

# SEASONAL ALLERGIC RHINITIS

## MANAGING HAY FEVER

### Key concepts:

- Seasonal allergic rhinitis can significantly affect the quality of life for many people
- Assess for asthma as this often co-exists with allergic rhinitis
- For mild symptoms, try intranasal antihistamines first
- For moderate to severe symptoms, try intranasal corticosteroids, which are the most effective medicine class for managing symptoms of seasonal allergic rhinitis
- If standard treatment fails, immunotherapy may be considered

Seasonal allergic rhinitis, also known as hay fever, is caused by an immune mediated reaction to seasonal environmental aeroallergens (i.e. pollen).<sup>1</sup> Symptoms are usually seen in spring and early summer, depending on weather conditions and local plant species.<sup>2</sup>

Hay fever can have a significant impact on peoples' lives. It can affect sleep, work performance, learning ability and participation in social activity. Allergic rhinitis often co-exists with asthma, eczema, conjunctivitis and other sinus conditions.<sup>2</sup>

There are a wide range of effective treatment options available. Aim for symptom control with the lowest dose and number of medications.

### Diagnosing seasonal allergic rhinitis

Seasonal allergic rhinitis may affect up to 30% of adults and 40% of children. Prevalence is higher in Western countries including New Zealand, Australia, Canada, USA and UK.<sup>3</sup> Pollen sensitivity begins between age six months and two years, although symptoms do not generally develop until age two to seven years.<sup>1</sup>

Family history of atopy is a known risk factor, but it is unclear whether early childhood exposure to infections, animals and tobacco smoke plays a role in allergic rhinitis.<sup>1</sup>

For a positive diagnosis of seasonal allergic rhinitis, the timing of symptoms should be related to exposure to environmental aeroallergens.


Symptoms are characterised by sneezing (especially paroxysmal), congestion, watery anterior rhinorrhoea, itchy nose, eyes and throat, sinus pressure, facial pain and decreased sense of smell or taste. Signs in children may include tiredness, daytime sleepiness, sniffing, blinking, eye rubbing, speech problems, snoring and dark circles under the eyes ("shiners").<sup>1, 3, 4</sup>

### Types of rhinitis<sup>2</sup>

- **Seasonal allergic rhinitis** – associated with spring and early summer, triggered by pollen (outdoor allergens)
- **Perennial allergic rhinitis** – symptoms all year round, triggered by house dust mite, pets and mould (indoor allergens)
- **Occupational rhinitis** – symptoms worsened at work, triggered by chemicals, irritants and dust
- **Non-allergic rhinitis** – triggered by strong smells, change in temperature, viral infections, pregnancy, hypothyroidism or rarely medications e.g. some antihypertensives

Symptoms **not** usually associated with allergic rhinitis include: unilateral symptoms, nasal obstruction without other symptoms, mucopurulent rhinorrhoea, posterior rhinorrhoea with thick mucuous, recurrent epistaxis.<sup>3</sup>

Towards the end of pollen season, symptoms may worsen. This is known as allergen priming where after repeated challenges, the amount of allergen required to induce a response decreases.<sup>1</sup>

 An annual pollen calendar for plant species in New Zealand can be found at:

[www.allergy.org.nz/site/allergynz/files/Annual%20Pollen%20Calendar.pdf](http://www.allergy.org.nz/site/allergynz/files/Annual%20Pollen%20Calendar.pdf)

Ask about:

- Pattern, chronicity and seasonality of symptoms
- Response to medications
- Occupational exposure
- Environmental history
- Identification of precipitating factors
- Effect on quality of life

Assess for:

- Co-existing asthma

Allergic rhinitis is significantly associated with asthma (the “united airways disease” concept). Allergic rhinitis occurs in 75–80% of patients with asthma and conversely, 20–30% of patients with known allergic rhinitis are subsequently found to have asthma. Studies have shown that in patients with both asthma and allergic rhinitis treatment of allergic rhinitis with intranasal steroids reduces the risk of asthma-related emergency department visits and hospitalisations.<sup>3</sup>

### **Many people have both seasonal and perennial allergic rhinitis**

In reality many people are allergic to both indoor and outdoor allergens, and their symptoms are perennial, with seasonal exacerbations. The World Health Organisation along with the Allergic Rhinitis and its Impact on Asthma group (ARIA)<sup>3</sup> have developed a new classification of rhinitis based on frequency and severity of symptoms, as these are the major factors involved in determining treatment.

Patients are classified by both:

#### **1. Duration of symptoms :**

- Intermittent – symptoms less than four days per week or four weeks at a time

- Persistent – symptoms greater than four days per week or four weeks at a time

#### **2. Severity of Symptoms**

- Mild – no troublesome symptoms with normal sleep and normal daily activities
- Moderate to severe – troublesome symptoms with abnormal sleep and impairment of daily activities (e.g. school, work, sport)

The ARIA classification works very well in New Zealand where most people with seasonal rhinitis are allergic to more than one type of pollen. For example, people allergic to only birch pollen will have symptoms lasting for only three to four weeks, whereas, most people with hay fever are probably allergic to grasses, trees and weeds, and their hay fever season will last up to nine months.


### **Skin prick testing**

Referral for skin prick testing may be considered, if the diagnosis is in doubt, if the patient wishes to determine possible sensitivity to a specific allergen or when expensive avoidance measures or immunotherapy are being contemplated. A positive reaction to an extract does not necessarily mean that this allergen causes the patients symptoms, but it provides supportive evidence as part of an overall exposure history.

Extracts used for testing should be carefully selected to match allergens that the patient is normally exposed to.<sup>2</sup> N.B. atopic individuals may get false positive results with skin prick testing because of sensitivity of their skin to any trauma (dermographism). However this should be apparent if the negative saline control is also positive.

## Managing seasonal allergic rhinitis

Management of hay fever should be individualised depending on specific patient factors and symptoms. In most cases, begin with one treatment and assess response and adverse effects. If the patient is compliant with the medication but symptoms are not controlled, consider substitution with another class of medication or addition of a medication in a step wise approach.

 See Table 1 (page 21) for information on medicines recommended for use in hay fever.

### For mild symptoms try antihistamines first

Intranasal antihistamines may be used as first-line treatment for people with occasional mild symptoms, who wish to gain rapid relief (rescue therapy).<sup>5</sup> They are equal to or more effective than oral antihistamines for the treatment of rhinitis symptoms, although less effective than intranasal corticosteroids. They are not as effective for the treatment of symptoms related to the eye and throat.<sup>6</sup> They have a rapid onset of action so may be used on an “as needed” basis for symptom relief.<sup>1</sup> If treatment fails, or symptoms worsen, proceed to intranasal corticosteroid treatment.

Some formulations may cause drowsiness. Intranasal antihistamines are not suitable for children aged less than five years.<sup>5</sup>

Oral antihistamines can be considered if a spray formulation is not acceptable. They may be used as needed but are more effective if used continuously throughout the pollen season. Oral antihistamines are less effective for nasal congestion than intranasal antihistamines or corticosteroids, but more effective than intranasal antihistamines for eye symptoms.<sup>1</sup>

Second-generation antihistamines (e.g. loratadine, fexofenadine, cetirizine) should be used as they are less sedating and less associated with anticholinergic effects. Of the second generation antihistamines, none have been

found to be superior over the other for symptom control.<sup>1</sup> However, cetirizine may cause drowsiness, particularly when the dose is increased above 10 mg daily.

Sedating antihistamines are contraindicated for the treatment of allergic rhinitis in children, even for night time use as somnolence can continue through to the next day and affect cognitive function.

### For moderate to severe symptoms try intranasal corticosteroids first


For most patients, if their symptoms are significant enough to seek medical advice, it is likely that they require more effective treatment than antihistamines.

Corticosteroid nasal sprays are considered to be the most effective medicine class for controlling the four main symptoms of hay fever – sneezing, itching, rhinorrhoea and nasal blockage. The onset of action of intranasal corticosteroids is usually within 12 hours, but the effect can be more rapid for some people (three to four hours). Maximum efficacy may take up to two weeks.<sup>5,6</sup> Treatment can be started prior to the anticipated beginning of the pollen season and regular use throughout the season is ideal.

Clinical response does not appear to vary significantly between different products, regardless of potency, therefore use the lowest dose possible to control symptoms.<sup>1,2</sup> There are two methods for achieving the optimum dose – either start low and step-up the dose as dictated by symptoms<sup>5</sup> or start with the maximum dose for the patients age and step down the dose at one week intervals to the lowest effective dose.<sup>7</sup> If symptoms still remain uncontrolled, or for “breakthrough symptoms”, consider the addition of an oral antihistamine.<sup>6</sup>

Intranasal corticosteroids may be absorbed systemically to some extent but they are not generally associated with adverse effects and are considered a safe long-term treatment (including during pregnancy and breast feeding<sup>5</sup>). Nasal irritation and bleeding may occur.

If patients find it difficult to use the spray, check their technique (see box below).<sup>2</sup> Be aware of total steroid load in patients also using inhaled corticosteroids.

 **Best practice tip:** If a nasal saline spray is used before the steroid, it can clear mucous and improve mucosal contact with the steroid and potentially reduce the dose required for efficacy.<sup>2</sup>

### Other medications

**Saline spray/drops** are less effective than intranasal corticosteroids but can relieve nasal congestion and dryness. They are associated with minimal adverse effects and may be considered for younger patients or those who cannot tolerate other medications.<sup>1</sup> There are several commercial saline sprays available. A home-made salt water solution could also be used for irrigation – mix ¼ tsp salt with two cups of cooled, boiled water. The solution can be administered using a small spray bottle, nasal dropper or syringe.<sup>4</sup>

**Intranasal decongestants** may be used to reduce significant nasal congestion. However due to the risk of rhinitis medicamentosa (rebound nasal congestion), they should only be used short-term (<10 days) and intermittently.

**Oral decongestants** such as pseudoephedrine and phenylephrine are generally not recommended for use in hay fever. They are associated with insomnia, irritability,

hypertension and palpitations so should be used with caution in older people and people with cardiac conditions and should not be used in children under six or in the first trimester of pregnancy.<sup>1</sup>

**Oral corticosteroids** may be considered for very severe or intractable nasal symptoms or nasal polyps. Use a short course of five to seven days only,<sup>1</sup> 20–40 mg per day in adults and 10 mg per day in children.<sup>5</sup> Continue intranasal corticosteroid during treatment.<sup>6</sup>

**Parenteral corticosteroid injections** are not recommended due to the risk of long-term corticosteroid adverse effects and the availability of more effective treatments.<sup>1, 5</sup>

**Intranasal anticholinergics** e.g. ipratropium bromide can be used as an “add-on” treatment to intranasal corticosteroids and antihistamines to reduce rhinorrhoea, but it has no effect on other nasal symptoms.<sup>1, 4, 6</sup>

**Intranasal sodium cromoglycate** may be effective in preventing onset of symptoms in some patients but for most people, it is less effective than intranasal corticosteroids.<sup>1</sup> The four times daily dosing and the delayed onset of action (up to three weeks) of the cromoglycates contribute to the overall reduced compliance and effectiveness. It is a safe treatment to use in young children and during pregnancy.<sup>6</sup>

---

## Patient advice on administering intranasal sprays (adapted from Scadding et al 2008)<sup>6</sup>

1. Shake bottle well
2. Look down at the floor (do not tilt head back)
3. Using the right hand for the left nostril, put the nozzle just inside the nose and aim to the side (away from the septum)
4. Squirt once or twice as directed
5. Do not sniff as this may result in the drug being swallowed (indicated by an unpleasant taste in the mouth) and is a cause of treatment failure
6. Change hands and repeat for the other side (i.e. use the left hand for the right nostril)

**Oral anti-LT agents** (anti-leukotriene receptor antagonists) such as montelukast are used in some countries for treating hay fever. They are less effective than intranasal steroids and antihistamines and are not generally recommended.<sup>1, 4, 5</sup>

### **Medications for eye symptoms**

If allergic conjunctivitis is the dominant symptom, antihistamine eye drops are most effective.<sup>6</sup> Saline eye drops, sodium cromoglycate eye drops, intranasal corticosteroids and/or oral antihistamines can also be used.<sup>5</sup>

Patients should be advised to avoid rubbing their eyes as this can cause worsening of symptoms. Frequent use of artificial tears during the day can help to dilute and remove allergens.<sup>8</sup>

### **Follow-up and specialist referral**

If a patient with moderate to severe allergic rhinitis fails to improve after four weeks of adequate treatment (nasal corticosteroids and oral antihistamines), patient compliance or the diagnosis must be re-assessed. In such cases, if the diagnosis is in doubt a nasal endoscopy is necessary, to exclude other potential causes of nasal obstruction.

Consider referral to an ear, nose and throat specialist if:<sup>3</sup>

- The patient has constant unilateral obstruction
- There are complications such as resistant obstruction, anosmia, sinus disease, ear problems, persistent purulent discharge
- A polyp is unresponsive to inhaled corticosteroid treatment

## **Environmental management of seasonal allergic rhinitis**

Pollen counts are generally the highest in the morning and on sunny, windy days with low humidity, although this is difficult to predict.<sup>1, 6</sup>

There are many tips about how to minimise pollen exposure. Unfortunately many of these are not practical. Some practical pollen avoidance measures include:<sup>2, 4, 9</sup>

- Use a clothes dryer to finish drying bedding
  - this reduces the amount of pollen that may have settled while on the washing line
- Wear glasses/sunglasses outdoors to reduce pollen contact with the eyes
- Use air conditioning (on recycle mode) in the car
- Use a dehumidifier to reduce indoor humidity
- If possible avoid mowing lawns or raking leaves (or wear a mask)
- Have lawns mowed frequently to avoid flowering
- Select garden species which are low pollen producers (usually native plants, ask at your local garden store)

Consider referral to an allergy specialist for patients who have:

- Inadequately controlled symptoms with maximum doses of medications
- Reduced quality of life
- Adverse reactions to medications
- A desire to identify the allergens to which they are sensitised
- Serious co-morbid conditions such as uncontrolled asthma

### **Immunotherapy**

Immunotherapy involves subcutaneous injection of increasing doses of an identified allergen (or combined allergens), eventually resulting in desensitisation<sup>9</sup> This is an effective treatment for allergic rhinitis which can be considered for patients who are unable to tolerate the amount of medications required to control their symptoms and the associated adverse effects, or for those who have medication failure.

Allergen immunotherapy may prevent the development of new sensitivities and reduce the risk of developing asthma. In one study, patients who had subcutaneous immunotherapy showed a 50% reduction in symptoms and an 80% reduction in the need for medication, compared to those receiving placebo.<sup>10</sup>

Patients receive weekly increasing doses of the vaccine for 12 weeks, up to a maintenance dose, and then monthly injections of the maintenance dose for three to five years. Treatment can be costly, but clinical benefit is usually sustained for many years. There is no specific upper or lower age limit for treatment.<sup>6</sup>

Sublingual immunotherapy is an alternative method of desensitisation, however it is currently not widely used outside Europe.

**ACKNOWLEDGMENT** Thank you to **Dr Vincent St Aubyn Crump**, Allergy Specialist, Auckland Allergy Clinic for expert guidance in developing this article.

**Table 1: Common medications used for seasonal allergic rhinitis**

**Notes:**

1. Medications are ordered based on efficacy and adverse effects, however cost and patient preference are also important factors in choice of medicine.
2. For pregnant or breastfeeding women use intranasal corticosteroid first-line (e.g. budesonide), if not tolerated or additional treatment is required, prescribe an oral antihistamine (e.g. loratadine), also consider the use of saline nasal spray as a “drug-free” alternative.<sup>5</sup>

	Adults	Pregnant/breastfeeding	Children
<b>Intranasal antihistamines</b>	<p>Azelastine 0.14 mg/spray, one spray per nostril, twice daily (<b>Azep NS</b>)</p> <p>Levocabastine 0.5 mg/mL, two sprays per nostril, twice daily (<b>Livostin NS</b>)</p>	<p>Azelastine - B3</p> <p>Levocabastine - B3</p>	<p>From age five years:</p> <p>Azelastine 0.14 mg/spray, one spray per nostril, twice daily (<b>Azep NS</b>)</p>
<b>Oral antihistamines</b>	<p>Loratadine 10 mg once daily (<b>Loraclear Hayfever Relief FS</b>)</p> <p>Fexofenadine 120–180 mg once daily (<b>Telfast PS</b>)</p> <p>Cetirizine 5–20 mg once daily (<b>Zetop FS</b>) (sedating above 10 mg daily)</p>	<p>Loratadine - B1</p> <p>Cetirizine - B2</p> <p>Fexofenadine - B2</p>	<p>From age two years:</p> <p>Loratadine 1 mg/mL, 5 mL once daily (age &gt;6 years, 10 mL) (<b>LoraPaed FS</b>)</p> <p>From age two years:</p> <p>Cetirizine 1 mg/mL, 5 mL once daily (age &gt;6 years, 10 mL) (<b>Cetirizine AFT FS</b>)</p>
<b>Intranasal corticosteroids</b>	<p>Fluticasone 50–100 mcg/nostril once daily (<b>Flixonase, Nasaclear NS</b>)</p> <p>Triamcinolone 55 mcg/nostril twice daily (<b>Telnase NS</b>)</p> <p>Beclomethasone 50–100 mcg/nostril twice daily (<b>Alanase FS</b>)</p> <p>Budesonide 50–100 mcg/nostril once daily (<b>Butacort Aqueous PS</b>)</p>	<p>Budesonide - A</p> <p>Beclomethasone - B3</p> <p>Fluticasone - B3</p>	<p>From age 12 years:</p> <p>Fluticasone 50 mcg/nostril once daily (<b>Flixonase, Nasaclear NS</b>)</p> <p>From age six years:</p> <p>Budesonide 50 mcg/nostril once daily (<b>Butacort Aqueous PS</b>)</p>

**FS** = Fully subsidised, **PS** = Partly subsidised, **NS** = Not subsidised

	Adults	Pregnant/breastfeeding	Children
<b>Intranasal decongestants</b>	Xylometazoline 0.1%, one spray/nostril two to four times per day, maximum five days ( <b>Otrivin spray or drops NS</b> )  Oxymetazoline 0.5 mg/mL ( <b>Drixine NS</b> )	Xylometazoline  Not recommended unless benefit outweighs risk ( <b>Category C</b> )	Xylometazoline 0.05%, one spray/nostril two to three times per day, max five days ( <b>Otrivin Junior spray or drops NS</b> )
<b>Oral corticosteroid</b>	Prednisone 20–40 mg once daily for five to seven days	Prednisone – A	Prednisone 10 mg once daily for five to seven days
<b>Intranasal anticholinergic</b>	Ipratropium bromide 0.03% two sprays, two to three times daily ( <b>Apo-Ipravent FS</b> )	Ipratropium bromide – B1	From age 12 years: Ipratropium bromide 0.03% two sprays, two to three times daily ( <b>Apo-Ipravent FS</b> )
<b>Intranasal sodium cromoglycate</b>	Sodium cromoglycate Nasal Spray 4%, one spray/nostril two to four times per day ( <b>FS</b> )	Sodium cromoglycate – A	From age six years: Sodium cromoglycate Nasal Spray 4%, one spray/nostril two to four times per day ( <b>FS</b> )
<b>Ocular antihistamines</b>	Levocabastine, one drop per eye, three times per day ( <b>Livostin eye drops PS</b> )  Lodoxamide, one drop per eye, four times per day ( <b>Lomide PS</b> )  Olopatadine, one drop per eye, two times per day ( <b>Patanol NS</b> )  Ketotifen, one drop per eye, two times per day ( <b>Zaditen NS</b> )  Naphazoline + pheniramine ( <b>Visine, Naphcon-A NS</b> )  Antazoline + naphazoline ( <b>Albalon-A NS</b> )  N.B. naphazoline can cause rebound hyphaeremia (redness) if used for longer than ten days	Lodoxamide – B1  Olopatadine – B1  Ketotifen – B1  Levocabastine – B3	From age six years: Levocabastine, one drop per eye, three times per day ( <b>Livostin eye drops PS</b> )  From age four years: Lodoxamide, one drop per eye, four times per day ( <b>Lomide PS</b> )  From age three years: Olopatadine, one drop per eye, two times per day ( <b>Patanol NS</b> )  From age three years: Ketotifen, one drop per eye, two times per day ( <b>Zaditen NS</b> )

**Australian Drug Evaluation Committee classification of drugs in pregnancy (summarised)<sup>11</sup>**

<b>Category A</b>	No evidence of harmful effects to the human foetus.
<b>Category B1</b>	No evidence of harmful effects to the human foetus observed, but limited number of human studies. Animal studies have shown no increased risk of foetal harm.
<b>Category B2</b>	No evidence of harmful effects to the human foetus observed, but limited number of human or animal studies.
<b>Category B3</b>	No evidence of harmful effects to the human foetus observed, but limited number of human studies. Animal studies have shown evidence of increased risk of foetal harm, the significance of which is uncertain in humans.
<b>Category C</b>	May cause, or may be suspected of causing, harmful effects on the human foetus or neonate without causing malformations. Drug should only be used if benefit outweighs risk

FS = Fully subsidised, PS = Partly subsidised, NS = Not subsidised

**References**

- Wallace D, Dykewicz M, Eds. The diagnosis and management of rhinitis: An updated practice parameter. *J Allergy Clin Immunol* 2008;122:S1-84.
- Hu W, Katelaris C, Kemp A. Allergic rhinitis: Practical management strategies. *Aust Fam Phys* 2008;37(4):214-20.
- Bousquet J, Khaltaev N, Cruz A, et al. Allergic rhinitis and its impact on asthma (ARIA). *Eur J Allergy Clin Immunol* 2008;63(Suppl 86):1-160.
- Mayo Clinic. Hay fever. Mayo Foundation for Medical Education and Research, 2008. Available from: [www.mayoclinic.com/health/hay-fever/DS00174](http://www.mayoclinic.com/health/hay-fever/DS00174) (Accessed September 2009).
- Clinical Knowledge Summaries (CKS). Allergic rhinitis: NHS, 2009. Available from: [www.cks.nhs.uk/allergic\\_rhinitis](http://www.cks.nhs.uk/allergic_rhinitis) (Accessed September 2009).
- Scadding G, Durham S, Mirakian R, et al. BSACI guidelines for the management of allergic and non-allergic rhinitis. *Clin Exp Allergy* 2008;38:19-42.
- deShazo R, Kemp S. Pharmacotherapy of allergic rhinitis. UpToDate, 2009. Available from: [www.uptodate.com](http://www.uptodate.com) (Accessed September 2009).
- Dana M. Allergic conjunctivitis. UpToDate, 2009. Available from: [www.uptodate.com](http://www.uptodate.com) (Accessed September 2009).
- Auckland Allergy Clinic. Allergic rhinitis. Allergy guides. Available from: [www.allergyclinic.co.nz/guides/16.html](http://www.allergyclinic.co.nz/guides/16.html) (Accessed September 2009).
- Walker S, Pajno G, Lima M, et al. Grass pollen immunotherapy for seasonal rhinitis and asthma: a randomised controlled trial. *J Allergy Clin Immunol* 2001;107(1):87-93.
- Medicines in Pregnancy Working Party of the Australian Drug Evaluation Committee. Prescribing medicines in pregnancy. Canberra, 1999. Available from: [www.tga.gov.au/DOCS/HTML/medpreg.htm](http://www.tga.gov.au/DOCS/HTML/medpreg.htm) (Accessed September 2009).