mites include:10

- encasing bedding (pillows, mattresses and doonas) in mite-impermeable covers
- weekly washing bed linen (pillow cases, sheets, doona covers) in a hot wash (> 55°C)
- using pillows manufactured with anti-microbial treatments that suppress fungal growth and dust mites
- removing unnecessary bedding such as extra pillows and cushions where dust mites might live and breed
- removing soft toys, or washing them in a hot wash (> 55°C) every week
- vacuuming rugs and carpets weekly using a vacuum with a high-efficiency particulate air (HEPA) filter, while allergic person is absent
- cleaning hard floors weekly with a damp or antistatic cloth, mop or a steam mop and dusting weekly using a damp or antistatic cloth
- regularly washing curtains or replacing curtains with cleanable blinds
- spraying the area with chemicals that kill mites (acaricides), such as benzyl benzoate spray or liquid nitrogen. Acaricide sprays are not commonly used in Australia.

Some clinical trials assessing the dust mite avoidance strategies (e.g. the use of allergen-impermeable mattress and pillow covers, acaricide sprays, air filters, or combinations of these) have reported a reduction in levels of house dust mite.11, 12, 13, 14, 15, 5, 16, 17, 18, 19, 20, 3 However, reduced exposure may not improve symptoms.

Overall, clinical trials assessing dust mite avoidance for patients with asthma do not show that these strategies are effective in improving asthma symptoms, improving lung function or reducing asthma medication requirements in adults or children, compared with sham interventions or no interventions.1 The use of allergen-impermeable mattress covers, as a single mite-reduction intervention in adults, is unlikely to be effective in improving asthma.21

Use of mite allergen-impermeable covers for bedding (e.g. mattress covers, pillow covers, doona covers) was a component of some of the multi-component strategies for reducing house dust mite exposure that have been shown to be effective for improving asthma symptoms or control.
Pet allergens
Contact with pets (e.g. cats, dogs and horses) can trigger asthma, mainly due to sensitisation to allergens in sebum or saliva. Exposure can trigger flare-ups or worsen symptoms.\(^\text{10}\)

The amount of allergen excreted differs between breeds.\(^\text{10}\) Although some breeders claim that certain breeds of dogs are less likely to trigger asthma (‘hypoallergenic’ breeds), allergen levels have not been shown to be lower in the animal’s hair or coat,\(^\text{22}\) or in owner’s homes\(^\text{23}\) with these breeds than other breeds.

Cat allergens easily spread on clothing and are found in places where cats have never been.\(^\text{10}\)

The most effective method of allergen avoidance for people with asthma who are allergic to cats or dogs is to not have these pets in the home. However, the allergen can persist for many months, or even years, after the pet has been removed.\(^\text{10}\)

There is not enough clinical trial evidence to determine whether or not air filtration units are effective to reduce allergen levels in the management of pet-allergic asthma.\(^\text{24}\)

Other strategies for reducing exposure to pet allergens include:

- washing hands and clothes after handling pets
- washing clothes and pet bedding in hot water (\(> 55^\circ\text{C}\))
- frequent vacuuming of the home using a vacuum with a HEPA filter
- cleaning hard floors with a damp/antistatic cloth or a steam mop, and cleaning air-conditioning or heating ducts
- grooming pets regularly (where possible, the patient should be absent while this occurs), and washing pets regularly, but no more than the vet recommends.

Pollens
Allergy to airborne pollen grains from certain grasses, weeds and trees is common in people with asthma in Australia.\(^\text{10}\)

The highest pollen counts occur on calm, hot, sunny days in spring or early summer, or during the dry season in tropical regions.

Exposure to pollen:\(^\text{10, 25}\)

- may worsen asthma symptoms during the pollen season
- can cause outbreaks of asthma flare-ups after thunderstorms
- is usually caused by imported grasses, weeds and trees (which are wind pollinated) – the pollen can travel many kilometres from its source
- is not usually caused by Australian native plants (although there are exceptions, such as Cypress Pine)
- is not usually caused by highly flowered plants as they produce less pollen (which is transported by bees) than wind pollinated plants.

Completely avoiding pollen can be difficult during the pollen season. Strategies that have been proposed for avoiding exposure to pollens include:\(^\text{10}\)

- avoiding going outdoors on days with high pollen counts (particularly 7–9 am and 4–6 pm), on windy days or after thunderstorms
- keeping car windows closed, ensuring the vehicle has a pollen cabin air filter and setting the cabin air to recirculate
- showering (or washing face and hands thoroughly) after being outside with exposure to pollen
- drying bed linen indoors during the pollen season
- holidaying out of the pollen season or at the seaside
- not mowing the grass, and staying inside when it is being mown
- wearing a facemask and/or glasses in special situations where pollen can’t be avoided, e.g. if mowing is unavoidable
- removing any plants the patient is sensitive to from their garden.

Daily pollen indices and forecasts are available from news media websites (e.g. www.weatherzone.com.au).
Building repairs to reduce dampness in homes (e.g. leak repair, improvement of ventilation, removal of water-damaged materials) may reduce asthma symptoms and the use of asthma medicines. A systematic review and meta-analysis found that damp remediation of houses reduced asthma-related symptoms including wheezing in adults, and reduced acute care visits in children. In children living in mouldy houses, remediation of the home may reduce symptoms and flare-ups, compared with cleaning advice about moulds.

Other strategies that have been proposed for avoiding exposure to moulds include:

- removing visible mould by cleaning with bleach or other mould reduction cleaners (patients should avoid breathing vapours)
- using high-efficiency air filters
- removing indoor pot plants
- drying or removing wet carpets
- treating rising damp as soon as it is detected
- avoiding the use of organic mulches and compost.

See: Asthma triggers

**Triggers in the workplace**

A wide range of occupational allergens has been associated with work-related asthma. Investigation of work-related asthma is complex and typically requires specialist referral.

<table>
<thead>
<tr>
<th>Agent</th>
<th>Occupations</th>
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<tbody>
<tr>
<td><strong>Low molecular weight agents</strong></td>
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<tr>
<td>Wood dust (e.g. western red cedar, redwood, oak)</td>
<td>Carpenters</td>
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<td>Builders</td>
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<td>Model builders</td>
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<td>Sawmill workers</td>
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<td>Sanders</td>
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<td>Isocyanates</td>
<td>Automotive industry workers</td>
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<td>Adhesive workers</td>
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<td>Chemical industry</td>
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<td>Mechanics</td>
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<td>Painters</td>
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<td>Polyurethane foam production workers</td>
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<td>Formaldehyde</td>
<td>Cosmetics industry</td>
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<td>Embalmers</td>
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<td>Foundry workers</td>
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<td>Hairdressers</td>
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<td>Laboratory workers</td>
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<td>Tanners</td>
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<td>Paper, plastics and rubber industry workers</td>
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<td>Agent</td>
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<td><strong>Low molecular weight agents</strong></td>
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<td><strong>Platinum salts</strong></td>
<td>- Chemists</td>
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<td>- Dentists</td>
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<td>- Electronics industry workers</td>
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<td>- Metallurgists</td>
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<td>- Photographers</td>
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<td><strong>High molecular weight agents</strong></td>
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<td><strong>Latex</strong></td>
<td>- Food handlers</td>
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<td>- Healthcare workers</td>
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<td>- Textile industry workers</td>
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<td>- Toy manufacturers</td>
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<td><strong>Flour and grain dust</strong></td>
<td>- Bakers</td>
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<td>- Combine harvester drivers</td>
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<td>- Cooks</td>
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<td>- Grocers</td>
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<td>- Pizza makers</td>
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<tr>
<td><strong>Animal allergens (e.g. urine, dander)</strong></td>
<td>- Animal breeders</td>
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<td>- Animal care workers</td>
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<td>- Jockeys</td>
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<td>- Laboratory workers</td>
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<td>- Pet shop workers</td>
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<td>- Veterinary surgery workers</td>
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Asset ID: 45

See: [Work-related asthma](http://www.racgp.org.au/afp/201001/35841)

### Multi-allergen avoidance strategies

Studies assessing interventions designed to reduce exposure to multiple allergens, including studies of individualised allergen avoidance advice after allergy testing, have reported inconsistent findings.²⁷,²⁸,²⁹,³⁰

A non-blinded randomised controlled clinical trial in 937 children with allergic asthma reported small reductions in symptoms and emergency department visits during a 1-year multi-component intervention and over a follow-up year,
compared with no intervention. The intervention involved a combination of environmental tobacco smoke avoidance with a range of allergen avoidance strategies tailored to the child’s sensitisation profile, including measures to reduce exposure to dust mites (allergen-impermeable covers for mattresses, pillows and bed springs, provision of high-efficiency particulate air-filter vacuum cleaner, installation of high-efficiency particulate air-filter in child’s bedroom), cockroaches (professional pest control), pets (high-efficiency particulate air-filter in child’s bedroom), rodents, and moulds. A single-blinded randomised controlled clinical trial in 214 adults with asthma reported an increase in lung function among patients who underwent individualised allergen avoidance, compared with the control group.

References