

Allergic rhinitis and the patient with Asthma



Effective asthma management involves accurate recognition and appropriate treatment of allergic rhinitis. Alone, allergic rhinitis can significantly affect individuals' daily activities and impair quality of life; when it occurs in a patient with asthma, it contributes to airway symptoms and must be considered in the management plan.

Contrary to the previous belief that allergic rhinitis was mainly a disorder of adults, it is now known to affect almost 8% of Australian children and adolescents.¹

Treat allergic rhinitis to manage asthma

Rhinitis occurs in an estimated 75–80% of patients with asthma,² with high rates reported in both atopic and non-atopic asthma.^{3,4} Conversely, 20–30% of patients with known allergic rhinitis also have asthma.^{3,5,6} Allergic rhinitis is now recognised as a risk factor for developing asthma.^{3,4,7–9}

A comprehensive approach to asthma management includes investigation for allergic rhinitis and effective treatment. The presence of allergic rhinitis is associated with worse asthma control in children and adults.^{10,11}

Treatment of allergic rhinitis with intranasal corticosteroids (INCS) reduces the risk of asthma-related emergency department visits and hospitalisation in patients with asthma and co-existing allergic rhinitis¹² <Level II> and may improve lung function.¹³ <Level II> Studies assessing specific immunotherapy in children with allergic rhinitis (mainly pollen allergies) suggest that arresting the allergic response may reduce the risk of developing asthma.^{14,15} <Level II> (See Immunomodulatory therapy, page 7.)

Practice points

- In patients with **persistent allergic rhinitis**, investigate for asthma (history, chest examination, pre- and post-bronchodilator spirometry if indicated).
- In patients with **asthma**, investigate for rhinitis (history and physical examination).
- In patients with **both allergic rhinitis and asthma**, treat with a combination of INCS and inhaled corticosteroids (ICS) at doses appropriate to symptom severity.

Allergic rhinitis in Australia^{1,16, 17}

The prevalence of allergic rhinitis is increasing. Approximately 16% of Australians have allergic rhinitis, including:

- about 19% of working-aged adults
- about one in four younger adults (25–44 years)
- one in five adolescents (13–14 years)
- one in eight primary school-aged children (6–7 years)

Approximately 10% of all Australians and 14–16% of Australian children have asthma.

This information paper is intended to provide information on the clinical interrelationship between asthma and allergic rhinitis for GPs, asthma educators, practice nurses and pharmacists. For more information on the diagnosis and management of allergic rhinitis in primary care, see: Australasian Society of Clinical Immunology and Allergy. Asthma and Allergy. Australian Government Department of Health and Ageing 2005 (available at: www.nationalasthma.org.au).

Diagnosis

When to suspect allergic rhinitis

Allergic rhinitis is easily missed. Consider the possibility of allergic rhinitis in a patient with any of the following:

- Symptoms suggestive of continuous or recurrent upper respiratory tract infections
- Frequent sore throats
- Hoarse voice
- Persistent throat-clearing
- Persistent mouth breathing, especially in children with perennial rhinitis
- Snoring
- Feeling of pressure over sinuses
- Recurrent headaches
- Recurrent serous otitis media, especially in children
- Coughing, especially in children (e.g. those who habitually cough soon after lying down at night)
- Halitosis
- Poor sleep and daytime fatigue or poor concentration
- Loss of sense of smell
- 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)
- 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
- triggering and relieving factors
- use of medications (including complementary medications), adherence and response
- home, work and leisure environments
- any systemic symptoms (e.g. daytime fatigue).

! Further investigations/early referral (or specialist consultation where referral access is limited) may be indicated if any of these are present:

- Difficult-to-treat eczema, food allergies or poorly controlled asthma → **Consider referral to allergy specialist.**
- Persistent rhinitis symptoms that have not responded to a trial of appropriate medications → **Consider referral to allergy specialist or ear, nose and throat surgeon (ENT).**
- Persistent symptoms and signs suggesting chronic sinusitis (nasal obstruction, congestion, post nasal drip and a reduced sense of smell¹⁸) for 12 weeks or more → **Consider CT scan, referral to allergy specialist or ENT.**
- Persistent unilateral nasal obstruction in a child → **Consider foreign body.**
- Atypical symptoms that suggest an alternative diagnosis such as polyp, tumour, or foreign body (e.g. persistent unilateral bleeding, persistent unilateral obstruction) → **Consider referral to ENT.**

Practice points

- Patients can mistake symptoms of allergic rhinitis for asthma. Allergic rhinitis is sometimes more easily recognised only after asthma has been stabilised.
- The absence of classical symptoms does not rule out the diagnosis of allergic rhinitis. It may present as any combination of rhinorrhoea, itching/sneezing and blockage, including blockage alone.
- Children with allergic rhinitis may show persistent throat-clearing but be unaware of nasal symptoms.

Practice points

- Pollens and moulds are typically seasonal allergens in southern regions, but can be perennial in tropical northern regions (see Australasian Society of Clinical Immunology and Allergy pollen calendars at www.allergy.org.au).
- The majority of patients are sensitised to multiple allergens (e.g. both pollens and house dust mite), so symptoms may be present throughout the year.
- 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).

Pharmacy practice point

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

- rhinitis symptoms are severe or not well controlled by INCS and antihistamines
- rhinitis treatment is required for more than 4 weeks at a time
- other medical conditions are present
- there are any complications, e.g. pain, hearing loss, loss of sense of smell.

Physical examination

Examine upper and lower airway for signs of rhinitis and for signs of asthma. In addition to the nasal cavity (including inspection of mucosa and septum), examine the eyes and orbital areas, ears and oropharynx, perform a thorough chest examination.

Further investigation should be considered if:

- asthma is suspected (or status of existing asthma control needs review) → **Perform pre-and post-bronchodilator spirometry.**
- a unilateral polyp is present (see History) → **Consider referral to ENT.**

The absence of abnormal findings does not exclude intermittent allergic disease.

Confirm cause is predominantly allergic

- Try to distinguish allergic rhinitis from common non-allergic types (e.g. vasomotor rhinitis, bacterial and viral respiratory infections, sinusitis). Up to 80% of Australian young adults with rhinitis symptoms are atopic.¹⁹
- Rule out less common conditions, (e.g. overuse of topical decongestant sprays, nasal polyps, anatomical abnormalities, foreign bodies, adverse effects of medications, hormonal effects, sensitivity to drugs or occupational irritants, cocaine abuse) and rare conditions (e.g. tumours, granulomas, atrophic rhinitis, ciliary defects, cerebrospinal rhinorrhoea, vocal cord dysfunction).

Be aware that both allergic and non-allergic components may contribute to rhinitis in an individual.

Initiate a therapeutic trial with INCS

Give INCS and monitor response in patients with:

- a provisional diagnosis of persistent allergic rhinitis
- no features requiring immediate referral or further investigations
- no contraindications to use of intranasal corticosteroids (severe nasal infection including candidiasis, haemorrhagic diathesis, history of recurrent nasal bleeding).

If symptoms do not resolve within a 3–4 weeks of commencing INCS, consider allergy testing and review the diagnosis.

If symptoms respond and long-term (>6 weeks) treatment is required, confirm a definitive diagnosis of allergic rhinitis through careful history and appropriate allergy testing.

Consider allergy testing, referral

Skin prick testing or blood tests for allergen-specific IgE (radioallergosorbent testing; RAST) may be necessary to identify triggers.

- These tests should be interpreted by a doctor trained in their interpretation. False negative and false positive results can occur.
- Refer to an allergist if triggers are in doubt.
- Most rural and remote areas can access RAST through major pathology laboratories.

Practice points

It is reasonable and practical to make a provisional diagnosis of allergic rhinitis in a patient with suggestive symptoms and treat accordingly, provided that the diagnosis is reassessed if the patient does not experience prompt resolution of symptoms in response to treatment.

Practice points

- Before contemplating allergen avoidance measures or discussing desensitisation therapy, confirm which allergens are clinically important. Consider referral to an allergist for detailed allergy assessment.
- Tell patients:
 - Food allergies **do not** cause allergic rhinitis – nasal symptoms in reaction to food (e.g. spicy foods, wine) is 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, though it may respond to INCS.

Practice points

Both allergic and non-allergic rhinitis can respond to INCS.² Therefore response to INCS alone does not confirm allergy or warrant allergen avoidance measures in the absence of confirmed allergic triggers.

Management

Advise patients not to smoke and to avoid environmental tobacco smoke. Smoking may worsen both asthma and rhinitis, and impair effectiveness of treatment.²

Allergen avoidance

Before considering trigger avoidance strategies, confirm the diagnosis and confirm that the particular allergen is a significant trigger for the individual by both allergy testing and history.

Grass pollens

While pollen avoidance measures such as sealing the home against outside air and the use of face masks or glasses are sometimes advocated, these are impractical in Australian environments and generally unacceptable to patients.

House dust mite

The house dust mite is a very common allergen source in humid areas of Australia, and avoidance by allergic individuals is intuitively reasonable. However, there is no definitive evidence from well-designed studies to indicate which strategies effectively reduce allergen load or improve allergic rhinitis and asthma.^{20,21} Measures that have consistently been reported effective in reducing mite exposure include hot (>55 degrees C) washing of all bedding and the use of mite-proof cases for mattresses and pillows.^{20 <Level III>} Patients should be warned that house dust mite avoidance measures can be expensive and time consuming, and may not be effective in individuals.

Pet allergens

For patients with demonstrated allergy to cats or other pets, allergic symptoms are highly unlikely to be adequately controlled while the pet remains in the house. After removal of a pet, thorough cleaning of walls and floorings should be undertaken to remove adherent allergens. Allergic symptoms may not resolve promptly despite these measures. Recognise that psychosocial factors will affect patients' decisions about existing pets.

Indoor and outdoor moulds

There is insufficient evidence to indicate effective measures for avoiding exposure to indoor and outdoor mould allergens, or that avoidance attempts can improve symptoms or allergy and asthma.

Practice points

- Don't recommend allergen avoidance measures to patients unless the allergen is known to be a significant contributor to symptoms, as demonstrated by allergy testing that has been expertly performed and interpreted.
- Advise patients with known pet allergy not to acquire a pet. If patients choose to keep existing pets, they should be kept outside. Warn patients that allergen exposure and symptoms may persist after removal, and that frequent washing of pets is ineffective and may be harmful to pets.
- High-efficiency particulate air (HEPA) filter vacuum cleaners may remove more allergen than other vacuum cleaners, but there is no evidence that they are effective in controlling allergic rhinitis or asthma.
- Acaricide sprays, home dehumidifiers and air cleaning devices are not recommended in the control of allergic symptoms.

For detailed advice on allergen avoidance, refer to the Australasian Society of Clinical Immunology and Allergy (www.allergy.org.au).

Consider nasal irrigation

Nasal irrigation is an effective technique for managing allergic rhinitis in adults and children, possibly due to enhanced ciliary function or removal of inflammatory cytokines via mucus clearance.²² Various methods are suitable, including use of pre-packaged nasal sprays and introduction of saline solutions via rinse bottles. Suitable solutions include commercially manufactured saline solutions and home-made normal saline (4.5 g of common salt added to 500 mL of boiled water; approximately 1 teaspoon per 600 mL/1 pint). There is limited evidence to indicate whether solutions should be hypertonic or isotonic, buffered or non-buffered, sterile or non-sterile, or whether various additives provide any advantage. There is insufficient evidence to recommend that patients use steam or an irritant decongestant (e.g. eucalyptus, menthol) prior to saline irrigation.

When nasal irrigations are to be used frequently, patients are more likely to adhere to simple and convenient regimens than those requiring complex procedures, regardless of theoretical advantages.²²

Pharmacological treatment

If continuous treatment is required, an INCS is the first-choice treatment (except where contraindicated), especially in patients with asthma.² Intranasal corticosteroids:

- are more effective than antihistamines in controlling symptoms of allergic rhinitis as well as non-allergic rhinitis.^{23<Level I>}
- are effective in managing ocular symptoms.^{2, 23<Level I>}
- may contribute to asthma control in patients with asthma and allergic rhinitis.^{13 <Level II>}

Intranasal preparations of mometasone, fluticasone, budesonide and triamcinolone do not have a clinically significant effect on the hypothalamic–pituitary–adrenal (HPA) axis or cause mucosal atrophy when taken continuously.^{2, 24<Level II>}

Intranasal corticosteroids must be taken for up to 2 weeks before maximal efficacy is achieved.² They are most effective when taken continuously, but when used on an as-needed basis remain at least as effective as oral antihistamines.² Budesonide (*Rhinocort*), fluticasone propionate (*Beconase Allergy*), beclomethasone (*Beconase Hayfever*) and triamcinolone acetonide (*Telnase*) are available over the counter. Higher-dose budesonide (*Rhinocort*, *Budamax*) and mometasone furoate (*Nasonex*) are available on prescription.

If only intermittent therapy is required, options should be considered according to symptoms. As a general guide:

- **itching and sneezing respond well to oral H¹-antihistamines**²⁵ Second-generation, less sedating antihistamines should be used in preference to more sedating antihistamines, where possible. Before prescribing, check the individual agent for potential cardiac effects and interactions with other drugs, food supplements or complementary products.²
- **rhinorrhoea responds well to INCS or ipratropium bromide.**^{2,4}
- **nasal congestion responds best to INCS**² Oral antihistamines are ineffective for managing congestion.^{2,26}
- In patients with asthma, leukotriene antagonists may also contribute to control of allergic rhinitis symptoms.²⁷

Emphasise correct inhalation technique

Explain to patients that correct use of an INCS inhaler is important for optimal effects, just as with asthma puffers. Demonstrate technique clearly. For best results, patients should:

- Clear nose of mucus by blowing gently
- Tilt head slightly forward
- Introduce the nozzle into the nostril only; avoid pushing it right up into the nose.

- Direct the nozzle laterally, never towards the middle of the nose, and avoid making contact with the septum.
- Breathe in gently while actuating the inhaler according to manufacturer's instructions, letting the mist fall onto the nasal mucosa rather than sniffing sharply. (The sensation of the spray reaching into the back of the nose indicates correct technique.)
- Breathe out through the mouth.

Other agents and adjuncts

- **Intranasal antihistamines** are as effective as oral antihistamines.² They have a rapid onset of action and might be considered as an alternative to oral antihistamines in a patient with mild allergic rhinitis, where quick relief of symptoms is required, as an add-on medication for patients experiencing insufficient relief with INCS alone, or in patients in whom INCS are contra-indicated or not tolerated.
- **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 in a patient with severe nasal congestion where rapid onset of action is required until the full effect of INCS is achieved.
- **Oral decongestants** should generally be avoided in the management of allergic rhinitis, since most patients will require long-term medication. These agents are indicated for short-term use only (e.g. acute infectious rhinitis), are contraindicated in patients with hypertension or coronary artery disease, and should be used with caution in people aged over 65 years, in patients with benign prostatic hyperplasia and those taking multiple medications.
- **Anticholinergic sprays** (e.g. ipratropium bromide) are effective in managing persistent rhinorrhoea but not blockage or itch.⁴ They are mainly useful in the management of vasomotor rhinitis.
- **Ocular anti-allergy preparations** (antihistamines, decongestants, mast-cell stabilising agents) may be considered if allergic conjunctivitis persists despite INCS. Check contraindications (e.g. glaucoma, pregnancy) for specific agents.

- **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.

Practice points

- An INCS is the appropriate first-line option for most patients with persistent allergic rhinitis or moderate-to-severe intermittent allergic rhinitis, and should be initiated in those with mild intermittent allergic rhinitis who have experienced insufficient response to antihistamines.
- Oral antihistamines can generally be added to INCS as needed, including pre-emptively when heightened allergic response is predicted.
- Explain to patients that INCS are similar to asthma preventers: they must be taken **regularly, pre-emptively** and with **correct inhalation technique**. Explanation of the mechanisms of allergy can help reinforce adherence.
- In patients with asthma already taking ICS, the INCS dose should be taken into account when determining the total daily corticosteroid dose.
- Contraindications to INCS include severe nasal infections, especially candidiasis, haemorrhagic diatheses or a history of recurrent nasal bleeding.

Pharmacy practice points

- Emphasise that INCS should be used long-term where indicated.
- Address unfounded concerns about taking topical corticosteroids. Reassure patients that INCS are well tolerated when prescribed by a doctor for correctly diagnosed allergic rhinitis, and that long-term studies of newer agents have not demonstrated unwanted systemic effects.
- Whenever dispensing an inhaled medication for allergic rhinitis, show patients the inhalation device instructions and emphasise the importance of following them carefully.

Pregnant women

In women with asthma in whom effective management of allergic rhinitis is likely to help control asthma, the potential benefits of using INCS might outweigh concerns about potential treatment-related adverse effects.

- Intranasal budesonide spray is rated Category A for pregnancy*, and can be considered for use by pregnant women where necessary. Other INCS (beclomethasone dipropionate, fluticasone propionate, mometasone furoate) are rated Category B3.*
- Intranasal antihistamines levocabastine (*Livostin*) and azelastine (*Azep*) are classified Category B3.*

Avoid deliberate use in pregnancy, but reassure women who have inadvertently taken them short-term during the first trimester that this exposure is unlikely to harm the foetus.

- If a non-sedating oral antihistamine is required during pregnancy, loratidine (*Claratyne*) is appropriate (Category B1).*

Lactation^{*28}

- Intranasal azelastine should be avoided
- Intranasal corticosteroids (budesonide, fluticasone, mometasone, triamcinolone) may be used.
- Ipratropium may be used
- Newer, less sedating oral antihistamines may be used.

*Refer to Approved Product Information for individual agents.

Young children

Intranasal corticosteroids are appropriate first-line treatment in children with moderate-to-severe intermittent allergic rhinitis or persistent allergic rhinitis. Intranasal corticosteroids are more effective than antihistamines²⁹ or leukotriene receptor antagonists³⁰ in children.

- Mometasone furoate nasal spray can be used in children over 3 years old; budesonide nasal spray can be used in children over 6 years old*
- Growth rate in children does not appear to be affected by treatment with newer intranasal INCS.^{31,32}

Oral antihistamines are appropriate first-line therapy in children with mild allergic rhinitis or intermittent allergic rhinitis.

- Newer (less sedating) oral antihistamines e.g. cetirizine (*Zyrtec*), loratidine (*Claratyne*) are appropriate first-line treatment in very young children. There is a large body of safety data supporting the use of cetirizine in very young children.³³ Cetirizine and loratidine can be used in children over 1 year old. Fexofenadine (*Telfast*) can be used in children over 6 years old.
- Older (more sedating) antihistamines should be avoided.

Topical antihistamines should be used with caution in children under 5 years old.*

*Refer to Approved Product Information for individual agents.

Patients with allergic rhinitis and asthma

- The use of INCS for allergic rhinitis might help improve control of asthma.¹³
- Concurrent treatment with INCS and ICS does not appear to affect function of the hypothalamic–pituitary–adrenal axis, based on studies of fluticasone propionate.³⁴ Consider the total corticosteroid dose, especially in children.
- In children with asthma and allergic rhinitis, treatment guidelines for both conditions should be followed concurrently, according to severity.³⁵

Practice points

- Many children do not tolerate intranasal medications. Oral antihistamines may provide an alternative with better adherence.
- In children with asthma and allergic rhinitis, do not hesitate to prescribe INCS and ICS concurrently.
- For children using high-dose ICS for asthma, choose lower bioavailability INCS formulations (e.g. budesonide, mometasone or fluticasone).^{24,36}

Immunomodulatory therapy

Specific allergen immunotherapy (desensitisation)

Specific allergen immunotherapy is effective in the management of rhinitis and asthma and can achieve a durable remission of allergic symptoms.^{37,38,39} <Level I>

Evidence from a randomised clinical trial suggests that it may reduce the risk of childhood rhinitis progressing to asthma.^{14, 15} <Level II>

This treatment should be considered only when there is evidence that allergic rhinitis is predominantly due to exposure to a single allergen, and where it is not possible to avoid the allergen (e.g. pollens, house dust mite, occupational allergens). It should be considered in consultation with an allergist.

Oral (sublingual) and injectable (subcutaneous) forms of immunotherapy are available:

- **Subcutaneous allergen immunotherapy** involves a course of injections given weekly to monthly over 2–3 years. It is well tolerated in adults and children when administered and supervised by an allergist.⁴⁰ Potential adverse effects include injection-site reactions, sneezing, bronchospasm, urticaria and anaphylaxis. Subcutaneous immunotherapy can only be attempted while asthma symptoms are well controlled. The risk of a fatal allergic reaction is increased in patients with marked airflow limitation (e.g. when forced expiratory volume in one second is less than 70% of the predicted value).⁴¹ Immunotherapy is contraindicated in patients with severe or unstable asthma and those using beta blockers.

- **Sublingual immunotherapy** involves daily self-administration by the patient at home, and is relatively expensive. There is limited evidence for efficacy of sublingual immunotherapy in children. Since immunotherapy should be prescribed by an allergist or specialist physician with specific training in allergy, access to immunotherapy as a treatment option is often limited.

Anti-immunoglobulin E (IgE) therapy

Monoclonal anti-IgE antibody therapy (omalizumab) also has been reported to be effective in controlling symptoms of allergic rhinitis in patients with concomitant asthma and allergic rhinitis.⁴² The feasibility of using this option may be limited by cost, because omalizumab (*Xolair*) is not listed on the Pharmaceutical Benefits Scheme.

Practice points

- Discuss immunotherapy early in the course of allergic rhinitis, if suitable.
- Explain to patients that immunotherapy:
 - has not been shown to be effective in patients with multiple allergens, so is most likely to benefit those with a well-defined single allergen (e.g. pollen, house dust mite, cat allergens)
 - offers no benefit if triggers are substantially non-allergic
 - can cause local and systemic adverse effects.

Review

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

Inspect nasal mucosa at least twice per year to check for mucosal atrophy and monitor resolution of polyps. Refer to an ENT surgeon if a polyp is unresponsive to initial INCS therapy.⁴³

Offer referral to an allergy specialist if:⁴³

- 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.

For further information about asthma, visit the National Asthma Council Australia website at: www.nationalasthma.org.au

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

Table 1. Patterns of allergic rhinitis

The following ways of thinking about the pattern of symptoms are useful to help guide treatment:	
<p>Intermittent versus persistent</p> <p>Intermittent: symptoms < 4 days per week or < 4 weeks at a time</p> <p>Persistent: symptoms >4 days per week or >4 weeks at a time</p>	<p>Even in intermittent allergic rhinitis, a course of continuous INCS is likely to be more effective than partial treatment with inadequate doses, which may allow the nasal passages to remain inflamed and hypersensitive to irritants.</p> <p>These classifications may overlap (e.g. frequent short bouts throughout the year).</p>
<p>Severity</p> <p>Moderate–severe: any of impairment of sleep, daily activities, leisure or sport, school or work.</p> <p>Mild: doesn't impair any of these</p>	<p>Individuals' symptom severity fluctuates. Categorising allergic rhinitis as moderate or severe is mainly useful when recommending treatment, e.g. a person who has been in the habit of using insufficient doses of over-the-counter medication intermittently may consider adopting a more rational self-management regimen after it is explained that <i>any</i> impairment of activities indicates that allergic rhinitis warrants adequate medication.</p>
<p>Seasonal versus perennial</p> <p>Seasonal (hay fever): triggered by wind-borne pollen from grasses, weeds sometimes trees. Symptoms most common in spring and summer but depends on individual allergen exposure, geography, rainfall, time of day (e.g. pollen exposure is highest in morning, outside, windy days, after thunderstorms)</p> <p>Perennial: triggered by exposure to allergens present all year round (e.g. house dust mite, animal dander, moulds).</p>	<p>People who predictably experience symptoms only part of the year may benefit from pre-emptive INCS course timed for usual onset,⁴⁴ and can usually discontinue treatment afterwards. Generally at least 6 weeks' treatment is needed during a pollen season.</p> <p>A mixed pattern of seasonal and perennial features is common.</p>

Key messages

- Effective management of concurrent asthma and allergic rhinitis requires a combined approach.
- Intranasal corticosteroids are the most effective available treatments for allergic and non-allergic rhinitis.
- Patients with allergic rhinitis severe enough to impair activities or worsen asthma control will require long-term pre-emptive intranasal corticosteroids with careful attention to inhalation technique, just as for ICS.

References are listed in the online version of this information paper (available at www.nationalasthma.org.au).

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Levels of Evidence

- I Evidence obtained from a systematic review of all relevant randomised controlled trials
- II Evidence obtained from at least one properly designed randomised controlled trial
- III-1 Evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method)
- III-2 Evidence obtained from comparative studies with concurrent controls and allocation not randomised (cohort studies), case-control studies, or interrupted time series with a control group
- III-3 Evidence obtained from comparative studies with historical control, two or more single-arm studies, or interrupted time series without a parallel control group
- IV Evidence obtained from case series, either post-test or pre-test and post-test

These levels of evidence ratings have been adapted from US Preventative Services Task Force (1989) Guide to clinical preventative services: an assessment of the effectiveness of 169 interventions (ed M Fisher), Williams and Williams, Baltimore Appendix A, p 388.
 Source: NHMRC. A guide to the development, implementation and evaluation of clinical practice guidelines.