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ARIA pharmacy 2018

"Allergic rhinitis care pathways for community pharmacy"

AIRWAYS ICPs initiative (European Innovation Partnership on Active and Healthy Ageing, DG CNECT and DG Santé)

POLLAR (Impact of Air Pollution on asthma and rhinitis

GARD Demonstration project

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All authors approved the paper

Abstract

Pharmacists are trusted health professionals. Many patients use over-the-counter (OTC) medications and are seen by pharmacists who are the initial point of contact of allergic rhinitis management in most countries. The role of pharmacists in integrated care pathways (ICPs) for allergic diseases is important. This paper builds on existing studies and provides tools intended to help pharmacists provide optimal advice/interventions/strategies to patients with rhinitis. The ARIA-pharmacy ICP includes a diagnostic questionnaire specifically focusing attention on key symptoms and markers of the disease, a systematic Diagnosis Guide (including differential diagnoses) and a simple flowchart with proposed treatment for rhinitis and asthma multimorbidity. Key prompts for referral within the ICP are included. The use of technology is critical to enhance the management of AR. However, the ARIA-pharmacy ICP should be adapted to local health care environments/situations as regional (national) differences exist in pharmacy care.

Abbreviations

AHA: Active and healthy ageing

AIRWAYS ICPs: Integrated care pathways for airway diseases

AR: Allergic rhinitis

ARIA: Allergic Rhinitis and Its Impact on Asthma

CARAT: Control of Allergic Rhinitis and Asthma Test

CDSS: Clinical decision support system

CRD: Chronic Respiratory Diseases

DG CONNECT: Directorate General for Communications Networks, Content and Technology

DG Santé: Directorate-General for Health and Food Safety

DG: Directorate General

EFA: European Federation of Allergy and Airways Diseases Patients' Associations

EIP on AHA: European Innovation Partnership on AHA

EIP: European Innovation Partnership

GARD: WHO Global Alliance against Chronic Respiratory Diseases

HCP: Health care professional

ICP: Integrated care pathway

JA-CHRODIS: Joint Action on Chronic Diseases and Promoting Healthy Ageing across the Life Cycle

MACVIA: contre les MAladies Chroniques pour un VIeillissement Actif (Fighting chronic diseases for AHA)

MASK: Mobile Airways Sentinel NetworK

MeDALL: Mechanisms of the Development of ALLergy (FP7)

mHealth: Mobile health

NCD: Non-communicable disease

OTC: Over-the-counter

POLLAR: Impact of air POLLution on Asthma and Rhinitis

QOL: Quality of life

SCUAD: Severe chronic upper airway disease

VAS: Visual analogue scale

WHO: World Health Organization

WPAI-AS: Work Productivity and Activity questionnaire

Key words: ARIA, asthma, care pathways, pharmacist, rhinitis

Introduction

Allergic diseases such as rhinitis and asthma are common, complex conditions, associated with allergen-specific IgE and non-allergic mechanisms (1, 2). These diseases represent an enormous burden associated to personal, medical, and social costs as well as impairment in work productivity (3-6), impacting health and social inequalities in all age groups (7).

Allergic rhinitis (AR) is a highly diverse chronic disease spanning from mild intermittent rhinitis to Severe Chronic Upper Airway Disease (SCUAD) (8). There is evidence that the condition is sub-optimally managed with several unmet needs which include:

- Understanding the different endotypes (rhinitis and asthma) (9) and the presence of different phenotypes of AR and multi-morbidities which can impact AR and asthma control,
- Improving AR diagnosis using modern technology (10),
- Delivering management strategies and interventions which address suboptimal rhinitis and asthma control arising not only from suboptimal medical management/treatment, but as a result of a range of cultural and/or social barriers (8, 11),
- Assessing risk factors such as allergens and pollutants to incorporate them into management strategies, using technologies that promote sentinel networks within multidisciplinary care pathways (i.e. integrated care pathways (ICPs)) (12),
- Stratifying patients, based on their needs, in order to optimize the use and effectiveness of ICPs (13), and
- Promoting multidisciplinary teams within integrated ICPs, endorsing innovation in clinical trials and encouraging patient empowerment.

ICPs are structured multidisciplinary care plans which detail essential steps in the care of patients. They promote the translation of guidelines into local protocols and their subsequent application to clinical practice. They empower patients and their carers (health and social). ICPs differ from practice guidelines as they are utilized by a multidisciplinary team and have a focus on the quality and

coordination of care. Pharmacists are at the forefront of ICPs for AR. An ICP is intended to act as a guide to treatment.

This paper builds on existing studies and provides tools intended to help pharmacists provide optimal advice/interventions/strategies to patients with AR. The ARIA-Pharmacy ICP includes a diagnostic questionnaire specifically focusing attention on key symptoms and markers of the disease, a systematic Diagnosis Guide (including a differential diagnosis) and a simple flowchart with proposed treatment for rhinitis and asthma multimorbidity. Key prompts for referral within the ICP are included. The use of technology is critical to enhance the management of AR. However, the ARIA-pharmacy ICP should be adapted to local health care environments/situations.

1- Pharmacist challenge in allergic rhinitis

Considering the challenges associated with AR and the identified needs, it is clear that the pharmacist has a role for AR management in practice, through a guided change management process. This is both within the scope of pharmacy practice and in line with future models of integrated care. Pharmacists are ideally placed to manage this extremely important link in care pathways.

Worldwide, pharmacists receive advanced training in basic and clinical sciences. Given the importance of self-medication in many allergic diseases and in iatrogenic disease, pharmacist interventions are well placed to maximize the benefits and minimize the adverse events associated with pharmacotherapy. This is particularly important in AR and asthma multi-morbidity (14) as well as in the elderly patients, a large number of whom present with allergic diseases in combination with other chronic diseases (15). Moreover, most AR medications are available over the counter (OTC) (16-19). The impact of the switch from prescription to OTC medications has been profound in AR (20) with a significant impact on cost and health utilization reduction (21). Therefore, as trusted healthcare professionals in the community, pharmacists are well placed to play a critical role identifying the symptoms of AR, recommending appropriate OTC treatment (22-24) and integrating ICPs into health care teams.

Pharmacists (along with patients, clinicians and other healthcare professionals (HCPs)) are faced with the relative merits and downsides of the various treatment options. Clinical practice guidelines for AR management developed over the past 20 years have improved the care of AR patients (25) and provide a critical framework for AR management (25-27). These guidelines are becoming particularly

important for HCPs in primary care since, in most countries, few AR patients consult a specialist physician. In fact, many patients with AR under-recognize their condition (4) and, as such, do not even consult a physician (28). A large proportion of AR patients actually self-manage their condition (5, 6) and the pharmacist is often the first HCP to whom a person with nasal symptoms presents (29, 30). This further strengthens the important role of pharmacists within multidisciplinary health care teams, acting at different steps of the ARIA-Pharmacy ICPs (23, 31-33).

The specific role of pharmacists within ICPs can been evidenced through several strategies that have been initiated (34) or completed in the AR management in the pharmacy, and in studies confirming the important impact of pharmacist interventions on AR outcomes (18, 35-43). The specific areas of pharmacist impact in AR are summarized in Table 1.

2- ARIA

Allergic Rhinitis and its Impact on Asthma (ARIA) commenced during a World Health Organization (WHO) workshop in 1999 (44), and was further developed by the WHO Collaborative Center for Rhinitis and Asthma (2002-2013). This work has been undertaken in four phases, which are briefly summarized below:

- Phase 1: The initial goals were (i) to propose a new AR classification, (ii) to promote the concept of multi-morbidity in asthma and rhinitis and (iii) to develop guidelines with all stakeholders that could be used globally for all countries and populations. ARIA has been disseminated and implemented in over 70 countries globally (7, 45-54), and was revised and updated in 2008 (7).

- Phase 2: Focused on transparent reporting of guidelines to facilitate understanding and acceptance using the GRADE approach (25, 26).

- Phase 3: MASK (Mobile Airways Sentinel Network), an ARIA initiative, is focusing on (i) the implementation of multi-sectoral ICPs (ii) using emerging technologies (iii) with real-world data (iv) for individualized and predictive medicine (v) in rhinitis and asthma multi-morbidity, (vi) by a multi-disciplinary group or by patients themselves (self-care) using the AIRWAYS ICPs algorithm (Figure 2) (vii) across the life cycle (12, 55).

- Phase 4 concerns change management strategies (56). ARIA-pharmacy ICPs represent one of the change management steps.

ARIA in the pharmacy (23) and its pocket guide were published in 2004 to help pharmacists with the management of AR symptoms and their impact on asthma. Most recommendations proposed in

2004 are still valid but should be updated due to the larger number of medications now available OTC. In the initial approach, ICPs were not considered and the new information and communication technology (ICT) was not available.

3- Integrated care pathways for allergic rhinitis

a. AIRWAYS ICPs

The B3 Action Plan of the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA, DG Santé and DG CONNECT) (57) promotes integrated care models for chronic diseases, including the use of remote monitoring. Based on this initiative and its aims to produce evidence-based translational outcomes, an ICP for airways disease (AIRWAYS ICPs) was developed. Its aim was to launch a collaboration to develop practical multi-sectoral ICPs (i) to reduce chronic respiratory disease (CRD) burden, mortality and multi-morbidity, (ii) to improve education of all stakeholders, (iii) to improve work productivity, (iv) to promote AHA and (v) to reduce inequities in all populations globally (58).

AIRWAYS ICPs considers a multi-disciplinary approach to AR and asthma multi-morbidity management with the pharmacist at the forefront of the algorithm (Figure 1). A very large number of AR patients use OTC drugs (23) and are treated in community pharmacies while the vast majority of patients who visit primary care physicians or specialists have moderate/severe rhinitis (59-63).

However, pharmacy practice varies widely across countries and ICPs should be tailored to the local needs taking into account cultural barriers, socio-economic considerations, health care practices and available OTC medications.

b. mHealth in the management of AR incorporating technology for better AR management

mHealth including apps running on consumer smart devices (i.e. smartphones and tablets) has the potential to profoundly impact healthcare (64). An evidence-based app for use in AR management is available. MASK (Mobile Airways Sentinel network) (ARIA Phase 3) is an app, i.e. an information and communications technology (ICT) system, centred around the patient (12, 55, 65). It is an implementation tool of the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA (57, 66)). A mobile phone App (available for Android and iOS), the *Allergy Diary*, launched in 23

countries and 17 languages (55, 67), is associated with an inter-operable tablet for physicians and other HCPs (65), using visual analogue scale (VAS), the same simple common language to manage AR ((68, 69).

The *Allergy Diary* also encompasses questions relating to the patient's experience of AR symptoms, an additional quality of life questionnaire (EQ-5D (EuroQuol)) (70-72), and a validated tool for simultaneously assessing AR and asthma control (Control of Allergic Rhinitis and Asthma Test (CARAT)) (73-76). These can be used for self-monitoring or can be used for inclusion into clinical trials. The *Allergy Diary* is an integrated approach and can be used by patients in the management of their AR, by HCPs in assisting and guiding management and by researchers to collect large-scale population data on AR status and management globally.

c. Clinical decision support system: additional resource for pharmacists

Clinical decision support systems (CDSS) are software algorithms that advise HCPs on diagnosis and management of patients based on the interaction of patient data and medical information, such as prescribed drugs. CDSS should be based on the best evidence to aid patients and HCPs in shared decision making. In a prospective intervention study, a computerized pharmacy CDSS for the counselling of patients with AR was tested. The results showed that pharmacists omitted many questions mandatory to assessing whether self-medication is appropriate, showing the importance of the CDSS (77).

An AR CDSS (MASK CDSS) is available for pharmacists as a companion to the Allergy Diary (*ARIA Allergy Diary Companion*) (12, 55). The *ARIA Allergy Diary Companion* is based on an algorithm to aid in the selection of pharmacotherapy for patients with AR and to stratify their disease severity (55). It uses a simple step-up/step-down individualized approach to AR pharmacotherapy and may hold the potential for optimal control of symptoms, while minimizing side-effects and costs. Its use is encouraged for pharmacists, however its application may vary depending on the availability of medications in the different countries and on resources.

4- Management of allergic rhinitis in the pharmacy: ARIA-pharmacy ICP

Based on the ICP concept, mHealth and CDSS, ARIA Phase 4 has developed an ICP for Community Pharmacy, to assist pharmacists in the management of AR within the AIRWAY ICPs framework (Figure 1). In summary, this frames the role of the pharmacist in AR across 4 domains:

- Recognition and classification of allergic rhinitis symptoms. As pharmacists are often the health care location at which people with AR either initially present or most frequently present, recognizing and classifying AR becomes critical.

- Identification of AR-related ocular symptoms and asthma: Pharmacist's role includes not only assisting in confirming that AR is present but will allow for the identification of possible other conditions and patients at risk, requiring immediate referral to a general practitioner.

- AR treatment: Initiating/recommending optimal treatment, as medication management has been proven to be the most effective way of managing AR (25, 26).

- Patient support and AR monitoring over time: Supporting the patient with appropriate evidence-based education, self-management support and long term monitoring over time.

These 4 domains are discussed below:

a. Recognition and classification of allergic rhinitis symptoms

Although AR diagnosis requires tests to confirm the allergic sensitization, most patients self-diagnose their AR, consulting pharmacists without a doctor diagnosis of AR. Several questionnaires are available for the screening of allergic diseases (78, 79). Most AR patients have multiple nasal symptoms (rhinorrhoea, sneezing, nasal pruritus and obstruction), a large percentage have ocular symptoms (ocular tearing, redness and pruritus) and many have asthma. In order for pharmacists to evaluate the possibility of screening for AR, a series of questions should be asked to patients with nasal symptoms. The questionnaire in Table 2, while it will not be able to lead to a definitive diagnosis of AR, may enable pharmacists to determine whether a diagnosis of AR should be further investigated and can assist in identifying warning symptoms that need further medical investigation.

Figure 2 summarises the list of symptoms, which, if they occur in isolation, may be suggestive of a condition other than AR. The key feature of AR to remember is that AR symptoms are never unilateral and minimal bleeding may occur during long-term intranasal therapy. Furthermore, although nasal obstruction, loss of smell (80), facial pain or post nasal drip may be AR symptoms, when they occur as single symptoms, they are unlikely to be from allergic origin. Purulent discharge, especially if accompanied with fever, is suggestive of an infection (Figure 2). AR may present with symptoms similar to those of a number of other conditions induced by non-allergic triggers including viral infections such as the common cold. Table 2 may help the pharmacist to differentiate allergy from other causes including infection.

The ARIA guideline proposes a classification of AR based on symptom control, QOL and daily impact as well as duration (7, 44). Disease control associated with several health outcomes, including QOL (59-63) and some mHealth endpoints (72, 81-84), should be considered in ICPs. Although the duration of rhinitis is an important indicator of asthma multimorbidity (85), and duration and efficacy of treatment in AR (61), AR control should be considered as the most important end point for the pharmacist.

AR 'control" in AR patients is the main goal of treatment (86). Control is the degree to which therapy goals are currently met such as glycaemic control in diabetes. However, measures of AR control are somewhat different to many other chronic diseases as while they include symptom scores, alternative scales/scores, which are reflective of the impact of AR on day-to-day living, have been shown to be validated as measure of AR control. For example visual analogue scales (VAS) assessing impact of AR (69, 87), quality of life (QOL) measures and scores with several items which cover symptoms and impact on daily living (88, 89) are commonly used. In deciding which measure of AR control is most appropriate, it is important for a score to be simple and responsive to change over time, as AR control changes, hence VAS scores, which can be used in all age groups, (90, 91) are available in a wide variety of languages (92, 93) and have been shown to be valid for assessing AR control, are useful instruments for assessing AR control (Figure 3).

A VAS (range: 0-20) can be used to assess control before and some days after treatment (Figure 6). If the scale is <20/100, the patient has controlled AR, if the scale is from 20 to 50/100, the patient has partly controlled disease and for ≥50/100, the patient has uncontrolled disease (Figure 6). Using VAS can help the pharmacist to assess response to OTC treatment. VAS can be used to assess overall AR control (VAS global measure) as it relates to nasal symptoms and eye symptoms (94) (Figure 3 and Figure 6). There is a high degree of correlation between VAS global measured ("Overall how much are your allergic symptoms bothering you today?") and VAS for nose symptoms (81, 84). An electronic form of the VAS exists in the *Allergy Diary* (81, 84) and has been validated against several end points.

b. Identification of AR-related ocular symptoms and asthma

Ocular symptoms are commonly associated with nasal symptoms in AR, and they can be diagnosed using simple questions. However, some forms of conjunctivitis require referral to a physician (Figure 4). A VAS for ocular symptoms may also be used and is included in the *Allergy Diary* (Figure 3).

Asthma is a common multi-morbidity of AR and should be checked. A proposal has been made in ARIA in the pharmacy (23) (Figure 5). All patients with rhinitis should be evaluated for asthma, particularly if they have persistent and/or moderate-severe rhinitis.

c. AR Treatment

Goals for the treatment of rhinitis should be determined after an accurate diagnosis of AR and a validated assessment of control, including evaluation of coexisting asthma. AR treatment goals include:

- Normal sleep.
- Ability to undertake normal daily activities, including work and school attendance, without limitation or impairment, and the ability to participate fully in sport and leisure activities.
- No troublesome symptoms.
- No or minimal side-effects of rhinitis treatment. It should be recognized that many OTC drugs for the treatment of AR can induce sedation and should be avoided.

In all guidelines, it has been considered that many medications may be used at several steps of severity and duration (44); including antihistamines (oral and intranasal), intranasal glucocorticosteroids (INCS) leukotriene receptor antagonists and chromones (intranasal and eye drops). Anticholinergics and decongestants (intranasal and oral) are sometimes noted in the treatment of AR on a short-term basis however, there is little good quality evidence for their effectiveness (45) and prolonged use of decongestants (>10 days) may lead to rebound swelling of the nasal mucosa, drug-induced rhinitis (also known as rhinitis medicamentosa) and tachyphylaxis (7). Table 3 summarises the specific pharmacological effects of these different agents on specific AR symptoms (95).

In consideration of the specific role of the pharmacist, however, it is important to focus on pharmacotherapy that it available OTC in pharmacies i.e. antihistamines and in some countries, intranasal corticosteroids. Considering OTC medications, intra-nasal corticosteroids (INCS) are more effective than oral or intranasal H1-antihistamines (27, 44) but many patients prefer oral drugs. Other medications include leukotriene antagonists, nasal washing, vasoconstrictors and cromoglycate. In some countries (currently in New Zealand), the combination of azelastine and

fluticasone propionate is OTC. This medication may be preferred if the patient wants a rapid onset of action of the treatment (26).

Figure 6 provides a clinical treatment pathway to help pharmacists choose the appropriate OTC medications, based on assessment of AR control using VAS. The patient's preference should always be considered. OTC medication availability differs between countries.

Immunotherapy and AR treatment: The application of both subcutaneous immunotherapy and sublingual immunotherapy (for treatment of allergies to pollens, ragweed and house dust might) are reserved for patients with severe AR. They have been shown to improve the quality of life of people with AR and reduce the need for other pharmacological therapy (96-98). Currently in most countries, initiation of immunotherapy is both administered and monitored by specialist physicians. The role of pharmacy within the context of this treatment has not as yet been defined.

Non pharmacological AR treatment: In addition to pharmacological treatment, historically patients with AR have been recommended non-pharmacological strategies such as allergen avoidance or minimisation and nasal washing. When it comes to seasonal AR, it is evident that avoidance of seasonal allergens is effective. i.e. patients with seasonal AR do not experience symptoms outside of season. However, while the level of evidence is low, during pollen season, patients can be advised to close windows at night, drive with closed windows and wear wrap-around glasses when outdoors, to prevent exacerbation of symptoms; ,and wear sunglasses (99), nasal filters (100) and apply balms and ointments to the nose (95) during pollen season to reduce symptoms. For patients with occupational AR, avoiding exposure to the occupational agent trigger AR is recommended (101).

There is limited evidence that saline washings, irrigation or sprays are effective in reducing AR symptoms and potentially reducing the amount of pharmacotherapy needed (7, 102) however, they are well tolerated, safe and inexpensive(103), hence for patients who would like to try them, they can be safely recommended.

d. Patient Support and AR monitoring over time

In considering the way in which pharmacists can support the patient with AR, it is important to build on the process of recognition, classification and treatment recommendations with appropriate education, self-management support and both short and long term monitoring.

Education around the condition of AR is fundamental, however, education about the way in which treatment works, the need to be both adherent and use intranasal devices correctly, is also critical. In particular, it is well recognized that non-adherence to AR treatment adds to the burden of disease. It is difficult to accurately determine non-adherence to AR treatment, as some medications are taken seasonally (as needed) and many are available over the counter in the pharmacy. It is, however estimated that for people using intranasal corticosteroids to treat their AR, adherence is approximately 35% (104). Supporting the patient to better understand the way in which medication works and the need to take it regularly is critical. It has been shown that when pharmacists work with patients to assist them in setting their goals for AR management, better long term AR outcomes are achieved (36, 37)

Further to this, patients must be shown how to use their intranasal sprays correctly. Little is known about the proportion of patients who use their intranasal medication correctly however, the way in which the patient uses their intranasal spray does impact on way in which the spray distributes in the nasal cavity (105) and the occurrence of local side effects (106). Therefore, as with asthma devices, it is recommended that pharmacists train the patient how to use their intranasal device with a placebo device.

Monitoring adherence with AR treatment is a challenge. This is where the use of technology can assist. There are several mHealth tools for AR follow up but only the *Allergy Diary* has been validated. The Allergy Diary (MASK-rhinitis) has been implemented in 23 countries and 16 languages. Over 23,000 users have been recorded (55, 81, 82, 107-111). This tool appears to be appropriate for pharmacists, in particular since it is extremely simple, does not require the pharmacist to undertake any particular education on its use, is user friendly for the patient and can be used for follow-up over time.

For confidentiality reasons, patients cannot give access of the electronic data that they record in the *Allergy Diary* (both symptom VAS and medication use) to HCPs. However, they can print their daily AR control VAS responses and medication use, as summarized in Figure 7. Comparison of control at first dispensing of an OTC medication with the evolution of control during treatment will guide pharmacists to stop or increase the treatment with OTC medications or suggest referral to a physician. Moreover, this control chart will help the physician to optimize the treatment.

Conclusion

The present paper has summarized the need for community pharmacists to play an important role in ICPs for AR. Although each recommendation varies between countries due to the available OTC medications, legislation and cultural differences, ARIA-Pharmacy may be used as a model for the implementation of ICPs in different countries.

Table 1: Importance of pharmacists in the management of allergic rhinitis

- Recognizing (identification of) AR
- Risk assessment/stratification
- Over-the-counter treatment
- Patient education
- Referral to a physician
- Administration of topical treatment technique, Including teaching and re-evaluation of treatment technique
- Adherence to treatment
- Research on database

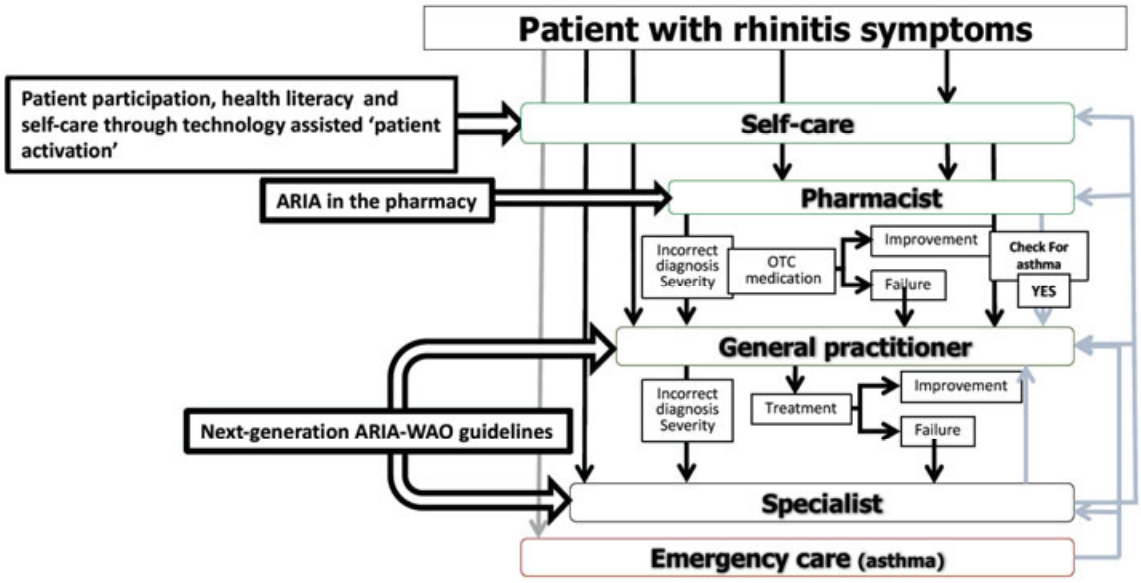
Table 2: Is it a cold or allergic rhinitis?

Symptoms	Cold	Allergic rhinitis
Duration	5-10 days	Variable but can last months or present recurrent episodes
Season	Most often in winter but may be possible at any time	Any time of the year, more common during pollen seasons which can occur in winter
Course of the disease	Symptoms usually take a few hours or days to be severe	Symptoms can be severe within minutes
Nasal and ocular symptoms	• Severe nasal obstruction • Rhinorrhoea • Sneezing (rarely in bouts) • **NO** nasal or ocular pruritus • Rare ocular symptoms • Frequent loss of smell	• Profuse watery rhinorrhoea • Several episodes of sneezing in succession • Nasal pruritus • Variable nasal congestion • **Often associated with ocular symptoms** (tearing, redness, pruritus) • Partial loss of smell in the most severe patients
Sore Throat	Common	Sometimes
Cough	Common	Sometimes
Chest Discomfort	• Mild to moderate • Cold can lead to severe asthma exacerbation	Rare, except for those with allergic asthma

Table 3: AR symptoms and relative effectiveness of different pharmacotherapeutic agents (from (95, 112)

	Sneezing	Rhinorrhea	Nasal obstruction	Nasal itch	Eye symptoms
Hi-antihistamines					
Oral	**++**	**++**	**+**	**+++**	**++**
Intranasal	**++**	**++**	**+**	**++**	**0**
Eye drops	**0**	**0**	**0**	**0**	**+++**
Corticosteroids					
Intranasal	**+++**	**+++**	**++**	**++**	**++**
Chromones					
Intranasal	**+**	**+**	**+**	**+**	**0**
Eye drops	**0**	**0**	**0**	**0**	**+**
Decongestants					
Intranasal	**0**	**0**	**++++**	**0**	**0**
Oral	**0**	**0**	**+**	**0**	**0**
Anti-cholinergics	**0**			**0**	**0**
Anti-leukotrienes	**0**			**0**	**++**
Intranasal steroids and intranasal antihistamine 1	**+++**	**+++**	**+++**	**+++**	**+++**

Figure 1: ARIA in the pharmacy initiative for AIRWAYS ICPs in allergic rhinitis (modified from (66))



This is a generic algorithm which varies between countries depending on regulations.

The health care professional should ascertain that the treatment taken by the patient accords to best practices. In particular, regular use of short-acting ß2 agonist as a single treatment should be avoided. Similarly, prolonged use of intra-nasal vasoconstrictors in rhinitis should be avoided.

Figure 2: Diagnosis of allergic rhinitis in the pharmacy (Adapted from (23))

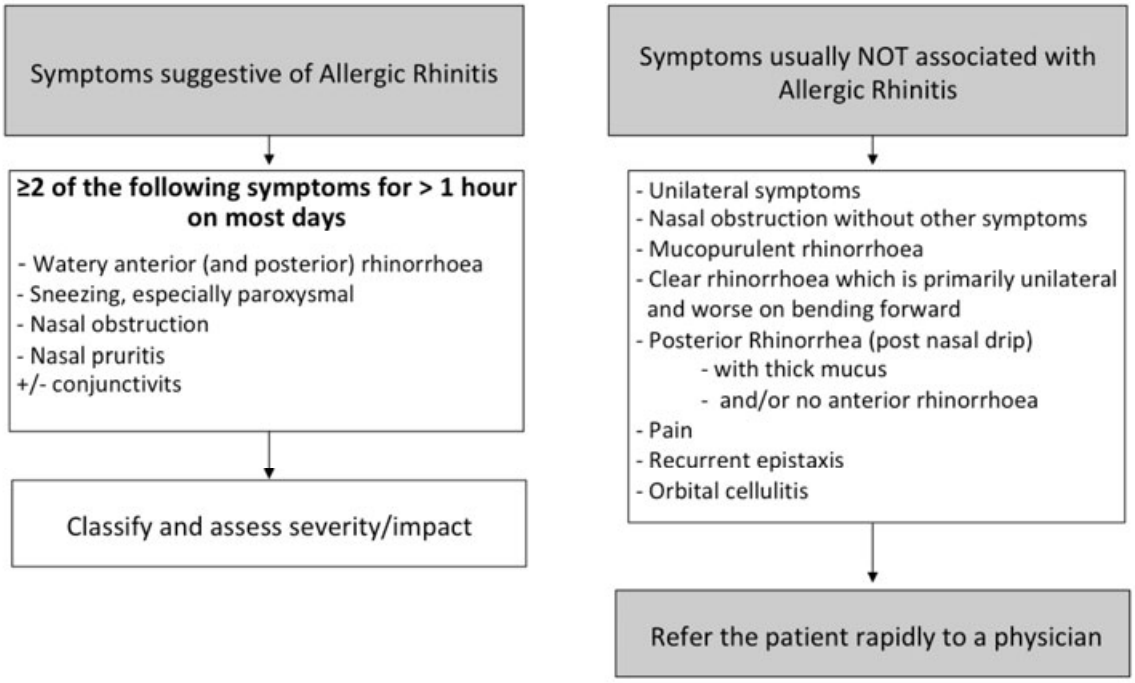


Figure 3: The MASK *Allergy Diary*

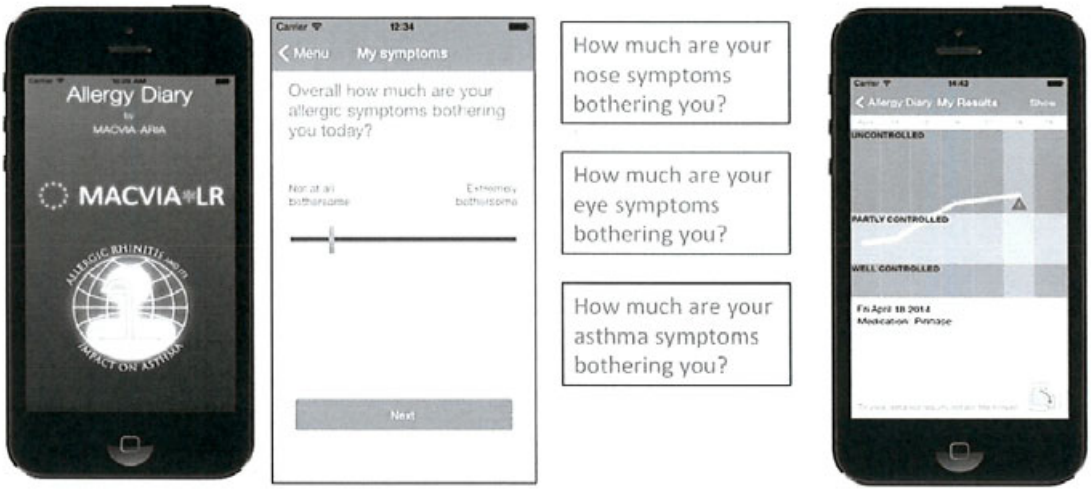


Figure 4: Diagnosis of allergic conjunctivitis at the pharmacy (adapted from (23)

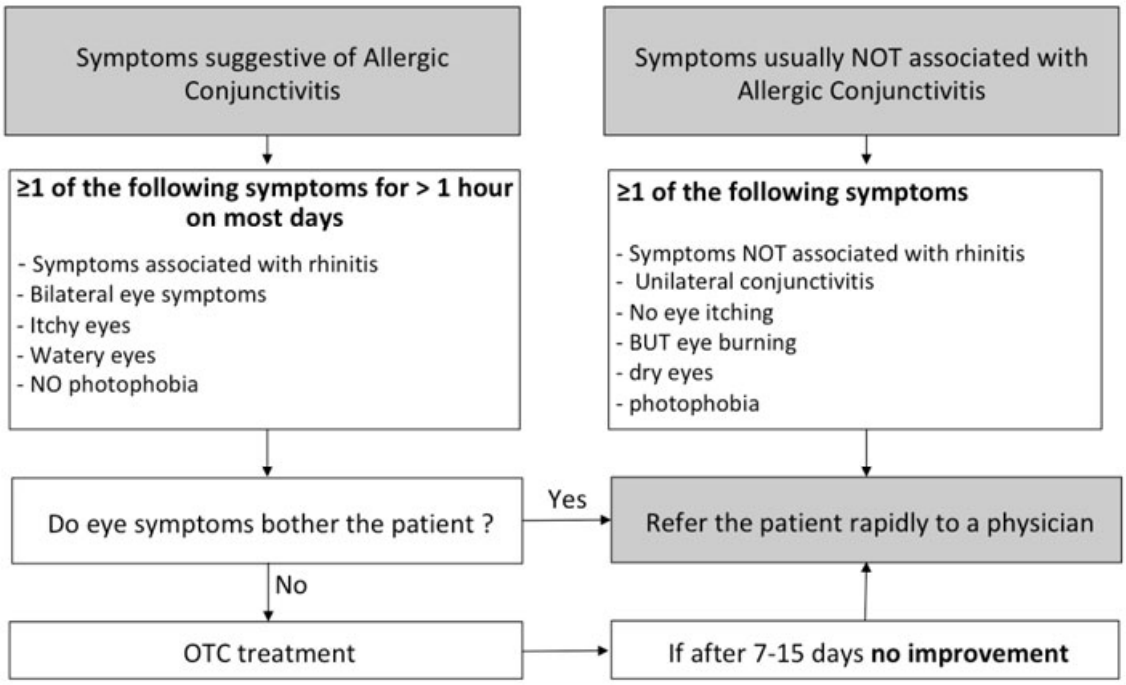


Figure 5: Screening of asthma in rhinitis patients in the pharmacy (from (23))

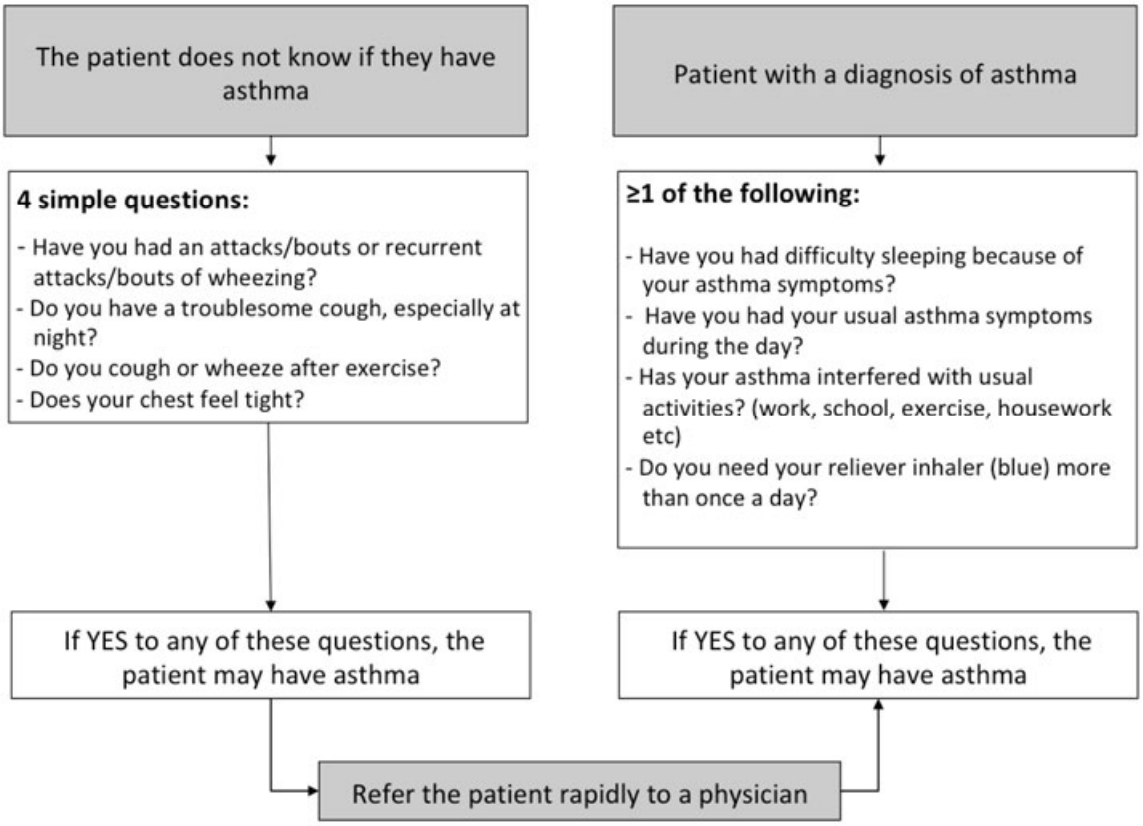
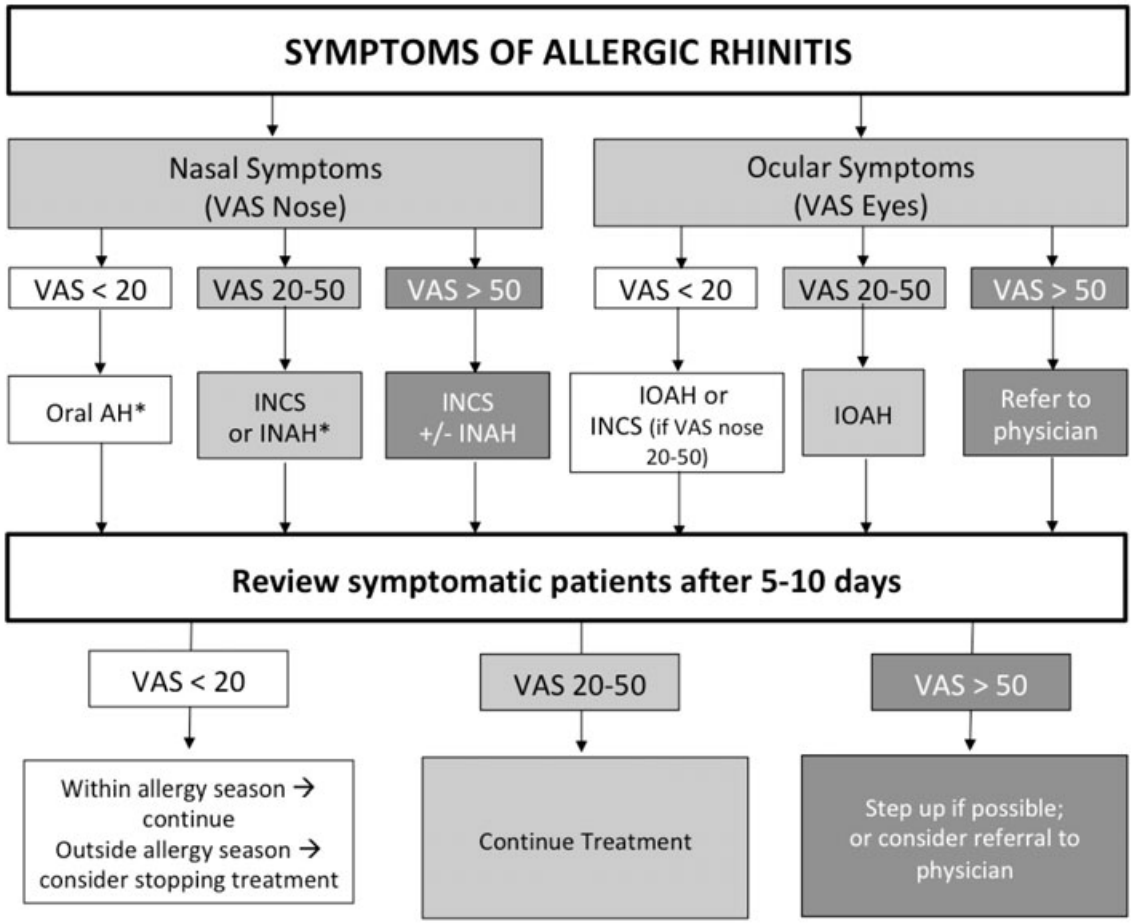


Figure 6: Treatment of allergic rhinitis in the pharmacy (adapted from (23))



VAS nose: "How are your nose symptoms bothering you today?"

**INCS if coexisting asthma.*

AH antihistamine; INCS intranasal corticosteroid; INAH intranasal antihistamine.

VAS eyes: "How are your eye symptoms bothering you today?"

**INCS if coexisting asthma.*

IOAH intraocular antihistamine; INCS intranasal corticosteroid.

This algorithm should be adapted to the regulations, needs, price of medications and cultural barriers of each country (or region)

Figure 7: Transfer of patient information on a computer and printed information (From (109))

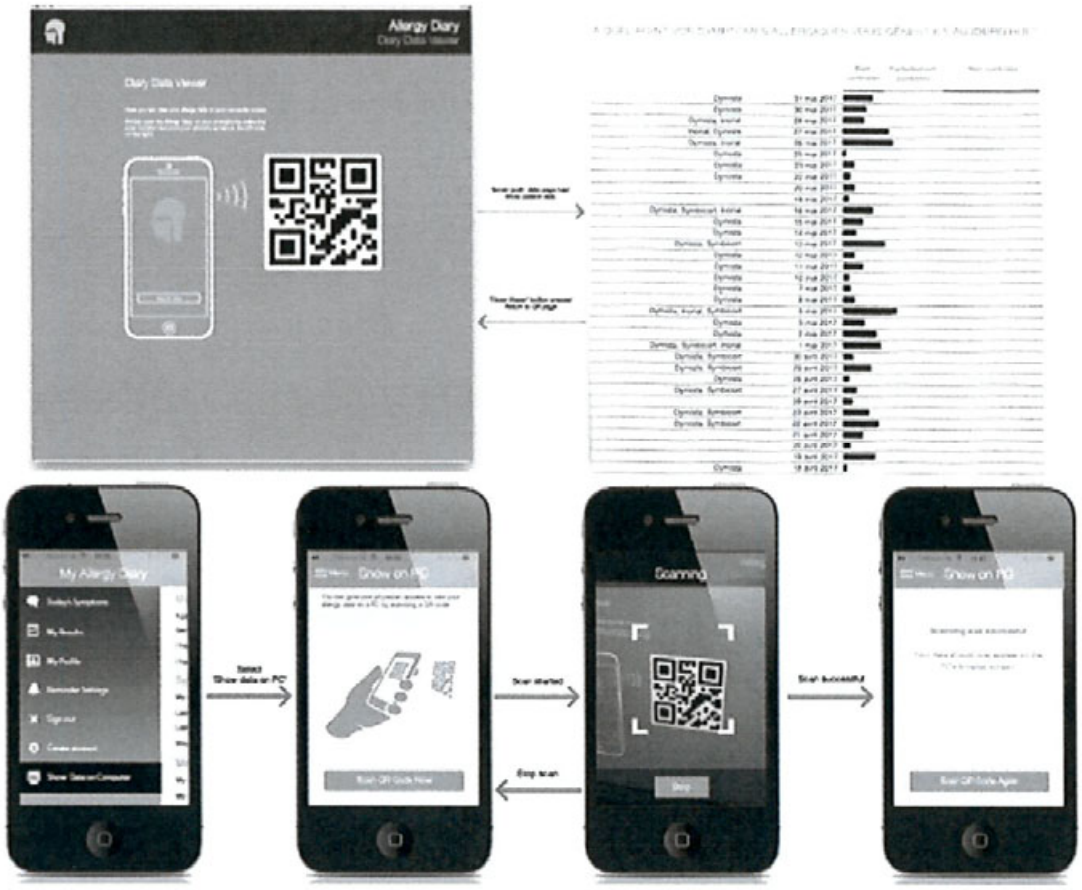
1- Open the Allergy Diary app and choose "Show Data on Computer" in the main menu

2- Go to www.macvia-aria-allergy-diary.com/data on your PC/Laptop (enter this URL in the address bar of the browser from your PC/Laptop)

3- Scan the QR code with the Allergy Diary app

4- The screen with your personal data can be seen

5- And you can also print these data (see figure below)



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