



A practical guide to improve rhinitis diagnosis in primary care

Rhinitis is a highly prevalent problem in all age groups that significantly impairs the lives of people with the condition, including their cohabitants. Underdiagnosis and misdiagnosis are common, which leads to under or inappropriate treatment, economic impact, and potential harm.¹

Most people with rhinitis manage the condition episodically, either with self-management or over-the-counter medications (OTC). Many underestimate and neglect their symptoms and often do not bring this to the attention of their general practitioner (GP). However, as this is a common problem and a frequent comorbidity affecting the management of other conditions, it needs to be recognised and managed appropriately in primary care.

The size of the problem

The overall median prevalence of allergic rhinitis (AR) and nonallergic rhinitis (NAR) are 18% and 12%, respectively, and appear to be increasing over time.² Allergic rhinitis affects approximately 500 million people worldwide³ while displaying considerable geographical variation.⁴

Rhinitis affects all ages, although the frequency of symptoms is higher in children and adolescents.⁵ AR is more frequent than NAR and has more persistent and moderate-to-severe symptoms.³ The frequency and severity of nasal and ocular symptoms with AR, together with sleep disturbances, result in a marked reduction of quality of life,⁴ and an economic burden resulting from medication costs, clinic visits, absenteeism, presenteeism, impact on academic and work performance and on family members.⁶⁻⁹

What is rhinitis and what are its causes?

Rhinitis is inflammation of the nasal mucosa, characterized by at least 2 symptoms, more than one hour per day on most days:

- 1. runny nose (rhinorrhoea)
- 2. blocked/stuffy nose (congestion)
- 3. sneezing
- 4. itchy nose
- 5. itchy throat
- 6. itchy eyes*

* This is a symptom of allergic conjunctivitis, which is present in at least 50% of the patients with AR

There are three widely accepted distinct rhinitis subgroups: allergic rhinitis (AR); non-allergic, non-infectious rhinitis (NAR); and infectious rhinitis.¹⁰ AR refers to symptoms triggered by an immune-mediated

response following exposure to allergens, while NAR refers to symptoms without allergic sensitisation.¹¹ Sometimes both types (NAR and AR) coexist at the same time (mixed rhinitis). Identifying the cause of rhinitis is important for successful management.

Allergic rhinitis (AR) is caused by aeroallergens, including exposure to occupational allergens. According to Allergic Rhinitis and its Impact on Asthma (ARIA): <https://www.euroforea.eu/aria/> it is classified based on the duration and severity of symptoms (Table 1). At least 50% of patients have persistent symptoms, and 40-60% have moderate-to-severe AR, which markedly impacts their quality of life. The diagnostic approach to AR is similar across all age groups. AR typically starts appearing in children around 4-6 years old, with incidence peaking at 14-16, but it can develop at any time in life.^{12,13} NAR is less common in children, except for infection-related NAR.

AR is often underdiagnosed or misdiagnosed, and is frequently untreated.¹⁴ As the presenting symptoms are similar to other conditions, especially viral (e.g. common cold, rhinosinusitis, influenza, COVID-19, NAR), people with AR may think they have an infection or another respiratory condition.^{15,16} This may lead them to expect an antibiotic prescription from their GPs¹⁷ (see below). In addition, people with AR often self-diagnose and self-

Table 1: Classification of allergic rhinitis (duration and severity)^{20,21}

Intermittent < 4 days per week or < 4 consecutive weeks	Mild (All of the following) - Normal sleep - Normal work and school - Normal daily activity - No disturbing symptoms
Persistent > 4 days per week and > 4 consecutive weeks	Moderate / Severe (One or more) - Disturbed sleep - Problems at work and school - Impairment of daily activities - Troublesome symptoms

manage with OTC treatment at community or online pharmacies for symptom relief without seeing their GP.¹⁸ This can lead to medication overuse, lack of established diagnosis, inadequate treatment, poor medication adherence, and poor self-management.¹⁹ OTC requests are an opportunity for pharmacists to identify probable rhinitis and to advise or direct individuals to a primary care consultation, where the diagnosis can be based on clinical and family history, physical examination and, in selected cases, referral.

Severity of AR and NAR symptoms are frequently assessed using a Visual Analogue Scale (Figure 1), which ranges from 0 (not bothersome) to 10 (extremely bothersome). A score of 5 or more identifies moderate to severe disease. Using a VAS to assess the rhinitis severity enables measurement of any change after treatment.

Non-allergic rhinitis (Table 2) is triggered by a variety of factors that inflame or irritate the nasal mucosa, such as certain medications e.g. aspirin, NSAIDs, food ingredients (capsaicin, spices, sulphites and dietary salicylates), hormones (pre-menstrual, oral contraceptive, HRT), chemicals (e.g. perfume, hair spray, cosmetics, antiperspirants/deodorants, bleach and household cleaning agents), sawdust, cigarette smoke, occupational factors and smog.²² Systemic diseases may also cause nasal symptoms (auto-immune disorders, immunoglobulin deficiencies, ciliary dyskinesia) as well as anatomical nasal deformities such as deviated nasal septum.²³ Infections, especially respiratory viral infections, are a common cause of NAR, as are lack of sleep, fatigue, stress and extreme cold. In mixed rhinitis, NAR can be complicated by the presence of AR.

Sinus pain, acute bacterial rhinosinusitis, and otitis media may occur with any of these forms of rhinitis. This is due to excess mucous production coupled with blockage of the sinus ostia and /or eustachian tube leading to increased pressure in the sinuses/middle ear which causes the pain. Typically, acute bacterial

Figure 1. Visual Analogue Scale



Adapted from: Sousa-Pinto B, et al. Validity, reliability, and responsiveness of daily monitoring visual analog scales in MASK-air®. Clin Transl Allergy. 2021 Sep 19;11(7):e12062. doi: 10.1002/ct2.12062.

Table 2: Differential diagnosis of rhinitis

Rhinitis	Allergic	Non-allergic	
		Non infectious	Infectious
	Allergic rhinitis (AR)	Non allergic rhinitis	Common cold viruses COVID Flu
Causes	Immune response to allergens	Diverse: pharmacological, chronic use of decongestants	Infection
Onset	Early in life	Any age	Any age
Duration	Intermittent/ Persistent	Intermittent/ Persistent	Intermittent, episodic
Family history	Rhinitis, atopic dermatitis, asthma	Irrelevant	If family member infected
Comorbidities	Allergic conjunctivitis, asthma, atopic dermatitis		
Triggers	Outdoor: pollens from trees, weeds and flowers, and mould (climate change may increase allergen levels) Indoor: house dust mite, cockroaches, animal dander and mould	- food additives (capsaicin, spices, sulphites dietary salicylates, occupational causes) - hormonal changes (HRT, premenstrual) - sexual arousal - alcohol	
Exacerbating factors	- viral infection, - tobacco smoke, - environmental irritants: smog, air pollution		

rhinosinusitis occurs after a viral infection which has worsening of symptoms 5-7 days after the onset of the symptoms. It is characterised by sinus pain, fever of greater than 38°C and often with systemic symptoms such as headache, muscle pains, fatigue, shivering and sweating. Unnecessary antibiotics may cause more harm than good, but topical nasal steroids may be beneficial.^{24,25} Identifying the underlying cause of rhinitis is essential for correct diagnosis and appropriate management. NAR is primarily managed

by eliminating the triggering factor, whereas AR can be effectively treated with a range of pharmacological therapies once accurately diagnosed.

How to make a diagnosis

History taking

Taking a detailed personal and family history is essential in the evaluation of AR, and questions should focus on the types of symptoms, their onset, duration and frequency, suspected exposures, exacerbating/alleviating factors, and seasonality [see Questions Box]. History should also assess for associated conditions such as allergic conjunctivitis, asthma, atopic dermatitis, sleep-disordered breathing, rhinosinusitis, and otitis media.

Physical examination

Findings may include clear, sticky mucus and pale, swollen inferior turbinates. Mouth breathing, frequent sniffing and/or throat clearing are often apparent, together with signs such as dark circles under the eyes ("allergic shiners"), infraorbital skin fold, and a transverse nasal crease (from the "allergic salute", which is more common in children). It is important to exclude other causes of nasal obstruction, such as significant septal deviation, polyps, or sinonasal masses and, especially in children, foreign bodies, characterised by unilateral smelly nasal discharge. The sinuses might be tender to touch in people with chronic symptoms.

Red flags

Certain 'red flags' warrant immediate attention and indicate the need for referral to an otolaryngologist and/or allergist. These include persistent unilateral nasal obstruction, progressive blood-stained discharge, malodorous nasal discharge, persistent sinus pain or nasal polyps (suggested by severe persistent nasal congestion and anosmia). Such signs suggest more serious underlying conditions that require further evaluation.

Evaluation

If history taking and clinical assessment suggest AR, and this is supported by a positive response to empiric treatment with a non-sedating H1-antihistamine and/or a nasal glucocorticoid (or a fixed combination of nasal glucocorticoid and nasal antihistamine in moderate to severe cases), history driven allergen confirmation is possible with either serum testing for allergen-specific immunoglobulin E (IgE) or allergy skin prick testing, although these tests are usually negative in local allergic rhinitis.^{26,27} Local allergic rhinitis is typified by good treatment response but negative detection of systemic IgE, as this resides only in the nasal mucosa. Serum testing (IgE) is frequently available in primary care, does not require trained technicians, and does not require antihistamine cessation. Skin prick testing requires a trained professional to perform testing and interpret findings. It is rarely available in primary care, however results are available immediately. These tests are best reserved when there is

Questions to help identify AR:

- Are you aware of anything or any place that triggers your symptoms? For example, house dust or pollen exposure, contact with animals, certain tasks at work or home or school, or exposure to chemicals.
- What symptoms are causing you the most trouble? (check for rhinorrhoea, sneezing, itchy nose, nasal congestion, loss of smell, watery or itchy eyes).
- How long have you had these symptoms? Did you have the same this time last year?
- Has any member of your family ever had similar symptoms?
- Were they ever diagnosed with allergic rhinitis (patients may know it as hay fever), allergic conjunctivitis, asthma or atopic dermatitis?
- Do your symptoms come and go, or are they always present? Can you relate symptoms to a particular season / time of the year?
- Is your nasal discharge clear and watery?
- Are you experiencing any wheezing or shortness of breath? ("Yes" may indicate asthma, but may also indicate difficulty in breathing through the nose).
- Do you have an earache or any pain in your face? ("Yes" may indicate otitis media or rhinosinusitis. This does not indicate bacterial infection, but is due to a combination of increased mucus production, accompanied by reduced drainage, leading to pressure (pain) in the middle ear or sinus (see above).

diagnostic uncertainty or non-response to treatment, but also if allergen immunotherapy is to be considered.^{28,29}

Radiographic imaging is not recommended for the diagnosis of AR.²⁰

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Practical tips³⁰

- People may experience acute symptoms without having AR or NAR, most often as a result of incidental, momentary and non-pathological exposure to environmental irritants (e.g., extreme cold during winter, exposure to cigarette smoke or perfume). These causes frequently do not require medical care and will resolve once the cause is removed.
- Environmental causes of AR vary widely on a global scale as allergen exposures differ by region. Moreover, climate change is making aeroallergen patterns increasingly unpredictable. Therefore, all patients should be assessed based on local climatic conditions and allergen exposure.
- Symptoms suggestive of AR (when related to allergen exposure) are 2 or more of the following for >1 h on most days:
 - Runny nose
 - Sneezing, especially paroxysmal
 - Nasal obstruction
 - Nasal itch
 - Ocular symptoms like itch, redness or tearing
 - (think of allergic conjunctivitis)
- Symptoms less suggestive of AR:
 - Unilateral symptoms
 - Discoloured secretions
 - Facial or nasal pain
 - Recurrent epistaxis
 - Smell disorder (anosmia)
 - Posterior rhinorrhoea (post-nasal drip) with thickened mucus
 - Isolated rhinorrhoea
 - Snoring / sleep apnoea

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Authors: Dermot Ryan, Ee Ming Khoo, Fletcher Charlton, Ian Charlton, Jaime Correia de Sousa, Juan Trujillo, Kerstin Romberg, Luís Carvalho, Osman Yusuf, Siân Williams

Reviewers: Bárbara Kong-Cardoso, Mário Morais-Almeida (WAO president) **Editor:** Ian Wright

Endorsed by the World Allergy Organization (WAO) - www.worldallergy.org

Funding statement: This desktop helper was funded from an educational grant from ALK-Abelló who provided a grant to support the development, typesetting, printing and associated costs but did not contribute to the concept or content of this document.

This Desktop Helper is advisory; it is intended for general use and should not be regarded as applicable to a specific case.

Date published: April 2025