Screening QUestionnaire for Allergic Rhinitis - Electronic = SQUAR-E
Allergic rhinitis: is it a public health problem?

The increasing incidence of allergic diseases over the last 30 years is of concern [1]. In particular, allergic rhinitis has now reached epidemic proportions. A recently published survey [2] shows that an average of 23% of the adult population in Europe has allergic rhinitis. The prevalence of this disease, in each country, is presented in Figure 1.

Management varies from one country to another.

The same survey [2] demonstrated that only half of the symptomatic allergic rhinitis subjects were diagnosed. It can be assumed that some of the other half of patients self-diagnosed themselves, thus carrying the risk of administering an inactive, inadequate or inappropriate medicinal product compared to current available therapies. For example, first generation H1-antihistamines, available in pharmacies without a doctor’s prescription, are known to decrease work efficiency [3] and learning performance in school (Fig. 2) [4], and increase the risk of traffic accidents and work-related accidents [5].

**Learning and seasonal allergic rhinitis**

Children 10 to 12 years

*Factual knowledge score*

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Among diagnosed patients, only half receive pharmacological therapy (Fig. 3) [2]. In other words, currently only one out of four patients suffering from allergic rhinitis is pharmacologically treated, even though this percentage varies from one country to another.

**Allergic rhinitis and complications**

More and more evidence supports the assumption that poorly controlled allergic rhinitis exposes the patient to the risk of worsening of the disease over time [6] which manifests itself by the following clinical presentations:

1. **Multiple sensitization** (i.e., sensitization to several allergens in the same category, for example, different airborne allergens)
2. **The occurrence of cross-reactions** (or sensitization to several allergens in different categories, but with a similar structure, such as apple and birch tree allergens)
3. **Rising hyperresponsiveness** (i.e., an increase in the incidence and severity of symptoms by non-allergic factors such as cold weather or air pollution)
4. **An increase in the incidence, duration and severity of symptoms**
5. **Extension of nasal inflammation to adjacent organs: conjunctivitis and sinusitis**
6. **The progression of the allergic disorder from rhinitis to asthma.**

**Fig. 3** – Percentage of the general population with allergic rhinitis [2]
In terms of pathophysiology, the risk of worsening of allergic rhinitis seems to depend mainly on the duration of the disease and of its severity. This observation has led a group of ARIA experts (Allergic Rhinitis and its Impact on Asthma) to propose a new classification of allergic rhinitis [1]. This classification breaks down allergic rhinitis into intermittent rhinitis and persistent rhinitis, depending on the frequency and duration of symptoms (Table 1). Persistent rhinitis is defined by the presence of symptoms for more than 4 days a week and more than 4 consecutive weeks per year, while intermittent rhinitis involves symptoms which occur less than 4 days a week or less than 4 weeks per year.

### Classification of allergic rhinitis

<table>
<thead>
<tr>
<th>Classification</th>
<th>Intermittent Symptoms</th>
<th>Persistent Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 4 days / week or</td>
<td>≥ 4 days / week and</td>
</tr>
<tr>
<td></td>
<td>&lt; 4 weeks</td>
<td>≥ 4 weeks</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Severity</th>
<th>Mild</th>
<th>Moderate - Severe one or more items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Normal sleep</td>
<td>Abnormal sleep</td>
</tr>
<tr>
<td></td>
<td>Normal daily activities, sport, leisure</td>
<td>Impairment of daily activities, sport, leisure</td>
</tr>
<tr>
<td></td>
<td>Normal work and school</td>
<td>Problems caused at work or school</td>
</tr>
<tr>
<td></td>
<td>No troublesome symptom</td>
<td>Troublesome symptoms</td>
</tr>
</tbody>
</table>

*Table 1 – ARIA classification of allergic rhinitis [1]*
The above-mentioned survey [7] clearly demonstrates that this new classification differs from the current one, based more on etiological factors (Fig. 4). In other words, the concepts of seasonal rhinitis and intermittent rhinitis are not identical, as well as perennial and persistent rhinitis. Furthermore, intermittent rhinitis should not only be associated with pollens and moulds nor should persistent rhinitis be associated only with house dust mites [7] (Fig. 5).

**Fig. 4** – Breakdown of types of rhinitis according to the current and the new ARIA classifications [7]

**Fig. 5** – Sensitization (IgE) to specific allergens according to sub-types of allergic rhinitis [7]
The new ARIA concept [1] also recognizes that assessing the impairment of the patient's quality of life is the most accurate means of evaluating the severity of allergic rhinitis (Table 1). This evaluation method is broader than a simple evaluation of symptoms: it better reflects the actual impact of the disease, it is more reproducible and has proven to be responsive to pharmacological therapy [8]. Thus, the degree of severity of rhinitis should be considered as moderate to severe when sleep disorders, impaired daily activity and problems at work or at school are present, and when symptoms are poorly tolerated by the patient. In all other cases, it should be considered as mild.

Consequently, this is why a decrease in quality of life induced by severe rhinitis is comparable to that observed in moderate to severe asthma (Fig. 6). [9, 10]

This new ARIA classification is useful and important in so far as the presence of moderate to severe persistent rhinitis is a risk factor predictive of progression to asthma (Fig. 7) [11]. In fact, allergic rhinitis and asthma are closely related. Currently, more careful screening would reveal that 20-50% of patients with allergic rhinitis present with bronchial hyperresponsiveness, and up to 80% of asthma patients with allergic rhinitis [12].
Finally, epidemiological and clinical findings emphasize the importance of properly diagnosing allergic rhinitis. Special attention should be paid in the case of moderate to severe persistent rhinitis, which requires continuing therapy (rather than "on demand" treatment) and long-term therapy (even chronic therapy) with the most potent medicinal products available [1].

**Fig. 7** – *Risk of progression to asthma according to the type of rhinitis and its severity [11]. (NB: this study was conducted before the criteria for the classification and evaluation of severity of rhinitis, according to the ARIA classification, were published).*
In the context of underdiagnosis of allergic rhinitis and considering the importance of early diagnosis, the UCB Institute of Allergy is proud to provide physicians with a simple, fast and reliable diagnostic tool for the screening of allergic rhinitis. This test is based on the results of data collected in the European epidemiological survey mentioned above [2,7,13]. The most revealing questions for the diagnosis of allergic rhinitis have been sought among different questionnaires used in this survey. From these data 11 questions were selected, each of which were weighted differently. For a "0" score, this simple questionnaire has a sensitivity of 93.8% and a specificity of 80.3%, a positive predictive value of 58.4% and a negative predictive value of 97.8%. Thus, the probability that this score will yield a false-positive diagnosis of allergic rhinitis is extremely low [13]

The available electronic version of this questionnaire makes it easy to calculate a specific score for each adult patient. This score is automatically converted into a risk probability (%) that patients will have allergic rhinitis. Furthermore, the type of rhinitis, intermittent or persistent, is also determined and displayed.
How to use the electronic version of the questionnaire?

Minimum system requirements
PC: Windows 98/2000 or XP with rights of writing
- Pentium III 256Mo of Traditional RAM
- For the first use, insert CD in the reader, the application launches out automatically and settles on the station, a short cut is created on the desk.

Macintosh
- MacOS 9.2 minimum
- Power Macintosh G3 with 64Mo of RAM
- For the first use, insert CD in the reader, the application launches out automatically and settles on the station, a short cut is created on the desk.

Installation of the CD ROM
It is important that all open applications are closed before launching the CD.
Click on the UCB logo (on the desk) to launch the SQUAR-E to the first use. Many languages are available, please choose your own (it is possible to change it thereafter).
To save your patients’ results click on "save" at the end of each simulation. The customised results are saved on your hard disk.
To consult these results: go in C:/, open the file program files, then the file "SQUAR-E" and finally the file data.txt. which must be open with msn excel application.
Certain pages can be printed by clicking on the print button.
This version is also available on the UCB Institute of Allergy web site:
www.theucbinstituteofallergy.com under Members section
References

13. Bauchau V et al, to be published

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The UCB Institute of Allergy

Division of UCB S.A., The UCB Institute of Allergy (IOA) is an independent, European and not-for-profit organisation, created in 1987 to combat allergy.

In response to the international epidemic of this disease, the Institute’s objective is to implement all the resources necessary to raise awareness of allergy as a major health issue amongst the general public, patients, health care professionals and public authorities.

Under the supervision of a Scientific Advisory Board made up of eminent European specialists in the field of allergy, the IOA has initiated many actions. These aim to inform and educate about allergy, to improve prevention, to promote research, to analyse the current situation and to define key actions to be taken over the coming years. Moreover the IOA favours cooperation between various allergy related organisations. The Institute is present all around Europe with 20 national sections and in South Africa.

The Institute’s web site (http://www.theucbinstituteofallergy.com) and central membership library provide members with current relevant information and publications about allergy. For the general public, schools and children, the IOA has produced videos (e.g. "Who’s sleeping in your pillow?", "Allergic: to be or not to be?...Rhinitis), educational games and other information material. The IOA also organises and holds meetings, symposia, conferences, panel discussions.

As a result of these activities, The UCB Institute of Allergy hopes to forestall the sobering prediction of certain epidemiologists: In 30 years’ time, everyone may be allergic... Unless we act now!