Rhinitis incorporates a group of disorders that may have diverse pathophysiological mechanisms. These usually, but do not always involve an inflammatory component or mechanism. The typical symptoms experienced are rhinorrhea, sneezing, nasal itching and/or nasal congestion. The underlying causes may include allergic, non-allergic or infective components, either alone or in combination. The essential element in making the diagnosis, is taking an appropriate and comprehensive history, including the patient’s main symptoms, so that treatment can be tailored to the individual patient’s symptom complex.

Allergic Rhinitis

Allergic rhinitis is a common condition, affecting between 10 and 40% of the world’s population. Its prevalence is increasing in both adults and children, and this together with its impact on quality of life has lead to it being classified as a major chronic respiratory condition. It is also listed as one of the ten causes for contact with the health profession. Quality of life is reduced by impairing sleep, adversely affecting leisure activities, social life, school performance and work productivity. Systemic manifestations such as fatigue, headaches and impaired cognitive function add to the distress. Both the direct and indirect financial cost of sick leave, school and work absenteeism, and loss of productivity make allergic rhinitis an important health burden.

The pathogenesis of allergic rhinitis is an allergic response mediated by a type I hypersensitivity reaction, involving excessive production of IgE antibodies in response to allergen exposure. It is also referred to as an atopic reaction. Degranulation of the mast cell follows the IgE-mediated reaction, leading to the release of inflammatory mediators. In the early phase, histamine is released, causing the characteristic symptoms of sneezing, rhinorrhea, nasal itching and ocular symptoms of tearing and pruritus. The release of cytokines and leukotrienes leads to the manifestation of the late phase, which can begin up to six hours after initial allergen exposure. It can continue for up to forty-eight hours and is characterised by nasal congestion and post nasal drip.

Allergic rhinitis has been classified by the Allergic Rhinitis and Its Impact on Asthma Work Group (ARIA) into two categories, namely intermittent and persistent. This replaces the previously known entities of seasonal and perennial allergic rhinitis respectively. Symptoms are termed intermittent if they occur for fewer than four days per week, or for less than four consecutive weeks. Persistent symptoms are present for more than four days per week, and for a period exceeding four weeks. Once the designation of intermittent or persistent allergic rhinitis has been made, severity must be gauged as either mild or moderate to severe as follows:

Mild:
- Normal sleep
- No impairment of daily activities, sports and leisure
- Normal work and school functioning
- Absence of troublesome symptoms

Moderate-severe:
- Abnormal sleep
- Impairment of daily activities, sports and leisure
- Impairment of work and school functioning
- Presence of troublesome symptoms

It is advisable for pharmacists to refer certain patients to a physician before commencing treatment for allergic rhinitis. These instances include:
- Children under the age of twelve years
- Pregnant or breast-feeding women
- Unilateral obstruction
- Anosmia (loss of smell)
- Nasal obstruction without rhinorrhea
- Thick green or yellow mucous secretions
- Posterior rhinorrhea
- Recurrent epistaxis
- Symptoms of undiagnosed or uncontrolled asthma
- Rhinorrhea commencing after head trauma (possibility of CSF leak)

(See Box 1 for treatment of allergic rhinitis)
NON-ALLERGIC RHINITIS

There are numerous causes or types of non-allergic rhinitis, each with its own unique triggers and identifying symptoms. However, patients with non-allergic non-infectious rhinitis are typically symptomatic year round, with exacerbations during winter months. The onset is typically later in life with the patients generally presenting with persistent nasal congestion and/or rhinorrhea. Hyperactivity of the nasal mucosa leads to an increase in symptoms with exposure to non-specific stimuli.1

See Table I for types and possible triggers of non-allergic rhinitis.5

Non allergic rhinitis with eosinophilia syndrome (NARES) tends to produce symptoms that are more intense than vasomotor rhinitis. Profuse watery rhinorrhea, nasal pruritus and sneezing paroxysms are common symptoms, with anosmia also being apparent on occasion. Impaired mucociliary clearance may predispose the individual to secondary infections.10

Vasomotor rhinitis is unrelated to allergy, infection, structural lesions, systemic disease or drug abuse. Little is known regarding its pathogenesis apart from the fact that non-specific nasal hyper-reactivity occurs on exposure to non-immunological stimuli including environmental factors such as relative humidity, temperature or barometric changes, or strong odours such as perfumes, cigarette smoke, paint fumes and inks. Patients with vasomotor rhinitis are further divided into two subgroups: “runners”, who demonstrate “wet” or secretory rhinorrhea; and “dry” patients, who exhibit nasal obstruction, congestion and airflow resistance with minimal rhinorrhea. The treatment of choice for vasomotor rhinitis includes the use of topical antihistamines and topical corticosteroids.6,10

Rhinitis medicamentosa, or drug-induced rhinitis, is associated with the prolonged and indiscriminate use of topical vasoconstrictive agents such as xylometazoline, as well as cocaine. This rebound congestion phenomenon typically occurs in patients who have self-medicated their underlying problem of rhinitis. Treatment of rhinitis medicamentosa requires withdrawal from the offending topical decongestant as well as treatment of the underlying rhinitis disorder. Topical corticosteroids form the mainstay of treatment, provided that there is a component of inflammatory rhinitis present. This condition is completely avoidable and preventable by the pharmacist who should counsel individuals purchasing these agents on their safe and effective use.10

Hormonal-associated rhinitis can occur with pregnancy and oral contraceptive usage. The physiological changes associated with pregnancy, which lead to increased nasal congestion and nasal...
obstruction, include an increase in circulating blood volume resulting in nasal vascular pooling, progesterone-induced vascular smooth muscle relaxation, as well as nasal mucous gland hyperactivity under the influence of pregnancy-associated hormones. The management of rhinitis in pregnancy should include therapies such as steam inhalation and nasal saline sprays. Should insufficient relief be obtained from these modalities, topical medical therapy is preferred to systemic agents.10

Atrophic rhinitis can occur as a rare complication of radical nasal tissue removal by surgery aimed to relieve obstruction, as well as secondary to trauma and radiation therapy. Symptoms of epistaxis, severe crusting, and stuffiness are associated with a foul or fetid odour and Klebsiella colonisation. Atrophic rhinitis appears to be resistant to treatment. The standard approach to management includes aggressive nasal saline irrigation and eradication of bacterial overgrowth with the use of antibiotics. This clearly necessitates referral to a physician.10

Non-allergic and allergic rhinitis can present similarly, but some symptoms are highly predictive of one condition versus the other as can be seen from the approach of the rhinitis diagnostic worksheet.1

**Features suggestive of allergic rhinitis**
- Sneezing
- Itchy nose
- Seasonal symptoms
- Itchy eyes / eye rubbing
- Clear rhinorrhea
- Family history of allergic rhinitis
- Eczema
- Food allergy

**Features suggestive of non-allergic rhinitis**
- Persistent congestion and/or rhinorrhea without itch/sneeze
- Poor response to oral antihistamines
- Symptoms exacerbated by:
  - weather changes
  - temperature changes
  - foods
  - perfumes/odours
  - smoke/fumes
- Late age of onset
- Absence of cat/dog/pet trigger

**INFECTIOUS RHINITIS**
This entity is caused by an infectious microorganism that can be viral, bacterial, or fungal in nature. Fungal infections are more common in immunocompromised individuals. Viral rhinitis is most commonly caused by the rhinovirus, coronavirus or respiratory syncytial virus with symptoms of rhinorrhea, nasal obstruction and sneezing being accompanied by pharyngitis, cough and malaise. Treatment is usually symptomatic and supportive with patients recovering spontaneously within 7–10 days.8 Bacterial rhinitis usually has Streptococcus pneumonia, Moraxella catarrhalis, Haemophilus influenzae or mycobacteria as its causative organism, and may occur with or without viral rhinitis as a precursor. Symptoms involved are nasal congestion and obstruction occasionally leading to occlusion of the sinus ostia, with subsequent development of a purulent nasal discharge, facial pain and nasal crusting, as well as Eustachian tube dysfunction. Treatment includes antibiotics, irrigation, topical decongestants and analgesics. From this it can be seen that referral is therefore required.5,6

**MANAGEMENT – THE TOOLS IN THE PHARMACIST’S ARSENAL**

**Oral antihistamines**
Oral antihistamines are effective H1-antagonists and are available without prescription. Due to their mechanism of action, they are most effective against the symptoms caused by histamine release namely, rhinorrhea, sneezing, nasal itching and ocular symptoms, but are less effective against nasal congestion. The first generation oral antihistamines can cause sedation, cognitive impairment and anticholinergic side effects including dry mouth, dry eyes and difficulty in urinating. In addition to this, first generation antihistamines have a shorter duration of action, therefore, requiring increased dosing frequency. Examples of first generation antihistamines include chlorpheniramine and diphenhydramine. The second generation antihistamines including loratadine, desloratadine, cetirizine, fexofenadine, levocetirizine, ebastine and mizolastine have longer durations of action thus allowing once daily dosing. These newer antihistamines cause less sedation and anticholinergic side effects. They have been shown to alleviate other allergic symptoms at sites such as the conjunctiva, palate, skin and lower airways and have additional anti-inflammatory capacity to ameliorate the nasal eosinophilia characteristic of allergic rhinitis. They are thus indicated as first-line therapy for mild to moderate intermittent and mild persistent rhinitis. It must be emphasised that regular use is more effective than as needed usage in persistent rhinitis.5,6,9

**Topical antihistamines**
The available topical antihistamines are azelastine and levocabastine. Both of these antihistamines are H1-antagonists. Azelastine also appears to work by inhibiting the release of inflammatory mediators from mast cells. The dosage of azelastine is one spray (140 µg) into each nostril twice daily while that of levocabastine is two sprays (100 µg) into each nostril twice daily. Both of these agents have been approved for seasonal allergic rhinitis, however, azelastine has also gained Food and Drug Administration (FDA) approval for the treatment of non-allergic vasomotor rhinitis. Side effects reported include a bitter taste, local irritation and burning.5

**Topical corticosteroids**
Intranasal corticosteroids are potent anti-inflammatory agents that have been proven to be highly effective as a first line treatment for individuals suffering from both allergic and non-allergic rhinitis with symptoms ranging from moderate to severe or persistent. The key issue connected to the use of intranasal steroids is that of compliance.3 Widely used intranasal corticosteroids include beclomethasone dipropionate, budesonide, fluticasone propionate, triamcinolone acetonide, mometasone furoate. Only beclomethasone is available without a prescription in South Africa and thus can be used as an effective first-line management by pharmacists. Side effects of topical corticosteroids include local nasal irritation, sore throat and epistaxis affecting up to 10% of users.7

**Nasal saline**
Nasal saline can reduce symptoms in both children and adults with intermittent allergic rhinitis and is thus safe and
effective adjunct to standard therapy. It is also effective in reducing sneezing, congestion and postnasal drip in patients with vasomotor rhinitis.  

Decongestants

Xylymetazoline and oxymetazoline are both intranasal decongestants that cause nasal vasoconstriction and are thus effective in relieving nasal congestion in both allergic and non-allergic rhinitis. Side effects that may occur include rhinitis medicamentosa, nasal irritation and an increase in rhinorrhoea. Thus a brief period of use is indicated i.e. less than ten days. Oral decongestants are weakly effective in reducing nasal congestion but do not cause a rebound effect. Side effects range from insomnia and agitation to an increase in blood pressure. Pseudoephedrine is the most common agent available in South Africa. 

See Table II for the effects of different therapies on the symptoms of rhinitis.  

Compliance

Topical nasal corticosteroids have been shown to be superior in the treatment of nasal symptoms in both allergic and non-allergic rhinitis, however their use is far below that which would be expected for a condition with such a high prevalence. Patients should be instructed on the correct use of nasal sprays, i.e. placing the nozzle of the spray into the nostril in an upward and lateral position towards the inferior turbinates and not towards the nasal septum as often occurs.  

CONCLUSION

Rhinitis is an extremely common condition that pharmacists are faced with, and in order to choose the most appropriate therapy for the individual patient, it is best to have an understanding of the various subtypes of rhinitis. Many forms of therapies exist, but according to evidence it is suggested that intranasal corticosteroids are the mainstay of treatment and the remaining therapies should be used as adjuncts.  

References:
2. www.whiar.org  

| Table II: Effects of different therapies on the symptoms of rhinitis |
|-------------------|-----------------|-----------------|-----------------|-----------------|
|                  | Sneezing | Rhinorhoea | Nasal obstruction | Nasal itch | Eye symptoms |
| H1-antihistamines |         |           |                  |            |              |
| Oral             | ++      | ++        | +                | +++        | ++           |
| Intranasal       | ++      | ++        | +                | ++         | 0            |
| Eye drops        | 0       | 0         | 0                | 0          | +++          |
| Corticosteroids  |         |           |                  |            |              |
| Intranasal       | +++     | +++       | +++              | ++         | ++           |
| Decongestants    |         |           |                  |            |              |
| Intranasal       | 0       | 0         | +++              | 0          | 0            |
| Oral             | 0       | 0         | +                | 0          | 0            |
