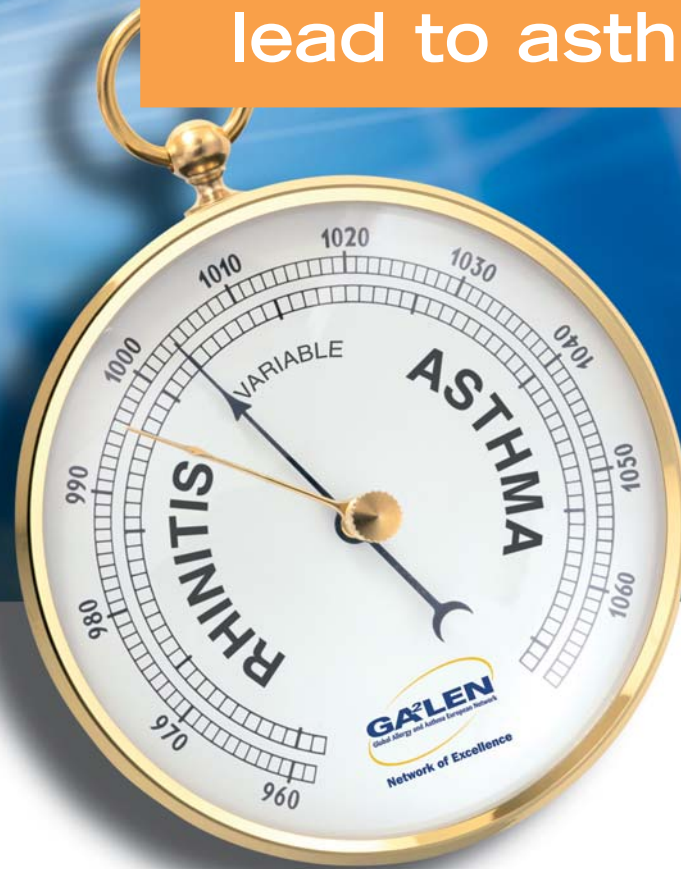


Does rhinitis

lead to asthma?



Role of the primary care physicians



Spreading Excellence in Allergy and Asthma in Europe

Allergy is the most common chronic disease in Europe and its prevalence is growing. By 2015, every second person might be suffering from at least one form of allergic disease, including allergic rhinitis, asthma, eczema and food allergies.

The European Union has expressed its commitment to addressing this important public health issue by supporting GA²LEN, Global Allergy and Asthma European Network.

It is a consortium of 26 European universities, 50 Collaborating Centers, scientific organizations and patient associations dealing with allergy and asthma, which is still growing and open to new collaborations.

The aim of this “network of excellence” is to enhance the quality of research on all aspects of the disease and to rapidly communicate the findings with a view to reducing the overall burden of allergy and asthma.

The network approach recognises the need for constant communication between researchers, doctors, patients and policy makers. Effective prevention and treatment rests on raising awareness among all these players and the rapid translation of research findings into clinical practice.

Thanks to its critical mass and expertise in the field, GA²LEN is in position to generate new hypotheses and develop new models for addressing the possible role played by rhinitis, both allergic and non-allergic, in the development of asthma.

www.ga2len.net

Sneezing and Wheezing

The relationship between rhinitis and asthma has been the scope of recent epidemiological surveys, basic research studies and clinical trials.

Integrated airway hypothesis

Various investigators have referred to allergic rhinitis and asthma as a “united airways disease”, that is, a condition affecting a unique entity of upper and lower airway combined and influenced by inflammatory process. Thus, alteration of upper airway function could result in alteration of the function of the lower airway.

Link rhinitis/asthma

The relationship between rhinitis and asthma has been the scope of recent epidemiological surveys, basic research studies, and clinical trials.

The main evidence shows that rhinitis and asthma are intimately linked, suggesting the concept of “one airway, one disease”.

Whether or not the link is causal, it is important for primary care physicians to recognize the presence of rhinitis in asthma patients and similarly that rhinitis patients are evaluated for the presence of asthma.

These findings are based on the GA²LEN Review Paper, recently published in *Rhinology*¹ and on a scientific report by the WHO on ARIA (Allergic Rhinitis and its Impact on Asthma).

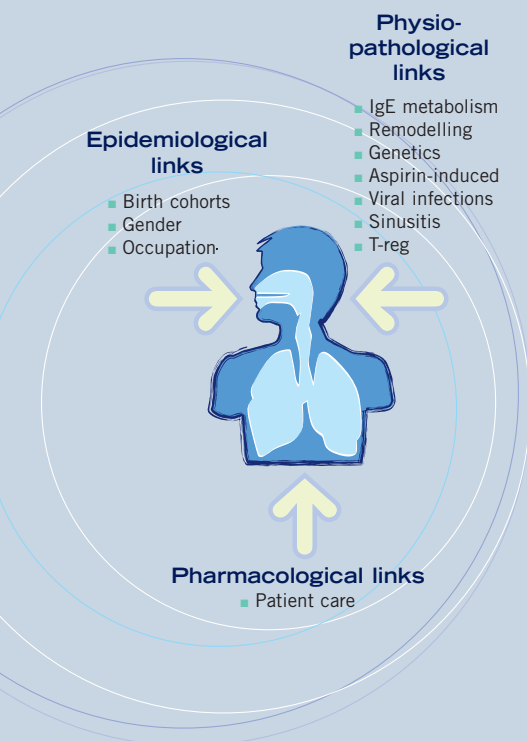
The implication is that appropriate management of allergic rhinitis can decrease the risk of asthma developing or exacerbations. With one recent study showing that as many as one in three allergic rhinitis patients may go on to develop asthma within 10 years, treatment of allergic rhinitis represents an important investment in the promotion of public health.

Rhinitis should in any event always be treated. As well as being a risk factor for asthma, studies have shown it to significantly impair patients' quality of life and their social, educational and professional performance.

Children are also vulnerable. The prevalence of allergic rhinitis is 10-20% in young school children and ranges from 15-30% in teenagers in different countries. While the condition may have its onset at 3-5 years, peak incidence is later in childhood and adolescence.



GA²LEN research activities investigating the links between upper and lower airways diseases



Evidence of the links

Evidence - at various levels - supports the existing relationship between allergic rhinitis and asthma.

Epidemiological Links

Allergic rhinitis and asthma often co-exist.

Indeed, about 80% of asthmatics have rhinitis and approximately 15-30% of rhinitis patients have asthma.

GA²LEN Research activities:

■ Birth Cohort

This work group compares the methodologies of the various birth cohorts in Europe and gathers data in order to implement at best important data analysis. They develop common standards for questionnaires and follow-up procedures, recommendations for development of new birth cohort studies.

■ Gender

Gender differences in the development, diagnosis and treatment of asthma and allergy have received little attention. Incidence, prevalence, report of symptoms and severity of asthma and allergy differ by gender. The working group also examines the role of sex hormones in asthma and allergic disease.

■ Occupation

Allergic problems associated with occupation are likely to increase greatly as the current generation of children with their high prevalence of allergies move into the workforce. This working group studies the effects of work in non-industrial indoor environments on asthma and the effects of occupational exposure to cleaning on asthma and other allergic diseases.

Physiopathology Links

Basic research has demonstrated the numerous similarities in inflammatory and remodelling pathomechanisms.

GA²LEN Research activities:

■ Aspirin intolerance

GA²LEN launches action plans on chronic rhinosinusitis, nasal polyposis and aspirin intolerance stressing the important links between upper and lower airway inflammation reactions in this particular clinical situation.

■ Genetics

GA²LEN Working group on genetics is mainly focused on atopy but its findings could support new views on the concomitant or consequent development of asthma in rhinitic patients.

■ Infections

Infections are also under investigation by GA²LEN researchers. Recently, a working group was developed for analysing the particular effects of virus-induced rhinitis on asthma exacerbations.

■ Remodelling

An entire GA²LEN workpackage is dedicated to tissue remodelling in rhinitis and asthma. The aim is to identify biological factors that may explain the differences observed between upper and lower airway remodelling. The scientists of this working group would also like to identify new biomarkers for early diagnosis of tissue remodelling in airways.

■ IgE sensitisation and allergic diseases

The synthesis of allergen-specific IgE is required for the development of allergic diseases including asthma, but around 1/3 of individuals with allergen-specific IgE do not develop symptoms. The concentration of specific IgE needs to be considered in

the clinical situation; the higher the concentration, the higher is the likelihood of presenting with symptoms.

This group is working to better understand the genetic, molecular and cellular mechanisms underlying the functionality of IgE.

Pharmacological links

GA²LEN Research activity:

■ Patient Care

GA²LEN has developed a specific working group dealing with patient care. It aims to review the current requirements for clinical research in Europe, the current routinely collected data in each country and the quality measures in health care in Europe. Adequate data collection is pivotal in patients suffering from different allergy expressions such as rhinitis and asthma.

Why is the link important?

Rhinitis is a risk factor for asthma. Improvement of allergic rhinitis symptoms can be associated with resolution of asthma symptoms and worsening of allergic rhinitis symptoms can be associated with exacerbation of asthma symptoms.

Clinical Evidence

Clinical trials are an important source of information for investigating the impact of rhinitis on asthma.

- *An adequate treatment of allergic rhinitis in asthmatics has been shown to improve asthma symptoms and to reduce hospitalisations due to asthma exacerbations. Inadequately controlled allergic rhinitis in asthmatic patients can contribute towards increasing asthma exacerbations and poorer symptom control.*
- *More data are needed to fully appreciate if pharmacological treatment of allergic rhinitis can prevent in some extent asthma symptoms.*

The main studies have focused on the positive influence of a rhinitis treatment on the clinical course of asthma.



Quality of Life

“Quality of life” focuses on patients’ perception of their disease and measures impairments that have a significant impact on the patient’s well-being or activities.

Quality of life also analyses the social repercussion of a disease.

Similar symptoms may vary in the effects they have on different individuals. Tools, such as validated questionnaires, assess the severity of the disease.

The goal is to prescribe a therapy that reduces those impairments that patients consider important and to prevent developing complications.



Making the diagnosis

Accurate diagnosis is essential to establish appropriate therapeutic options.

Allergic rhinitis symptoms:

Ask your patients the following questions. Their answers will be helpful in eliminating alternative diagnoses, such as the common cold.

1. **Have you had during the last year daytime (nasal congestion, itchy nose, post-nasal drip, sneezing and runny nose/rhinorrhoea) or nighttime (sleep disorders, nocturnal awakenings) symptoms, which do not seem to be caused by a common cold?**

- yes
- no

2. **The symptoms above occur during**

- winter
- spring
- summer
- autumn
- no clear variation, the symptoms persist

3. **When the symptoms occur are they**

- intermittent (less than 4 days a week or less than 4 weeks in a year) or
- persistent (more than 4 days a week or more than 4 weeks in a year)?

4. **Do these symptoms restrict your regular activities at home/work or do they prevent you from exercising and other free time activities/hobbies?**

- yes
- no

The same nasal symptoms can be induced by various different causes and it is very important to first eliminate alternative diagnoses, such as infectious rhinitis. This can occur with a common cold, which may clear rapidly or continue with symptoms longer than a week.

In our leaflet, we concentrate only on allergic rhinitis. Infectious types of rhinitis are being studied by a GA²LEN working group and will be the core of further communication.

Allergic rhinitis is the most common cause of the sneezing, itching, runny or stuffy nose and red/watery eyes, mainly during the grass pollen season.

Some patients have symptoms all the year around - inside or outside season - depending on the allergen exposure.

Symptoms may be persistent or intermittent, mild or moderate/severe. The severity is based on the quality of life impaired by the condition: impact of professional activities / school performance / sleep disturbances / daily activities, sport and leisure / bothersome symptoms.

Decreased quality of sleep is often reported in patients with allergic rhinitis. It is important not to neglect this symptom when diagnosing.

Diagnosis is complicated by the fact that symptoms of both allergic rhinitis and allergic asthma may co-exist.

In some patients, allergic rhinitis predominates and asthma is undiagnosed or sub-clinical; while in others, asthma predominates and allergic rhinitis is undiagnosed or sub-clinical.

In either case, a diagnosis of allergic rhinitis is recommended because of the new evidence that treating rhinitis can significantly improve asthma symptoms and reduce hospitalisations due to asthma exacerbations.

Patients presenting with asthma as the prime disease should be asked about their nasal symptoms.

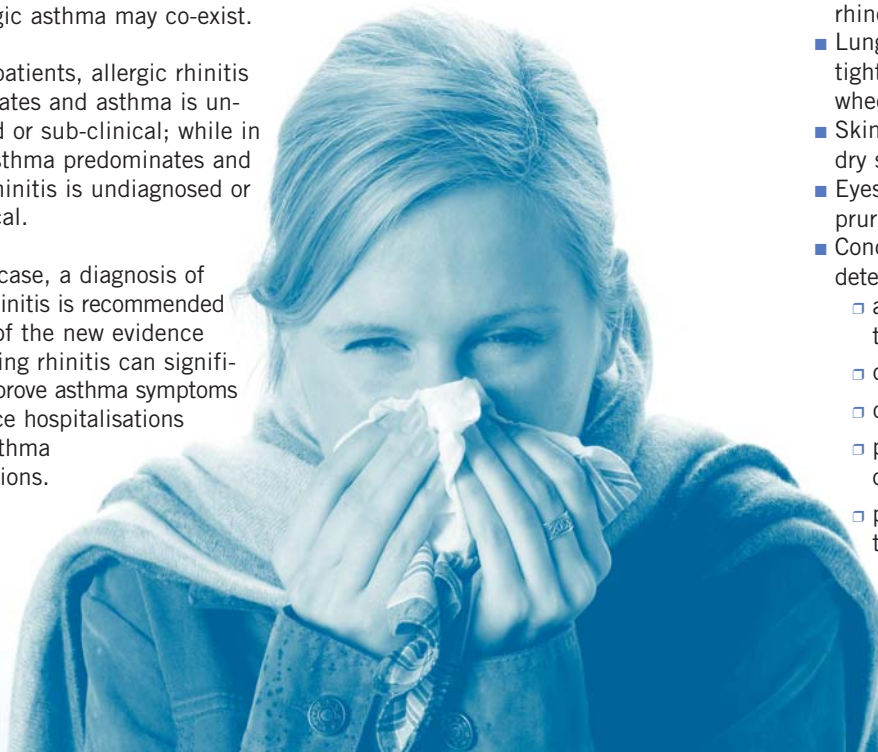
Patients presenting with severe or persistent allergic rhinitis and/or rhinosinusitis should be systematically evaluated for the presence of asthma.

How is it diagnosed?

1. History taking

The medical history of the patient is the basis for the diagnosis of allergic rhinitis, taking into account:

- ENT symptoms: nasal congestion/blocked nose, itching nose, sneezing and runny nose/ rhinorrhea,...
- Lung symptoms: coughing, chest tightness, shortness of breath, wheezing,...
- Skin symptoms: itching of the skin, dry skin,...
- Eyes symptoms: tearing eyes, pruritus,...
- Conditions of occurrence: determine when the symptoms occur:
 - at a consistent level throughout the year ?
 - only in specific seasons ?
 - combination of the two ?
 - present on a daily basis or only on episodic basis ?
 - present all day or only at specific times during the day ?



Atopy

Genetic tendency to develop allergic diseases. Atopy involves the capacity to produce IgE in response to common environmental proteins such as house dust-mite, grass pollen, and food allergens.

GA²LEN Research Activity

■ Skin Prick test Panel

A GA²LEN team designed a new pan-European skin prick test panel to study the prevalence of allergens throughout the Europe. This study helps rank 50 factors influencing child allergy.

Making the diagnosis

- Previous history of allergy
 - Family history of allergy: positive family history for atopy makes the diagnosis more likely
 - Environmental causes: Determine whether symptoms are related to specific trigger factors : exposure to pollens, mold spores, specific animal danders, dust, tobacco smoke, pollution, conservatives in perfumes/cosmetics....
- Sinus areas, for tenderness and signs of infection (facial pain or pressure / frontal headache)
- Ears, for the appearance of the eardrum and eventual presence of fluid in the middle ear
- Mouth, for stigmata of open mouth breathing
- Back of throat, for signs of post-nasal drip or infection, such as hypertrophic lymphoid tissue

2. Clinical examination

- ENT
 - Nose, for swollen nasal mucous membranes, amount and nature of secretions, tumoral formations, structural defects, and nasal polyps
 - Eyes, to check if they are swollen, teary, or red, or if you have other signs of long-term (chronic) inflammation

■ Lungs

- Chest and lungs: cough, dyspnea, wheezing, tightness in the chest

■ Skin

- Skin, for signs of allergy, such as hives or eczema

3. Allergy tests

Skin or blood tests can be performed to confirm or exclude allergy as a diagnosis and determine what allergens trigger the symptoms of your patient:

- Skin-prick tests: measure specific IgE to antibodies. A positive result is a typical raised wheal and red flare reaction on the skin
- Specific IgE in vitro tests: measure the presence of specific IgE in serum
- In vitro tests

How is it treated?

Fundamentals

The approach to management and therapy should be global taking into account three separate considerations:

- Effective and sometimes long-term treatment of nasal allergy can have a marked beneficial effect on preventing the exacerbations of asthma and on existing asthma symptoms.
- Uncontrolled allergic rhinitis can lead to worsening of co-existing asthma whereas effective treatment of nasal disease can have a marked beneficial effect on preventing the development of asthma and on controlling existing asthma conditions.
- The patient's quality of life, sleep quality and school/professional performances must also be considered.

Medical treatment

1. A wide range of treatment options is available to the practitioner

- Medication to be taken orally: antihistamines, antileukotrienes,...
- Medications to be applied topically: intranasal corticosteroids, ophthalmic and intranasal antihistamines, cromones, decongestants,...
- Treatment using other ways of administration: immunotherapy (sub-cutaneous, sublingual),...

2. Combination therapies

Allergic rhinitis and asthma often co-exist.

Indeed, about 80% of asthmatics have some form of rhinitis and approximately 15-30% of rhinitis patients having asthma.

In some studies, patients with both conditions showed asthma symptoms improved with an efficacious treatment of allergic rhinitis.

Combination of local therapies (nasal, bronchial, or systemic) can be justified in function of the allergic profile of the patient.



Patient Education

It is of high importance to have the patients educated with the appropriate information, so as to have them actively involved in the management of their diseases.

Research studies have shown that the benefits of patient education include improvements in patient satisfaction, better compliance and better health outcomes.



Explaining allergies

During the initial consultation, it is necessary to:

- Describe the increasing prevalence and basic principles of the disease, including how contact with an allergen leads to symptoms.
- Describe how you have diagnosed their disease through both symptoms and any confirmatory tests.
- Indicate the risks, including the possibility of natural evolution of the disease or the development of co-morbidities.
- Work through the possible environmental causes significant for this patient.
- Explain possible pollen cross-reactions with foods. Some fruits & vegetables have similar molecular appearance to pollens and the antibodies produced against these pollens will cross-react with the fresh fruits & vegetables, mistaking them for pollens. For the majority of hay fever sufferers, cross-reaction to foods is mild and affect the mouth only, the so-called Oral Allergy Syndrome (OAS).

Prevention

- Point out that by avoiding or lessening contact, symptoms may decline.
- Recent studies suggest that maternal smoking during pregnancy increases the risk of recurrent wheezing during the first years of life.
- Identify with the patient how exposure to triggers might be avoided.

Self-management

The following tips are important for optimizing the patient's participation in his/her treatment.

- Involve the patient in self-management programmes by providing guidance on reporting back on medication use and changes in symptoms.
- Ensure that the patient understands how to use the prescribed therapy and the importance of compliance.
- Special attention should be made to the adolescent/teenager groups: non-compliance is often due to their lack of understanding about the need for long-term preventive treatment, especially when preventive medication does not produce immediate symptom relief. Moreover, they are not aware of the possible troublesome consequences of non-compliance.
- Provide an emergency action plan to help patients identify exacerbation and delineate the actions to take.



Understanding common risk factors and mechanisms will contribute to improve treatment and quality of life for up to 150-200 million Europeans with allergies and asthma.

GA²LEN, the Global Allergy and Asthma European Network, brings together multidisciplinary research teams (partners) that address allergic diseases in their globality.

GA²LEN in action for healthcare professionals

GA²LEN adapts and disseminates the research results towards the healthcare professionals and the patients, by conducting campaigns and by editing leaflets and brochures.

Partners

	University of Ghent	<i>Belgium</i>
	European Academy of Allergology and Clin. Immunology	<i>EAACI</i>
	European Federation of Allergy and Airways Diseases Patients Associations	<i>EFA</i>
	University of Vienna Medical School	<i>Austria</i>
	Odense University Hospital	<i>Denmark</i>
	Helsinki University Central Hospital	<i>Finland</i>
	INSERM	<i>France</i>
	Charité, Universitätmedizin Berlin	<i>Germany</i>
	Ludwig Maximilians Universität München	<i>Germany</i>
	Technische Universität München	<i>Germany</i>
	National and Kapodistrian University of Athens	<i>Greece</i>
	Consiglio Nazionale delle Ricerche (CNR), Div. Rome & Palermo	<i>Italy</i>
	University of Genoa	<i>Italy</i>
	Academic Medical Center Amsterdam	<i>Netherlands</i>
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	Voksentoppen BKL, National Hospital, Oslo	<i>Norway</i>
	Jagiellonian University Medical College Krakow	<i>Poland</i>
	Medical University of Lodz	<i>Poland</i>
	Universiad de Coimbra	<i>Portugal</i>
	Institut Municipal D'Assistencia Sanitaria (IMAS) Barcelona	<i>Spain</i>
	Autonoma University of Madrid	<i>Spain</i>
	Göteborg University	<i>Sweden</i>
	Karolinska Institutet	<i>Sweden</i>
	University of Zurich, Swiss Institute of Allergy and Asthma research (SIAF)	<i>Switzerland</i>
	King's College London	<i>United Kingdom</i>
	Imperial College of Science Technology and Medicine, London	<i>United Kingdom</i>
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GA²LEN in the future...

Perspectives

A platform for researchers

GA²LEN provides an integrated platform for research in allergy and asthma with harmonised tools and methods in its centres. The network that has now centres in 20 countries can benefit from the European diversity for risk factors studies and prevention schemes. Pilot protocols for clinical studies in several GA²LEN centres have been tested, which could open the door to further public-private collaboration. The network aims at developing novel biomarkers, treatment and preventive strategies.

Guidelines and life long learning

GA²LEN promotes the development of a high-level, large scale international and multidisciplinary scientific community. Allergy schools, training sessions and e-learning support the clinical and research activities of junior scientists and health professionals. Scientists can use the GA²LEN communication platform and programmes for mobility and exchange.

For patients, public and policy makers

The prevalence of allergic diseases has been increasing in the European population over the last decades, most clearly in children. Allergic diseases are currently insufficiently diagnosed, suboptimally managed and, generally undertreated. GA²LEN contributes to raising awareness on this public health problem and develops educational material for patients and the general public.

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Network of Excellence

GA²LEN Dissemination

T. +32 2 640 77 80 • F. +32 2 647 89 29

AWComm@ga2len.net

www.ga2len.net

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Phadia