

Allergic rhinitis spring into action

Rhinitis is a common condition affecting up to 30% of the population. While seasonal allergic rhinitis (hay fever) is confined to the pollen season, allergic rhinitis is often perennial. As well as causing typical symptoms, rhinitis can significantly impair quality of life. Allergic factors can be identified easily and specific avoidance or therapy prescribed.

S. JANET RIMMER

MB BS (Hons), MD, FRACP

Dr Rimmer is a Thoracic Physician and Allergist at St Vincent's Clinic, Darlinghurst, Sydney, NSW.

Although patients often call any type of rhinitis 'hay fever', the term refers to seasonal allergic rhinitis, which is caused by exposure to pollen. As with other allergic diseases, the prevalence of rhinitis has increased worldwide in the last few decades. The Woolcock Institute's Belmont population survey, a 20-year cross-sectional study of the prevalence of asthma and allergy among primary school children, illustrated this increase clearly. The 'yes' response to the survey question, 'Have you ever had hay fever?' increased from 21% of children in 1982 to 38% of children in 2002.¹

Rhinitis now affects at least 30% of Australians at some stage of their life. Previous descriptions of rhinitis have included seasonal (hay fever) or perennial allergic rhinitis; however, there has been a recent move to reclassify rhinitis into intermittent and persistent types (Tables 1 and 2). This new definition further classifies subjects into either mild or moderate-to-severe categories,

which acknowledges the effects of rhinitis on quality of life. This article outlines a practical approach to the investigation and management of allergic rhinitis of all causes.

The history of rhinitis

Although other forms of allergic disease were described hundreds of years ago, hay fever seems to be a more modern disease. Apart from a few isolated descriptions, it was only in the early 19th century that the disease was well described. The London physician, John Bostock, who had the disease himself, described 'catarrhus aestivus' (summer catarrh). In 1873, Charles Blackley, who also had hay fever, showed that the symptoms were due to the inhalation of pollen. Since these early descriptions, the prevalence of the disease has increased along with many other allergic conditions. The reasons for this may be linked to urbanisation following the industrial revolution

IN SUMMARY

- Rhinitis is a common condition affecting children and adults that often impairs quality of life.
- Symptoms of rhinitis are frequently perennial. Signs can include nasal obstruction and an abnormal nasal mucosa.
- Allergic causes of rhinitis can be easily demonstrated by skin prick testing or, where appropriate, specific IgE blood testing.
- Treatment should be targeted at the main symptom or symptoms, including effects on quality of life.
- Management should include allergen avoidance and medication (over-the-counter and prescription); immunotherapy may also be effective.

Table 1. Types of rhinitis**Allergic rhinitis**

Seasonal rhinitis (hay fever)
Perennial rhinitis

Nonallergic rhinitis

Vasomotor, gustatory rhinitis
Nonallergic rhinitis with eosinophilia
Rhinitis medicamentosa
Atrophic rhinitis

Occupational rhinitis**Rhinitis with systemic disease**

Associated with hypothyroidism
Associated with acromegaly

Drug-related rhinitis

Associated with use of oestrogen
Associated with use of beta blockers

and, more recently, the effect of the hygiene hypothesis.³

What is allergic rhinitis?

The majority of rhinitis is due to allergic factors with sensitisation or atopy developing in early childhood. The most common age of symptom onset is in the third decade, with symptoms relatively uncommon over the age of 50 years. A significant proportion of people with rhinitis are not atopic, and for these patients the disease is called nonallergic or vasomotor rhinitis. Despite this distinction, the symptoms of allergic and nonallergic rhinitis are indistinguishable.

Making a clinical diagnosis**Clues from the history**

The clinical history is important for both the diagnosis and management of allergic rhinitis. Questions to ask the patient include whether he or she experiences:

- a blocked nose (congestion)
- a runny nose (clear rhinorrhoea)
- sneezing
- itching of the nose, eyes, throat or ears
- a postnasal drip.

How troublesome is the condition?

The frequency and severity of symptoms should be elicited as many patients tolerate quite severe symptoms. Symptoms can be so severe that they may impair quality of life and interfere with the capacity to work and/or study.⁴ The effects of severe symptoms of rhinitis can be as severe as conditions such as asthma and diabetes.

The severity of symptoms associated with allergic rhinitis should not be underestimated and a careful assessment should always be undertaken when a patient presents with allergic rhinitis symptoms. Examples of questions to ask patients are listed below.

- How many tissues do you use on a bad day?
- How many times do you sneeze per day?
- What activities have been limited by your nose and/or eye symptoms in the last week?
- Do your nose and/or eye symptoms affect your sleep?
- As a result of your rhinitis do you suffer from fatigue, thirst, reduced productivity, tiredness, poor concentration, headaches and/or exhaustion?
- How affected are you by practical issues like having to carry tissues, needing to blow your nose and/or rub your nose and/or eyes repeatedly?
- Do your symptoms make you frustrated, irritable and/or embarrassed?

Are there any complications or associated disease?

Questions should also relate to potential complications or associated diseases, such as asthma, sinusitis, nasal polyposis and sleep apnoea.

- Do you have asthma symptoms?
- Do you cough?
- Do you get 'sinus' or sinus symptoms?
- Do you experience facial pain?
- Do you snore?
- Do you feel tired or sleepy?

Table 2. ARIA* classification of rhinitis²**Type of rhinitis**

Intermittent rhinitis: symptoms present <4 days per week or symptoms for <4 weeks/year

Persistent rhinitis: symptoms present >4 days/week and >4 weeks/year

Mild or moderate-severe rhinitis**Questions for patients**

- Do you have abnormal sleep?
- Do you have impairment of daily work or school?
- Do you have impairment of leisure activities?
- Do you have troublesome symptoms?

Rhinitis severity

If patients answer no to all questions they have mild rhinitis
If patient answers yes to one or more of these questions they have moderate-severe rhinitis

* ARIA: Allergic rhinitis and its impact on asthma

- Do you have a sense of smell?

Rhinitis is frequently associated with asthma, which has led to the concept of united airways disease.⁵ Up to 80% of patients with asthma have rhinitis and approximately 40% of patients with rhinitis have asthma. It is therefore important to assess the patient for both diseases. A history of fatigue may relate to the allergic disease itself, but other factors such as poor sleep quality or the presence of other conditions such as sleep apnoea also need to be considered.⁶

Are there any trigger factors?

Next, a history of trigger factors, including both allergic, irritant and occupational triggers, should be sought (Table 3). While many patients recognise acute triggers such as pollen and cat allergen, the relation between perennial allergens such as dust mite and symptoms is harder to

detect. Typically, in dust mite allergic rhinitis, symptoms are worse in the morning and settle later in the day, with symptoms occurring about 60% of the time.⁷ The reason for this pattern in symptoms is not known but higher exposure to dust mite allergen in bed at night is likely to contribute.

Is school performance an issue?

Several recent studies have shown that rhinitis affects school performance and this can be very important when final school examinations, such as the NSW Higher School Certificate, take place in spring. A UK study of school students with seasonal allergic rhinitis sitting their A-Level exams showed a drop in academic performance from their trial exams (which are held in winter) to their final exams (which are held in spring). Students sitting the same examinations who did not have allergic rhinitis showed an improvement in performance over the same period.⁸

How many medications have been taken?

Most patients will have tried a range of over-the-counter medications, and complementary medicines are often used as well. A history of what has been tried, how it has been used, how long it has been used for and the response to each agent should be sought.

Clues from physical examination

Is there an allergic crease?

The typical allergic salute and crease seen in both children and adults with allergic rhinitis is shown in Figure 1. Another feature, so-called 'allergic shiners', can also be present, and these refer to the dark circles under the eyes of patients with allergic disease.

Is there nasal obstruction?

Nasal patency can be tested on each side simply by obstructing one nostril and asking the patient to breathe in through the nose. If obstruction is noted, then the response to a topical vasoconstrictor can be tested to determine if the obstruction is reversible. Reversibility is consistent with tissue swelling rather than a fixed anatomical deformity. Continuous nasal obstruction can result in the 'allergic gape' or open-mouth breathing. Dental malocclusion and overbite from longstanding nasal obstruction can be a long-term consequence.

Is the nasal mucosa abnormal?

An auroscope with a rounded tip or a nasal speculum can be used to inspect the anterior section of the inside of the nasal cavities. The typical appearance of the nasal mucosa in allergic rhinitis is said to be pale and swollen, but this is not often convincingly present. More often,

Table 3. Rhinitis triggers

Allergic

Pollens
Animals (e.g. cats, dogs, horses, rodents)
Mould (e.g. indoor damp, lawn mowing)
Occupational exposure (e.g. animals, chemical, latex, flour)

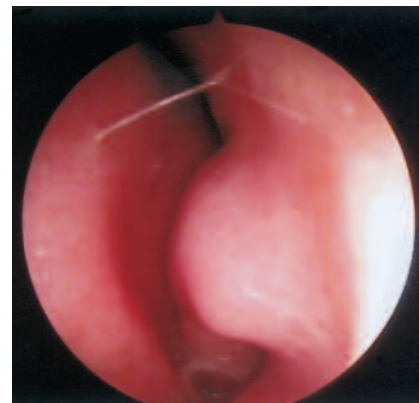
Irritant or nonspecific

Dust
Foods (e.g. dairy products, hot or spicy food, wine)
Food additives
Medications
Perfumes
Household sprays
Pollution (e.g. car fumes, specific pollutants such as SO₂, CO, ozone)
Weather (e.g. windy or cold weather, storms, changes in humidity)
Cigarette smoke
Occupational exposure (e.g. chemicals)

the inferior turbinates are grossly swollen and mucoid secretions are present inside the nose. Figure 2a shows a normal inferior turbinate and Figure 2b a pale and oedematous inferior turbinate, which is often seen in patients with allergic rhinitis.



Figure 1. The allergic salute and crease seen in both children and adults with allergic rhinitis.



Figures 2a and b. Inferior turbinate. a (left). Normal nasal mucosa. b (right). Pale and oedematous nasal mucosa in allergic rhinitis.

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continued



PHOTOLIBRARY

Figure 3. Skin prick testing is generally performed on the forearm and ideally should include a positive and negative control. The maximal wheal diameter, measured at right angles, is read at 15-20 minutes.

Table 4. Inhalant allergens used for skin testing

Allergen/trigger	Types	Comments
House dust	A mix of allergens	Better to be tested individually
Dust mite	<i>Dermatophagoides pteronyssinus</i> <i>Dermatophagoides farinae</i>	Need to test for both species
Other insects	Cockroach	
Animal	Cat Dog Other (e.g. horse, mouse, guinea pig)	
Grass pollens	Grass mix (12 grasses) Bermuda grass (couch grass) Rye grass Winter grass	Grass pollens cross react except for Bermuda grass (couch grass); need to test separately
Weeds	Plantain <i>Parietaria</i> (pellitory or asthma weed) Ragweed	Widespread Eastern seaboard Northern New South Wales and Queensland
Moulds	<i>Alternaria</i> <i>Aspergillus</i> Other	
Trees	<i>Callitris</i> (white Cyprus pine) Casuarinas (she-oak) Eucalyptus Plane tree (London plane tree) Olive tree Silver birch	South Australia Australian Capital Territory
Other	Latex	Occupational exposure

Are there any other abnormalities?

Other abnormalities that should be sought include deviation of the nasal septum, the presence of nasal polyps and the presence of mucopus. Dry nasal mucosa may indicate a sicca component, which requires specific management.

Polyps are not a specific complication of allergic rhinitis but occur equally in allergic and nonallergic subjects. It is, however, important to document the presence of polyps as their presence can alter the approach to management of allergic rhinitis. The eyes should be inspected for conjunctival injection, oedema of the eyelids and watering. In children with allergic rhinitis, there is an increased incidence of otitis media so the ear should also be examined.

Investigating allergic rhinitis

To make a diagnosis of allergic rhinitis, the presence of specific IgE antibodies to inhalant allergens needs to be demonstrated. This is done by skin prick testing preferably (Figure 3), or by testing for specific IgE antibodies in the blood. Generally, there is good correlation between the results of skin prick testing and blood-specific IgE.

All results should be interpreted in terms of clinical relevance – e.g. positive results may be false-positive such as dermatographism, or can exist without any clinical disease being present. In the latter case, the positive response only indicates allergen exposure and the capacity to produce specific IgE antibodies. Additional tests to consider include nasal cytology, measurement of nasal patency, rhinoscopy, tests of mucociliary clearance, sinus computed tomography and nasal provocation testing.

Skin prick testing

Skin prick testing is quick and easy to perform and it is generally a safe procedure. It also allows for an opportunity to explain the pathogenesis of allergic disease to the patient.

Common allergens

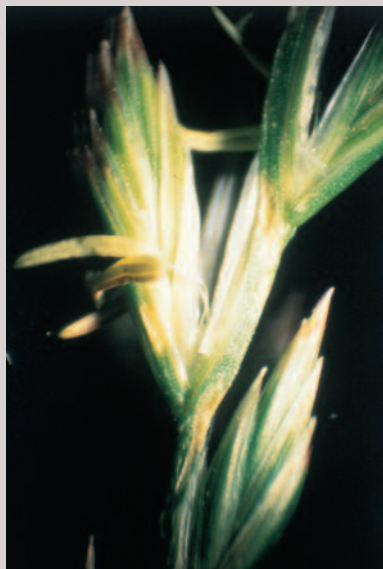


Figure 4 (top left). Dust mite allergen.

Figure 5 (top right). Ryegrass.

Figure 6 (middle left). Couch grass.

Figure 7 (middle right). Pellitory weed (asthma weed).

Figure 8 (left). London plane tree (*Platanus acerifolia*).

PLANT ALLERGEN IMAGES REPRODUCED WITH PERMISSION FROM THE WEBSITE OF THE AUSTRALASIAN SOCIETY OF CLINICAL IMMUNOLOGY & ALLERGY (ASCIA).

The procedure

Patients should have ceased taking anti-histamines, antidepressants, benzodiazepines, phenothiazines and theophylline for three days prior to skin prick testing as any of these medications can lead to false-negative results. Testing is generally performed on the forearm and ideally should include a positive (histamine acid phosphate) and negative (saline) control (see Figure 3). These controls are useful in excluding the presence of any drugs with an antihistaminic effect (via a falsely-negative positive control) and dermatographism (via a falsely-positive negative control).

Results of the test are read at 15 to 20 minutes as the maximum diameters of the wheal size, measured at right angles. Table 4 lists allergens commonly used in skin prick testing and Figure 4 shows a dust mite. Figures 5 to 8 depict various plant allergens.

Complications

Complications of skin tests can include:

- erythema, spreading up the arm towards the axilla; not uncommon with large reactions and settles rapidly
- a late allergic reaction – a diffuse, ill-defined swelling that develops two to four hours after the test and lasts for up to 12 hours; occurs in about 30% of patients
- a systemic reaction, such as wheeze.

A systemic reaction is more likely with allergens associated with the investigation of anaphylactic reactions, such as latex, insect venom or foods. Such reactions occur rarely with inhalant allergens; however, because of the potential risk of a systemic reaction, facilities for resuscitation in case of anaphylaxis should be available when conducting skin tests.

***In vitro* detection of specific IgE**

Serum-specific IgE directed against a single allergen or a panel of allergens can be measured at pathology laboratories. There is a limited Medicare Benefits

Schedule rebate for specific IgE testing, which is available for four tests over a 12-month period.

The procedure

In this test, the patient's serum is incubated with a disc (or multidisc) coated with the allergen or allergens. The reaction or reactions are measured using an anti-human IgE antibody and either measurement of radioactivity (RAST test) or, more commonly, enzymatic activity via an ELISA test (ImmunoCAP test). Results are expressed semiquantitatively from 0 to 4+.

The ImmunoCAP test system is fully automated and is increasingly replacing the standard RAST system. ImmunoCAP uses a porous solid phase to carry the allergen and is more sensitive than the RAST test; it can also provide quantitative results. While this may be a benefit, it also results in a higher rate of false-positive results.

Advantages

In vitro-specific IgE testing is advantageous and particularly useful in:

- patients with generalised eczema
- patients who give a history of extreme sensitivity (e.g. to a food allergen) and thus have a greater risk of developing a systemic reaction on skin testing
- determining the existence of allergies in patients attending practices that do not carry skin prick testing reagents
- patients who cannot stop taking a medication that can interfere with interpretation of the skin tests (such as some antidepressant medication – e.g. tricyclics, selective serotonin reuptake inhibitors)
- situations where serum needs to be stored and assayed at a later date.

Disadvantages

In vitro-specific IgE testing has several disadvantages, including the fact that:

- multidiscs may not be specific enough – this is particularly important when

immunotherapy is being considered

- results take several days
- fewer allergens can be tested than with skin prick testing
- patients may incur additional costs if more allergens are tested for.

Managing allergic rhinitis

Treatment options include avoidance of the allergen, drug therapies, immunotherapy (desensitisation) and/or surgery. The flowchart on page 54 outlines an approach to managing allergic rhinitis. Despite the use of optimal medical therapy, at least a third of patients have symptoms that are not adequately controlled.⁹ The role of the GP is outlined in the box on this page. The following important questions should be considered when making decisions about treatment options for individual patients.

- What is the main symptom that needs treating?
- Is the disease having multi-organ effects?
- Has the patient failed a reasonable trial of medical treatment?

Allergen avoidance

Generally, patients are keen to avoid allergens if at all possible; however, this may be difficult. Closing windows and installing air conditioning may help in avoiding exposure to pollens, especially during very

Managing allergic rhinitis: the role of the GP

- Assess symptom severity – do not underestimate symptoms
- Look for associated diseases or complications
- Assess allergic and nonallergic trigger factors
- Treat the main symptoms
- Consider that treatment failure may be due to the inappropriate use of medications
- Consider referral for immunotherapy, which may be useful for multisystem disease or failed medical treatment

short, intense pollen seasons such as the ragweed season, which lasts from March until May.

Much has been written about measures to avoid dust mite in the home and while it is possible to reduce domestic house dust mite allergen levels, the clinical efficacy of such measures is not always assured (see the box on this page).

Cat and dog allergens can be deliberately avoided but cat allergen, in particular, may persist for many months after removal of the cat. It has been well documented that schoolchildren who do not have cats at home may be sensitised to the

Recommended dust mite avoidance measures

- Cover mattress and pillows with impermeable antiallergy covers (e.g. Allergend, Allersearch, Miteguard)
- Regularly wash sheets and pillowcases in warm water and detergent; this removes >95% of allergens.
- Wash bedding with hot wash (>55° C) or eucalyptus oil to kill dust mites
- Encase or wash all large bedding items every two months (e.g. blankets and doonas)
- Ensure rooms are well ventilated
- Remove carpet and replace with washable, hard flooring
- Remove extra soft furnishings and toys
- Wash clothes regularly, especially after storage
- Vacuum using a high efficiency particulate air (HEPA) filter or ducted collection system

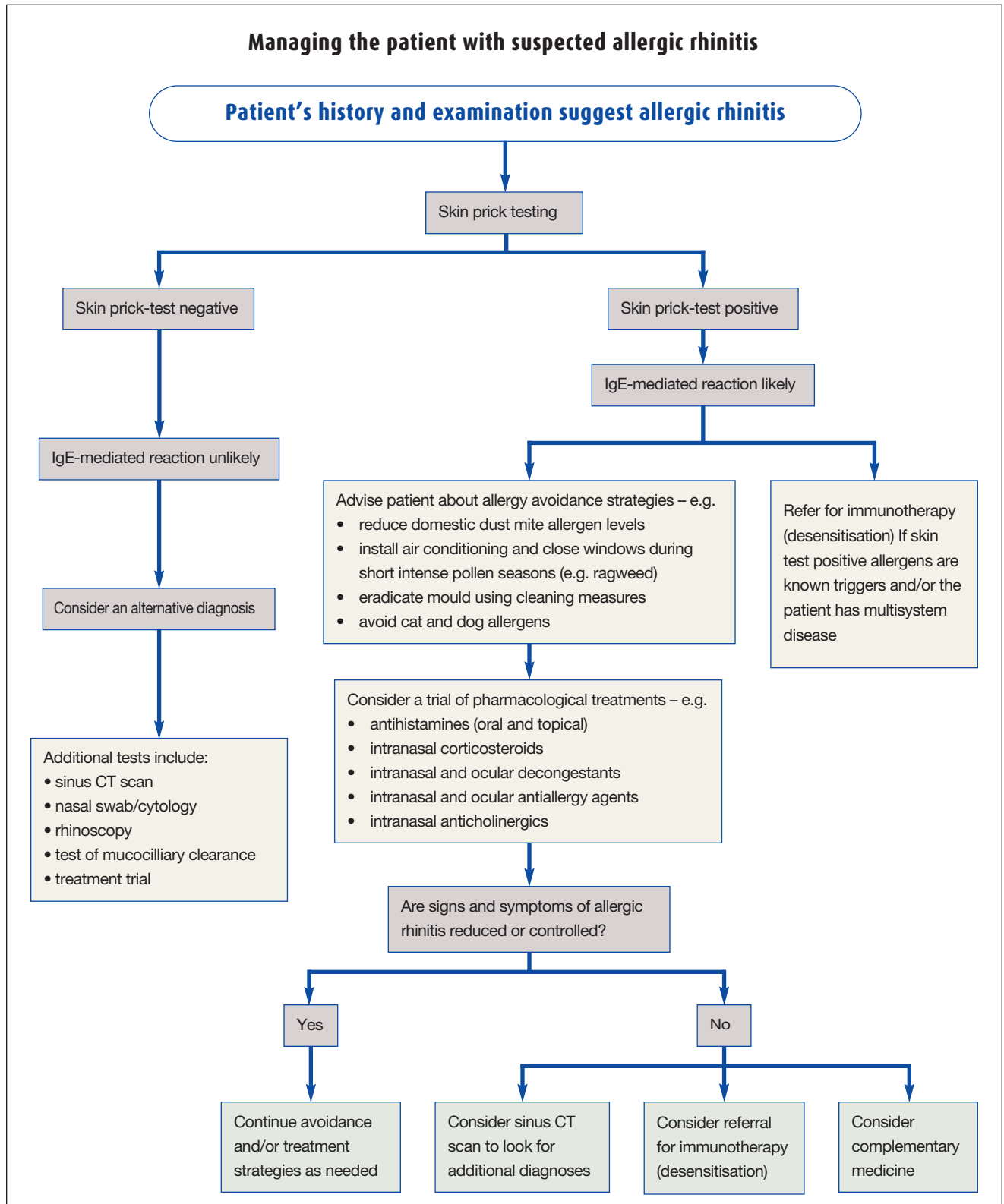


Table 5. Examples of medical treatment of allergic rhinitis

Drug group	Examples	Comments
Oral sedating antihistamines	Cyproheptadine (Periactin), Dexchlorpheniramine (Polaramine) Pheniramine (Avil)	
Oral non-sedating antihistamines	Cetirizine (Alzene, Zyrtec) Desloratadine (Claramax) Fexofenadine (Fexotabs, Telfast, Xergic) Loratadine (Alledine, Allereze, Chemists' Own Loratadine, Claratyne, Hexal Lorano, Lorapaed, Lorastyne)	Fexofenadine available with pseudoephedrine (Telfast Decongestant) Loratadine available with pseudoephedrine (Clarinase, Repetabs)
Intranasal antihistamines	Azelastine (Azep Nasal Spray) Levocabastine (Livostin Nasal Spray)	Multiple ocular preparations also available
Intranasal corticosteroids	Beclomethasone (Beconase Allergy & Hayfever 12 Hour) Budesonide (Budamax, Rhinocort, Rhinocort Hayfever) Fluticasone (Beconase Allergy & Hayfever 24 Hour) Mometasone (Nasonex Aqueous Nasal Spray) Triamcinolone (Telnase)	Beclomethasone has a distinct smell; contains preservative
Intranasal decongestants	Oxymetazoline (Chemists' Own Decongestant Nasal Spray, Dimetapp 12 Hour Nasal Spray, Drixine Nasal, Logicin Rapid Relief, Vicks Sinex) Phenylephrine (Nyal Decongestant Medicine, Nysal Sinus Relief Elixir, Sudafed PE Nasal Decongestant) Tramazoline (Spray-Tish) Xylometazoline (FLO Xylo-POS Nasal Spray, Otrivin)	Multiple ocular preparations available All topical decongestants can lead to rhinitis medicamentosa
Intraocular decongestants	Phenylephrine (Albalon Relief, Isopto Frin, Prefrin) Naphazoline (Albalon, Murine Clear Eyes, Naphcon Forte) Naphazoline plus hamamelis extract (Optrex Eye Drops)	
Intranasal and intraocular antiallergics	Sodium cromoglycate (Cromolux Eye Drops Opticrom, Rynacrom)	Needs to be used frequently
Intranasal anticholinergics	Ipratropium bromide (Atrovent Nasal, Atrovent Nasal Forte)	Useful as a drying agent
Intranasal moisturisers	Saline (Fess, Narium)	

allergen at school – after being introduced to the allergen at school on the clothing of other children who have cats at home. It may be possible to eradicate mould from a particular environment by simple cleaning measures and also by correcting predisposing causes, usually damp conditions and/or poor ventilation.

Drug therapies

A range of over-the-counter and prescription medicines, administered both orally

and topically (intranasally), are used in the management of allergic rhinitis (Table 5).

Oral and topical antihistamines

Patients have often tried over-the-counter antihistamines with allergic rhinitis prior to seeing a doctor. These medications are most likely to be effective if a patient has multi-organ symptoms or if the patient's main symptoms include sneezing, rhinorrhoea and/or itch.

Non-sedating antihistamines have an

excellent safety profile and they also have minimal side effects. Patients do describe mood changes, sedation and/or reduced taste as a result of taking non-sedating antihistamines; however, these effects probably occur at a rate no greater than that for patients taking placebo. A large number of these drugs are available including cetirizine (Alzene, Zyrtec), desloratadine (Claramax), fexofenadine (Fexotabs, Telfast, Xergic), loratadine (Alledine, Allereze, Chemists' Own

Loratadine, Claratyne, Hexal Lorano, Lorapaed, Lorastyne) and olopatadine (Patanol).

Sedating antihistamines are not the drugs of choice for the treatment of allergic rhinitis but some patients may use these medications if they find them more effective than nonsedating antihistamines, or because of their lower cost. Patients should be made aware of the potential for sedation and impaired performance when sedating antihistamines are used. Sedating antihistamines include cyproheptadine (Periactin), dexchlorpheniramine (Polaramine) and pheniramine (Avil).

There is little evidence to support concerns that because antihistamines dry up secretions they can cause problems for patients with asthma. Such patients should not have any problems using these medications. Indeed, antihistamines produce a small amount of bronchodilatation (approximately 10%) due to inhibition of resting airway muscle tone.

Topical antihistamines are available for the nose – e.g. levocabastine hydrochloride (Livostin Nasal Spray) and azelastine (Azep Nasal Spray). They are also available for ocular use – e.g. levocabastine (Livostin Eye Drops), pheniramine (Naphcon A, Visine Allergy with Antihistamine) and lodoxamide trometamol (Lomide Eye Drops 0.1%).

Intranasal corticosteroids

Five topical intranasal corticosteroid preparations are currently available. These include beclomethasone (Beconase Allergy & Hay Fever 12 Hour), budesonide (Budamax, Rhinocort, Rhinocort Hayfever), fluticasone (Beconase Allergy & Hay Fever 24 Hour, Flixonase Nasule Capsules), mometasone (Nasonex Aqueous Nasal Spray) and triamcinolone (Telnae).

These medications can be very effective and are often sufficient to relieve symptoms; they are also cost effective. An additional benefit is that they also improve concurrent ocular symptoms, and high

doses may control nasal polyps as well. It is important to explain to patients that the effect of a topical intranasal corticosteroid is not instantaneous – a perceived lack of efficacy is often a reason why patients do not persist with treatment. A trial of at least one month is recommended.

In rhinitis, as in asthma, intranasal corticosteroids are effective in the majority of patients but do not provide symptom control in everyone. This may relate to underlying disease severity or possibly a different disease phenotype such as neutrophilic inflammation.

A common reason for cessation of therapy is nosebleeds, which patients often interpret as a result of damage to the lining of the nose. Reassurance, cessation of treatment for several days and subsequent dose minimisation often effectively manages this side effect. It is important to check the mucosa over the nasal septum as there is a very small incidence of nasal septal necrosis associated with intranasal corticosteroid use.

Correcting the administration technique for intranasal corticosteroids use can help – i.e. the tip of the nasal spray needs to point upwards and outwards (away from the nasal septum) in each nasal cavity. Some patients have concerns about the use of any type of steroid medication. It is useful to spend time explaining the small doses used, the safety profile of these agents and the indications for treatment.

For patients with concurrent asthma, the addition of an intranasal corticosteroid to their usual inhaled corticosteroid dose may exceed the suggested level of 800 µg per day in children and 1600 µg per day in adults to minimise side effects. The use of intranasal corticosteroid preparations can actually improve control of both upper respiratory tract symptoms, as well as improved asthma control which then may allow for a reduction in the dose of inhaled corticosteroid.

Intranasal and ocular decongestants

Intranasal decongestant preparations are

also available over-the-counter and many people trial these medications before seeing a doctor. These agents are useful for short-term use, usually in the context of an upper respiratory tract infection or acute sinusitis. They sometimes improve the therapeutic success rate of intranasal corticosteroids in patients with such severe nasal blocking that penetration is in doubt.

Both short- and long-acting intranasal decongestants are available. The former includes phenylephrine (Nyal Decongestant Medicine, Nyal Sinus Relief Elixir, Sudafed PE Nasal Decongestant) and the latter includes oxymetazoline (Chemists' Own Decongestant Nasal Spray, Dime-tapp 12 Hour Nasal Spray, Drixine Nasal, Logicin Rapid Relief Nasal Spray, Vicks Sinex), tramazoline (Spray-Tish) and xylo-metazoline (FLO Xylo-POS Nasal Spray, Otrivin) preparations.

Repeated use of intranasal decongestants can lead to rhinitis medicamentosa within five to seven days, with rebound nasal congestion after use. At times, this can be responsible for the majority of presenting symptoms.

Many ocular preparations are also available including short-acting phenylephrine (Albalon Relief, Isopto Frin, Prefrin) and long-acting naphazoline (Albalon, Murine Clear Eyes, Naphcon Forte). Combination ocular vasoconstrictors and antihistamines (Antistine-Privine Eye Drops, Naphcon-A, Optrex Eye Drops and Visine Allergy with Antihistamine) are another over-the-counter option.

Intranasal and ocular antiallergy agents

Sodium cromoglycate preparations for the nose and the eyes (Cromolux, Opticrom, Rynacrom) are useful treatments with minimal side effects, although frequent applications are needed. Lodoxamide (Lomide Eye Drops) and olopatadine (Patanol) act on mast cells in a manner resembling that of sodium cromoglycate, and are available in ocular preparations.

Table 6. Comparative costs of treatment for allergic rhinitis

	Approximate daily cost	Comments
Oral antihistamines	65 – 76c	Dosing can be intermittent
Intranasal antihistamines	1.08 – 2.75c	Dose can be reduced, can be administered intermittently
Intranasal corticosteroids	85c – \$1.05	Dose can be reduced, but should not be intermittent
Injectable immunotherapy	92c	Based on 0.5 mL monthly maintenance injections – does not include administration costs
Sublingual immunotherapy	\$2.00	Based on eight presses daily

Intranasal anticholinergics

Intranasal ipratropium bromide (Atrovent Nasal, Atrovent Nasal Forte) is particularly useful in the prevention or treatment of watery rhinorrhoea – e.g. skier's nose and gustatory rhinitis.

Oral corticosteroids

Oral corticosteroids are used to treat extremely severe symptoms while waiting for other forms of treatment to work. They may also be specifically indicated for nasal polyposis.

Precautions in pregnancy

In pregnancy, category A drugs are preferably prescribed for women with allergic rhinitis.¹⁰ As a result, some of the older sedating antihistamines such as dexchlorpheniramine, cyproheptadine and pheniramine are used in pregnancy. Intranasal sprays such as budesonide, sodium cromoglycate and saline sprays can also be used for treating pregnant women.

Immunotherapy (desensitisation)

Immunotherapy is specifically directed against the allergens to which the patient is sensitised. By definition, it is only used in skin test-positive subjects who have a history indicating that these skin test-positive allergens are allergy triggers. The allergen used in the immunotherapy

extract should be selected for current clinical relevance – e.g. if a patient is skin test positive to house dust mite and cat but is no longer exposed to cats then it is reasonable to desensitise to dust mite alone. Therefore, it is advisable that the extract is selected and prescribed by an allergy specialist or someone with particular expertise in allergy. Extracts currently available are all imported into Australia and include Alustal (a slow-release preparation), aqueous extracts (rapid-release preparation) and more recently Staloral, which is a sublingual preparation. The sublingual preparation is particularly suitable for children.

Patient selection

Most patients who select this form of therapy have multisystem disease that is poorly controlled by other forms of medical therapy. Contraindications include unstable asthma, severe eczema and use of beta-blockers. Treatment should not be initiated during pregnancy or after diagnosis of an autoimmune or malignant disease, but pre-existing treatment can be continued in these circumstances.

Immunotherapy can be given pre-seasonally (for allergy to grasses) or continuously. Initial injections are given on a weekly basis until a maintenance dose is achieved, thereafter spaced at monthly

intervals and continued for a minimum of three years. Pollen immunotherapy is more effective than dust mite immunotherapy.

Risks and benefits

It is important that patients are fully informed about the possible risks as well as benefits of this form of treatment. Injections must be given under medical supervision, patients need to be observed for 30 minutes after each injection and resuscitation facilities must be available in the event of an anaphylactic reaction.

Prior to each injection, enquiry should be made as to whether any side effects (early or late) occurred after the last injection. The sublingual form of therapy is self administered, although local side effects such as oral itch can occur. So far, only one case of anaphylaxis has been reported worldwide with sublingual therapy so it is likely to be safer but it has not been as extensively used and monitored as injectable immunotherapy.¹¹

Surgery

For patients with allergic rhinitis there can often be an anatomical component to the disease such as nasal septal deviation or nasal polyps. For optimal control of symptoms, both the allergic and the anatomical components of the disease need to be addressed. Surgery may also be indicated for associated sinusitis. Computer tomography and rhinoscopy are necessary to assess for surgical indications.

Other therapies

Many patients will use herbal therapies, such as horseradish and garlic tablets and echinacea, despite these treatments not having been formally tested or compared with conventional medication. At least four controlled clinical trials have shown that some Chinese medicine treatments are beneficial for perennial allergic rhinitis or seasonal allergic rhinitis.¹²⁻¹⁴ The herb butterbur (*Petasites hybridus*) has been shown to be as effective in as cetirizine for the

treatment of seasonal allergic rhinitis.¹⁵

Polyphenols, derived from apples and used as a daily drink, have also been trialled in perennial allergic rhinitis and shown to be effective. This chemical compound is found in green tea and other plant products. It is an antioxidant and may work by blocking release of histamine from inflammatory cells.¹⁶

A recent Australian study suggested that acupuncture for eight weeks may be beneficial for perennial allergic rhinitis with positive effects still present three months after treatment.¹⁷ Yet another option, a pollen blocker cream, which is a petroleum based ointment that acts as a mechanical barrier for the nose has been trialled and shown to reduce hay fever symptoms.¹⁸ An alternate physical barrier, a disposable nasal filter, has also been developed by researchers at Sydney University. The researchers showed the

device was effective in pollen avoidance but further work is underway to customise the size and shape of these filters to allow usage for longer periods.¹⁹

Treatment costs

The Pharmaceutical Benefits Scheme does not cover the cost of nasal therapies and this may influence patient compliance and the success of therapy. It should be noted that for patients with moderate-to-severe rhinitis, who often need multiple and continuous prophylactic treatment, the cost can easily reach \$600 per annum (Table 6).

Conclusion

Most rhinitis is due to allergic factors and may be either seasonal (intermittent) or perennial (persistent). To make a definitive diagnosis of allergic rhinitis, the presence of specific IgE antibodies to inhalant

allergens needs to be demonstrated with either skin prick testing or specific IgE levels. Treatment modalities to consider include avoidance of allergens, topical and oral medications (including antihistamines, corticosteroids, and decongestants), immunotherapy and surgery.

A list of references is available on request to the editorial office

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Allergic rhinitis spring into action

S. JANET RIMMER MB BS (Hons), MD, FRACP

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