

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.⁶⁻⁸

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

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

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

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.

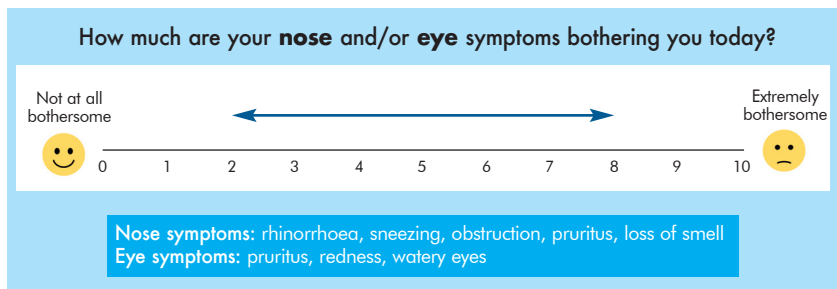
AR is often underdiagnosed or misdiagnosed, and is frequently untreated.¹⁴ As the presenting symptoms are similar to other conditions, especially viral (e.g. common cold, rhinosinusitis, influenza, COVID-19, NAR), people with AR may think they have an infection or another respiratory condition.^{15,16}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

from their GPs¹⁷ (see below). In addition, people with AR often self-diagnose and self-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

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 | |

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 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 38C 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 below]. History should also assess for associated conditions such as allergic conjunctivitis, asthma, atopic dermatitis, sleep-disordered breathing, rhinosinusitis, and otitis media.

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).

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 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

Practical tips:³⁰

- 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

References

- Braido F, Baiardini I, Scichilone N, Musarra A, Menoni S, Ridolo E, et al. Illness perception, mood and coping strategies in allergic rhinitis: are there differences among ARIA classes of severity? *Rhinology*. 2014 Mar;52(1):66-71. doi: 10.4193/Rhino13.040.
- Savouré M, Bousquet J, Jaakkola JJK, Jaakkola MS, Jacquemin B, Nadif R. Worldwide prevalence of rhinitis in adults: a review of definitions and temporal evolution. *Clin Transl Allergy*. 2022 Mar;12(3):e12130. doi: 10.1002/cti2.12130. PMID: 35344304; PMCID: PMC8967272.
- Bousquet J. Allergic rhinitis and its impact on asthma (ARIA) 2008 update (in collaboration with the World Health Organization, GA(2)LEN and AllerGen). *Allergy*. 2008 Apr;63:8-160.
- Akdis CA, Hellings PW, Agache I, editors. Global atlas of allergic rhinitis and chronic rhinosinusitis. European Academy of Allergic Rhinitis and Chronic Rhinosinusitis; 2015.
- Meltzer EO. Allergic rhinitis: burden of illness, quality of life, comorbidities, and control. *Immunol Allergy Clin North Am*. 2016 May;36(2):235-48. doi: 10.1016/j.iac.2015.12.002.
- Bédard A, et al. Correlation between work impairment, scores of rhinitis severity and asthma using the MASK-air() App. *Allergy*. 2020 Jul;75(7):1672-1688. doi: 10.1111/all.14204. Epub 2020 Mar 22.
- Dierick BJH, van der Molen T, Flokstra-de Blok BMJ, Muraro A, Postma MJ, Kocks JWH, et al. Burden and socioeconomics of asthma, allergic rhinitis, atopic dermatitis and food allergy. *Expert Rev Pharmacoecon Outcomes Res*. 2020 Oct;20(5):437-453. doi: 10.1080/14737167.2020.1819793.
- Smith P, Hellings P, Scadding G, Harvey R, Carney S, Price D, et al. Impact of allergic rhinitis on health-related quality of life: results from an Australian survey. *Intern Med J*. 2016;46(Suppl 4):22. Article ASCIA-P57. doi: 10.1111/imj.57.13197.
- Cardell LO, Olsson P, Andersson M, Welin KO, Svensson J, Tennvall GR, et al. TOTALL: high cost of allergic rhinitis—a national Swedish population-based questionnaire study. *NPJ Prim Care Respir Med*. 2016 Feb 4;26:15082. doi: 10.1038/nppcr.2015.82.
- Liva GA, Karatzanis AD, Prokopakis EP. Review of rhinitis: classification, types, pathophysiology. *J Clin Med*. 2021 Jul 19;10(14):3183. doi: 10.3390/jcm10143183. PMID: 34300349; PMCID: PMC8303640.
- Savouré M, Bousquet J, Jaakkola JJ, Jaakkola MS, Jacquemin B, Nadif R. Worldwide prevalence of rhinitis in adults: a review of definitions and temporal evolution. *Clin Transl Allergy*. 2022 Mar;12(3):e12130.
- Hardjojo A, Shek LP, van Bever HP, Lee BW. Rhinitis in children less than 6 years of age: current knowledge and challenges. *Asia Pac Allergy*. 2011 Oct;1(3):115-22. doi: 10.5415/apallergy.2011.1.3.115. Erratum in: *Asia Pac Allergy*. 2012 Jan;2(1):90. PMID: 22053307; PMCID: PMC3206246.
- Asher MI, Montefori S, Björkstén B, Lai CK, Strachan DP, Weiland SK, et al. Worldwide time trends in the prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and eczema in childhood: ISAAC Phases One and Three repeat multicountry cross-sectional surveys. *Lancet*. 2006 Aug 26;368(9537):733-43. doi: 10.1016/S0140-6736(06)69283-0. Erratum in: *Lancet*. 2007 Sep 29;370(9593):1128. PMID: 16935684.
- Grønhoj Larsen C, Gyldenløve M, Linneberg A. Allergic rhinitis is often undiagnosed and untreated: results from a general population study of Danish adults. *Clin Respir J*. 2013 Oct;7(4):354-8. doi: 10.1111/crj.12015.
- Montméry P, Svensson C, Adelroth E, Löfdahl CG, Andersson M, Greiff L, et al. Prevalence of nasal symptoms and their relation to self-reported asthma and chronic bronchitis/emphysema. *Eur Respir J*. 2001;17(4):596-603.
- Larsson LG, Lindberg A, Franklin KA, Lundbäck B. Symptoms related to obstructive sleep apnoea are common in subjects with asthma, chronic bronchitis and rhinitis in a general population. *Respir Med*. 2001;95(5):423-9.
- Mainous AG 3rd, Zoorob RJ, Oler MJ, Haynes DM. Patient knowledge of upper respiratory infections: implications for antibiotic expectations and unnecessary utilization. *J Fam Pract*. 1997;45(1):75-83.
- Tan R, Cvetkovski B, Kritikos V, Price D, Yan K, Smith P, et al. Identifying the hidden burden of allergic rhinitis (AR) in community pharmacy: a global phenomenon. *Asthma Res Pract*. 2017 Nov 21;3:8. doi: 10.1186/s40733-017-0036-z.
- Scheire S, Germonpré S, Mehys E, Van Tongelen I, De Sutter A, Steurbaut S, et al. Rhinitis control and medication use in a real-world sample of patients with persistent rhinitis or rhinosinusitis: a community pharmacy study. *J Allergy Clin Immunol Pract*. 2024 Jul;12(7):1865-76.e6. doi: 10.1016/j.jaip.2024.04.031.
- DynaMed. Allergic rhinitis. Available from: <https://www.dynamed.com/condition/allergic-rhinitis#GUID-5F4112FD-1A2F-4207-892A-0023F2708CA9>
- Klimek L, Bachert C, Pfaar O, Becker S, Bieber T, Brehler R, et al. ARIA guideline 2019: treatment of allergic rhinitis in the German health system. *Allergol Select*. 2019 Dec 30;3(1):22-50. doi: 10.5414/ALX02120E. PMID: 32176226; PMCID: PMC7066682.
- Baroody FM, Gevaert P, Smith PK, Ziaie N, Bernstein JA. Nonallergic rhinopathy: a comprehensive review of classification, diagnosis, and treatment. *J Allergy Clin Immunol Pract*. 2024;12(6):1436-47.
- Schatz M, Zeiger RS, Falkoff RJ. Nasal manifestations of systemic conditions. *Immunol Allergy Clin North Am*. 1987 Apr 1;7(1):159-74.
- Fokkens WJ, Lund VJ, Hopkins C, Hellings PW, et al. European position paper on rhinosinusitis and nasal polyps 2020. *Rhinology*. 2020 Feb 20;58(Suppl 29):1-464.
- Ryan D. Management of acute rhinosinusitis in primary care: changing paradigms and the emerging role of intranasal corticosteroids. *Prim Care Respir J*. 2008 Sep;17(3):148-55. doi: 10.3132/pcrj.2008.00050. PMID: 18695848; PMCID: PMC6619892.
- Rondón C, Campo P, Galindo L, Blanca-López N, Cassinello MS, Rodríguez-Bada JL, et al. Prevalence and clinical relevance of local allergic rhinitis. *Allergy*. 2012 Oct;67(10):1282-8. doi: 10.1111/all.12002. PMID: 22913574.
- Bousquet J, Heinzerling L, Bachert C, Papadopoulos NG, et al. Practical guide to skin prick tests in allergy to aeroallergens. *Allergy*. 2012;67(1):18-24. doi: 10.1111/j.1398-9995.2011.02728.x.
- Clinical Practice Guideline: Allergic Rhinitis. *Otolaryngol Head Neck Surg*. 2015;152(1 Suppl):S1-S43. doi: 10.1177/0194599814561600.
- Kakli HA, Riley TD. Allergic rhinitis. *Prim Care*. 2016;43(3):465-75.
- EUFOR EA. Allergic rhinitis pocket guide. Available from: <https://www.euforea.eu/news/allergic-rhinitis-pocket-guide/>

Authors: Dermot Ryan, Ee Ming Khoo, Fletcher Charlton, Ian Charlton, Jaime Correia de Sousa, Juan Trujillo, Kerstin Romberg, Luis Carvalho, Osman Yusuf, Siân Williams
 Reviewers: Bárbara Kong-Cardoso, Mário Morais-Almeida (WAO president)
 Editor: Ian Wright

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. More information is available at: <https://www.ipcr.org/DTH19>

 Creative Commons Licence Attribution-NonCommercial-NoDerivatives.

The IPCRG is a registered charity (SC No 035056) and a company limited by guarantee (Company No 256268).
 Communication address: 19 Armour Mews, Larbert, FK5 4FF, Scotland, United Kingdom.



