Rhinitis Quality of Life in Clinical Practice

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There is a range of efficacious medications now available for the treatment of rhinitis as well as clear guidelines for their use. However, low rates of patient compliance can pose a major challenge to effective rhinitis management. An important contributor to poor compliance may be a discrepancy between the goals of the clinician and those of the patient. Clinicians tend to focus on nasal impairments by measuring outcomes like nasal symptom severity, nasal patency and inflammatory cytology. In contrast, patients, although bothered by their symptoms, are usually more concerned with their ability to function normally in their day-to-day lives. Improved clinician awareness of patients’ rhinitis-related quality of life goals and a willingness to address them may enhance patients’ willingness to take medications and thus improve both their health-related quality of life (HRQL) and the clinical status of the nose. Therefore, there is a need for quick, valid, easy-to-use, self-administered and clinic friendly quality of life questionnaires. The responses to these questionnaires can be used during the consultation to identify patients’ greatest problems, ascertain how troublesome they are and ensure that they are addressed in the treatment plan. Questionnaires can also be used to monitor patient progress over time.
The quality of a person's life may be considered in terms of its richness, completeness and contentedness. A number of factors contribute to this sense of well-being and include good health, a secure social and occupational environment, financial security, spirituality, self-confidence and strong, supportive family relationships. Each factor may be a determinant of a person's quality of life and may be closely interrelated with each of the others. For instance, a patient will often be able to deal with an illness better if he/she has good family support, a strong faith and the financial ability to acquire nourishing food, shelter and treatment.

Health-related quality of life can be considered as that part of a person's overall quality of life that is determined primarily by health status and which can be influenced by clinical interventions. The definition by Schipper and colleagues is both simple and focussed: "the functional effects of an illness and its consequent therapy upon a patient, as perceived by the patient"(1). The final phrase is important because it emphasises that these are the impairments that patients themselves consider important.
Why is quality of life important in rhinitis?

There are three reasons for treating patients: to prevent mortality; to reduce the probability of future morbidity; and to improve patient well-being (quality of life) (2). Rhinitis rarely causes mortality and so the primary goals of treatment are usually to prevent permanent damage to the nasal mucosa and improve quality of life. Most conventional clinical outcomes measure the status of the nose and usually include such things as severity of nasal symptoms, rhinomanometry, acoustic rhinometry, nasal peak flow, nasal hyper-reactivity and inflammatory cytology. In the past, it was frequently assumed that these measures also provided insight into patients’ well-being. Certainly, patients with very severe persistent rhinitis tend to have a worse quality of life than patients with milder intermittent rhinitis, but quality of life does not correlate closely with clinical status (3). Even the correlation between severity of symptoms and the impact that they have on the patient is only modest. Therefore the impact of rhinitis on a patient’s quality of life cannot be inferred from the clinical indices, it must be measured directly.
Why should the relationship between clinical markers of disease severity and health-related quality of life be so weak? Let us take as an example two hypothetical patients. Both have identical clinical rhinitis. The first patient is really bothered by the symptoms themselves. In addition, she is a light sleeper, she finds that her rhinitis prevents her getting a good night’s sleep and so she feels tired during the day. She is susceptible to headaches. She is a model and her impaired appearance prevents her working. She is a very anxious person and her rhinitis tends to make her feel very irritable. The second patient ignores her symptoms and is a very sound sleeper. She rarely gets a headache and cares little about how she looks. All-in-all, she is a very relaxed person. Although these two patients have identical clinical rhinitis, HRQL in the former patient is much more impaired than in the latter. If we take this one step further and treat both patients with an identical medication that produces an identical improvement in clinical rhinitis, the improvement in HRQL is likely to be much greater in the former patient than in the latter because her symptoms are far less troublesome, she can sleep well and function normally at work. Similar scenarios can be imagined for children.
What are the problems that bother patients?

Rhinitis may be a non-life threatening condition but it has an enormous impact on patients’ ability to function normally in day-to-day activities (physical, social, occupational and emotional). This impact is often not recognised by clinicians and there has been a tendency to dismiss the condition as trivial as many cases resolve spontaneously at the end of a pollen season or cessation of exposure to other allergens. However, when symptomatic, patients often experience worse impairment in quality of life than patients with more persistent chronic conditions such as asthma (4,5).

**Adults**

Adults with rhinitis are certainly troubled by the symptoms themselves, particularly having a stuffy/blocking nose, a runny nose and sneezing. They are particularly bothered by continually having to carry tissues, having to blow their noses frequently and experiencing the urge to rub both nose and eyes. In addition, they are bothered by not being able to sleep well at night and often feel tired and worn out during the day. They experience non-nasal symptoms that are troublesome such as thirst, poor concentration and headache. They are limited in their daily activities, both occupational and recreational and they feel frustrated and irritable (Table 1) (6,7).
**ADOLESCENTS**

Adolescents (12-17 years) experience very similar problems to adults except that they don’t have such severe problems with sleep but they have more problems with concentration, particularly with school work (8).

**CHILDREN**

Younger children (6-12 years) appear to present a slightly different picture (9). They are certainly bothered by their symptoms and the practical problems but they tend to experience minimal interference with doing their normal daily activities and don’t have the emotional dysfunction experienced by adults and adolescents. Parents often seemed to be much more bothered by their child’s rhinitis than the child was himself. This is very consistent with other conditions where parents appear to have a poor perception of their child’s HRQL (Table 2).
As I have already identified, patients are treated for three reasons: to prevent mortality, to reduce the probability of future morbidity and to improve patient well-being (quality of life). I would like to propose that in the majority of cases, quality of life should be the primary outcome of importance for both the clinician and the patient. Rhinitis is non-life threatening and rarely causes long-term permanent damage to the nasal passages. Certainly, it is important to prevent such damage but it is fairly rare and most impairments resolve at the end of the pollen season or other allergen exposure. In the majority of cases, the primary aim of treatment is to enable patients to feel better and function normally in their daily lives and so the actual severity of inflammation (morbidity) is usually of lesser importance than its impact.

However, clinicians treating rhinitis tend to focus on morbidity and they use the conventional clinical outcomes to assess the status of the nasal mucosa. Patients’ own goals may be very different from those of clinicians and, although patients are concerned about the severity of their symptoms, their primary goals are usually concerned with the impact that they have and their resultant quality of life. Most patients seek help from their clinicians in order to feel better and to function better in their every day activities. They want to be able to enjoy their sports, function well at work, participate social activities with their friends and family and cope easily with day-to-day activities of living.
WHAT IS SHARED-DECISION MAKING?

Shared-decision making (10) is an approach to patient management in which the clinician and the patient decide together on the patient’s management plan (Table 3). In rhinitis, the clinician brings to the encounter expertise in diagnosis, the goals of clinical rhinitis management and rhinitis treatment options.

The patient brings to the encounter his/her own goals for improving rhinitis-related quality of life, concerns about medications and likes/dislikes of various forms of treatment regimens. Together, the clinician and patient negotiate a rhinitis management plan that works towards both their goals and which, most importantly, the patient is willing to follow.

Inadequate rhinitis control frequently occurs when patients take the decision-making role away from clinicians and make their own choices about their management usually a conscious or subconscious decision not to take their medication as prescribed. Most patients do not have an adequate understanding of rhinitis and the mechanisms of action of the interventions to make such decisions and usually fail to meet both their own goals and those of the clinician. Although patients usually do not want to be the prime decision maker, they take over that role when they are unhappy with a treatment regimen paternalistically prescribed for them by their clinician. With many pharmacies now providing rhinitis medications "over-the-counter" and with the Internet and other modern technologies providing patients with a plethora of information, often inaccurate or misleading, they need a supportive environment in which they can discuss treatment options. Shared-decision making requires clinicians to move out of their conventional role as the sole decision-maker and engage with the patient in a discussion of the clinical goals, the patient’s personal goals and the management options. As yet there have been no formal studies in rhinitis, but in asthma there is already evidence that willingness of physicians to discuss management is strongly related to asthma outcomes and patient satisfaction.

Quality of life questionnaires may have an important role by facilitating the identification of patients’ goals and concerns. After the patient has completed the questionnaire in the waiting room, a quick scan of the responses allows the clinician to focus on problems that are most troublesome and this quickly leads to the identification of the patient’s treatment goals. Initial asthma studies in primary care have suggested that when clinicians are provided with Mini Asthma Quality of Life Questionnaire (11) data during a consultation, prescribing practices are altered and similar experiences have been reported in children. Feedback from patients has been positive. They report that they like the questionnaires because their own concerns are being addressed and they have told us that the questionnaire gives them permission to discuss their concerns, other than symptoms, with their clinician. However, the real test of whether there is a place for quality of life questionnaires in this model of clinical practice will be whether quality of life is enhanced and whether the risk of long-term nasal mucosal damage is averted by the use of the questionnaires.
Quality of life questionnaires in clinical trials

Since an aim of most rhinitis clinical trials is to evaluate whether patients themselves benefit from interventions and treatments, most studies now incorporate an assessment of health-related quality of life, often as the primary end-point. The availability of the Rhinoconjunctivitis Quality of Life Questionnaire (12) in more than 30 languages has been made possible by pharmaceutical companies doing trials in these countries. Since these instruments are short, easily understood and usually in self-administered format, completion is very little burden either to the investigator or the patient. In fact, we have found that patients enjoy completing quality of life questionnaires because they can relate to the questions and know that the things that are important to them are being taken into consideration. In addition, national pharmaceutical regulatory agencies often require quality of life data for new product submissions. The value of including assessment of health-related quality of life in both adult and paediatric studies is shown in two recent papers (13, 14) in which the effects of antihistaminic treatment in allergic rhinitis have been investigated (Figures 1 & 2).
Fig. 1. Mean change from baseline of the RQLQ domains after 6 months of treatment of adults with persistent allergic rhinitis included in a multicenter, randomized, placebo-controlled, double-blind, parallel group study (XPERT study, ITT analysis). Levocetirizine 5 mg group: n=278; placebo group: n=273.
Adapted from GW Canonica et al, Poster at the XXIII EAACI Congress, Amsterdam 2004.

Fig. 2. Improvement from baseline in Pediatric Rhinoconjunctivitis Quality of Life Questionnaire (PRQLQ) score for each domain at week 2, in children aged 6 to 12 years suffering from seasonal allergic rhinitis - multicenter, randomized, placebo-controlled, double-blind, parallel group study with a 6-week treatment period.
How do I select the right questionnaire for the task?

This section describes the types of questionnaires available, discusses their strengths and weaknesses and then reviews the measurement properties that an instrument must have for specific types of use.

**TYPES OF QUESTIONNAIRES**

**Generic Health Profiles**

There are two types of quality of life questionnaires, generic and specific. Generic health profiles can be used in patients with all medical conditions. In adults, the most commonly used and the best validated is the Medical Outcomes Survey Short Form 36 (SF-36) (15) (Figure 3).

![Comparison of SF-36 in Asthma and Severe Rhinitis](image)

Adapted from Bousquet et al. AM J Resp Crit Care Med 1994; 149: 371-5
Bousquet J et al., J Allergy Clin Immunol 1994; 94: 182-188

Fig. 3. Comparison of quality of life in asthma and severe perennial rhinitis as measured by the general health profile SF-36. Data from two studies have been pooled on the same graph (the 3 levels of severity of asthma and the severe type of perennial rhinitis).
For children, probably the most widely used is the Child Health Questionnaire (16). These questionnaires measure impairment over a broad spectrum of functions and their great advantage is that burden of illness can be compared across different medical conditions. For instance one can compare the burden of illness experienced by patients with asthma, COPD, rhinitis, inflammatory bowel disease, rheumatoid arthritis, etc.

**Disease-Specific Questionnaires**

These questionnaires include all the functional impairments that are most important to patients with a specific disease. Disease-specific questionnaires are ideal for detecting the problems experienced by individual patients and are very much more sensitive to change in patients’ quality of life than generic health profiles. Examples of some questions from the adult Rhinoconjunctivitis Quality of Life Questionnaire (12) and the Paediatric Rhinoconjunctivitis Quality of Life Questionnaire (9) are shown in Figure 4 and Figure 5.

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**Examples of questions in the:**

**Rhinoconjunctivitis Quality of Life Questionnaire (RQLQ)**

**Interviewer-administered**

Please circle the number that best describes how troubled you have been during the last week as a result of your nose/eye symptoms.

**NON-HAYFEVER SYMPTOMS**

How troubled have you been by these problems during the last week as a result of your nose/eye symptoms?

a) Fatigue 0 1 2 3 4 5 6
b) Thirst 0 1 2 3 4 5 6
f) Headache 0 1 2 3 4 5 6

**PRACTICAL PROBLEMS**

How troubled have you been by each of these problems during the last week as a result of your nose/eye symptoms?

a) Inconvenience of having to carry tissues or handkerchief 0 1 2 3 4 5 6
b) Need to rub nose/eyes 0 1 2 3 4 5 6
c) Need to blow nose repeatedly 0 1 2 3 4 5 6

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The complete questionnaire and instructions for administration and analysis can be obtained from Professor Juniper.
MEASUREMENT PROPERTIES

When selecting a questionnaire, you should make sure that it is capable of doing what you want it to do. Questionnaires which are to be used in cross-sectional studies (eg. screening and surveys) must have good discriminative properties because they are required to discriminate between patients and groups of patients of different levels of impairment. The measurement properties that provide this information are the reliability (test-retest) and cross-sectional validity. Instruments which are to be used in longitudinal studies (clinical trials and clinical practice) need good evaluative properties because they are required to evaluate change in impairment over time. These instruments must have good responsiveness and longitudinal construct validity. Full descriptions of these measurement properties can be found elsewhere (17).

WHAT CHANGE IN SCORE CAN BE CONSIDERED CLINICALLY IMPORTANT?

For many disease-specific quality of life questionnaires, we now have estimates of what difference or change in score can be considered clinically meaningful. This value is usually referred to as the Minimal Important Difference (MID). It has been defined as ‘the smallest difference in score which patients perceive as beneficial and would mandate, in the absence of troublesome side effects and excessive cost, a change in the patient’s management’ (18).

The MID may be determined by examining change in the questionnaire score relative to patients’ perception of change (global rating of change) or linking the change scores to other clinical indices whose MID is well established. Whichever method is used, clinicians should recognise that although MIDs may be accurate for group data, there may be quite large differences between individual patients. Therefore, the MID should only be used as a rough guide and the decision-making should also include a discussion with the patients about whether any changes they have experienced are important.

Figure 5
Some practical considerations

Which is better: "Self-report" or "Interviewer-administered"?

Paper versions of questionnaires completed by patients themselves in the clinic remain the most popular method for collecting quality of life data. The strengths and weaknesses of the various methods are shown in Table 4. Although there are many studies showing very little difference in overall scores when questionnaires are completed by patients and when administered by a trained interviewer, it is usually considered wise to stick to one method when the patient is being followed over time. In clinical trials, a minority of patients may not have adequate reading or numeracy skills. There is minimal risk of bias if these patients consistently have the questionnaire administered by an interviewer while the rest of the patients complete it on their own.

Telephone or Clinic?

Studies comparing telephone versus clinic interviews are far less consistent and so it is sensible to check whether the questionnaire that you are using has been evaluated for telephone administration. Some questionnaires score consistently higher by telephone while others score lower. It is important not to mix telephone interviews with clinic ones in a clinical trial or when following individual patients. Interactive voice-response systems for rhinitis are currently being validated.
Electronic or Paper?

Scores from electronic and paper versions are usually very similar. Although programmers have been trying for over a decade, there are still very few successful systems for electronic data collection. Programming can be quite complicated in order to overcome both practical and ethical problems. On the practical side, it is important for patients to be able to check and change responses they have already given. Programming flexible movement around questionnaires and providing change options can be quite difficult. In addition, the screen on handheld devices is often not large enough to include a complete question plus response options. On the ethical side, many countries now require patients to be able to skip questions they don’t want to answer. Questionnaires that have been successfully programmed then tend to run into practical problems because they cannot be made totally ‘idiot proof’. Apart from problems caused by people who are not computer literate, some patients and clinic staff love to “find out how it works”, manage to get into incredibly secure software and then the whole system crashes. It then takes a programmer to get it back into action. Having said all that, there are currently some very promising new systems being evaluated for use in rhinoconjunctivitis.

Postal or Clinic?

It is always best if patients are on their own when they complete questionnaires. There is only one way to ensure that this happens and that is in the clinic. There is a risk when questionnaires are completed outside the clinic that you get a family consensus. In addition, some patients don’t want their families to know what they are really experiencing while others seek their family’s guidance on both interpretation of questions and choice of responses. Although postal completion runs the risk of missing data, a recent study comparing postal and clinic completion suggested that failure to attend the clinic may be comparable to the missing postal data.
A large number of studies in a wide range of childhood illnesses have shown that parents have a very poor perception of the problems that bother the child. There have been a number of hypotheses as to why this happens such as the parent imagining how they would feel if they had the illness, not knowing about the child’s experiences at school and at night, the child not wanting the parent to know about their true experiences because of over/under protection, etc. Whatever the reason, the message is the same, ‘ask the child’. There is strong evidence that children as young as 6 can respond to quality of life questionnaires accurately and reliably (9, 19). The problem with going any younger is that the concept of time doesn’t develop until about 6 years of age and if you ask children how they have been ‘over the last week’ for instance, they cannot understand. They know how they are ‘now’ but with functional impairments varying during the day and from day to day, it is necessary to include several days in an assessment of quality of life so as to get an average and not accidentally catch a peak or trough. Children over about 11 years can usually self-complete questionnaires with no help. The limiting factor in going any lower does not appear to be reading skills but a willingness to concentrate. Little boys tend to scatter responses like confetti so that they can get on with more interesting activities!
Table 1: Functional impairments most troublesome to adults with rhinoconjunctivitis

<table>
<thead>
<tr>
<th>Practical Problems</th>
<th>Nasal Symptoms</th>
<th>Eye Symptoms</th>
<th>Sleep</th>
<th>Non-nasal / eye symptoms</th>
<th>Activity Limitations</th>
<th>Emotional Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blow nose</td>
<td>Stuffy / blocked</td>
<td>Itchy</td>
<td>Lack of sleep</td>
<td>Tiredness</td>
<td>Physical</td>
<td></td>
</tr>
<tr>
<td>Rub nose / eyes</td>
<td>Sneezing</td>
<td>Watery</td>
<td>Wake during night</td>
<td>Poor concentration</td>
<td>Social</td>
<td></td>
</tr>
<tr>
<td>Carry tissues</td>
<td>Runny</td>
<td>Swollen</td>
<td>Difficulty getting to sleep</td>
<td>Thirst</td>
<td>Occupational</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Headache</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Irritable
Frustrated
Embarrassed

Table 2: Functional impairments most troublesome to children with rhinoconjunctivitis

<table>
<thead>
<tr>
<th>Nasal Symptoms</th>
<th>Eye Symptoms</th>
<th>Practical Problems</th>
<th>Non-nasal / eye symptoms</th>
<th>Activity Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stuffy / blocked</td>
<td>Itchy</td>
<td>Rub nose / eyes</td>
<td>Thirst</td>
<td>Playing outdoors</td>
</tr>
<tr>
<td>Sneezing</td>
<td>Watery</td>
<td>Blow nose</td>
<td>Don't feel well all over</td>
<td>Sleeping</td>
</tr>
<tr>
<td>Runny</td>
<td>Swollen</td>
<td>Carry tissues</td>
<td>Irritable</td>
<td>Hard to pay attention</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3: The Shared Decision-Making Model in Rhinitis

<table>
<thead>
<tr>
<th>Decision Maker</th>
<th>Clinician alone</th>
<th>Clinician &amp; Patient</th>
<th>Patient alone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Paternalistic</td>
<td>Shared decision-making</td>
<td><em>Informed</em> decision-making</td>
</tr>
<tr>
<td>Primary Goals</td>
<td>Rhinitis control</td>
<td>Rhinitis control</td>
<td>Rhinitis-related quality of life</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rhinitis-related quality of life</td>
<td>Acceptable treatment regimen</td>
</tr>
<tr>
<td>Information</td>
<td>Clinician knows about diagnosis, guidelines for rhinitis control and treatment options</td>
<td>Exchange of facts and treatment preferences</td>
<td>In the model, the patient is provided with all the facts in order to make the decision</td>
</tr>
<tr>
<td>Decision-Maker</td>
<td>Clinician alone</td>
<td>Clinician + Patient</td>
<td>Patient alone</td>
</tr>
<tr>
<td>Reality</td>
<td>Majority of treatment strategies are decided by clinicians on their own</td>
<td>Clinician's and patient's goals achieved</td>
<td>Patients, without the facts, reject the clinician's directions and decide for themselves how to take their medication Non-compliance</td>
</tr>
<tr>
<td>Method of Administration</td>
<td>Advantages</td>
<td>Disadvantages</td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Self-completed in clinic (paper)</td>
<td>Most popular method because accurate, easy and cheap</td>
<td>Need some literacy and numeracy skills Must attend the clinic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Honest responses (no embarrassment or wanting to please the interviewer)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Clinic staff available if get confused</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No missing responses</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time for patients to think about responses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-completed in clinic (computer)</td>
<td>Honest responses No missing responses (if permitted by ethics) Time for patients to think about responses No transcription errors</td>
<td>Very difficult to program High 'screw-up' rate (none are &quot;idiot proof&quot;) Clinic/patient requires a computer Train clinic staff in computer use Patients need basic computer skills Expensive</td>
<td></td>
</tr>
<tr>
<td>Interviewer-administered in clinic</td>
<td>No missing responses Correct misunderstood questions or response options Patient requires minimal numeracy skills (ideal for young children and adults with low literacy skills)</td>
<td>Employ and train interviewers Risk of interpretation and/or response guidance by interviewer Embarrassment or desire to please may affect responses Poor interviewing can be a source of error</td>
<td></td>
</tr>
<tr>
<td>Telephone</td>
<td>No missing responses Patients do not have to attend clinic</td>
<td>Patients must have a phone Employ and train interviewers Provide patients with response options before the phone call Cannot be sure that patient is the respondent</td>
<td></td>
</tr>
<tr>
<td></td>
<td>More honest responses than postal (minimal family input)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post</td>
<td>Patients do not have to attend clinic Time for patients to think about responses</td>
<td>Missing data and questionnaires not returned Patient must have literacy and numeracy skills Nobody to ask if patient has understanding problems Family may influence patient’s responses Questionnaires lost in post</td>
<td></td>
</tr>
<tr>
<td>Surrogate</td>
<td>Better than nothing</td>
<td>Inaccurate - response may not reflect patient’s experiences (especially emotional)</td>
<td></td>
</tr>
</tbody>
</table>
References:


3. Juniper EF, Thompson AK, Roberts JN. Can the standard gamble and rating scale be used to measure quality of life in rhinoconjunctivitis? Comparison with the RQLQ and SF-36. Allergy 2002; 57: 201-206.


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, 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 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, 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. 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!

The UCB Institute of Allergy thanks for her active collaboration:
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