

Clinical Consult: Diagnosing and Treating Environmental Allergies

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What are environmental allergies?

Environmental allergies have been increasing in prevalence around the world. This increase is thought to be related to increased environmental exposure to air pollution and aeroallergens like pollen and mould.¹

In Canada, the most common pollen-induced allergies are from trees, grasses and ragweed. Ragweed is found mostly in Ontario and Quebec with birch and grasses common across the country. Grass and tree pollen are the most common allergens causing seasonal allergic rhinitis.¹

Allergic rhinitis is a risk factor for the development of asthma with over 65% of people with asthma allergic to aeroallergens. Exposure to these allergens can then be triggers for asthma exacerbations.

The symptoms of allergic rhinitis can have significant impact on quality of life including sleep, ability to function at work and school.²

How should environmental allergies be diagnosed?

Step 1 is to take a detailed clinical history focusing particularly on:

- Specific symptoms patient is experiencing and frequency of symptoms
- Age of onset
- Timing during the year
- Possible triggers including occupational exposures

- Any co-existing conditions they may have (ie: asthma, eczema, food allergies, etc.)

Step 2 is a physical exam to rule out conditions that mimic rhinitis/allergies.

It is important to evaluate for possible mimickers of rhinitis with a physical exam that includes both upper and lower airway, eyes, ears and skin. Some important mimickers of rhinitis include:

- Nasal septal deviation
- Turbinate hypertrophy
- Nasal foreign body and nasal/sinus tumour
- Nasal polyps
- CSF leak
- Systemic diseases including vasculitis and sarcoidosis

Common Allergic Rhinitis Symptoms

Sneezing
Drippy nose
Nasal congestion
Itchy nose
Watery, itchy, red eyes

Atypical Ones in Kids:

Sore nose, throat, eyes, or ears
Sleep disturbance, irritability,
and/or



A line or crease across the bridge of the nose from swiping the nose



Bags and the Denie-Morgan sign (double inferior crease in lower eyelid)



Skin-prick tests are used to definitively diagnose environmental allergens. A small amount of a suspected allergen is placed under the skin (epicutaneously) through a series of small pricks and then observed for a local wheal (due to localized histamine release) at the prick site that represents evidence of IgE-mediated sensitivity to a specific allergen. Typically, the allergens tested include tree pollen, grass pollen, ragweed pollen, dust mite, mould and animal dander.

How are environmental allergies treated?

While allergen avoidance is recommended where feasible, it is impossible to completely avoid exposure to environmental allergens. Thus, people with allergic rhinitis will require therapeutic treatment for relief of symptoms.

What can patients do to help manage their environmental allergies?

- Trigger avoidance where possible
 - dust mite avoidance strategies
 - keeping pets out of the bedroom
- Practical hygiene precautions
 - Air conditioning
 - Close windows during pollen season
 - Monitor pollen counts

Intranasal corticosteroids are the preferred medication when using monotherapy for allergic rhinitis. The intranasal corticosteroids approved in Canada have similar efficacy in controlling both nasal and ocular symptoms of allergic rhinitis. Compliance can be a concern as burning, stinging, dryness and epistaxis are common local adverse effects.⁴

Table 1: Intranasal Corticosteroids in Canada

Name
Beclomethasone dipropionate
Budesonide
Ciclesonide
Fluticasone furoate
Fluticasone propionate
Mometasone furoate
Triamcinolone acetonide

Antihistamines are a cornerstone of therapy and have a long history of use. Recently, the Canadian Society of Allergy and Clinical Immunology released a position statement recommending first-generation antihistamines be replaced by second-generation antihistamines as 1st-line treatment of allergic rhinitis due to improved safety.⁵

In Canada, there are 6 second-generation antihistamines available, 3 by prescription. There are convenience benefits to OTC medications with easy accessibility; however, prescription medication allows for closer



It is estimated that ~7.7 million Canadians, over 20% of the population, suffer from allergic rhinitis.³



Table 2: Second-Generation Antihistamines Available in Canada

Brand/Generic Name	Prescription	OTC	Pediatric Indication
Bilastine	✓		✓
Cetirizine	✓	✓	✓
Desloratadine		✓	✓
Fexofenadine		✓	
Loratadine		✓	✓
Rupatadine	✓		✓

monitoring of use and ensures patients are using a second-generation antihistamine vs inadvertently picking up a first-generation OTC.

What to Consider When Choosing A Prescription Antihistamine

Medication choice should be individualized for the patient and consider both clinical and pharmacokinetic factors.

Second-generation antihistamines are less-sedating and longer-lasting than first-generation antihistamines. A second-generation antihistamine is chosen based on the patient's perceived efficacy, side effects experienced, additional medications taken, pregnancy and age.

Although some patients will mention a tolerance to their second-generation antihistamine and that rotating with another similar antihistamine is helpful, there is not much data to support this finding.

Pharmacology & Metabolism

The prescription antihistamines all have a similar onset of action of approximately 1 hour.

Rupatadine is metabolized by the cytochrome P450 system (CYP450). Cetirizine is less extensively metabolized and is excreted 60% unchanged. Bilastine is not metabolized and does not interact with the CYP450 system.

Somnolence

The degree of somnolence associated with the second-generation prescription antihistamines may be a consideration for individual patient response. Table 3 shows the somnolence rates seen in registration trials from the respective product monographs.

Table 3: Product Monograph Somnolence Rates for Second-Generation Antihistamines vs. Placebo

	Bilastine – SAR/CSU	Cetirizine – SAR/CSU	Rupatadine – AR/CSU
Somnolence	20 mg: 4.08% vs. 2.63%	10 mg: 9.63% vs. 5.0%	AR 10 mg: 8.8% vs. 2.0% CSU 10 mg: 4.4% vs. 2.7%
		20 mg: 23.9% vs. 7.7%	

Information from respective product monographs

Food Interaction

Cetirizine and rupatadine can be given with or without food; bilastine is recommended to be taken 1 hour before or 2 hours after food due to reduced bioavailability. In a randomized, open-label two-period crossover study, once-daily bilastine 20 mg administered under fed conditions showed no reduction in antihistaminic activity despite reduced bioavailability.⁶

Immunotherapy

Allergen immunotherapy is a somewhat underutilized approach to allergic rhinitis.

There are two types – sublingual immunotherapy (SLIT) in the form of tablets, and subcutaneous immunotherapy (SCIT). This approach is generally considered if symptom management, through avoidance strategies and pharmacotherapy, has not provided adequate relief.

Patients who may benefit from this approach can be referred to an allergist for assessment and treatment.

Treating Allergic Rhinitis in Pregnancy

The choice of medications to treat rhinitis in pregnancy are made on an individual basis after weighing risks and benefits.

There are second-generation antihistamines that are more likely to be recommended in pregnancy due to our clinical experience with these medications including cetirizine and loratadine. Due to insignificant systemic absorption, intranasal corticosteroids can be used in pregnancy.

Subcutaneous immunotherapy (SCIT) can be continued during pregnancy, if the patient has reached and is tolerating maintenance dosing. However, SCIT is not usually started if the patient is pregnant, nor is the dose escalated during pregnancy should the patient not yet have reached maintenance.

1. Sierra-Heredia C, North M, Brook J, et al. Aeroallergens in Canada: Distribution, Public Health Impacts, and Opportunities for Prevention. *Int J Environ Res Public Health*. 2018;15(8):1577. Published 2018 Jul 25. doi:10.3390/ijerph15081577
2. Juniper et al. Assessment of quality of life in adolescents with allergic rhinoconjunctivitis: development and testing of a questionnaire for clinical trials. *J Allergy Clin Immunol*. 1994;93(2):413-23



Do allergies get worse over time?

The allergic march refers to the natural history or progression of allergic diseases that begins early in life, with the development of atopic dermatitis, food allergy, asthma and then allergic rhinitis. However, a study from the *Journal of Allergy & Clinical Immunology* in 2022 supported that not all children follow what is known as the traditional allergic march.⁷



3. Keith P et al. The burden of allergic rhinitis (AR) in Canada: perspectives of physicians and patients. *Allergy, Asthma & Clinical Immunology* 2012, 8:7
4. Folwer J and Sowerby LJ. Using intranasal corticosteroids. *CMAJ* 2021 January 11;193: E47. doi:10.1503/cmaj.201266
5. Fein et al. CSACI position statement: Newer generation H1-antihistamines are safer than first-generation H1-antihistamines and should be first-line antihistamines for the treatment of allergic rhinitis and urticaria. *Allergy Asthma Clin Immunol* (2019) 15:61
6. Coimbra J et al. Lack of Clinical Relevance of Bilastine-Food Interaction in Healthy Volunteers: A Wheal and Flare Study. *Int Arch Allergy Immunol*. 2022;183(12):1241-1250.
7. J.M. Biagini et al. Longitudinal atopic dermatitis endotypes: An atopic march paradigm that includes Black children. *J. Allergy Clin Immunol*. 2022 May; 149(5): 1702-1710.e4.