

## Chronic rhinitis in South Africa: Update 2013

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The term rhinitis implies inflammation of the lining of the nose. Characteristic symptoms are a blocked nose, anterior and posterior rhinorrhea, sneezing and itching. Not all cases of chronic rhinitis have an allergic basis. Chronic non-allergic rhinitis is defined as a condition where ongoing rhinitic symptoms are present for many months (as for persistent allergic rhinitis) but there is no IgE basis. Many common conditions may present as chronic rhinitis, which will need to be investigated and managed on their own merits. Not all cases of chronic rhinitis respond to allergic rhinitis therapy: continued attempts to manage chronic rhinitis as allergic rhinitis may be hampered by pathophysiological conditions where other specific therapy may be required. Chronic rhinitis impacts on patient quality of life, and therefore therapy is important. Managing patients with chronic rhinitis requires attention to patient education in order to achieve the maximal therapeutic benefit of medication. This update is intended to provide clinicians with a sound basis for management of a common condition.

*S Afr Med J* 2013;103(6):419-422. DOI:10.1796/SAMJ.6972



### 1. Introduction

The South African Allergic Rhinitis Working Group (SAARWG) met on 6 April 2013 to discuss and review important concepts in allergic rhinitis diagnosis and management. The theme of that meeting, and this update, is to remind clinicians that all patients with rhinitis may not have allergic rhinitis (AR) specifically. The reason is twofold: (i) patients with chronic rhinitis (CR) may have one of a number of conditions that are more significant and may herald more sinister diagnoses, and (ii) many forms of chronic rhinitis may not respond as well to standard allergic rhinitis therapy. This review will focus specifically on the differential diagnosis of AR and the management of these alternative conditions.

### 2. Definitions

The term 'rhinitis' implies inflammation of the lining of the nose. The characteristic symptoms are a blocked nose, anterior and posterior rhinorrhea, sneezing and itching.<sup>[1]</sup> Most patients with AR have an IgE or type I allergic basis,<sup>[2]</sup> and the Allergic Rhinitis and its Impact on Asthma (ARIA) Working Group has classified allergic rhinitis into 4 groups based on symptom duration and symptom severity (Fig. 1).<sup>[3]</sup> This classification has become important for South Africa, because where grass pollen is a major allergen (such as across the Highveld) the disease is usually persistent over several months and usually moderate to severe in nature.<sup>[4]</sup> In contrast, chronic non-allergic rhinitis, by

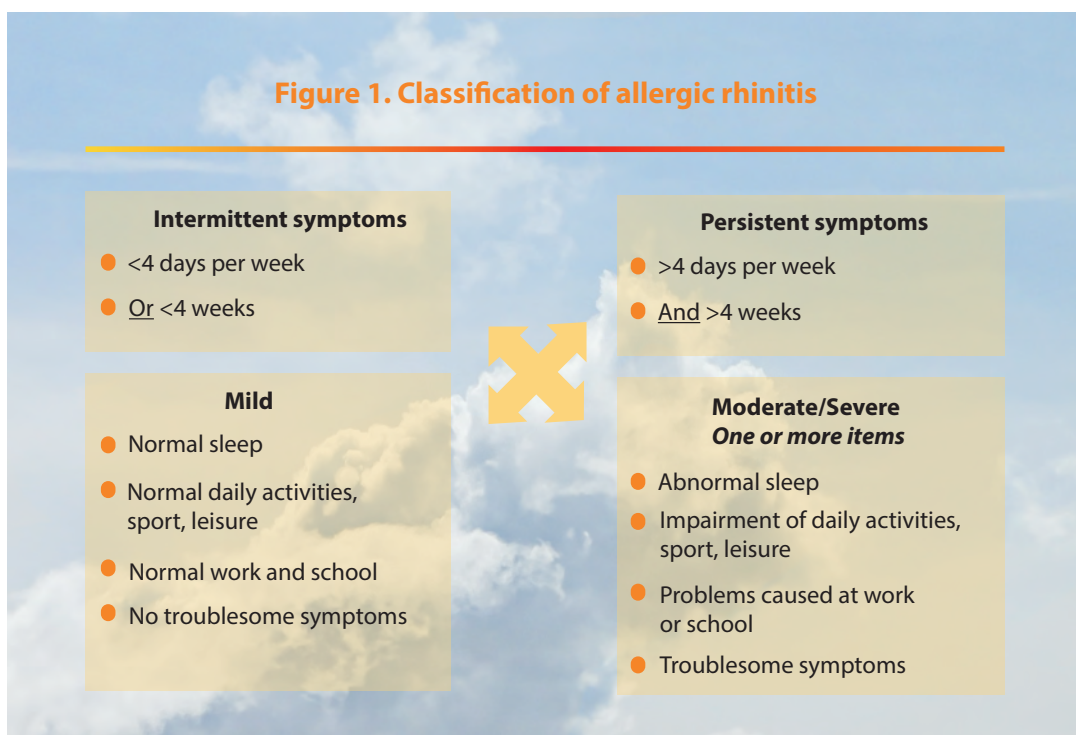
definition, is a condition where ongoing rhinitic symptoms are present for many months (as for persistent AR)<sup>[5]</sup> but where there is no IgE basis. A long list of conditions may present as CR (Table 1).

### 3. Prevalence of CR

South Africa was fortunate enough to be represented in the International Study of Asthma and Allergies in Childhood (ISAAC). Two centres (Cape Town and Polokwane) participated in this study of the epidemiology of allergic rhinitis. In Phase I of the ISAAC Study, conducted in 1995, questioning of 13 - 14-year-old subjects reported that the prevalence of AR was 30.4% in Cape Town.<sup>[5]</sup> By Phase II of the study in 2003, the prevalence had gone up to 38.5%.<sup>[6]</sup> In addition, that study revealed that AR's impact on quality of life was becoming more significant.<sup>[6]</sup> However, the major problem with these data is that although the subjects' condition was labelled as AR, no testing for allergy was performed. This raises a concern about the above epidemiological definition of AR and its prevalence.

It is clear that when subjects are questioned on the presence of nasal symptoms, a significantly higher rate of symptoms is reported than for true AR. For example, in one study, although 48% of subjects reported chronic nasal symptoms, only 14.9% had true AR with a positive skin-prick test (SPT).<sup>[7]</sup> This study emphasises that the term AR should not be used unless there is either a positive allergy test (either SPT or ImmunoCAP) or a clear history of symptoms triggered by specific allergens, possibly with a seasonal variation. If such evidence of allergy

**Figure 1. Classification of allergic rhinitis**



**Table 1. Causes of chronic rhinitis (CR)**

- Allergic rhinitis (intermittent or persistent)
- Local allergic rhinitis
- Non-allergic rhinitis:
  - Acute exacerbation of a low-grade chronic rhinitic condition (e.g. By a common cold)
  - Drug-induced: rhinitis medicamentosa caused by topical decongestants or other drugs (beta-blockers, ACE inhibitors, reserpine, calcium channel blockers, methyl dopa, alpha-receptor antagonists, phosphodiesterase-5 inhibitors, aspirin, NSAIDs, oral contraceptives)
  - Vasomotor rhinitis (non-allergic rhinopathy)
  - Occupational rhinitis
  - Chronic infective rhinosinusitis
  - Gustatory rhinitis
  - Pregnancy-associated rhinitis
  - Primary ciliary dyskinesia
  - Primary or secondary immune deficiency
  - Cystic fibrosis
  - Senile rhinitis

is not present, then the condition should be labelled as CR and the conditions listed in Table 1 should always be considered.

Another important consideration in defining AR is that a positive allergy test does not always confirm AR in isolation. Specific IgE may

be a pointer to AR but specific symptoms need to be present before the diagnosis is made.<sup>[8]</sup> Laboratory tests to confirm the diagnosis of AR should be selected based on careful history-taking, rather than applying a large panel of allergy tests.

In children the allergic component of CR may be more frequent than in adults.

#### 4. Climate change, urban air pollution and CR

We live in a dynamic environment, with rising average temperature and increasing anthropogenic greenhouse gases, which may increase the generation of pollen-producing plant species.<sup>[9,10]</sup> Increased levels of pollutants such as carbon dioxide, ozone and nitrogen dioxide enhance the allergic response,<sup>[11]</sup> and pollutants may induce their own form of irritant rhinitis. Changes in vegetation biomes, as a result of climate change, are likely to cause changes in outdoor pollen and fungal allergens. Changes in the climate are expected to alter the presentation, seasonality and epidemiology of allergic rhinitis and other allergic respiratory diseases in future.

#### 5. Impact of rhinitis on South Africans

In light of the statement above that most epidemiological studies of AR are in fact studies of CR, there are valuable lessons to be learned from studies of the impact of rhinitis on quality of life.<sup>[12]</sup> Many South African studies have suggested that CR impacts significantly on patient quality of life and the major effect is impaired sleep.<sup>[13-15]</sup> Trivialising CR as a minor, non-life-threatening illness promotes the idea that CR does not affect patients significantly. However, CR may result in significant co-morbidity, presenteeism and absenteeism from work and school.

## 6. Local allergic rhinitis

Recently, local allergic rhinitis (LAR) has been recognised as a condition.<sup>[16]</sup> In LAR, patients report typical allergy-induced rhinitic symptoms but all IgE-based allergy testing is negative. IgE is produced locally in response to allergens in the nose, but not systemically.<sup>[16]</sup> Only provocation testing diagnoses the problem; however, these tests are not widely available and only a limited number of allergens can be tested. However, patients with this condition do respond to the usual treatments for AR (including antihistamines and intranasal steroids).

## 7. Treating CR

Antibiotics must not be used for a 'cold'.<sup>[17]</sup> Upper respiratory tract infections are usually viral, and antibiotic use in this condition only leads to the evolution of resistant flora.

Previous SAARWG guidelines have discussed the therapeutic modalities for AR in depth.<sup>[18,19]</sup> Topical use of corticosteroids remains the drug of choice, although antihistamines appear to be more acceptable for the treatment of young children and are effective. Allergen immunotherapy is an important therapeutic option.

Aspirin-induced respiratory disease is a condition where sensitivity to non-steroidal anti-inflammatory drugs leads to asthma, nasal symptoms and polyposis. Therapy involves specific aspirin desensitisation and avoidance of Cox-I inhibitors. Montelukast is a useful therapeutic option for some patients.<sup>[20]</sup>

Therapy of non-allergic, so-called 'vasomotor' rhinitis is difficult. There is no standard therapy which always works. Some patients respond to intranasal corticosteroids,<sup>[21]</sup> and other therapies that may work in selected patients are topical anticholinergics<sup>[22]</sup> and occasional use of topical decongestants. However, the benefit of

topical decongestants often leads to the overuse of this form of therapy, which may lead to rebound or rhinitis medicamentosa.

## 8. Surgical intervention for CR

A number of anatomical abnormalities of the nose and sinuses may cause rhinitis symptoms and many may co-exist with AR. Thus at some stage in the medical management and investigation of CR, where therapy is ineffective, the patient should be evaluated for anatomical abnormalities, including septal deviation, nasal polyposis and tumours of the nose and sinuses. Referral to a specialist and radiological imaging may be necessary.

Every patient who experiences chronic snoring must be investigated for CR and have the condition managed adequately. If the snoring

**Table 2. Recommendations for action in treating chronic rhinitis (CR)**

- Consider CR as a multifactorial condition of which AR is only one cause
- Long-term studies of change in prevalence of CR in relation to climate change are needed
- The AR Essential Drug List (EDL) for South Africa should be updated to reflect safe and effective therapy – sedating antihistamine therapy must not be recommended
- Medical aid organisations must be encouraged to allow therapy for CR to be paid for through chronic benefits
- Medication should be tailored to individual patients
- Patient education for CR is very important

**Table 3. World Anti-Doping Agency (WADA): Chronic rhinitis (CR) drugs that are permitted and not permitted in sport**

Treatment	WADA rules	Notes
Antihistamines	Permitted (WADA 2006)	Second-generation antihistamines should be preferred, to avoid cardiotoxic effects and somnolence. (Nothing mentioned: WADA 2013)
Antileukotrienes	Permitted (WADA 2006)	Nothing mentioned: WADA 2013
Oral steroids	Prohibited	All glucocorticoids prohibited
Topical steroids	Require an abbreviated therapeutic use exemption (WADA 2006)	Nothing mentioned: WADA 2013
Oral beta-2 agonists	Prohibited	
Inhaled salbutamol, formoterol or salmeterol	Require an abbreviated therapeutic use exemption	The presence in urine of salbutamol in excess of 1 000 ng/ml or formoterol in excess of 40 ng/ml is presumed not to be an intended therapeutic use of the substance. It will be considered an adverse analytical finding unless the athlete proves, through a controlled pharmacokinetic study, that the abnormal result was the consequence of the use of the therapeutic inhaled dose up to the maximum indicated above
Ephedrine methylephedrine	Prohibited	Each of <b>ephedrine</b> and <b>methylephedrine</b> is prohibited when its concentration in urine is greater than 10 µg/ml
Pseudoephedrine	Prohibited	<b>Pseudoephedrine</b> is prohibited when its concentration in urine is greater than 150 µg/ml
Immunotherapy	Permitted	Subcutaneous immunotherapy injections should not be performed before or after physical exercise

continues, they should be evaluated and managed for adenoidal hypertrophy. This is particularly important in children, who are at risk of developing right-sided heart failure and cor pulmonale.

## 9. New international guidelines on CR/AR

Doctors in South Africa have regularly updated AR guidelines for local application.<sup>[1,18,19]</sup> The previous revision of the ARIA guideline has suggested 10 areas that require global applicability of ARIA and have unmet needs.<sup>[23]</sup> Recent South African guidelines have addressed some of these issues. There are, however, some areas, especially for CR, that still require attention (Table 2).

## 10. Sport and CR

Competitive sportsmen may experience significant rhinitic symptoms and require that their symptoms be managed.<sup>[24]</sup> A number of reasons for this phenomenon have been proposed.<sup>[24]</sup> Care must be taken with medication because of potential adverse effects and/or 'anti-doping' codes. Permitted and banned medications are listed in Table 3.<sup>[25]</sup>

## 11. Doctor and patient education for CR

Patients with CR must be educated about their condition and therapy. Clinical studies indicate that only 31% of patients are regularly shown how to use nasal sprays.<sup>[26]</sup> There is good evidence from international and local studies that patients are frustrated by CR – education helps to allay fears and concerns, and improves medication compliance.<sup>[26,27]</sup>

**Conflict of interest.** Aspen HealthCare provided an unrestricted grant for the meeting of the South African Allergic Rhinitis Working Group (SAARWG).

### References

1. Luyt DK, Green RJ, Alright P, et al. Management of allergic rhinitis in South Africa. *S Afr Med J* 1996;56(10):1315-1328.
2. Scadding GK, Durham SR, Mirakian R, et al. BSACI guidelines for the management of allergic and non-allergic rhinitis. *Clin Exp Allergy* 2008;38:19-42. [http://dx.doi.org/10.1111/j.1365-2222.2007.02888.x]
3. Bousquet J, Khaltaev N, Cruz AA, et al. ARIA (Allergic Rhinitis and its impact on Asthma (ARIA) 2008 Update. *Allergy* 2008;63(Suppl 86):8-160. [http://dx.doi.org/10.1111/j.1398-9995.2007.01620.x]
4. Mercer MJ, van der Linde GP, Joubert G. Rhinitis (allergic and nonallergic) in an atopic pediatric referral population in the grasslands of inland South Africa. *Ann Allergy Asthma Immunol*

- 2002;89(5):503-12. [http://dx.doi.org/10.1016/S1081-1206(10)62089]
5. Strachan D, Sibbald B, Weiland S, et al. Worldwide variations in prevalence of symptoms of allergic rhinoconjunctivitis in children: The International Study of Asthma and Allergies in Childhood (ISAAC). *Pediatr Allergy Immunol* 1997;8(4):161-176.
6. Zar HJ, Ehrlich RI, Workman L, Weinberg EG. The changing prevalence of asthma, allergic rhinitis and atopic eczema in African adolescents from 1995 to 2002. *Pediatr Allergy Immunol* 2007;18(7):560-565. [http://dx.doi.org/10.1111/j.1399-3038.2007.00554.x]
7. Zhang YM, Zhang J, Liu SL, et al. Prevalence and associated risk factors of allergic rhinitis in preschool children in Beijing. *Laryngoscope* 2013;123(1):28-35. [http://dx.doi.org/10.1002/lary.23573.]
8. Blomme K, Tomassen P, Lapeere H, et al. Prevalence of allergic sensitization versus allergic rhinitis symptoms in an unselected population. *Int Arch Allergy Immunol* 2012;160(2):200-207. [http://dx.doi.org/10.1159/000339853]
9. Blando J, Bielory L, Nguyen V, Diaz RI, Jeng HA. Anthropogenic climate change and allergic disease. *Atmosphere* 2012;3(1):200-212. [http://dx.doi.org/10.3390/atmos3010200]
10. Berman D. Climate change and aeroallergens in South Africa. *Curr Allergy Clin Immunol* 2011;24(2):65-71.
11. Lin G, Zacharek M. Climate change and its impact on allergic rhinitis and other allergic respiratory diseases. *Curr Opin Otolaryngol Head Neck Surg* 2012;20(3):188-193. [http://dx.doi.org/10.1097/MOO.0b013e3283524b14]
12. Green RJ, Davis G, Price D. Concerns of patients with allergic rhinitis: The Allergic Rhinitis Care Programme in South Africa. *Prim Care Respir J* 2007;16(5):299-303. [http://dx.doi.org/10.3132/pcrj.2007.00062]
13. Potter PC, Van Niekerk CH, Schoeman HS. Effects of triamcinolone on quality of life in patients with persistent allergic rhinitis. *Ann Allergy Asthma Immunol* 2003;91(4):368-374. [http://dx.doi.org/10.1016/S1081-1206(10)61684-5]
14. Potter PC, Paediatric Levocetirizine Study Group. Efficacy and safety of levocetirizine on symptoms and health-related quality of life of children with perennial allergic rhinitis: A double-blind, placebo-controlled randomized clinical trial. *Ann Allergy Asthma Immunol* 2005;95(2):175-180. [http://dx.doi.org/10.1016/S1081-1206(10)61684-5]
15. Green RJ, Luyt DK. Clinical presentation of chronic non-infectious rhinitis in children. *S Afr Med J* 1997;87(8):987-991.
16. Rondón C, Campo P, Tógias A, et al. Local allergic rhinitis: Concept, pathophysiology, and management. *J Allergy Clin Immunol* 2012;129(6):1460-1467. [http://dx.doi.org/10.1016/j.jaci.2012.02.032]
17. Brink A, Cotton M, Feldman C, et al. Updated guidelines for the management of upper respiratory tract infections in South Africa: 2008. *S Afr J Fam Pract* 2009;51:105-114.
18. Potter PC, Carte G, Davis G, et al. Clinical management of allergic rhinitis - the Allergy Society of South Africa Consensus update. *S Afr Med J* 2006;96(12 Pt 2):1269-1272.
19. Green RJ, Hockman M, Friedman R, et al. Allergic rhinitis in South Africa: 2012 guidelines. *S Afr Med J* 2012;102(8):693-696. [http://dx.doi.org/10.7196/samj.5810]
20. Scow DT, Luttermoser GK, Dickerson KS. Leukotriene inhibitors in the treatment of allergy and asthma. *Am Fam Physician* 2007;75(1):65-70.
21. Baccioğlu Kavut A, Kalpaklıoğlu F. Efficacy and safety of once daily triamcinolone acetonide aqueous nasal spray in adults with non-allergic and allergic rhinitis. *Allergol Immunopathol* 2012 (Epub ahead of print). [http://dx.doi.org/10.1016/j.aller.2012.05.006]
22. Druce HM, Spector SL, Fireman P, et al. Double-blind study of intranasal ipratropium bromide in nonallergic perennial rhinitis. *Ann Allergy* 1992;69(1):53-60.
23. Bousquet J, Schünemann HJ, Samolinski B, et al. Allergic Rhinitis and Its impact on Asthma (ARIA): Achievements in 10 years and future needs. *J Allergy Clin Immunol* 2012;130(5):1049-1062. [http://dx.doi.org/10.1016/j.jaci.2012.07.053]
24. Bonini S, Bonini M, Bousquet J, et al. Rhinitis and asthma in athletes: An ARIA document in collaboration with GA2LEN. *Allergy* 2006;61(6):681-992. [http://dx.doi.org/10.1111/j.1398-9995.2006.01080.x]
25. The World Anti-doping Agency (WADA). The 2013 prohibited list effective January 1, 2013. Adapted form ARIA guidelines 2006: Athletes. Lausanne, Switzerland: WADA; 2012. <http://www.wada-ama.org> (accessed 5 May 2013)
26. Blass MS, Meltzer EO, Derebery MJ, Boyle JM. Patient and healthcare-provider perspectives on the burden of allergic rhinitis. *Allergy Asthma Proc* 2007;28 Suppl 1:S4-10. [http://dx.doi.org/10.2500/aap.2007.28.2991]
27. Gani F, Pozzi E, Crivellaro MA, et al. The role of patient training in the management of seasonal rhinitis and asthma: Clinical implications. *Allergy* 2001;56(1):65-68.