

POSITION PAPER

Allergology in Europe, the blueprint

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To cite this article: de Monchy JG, Demoly P, Akdis CA, Cardona V, Papadopoulos NG, Schmid-Grendelmeier P, Gayraud J. Allergology in Europe, the blueprint. *Allergy* 2013; **68**: 1211–1218.

Keywords

allergy; Europe; specialty; training.

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Abstract

The number of patients with allergic diseases in Europe, and thus relevant demand for health care, is continuously increasing. In this EAACI-UEMS position paper, a rationale is given for the medical specialty of allergology. General practitioners and general paediatricians usually cannot elucidate and address all causative factors. Throughout Europe, therefore, the expertise of allergologists (allergists) is required. In collaboration with other medical professionals, they take care of allergic patients, in private practices or in specialized public centres. A well-structured collaboration between allergists and allergy centres offers the possibility of rapid signalling of new trends developing in the population of allergic patients (e.g. in food and drug allergy). Allergy centres also can perform clinical (and basic) research, teach medical students, future allergists and provide postgraduate training. To prevent that the quality of care in one or several countries within Europe lags behind developments in other countries, the UEMS Section and Board on Allergology together with the European Academy of Allergy and Clinical Immunology advocates the status of a full specialty of allergology in each European country, with a further intention to align their activities (blueprint, curriculum and centre visitation) with the UEMS Section of Paediatrics.

Accepted for publication 19 June 2013

DOI:10.1111/all.12225

Edited by: Hans-Uwe Simon

Allergology or allergology and clinical immunology are recognized as a full specialty in 12 European countries. It is a subspecialty in six other European countries. Some countries also recognize paediatric allergology as a full specialty or subspecialty. The UEMS (Union of European Medical Specialists) Section and Board (S&B) on Allergology has defined the focus of the specialty and requirements for training and

education (Tables 1, 2, 3) (1) and collaborates with EAACI (European Academy of Allergy and Clinical Immunology) in allergy knowledge examinations, education programmes and advocates for the specialty. UEMS S&B has recently started onsite visitation of allergy training centres in Europe. Several recent developments are changing the position of the allergist in Europe: (i) firstly, the large increase in knowledge about the immunological processes that play a role in allergic diseases. This increase in knowledge has led to changes in diagnostic and therapeutic possibilities (e.g. new forms of immunotherapy, component-resolved diagnosis), and it is expected that this tendency will continue; (ii) secondly, the

Abbreviation

EAACI, European Academy of Allergy and Clinical Immunology;
UEMS, Union of European Medical Specialists.

Table 1 Specific tasks for the allergy/clinical immunology specialist (special knowledge/training required)

Indication to allergen immunotherapy
Drug allergy work-up and provocation tests
Food allergy work-up and provocation tests
Venom allergy work-up (provocation tests) and desensitization
IgE component-resolved diagnosis
Rapid desensitization, for example, antibiotics or anticancer drugs
Occupational allergies
Anaphylaxis and its (rare) causes
Allergy prevention
Immunodeficiency (except HIV)

Table 2 Key needs, skills and benefits from allergy specialists

Increase in allergic diseases, substantial prevalence requires special attention
Allergic diseases start early in life and persist, often for life
Allergic diseases most often affect multiple organs
Food hymenoptera venom and drug allergy and anaphylaxis are multiorgan diseases
Cost/effectiveness of care (emphasis on ambulatory medicine)
Performance of different types of allergen immunotherapy
Quality control of allergy tests, specific treatments
Development of 'molecular allergology'
Bridging the gap between new developments and patient care
Building up of (training) centres
Development of the field: specialists booster the field, stimulate the interest of young doctors, stimulate research
Clinical research and clinical trials for drug development and prevention, carried out by specialists, are needed to reduce the huge public health burden

increase in knowledge about environmental exposure (allergens and irritants) and the possibilities of primary and secondary prevention (benefits and risks of allergen avoidance, infant feeding, application of pro/prebiotics, risk of tobacco smoke, role of epigenetics); (iii) Thirdly, many epidemiological surveys have shown that the number of allergic patients in Europe and other developed and developing countries is increasing dramatically (2–4). A notable proportion of individuals with respiratory allergy in Europe are underdiagnosed, undertreated and dissatisfied with their treatment (5). All these factors call for a re-evaluation of patient care. The UEMS S&B Allergology coordinates and integrates the professional interests of the practising allergists in Europe; in this blueprint, its vision, supported by the European Academy of Allergy and Clinical Immunology, on the professional development of the specialty is given. Next step will be to align this vision with the UEMS Section of Paediatrics.

Allergic diseases, definitions and prevalence

Allergic diseases stem from a dysregulated response of the immune system to exogenous stimuli (allergens). These stimuli can be derived from inhalant material (e.g. animal dandruff, pollens or house dust mites) or from foodstuffs (e.g. peanuts, tree nuts, milk, eggs). Also insect venom, drugs or industrial

Table 3 Training requirements for Allergists (UEMS proposal – European Charter Chapter 6, 2003)

Article 2: General aspects of training in Allergology and Clinical Immunology
2.1 The Allergology and Clinical Immunology specialty training program must be preceded by a basic medical training according to national rules
2.2 The duration of training in Allergology and Clinical Immunology should be a minimum of 5 years
2.3 Two years minimum of Common Trunk (preferably in the first 2 years)
a. 18–24 months Internal Medicine (or Paediatrics)
b. 3–6 months Paediatrics (or Internal Medicine)
c. Options: Clinical Pharmacology, Epidemiology, Occupational and Environmental medicine
Three years minimum (preferably in the final 3 years)
2.3 a. 24–30 months Allergology and Clinical Immunology in accredited institutions
b. 3 months Immunology Laboratory oriented
c. 3 months Dermatology and/or 3 months Pneumology and/or 3 months Oto-Rhino-Laryngology
To which can be added:
Having successfully passed the EAACI/UEMS Knowledge Examination in Allergology and Clinical Immunology

agents can act as allergens. These allergens induce diseases (in sensitive patients) that vary widely in nature and severity (e.g. asthma, rhinoconjunctivitis, eczema and anaphylactic shock or hypersensitivity reactions to drugs). All these have in common that (by definition) the reaction is directed to innocuous material and deleterious as opposed to immune reactions to infectious agents where the response is mainly protective. Nevertheless, in allergic individuals, nonspecific triggers may also induce hyper-responsiveness. Allergic reactions can no longer be seen as solely immunoglobulin (IgE) based, but stem from a complex and variable interaction between cellular and humoral factors within and outside of the immune system. In addition, all of the above-mentioned diseases can occur without the clear demonstration of causative allergens as exogenous factors. These diseases display similar clinical symptoms and have in the past been classified as intrinsic or 'nonallergic' (6). It is probable that a considerable proportion of these conditions are in fact allergic, but non-IgE mediated, according to the EAACI-WAO (World Allergy Organisation) definition (7).

Allergic diseases belong to the most frequent afflictions in the Western World. Up to about 50% of the European population has a tendency to develop allergic reactions. In many countries, more than 10% of all children are symptomatically allergic, while 30% may have had an allergic reaction at some time in their life (3–5, 8). In several European studies, the prevalence of the (doctor's) diagnosis of asthma in children was shown to be around 5% of the population. In adults, the prevalence of an asthma diagnosis is slightly lower. It should be noted, however, that asthma symptoms in the general population occur at about a three times higher rate, suggesting a considerable percentage of underdiagnosis (9). In the United States, the adult and childhood asthma

diagnosis taken together was estimated to be 8.7%. Annual direct expenditure attributable to asthma treatment was calculated to be 37.2 billion dollars yearly (10). Almost 15% of all occupational diagnoses were reported to be due to occupational asthma. Asthma is related to considerable absenteeism from school and work. A Swedish study showed lower school results for adolescents with rhinitis notably those using antihistamines (11). Asthma in children is associated with lower results in math and reading tests, adjusted for child and family factors (12).

The prevalence of eczema in Europe is estimated to be between 1% and 3% of the population. In Scandinavia, this figure may be higher. Rhinitis (e.g. hay fever) is the most frequent allergic illness and is reported to occur in 20–30% of the European population (13). The prevalence of both eczema and rhinitis is still increasing in many countries, although they may have reached a plateau in some (14). The diseases mentioned above often occur simultaneously in the same patient; 20–60% of eczema patients develop asthma, and 30–45% also have rhinitis. Fifty to 75% of asthma patients have rhinitis (15).

Allergic reactions to foods occur in 2–4% of the adult population; however, a much higher proportion (almost 20%) attributes various symptoms to allergy, affecting their lifestyle (16). Paediatric studies report a prevalence of cow's milk allergy of 2–3%. Life-threatening allergic reactions to food occur mostly in atopic individuals notably in those with asthma (17). The exact incidence of hypersensitivity reactions to drugs is not known. It has been estimated that about 5% of patients hospitalized on internal medicine wards develop reactions that necessitate stopping one or more drugs. About 0.1% of the reactions are fatal (18). Most cases of severe hypersensitivity to drugs are found in adult and aged people. A French study showed a mean age of 66.5 ± 18.1 years. The most frequent side-effects were located in the skin, central nervous system, haematological system and in the kidneys. More than half of those cases could have been prevented (19). On the other hand, a large proportion of patients reporting hypersensitivity to beta-lactam antibiotics in fact fail to show an allergic reaction when rechallenged (20). These data underline the importance of an adequate diagnosis. Not only drugs but also many other compounds can elicit severe allergic reactions.

Population-based studies performed over the last decade show a prevalence of systemic reactions from insect stings ranging from 0.3% to 8.9%, with the lowest occurrence in children. Anaphylactic shock may account for up to 34% of all systemic reactions. Mortality rate is low but not negligible and is probably underestimated (21). The impact on quality of life, however, may be severe (22).

In recent years, 'molecular allergology' is entering clinical practice. Allergists have built up a thorough knowledge about allergen structures, cross-reactivity and their clinical relevance, which is becoming quite a complicated issue. Flowing from this knowledge, component-resolved specific IgE diagnosis is becoming more and more relevant.

Summarizing, the prevalence of allergic diseases is large and increasing, the spectrum of allergic diseases is broad and

the number of causative agents is ever increasing. Often, allergens cause symptoms in different organs simultaneously or sequentially. The social and economic impact of allergic diseases is considerable. Allergic patients are expected to appeal increasingly to novel diagnostic possibilities and healthcare facilities.

Quality criteria in allergy health care: what are the minimum requirements?

Medical history and physical examination: general and specialist physicians should be trained in allergy

The presentation of allergic diseases often follows characteristic patterns. All doctors should be trained in recognizing these patterns. The medical history and the results from physical examination will condition all further diagnostic and therapeutic interventions. Medical history of allergic patients has its own features. Localization and severity of the symptoms are carefully analysed. The circumstances, time frame or season in which symptoms develop are extensively surveyed. Especially for preventive and therapeutic interventions, it is essential to understand the nature of exposure to allergens and the relative importance of the different allergic and irritant triggers. Equally relevant is how the patient has responded to previous therapeutic interventions.

The medical history should be completed with data about occupation, hobbies, housing, feeding habits, use of medication, smoking, alcohol consumption, history of vaccines, recurrent infections and a family history. A physical examination with special attention on respiratory organs, skin and mucosa should be carried out in every patient. Although nurses and paramedics are increasingly involved in health care, patients who are referred because of allergic problems should be followed up by a doctor.

Diagnostic tests: the patient may expect safe and adequate allergy testing

Following medical history and physical examination, skin tests are usually performed (prick tests, intracutaneous and/or epicutaneous tests). If relevant, serum total IgE and allergen-specific IgE are determined. Depending on the clinical picture, spirometry and broncho-provocation tests (e.g. with histamine or methacholine) are performed. Allergen provocation tests are performed depending on the presenting symptoms: specific tests evaluating the response of the nasal mucosa, the conjunctiva, the lungs or gastrointestinal tract have been developed and are safe to use. In some cases of food allergy, double-blind, placebo-controlled tests are mandatory. Special precautions are required for all challenges, but particularly for challenges with drugs or insect venom.

Skin prick tests or intracutaneous tests are the cornerstone of the diagnosis of type I allergy. The epicutaneous tests are used in patients with suspected type IV allergies. Performing skin tests requires a specific training. All types of skin tests, but especially tests with nonstandardized allergen material, require the presence of a qualified medical specialist. This medical

specialist should have evaluated the diagnostic value of the proposed tests and should also have determined whether the patient is fit to undergo these tests. Contraindications such as the use of beta-blockers, pregnancy or other conditions precluding some types of allergy testing should have been evaluated. Moreover, the condition of the skin of the patient must allow skin testing and the patient must have abstained from medication that could mask a positive response.

In vitro allergy tests may also be used for diagnosis. These tests evaluate the presence of total and allergen-specific IgE in serum or cellular (basophils, lymphocytes) responses to allergen. Immunoblots and IgE inhibition tests identify cross-reactivity between allergens and can be relevant in individual cases. Recombinant allergens have become available for routine diagnostic purposes, and together with purified allergen molecules, allow component-resolved diagnosis. Component-resolved IgE testing has improved the accuracy of laboratory testing. Increasingly, cell-bound IgE assays, such as basophil degranulation tests and/or flow cytometry analyses, are used in clinical practice. However, for several tests, the predictive value still needs improvement. IgE-based tests can be used to monitor allergenic exposure at home or in an occupational setting (e.g. baker's asthma). In an allergy centre, the expertise should be present to evaluate the results of such tests and to test on a routine basis immunoglobulin levels, complement products, serum tryptase, the most relevant autoantibodies and routine haematology and blood chemistry. Basophil activation tests, lymphocyte proliferation tests, immunoblotting and other laboratory techniques should be available on demand.

Allergen provocation tests can be important to establish the diagnosis because in some cases, laboratory and skin test may offer inconclusive results, and because allergen sensitization does not always translate in clinical reactivity. Provocation tests are mostly used to identify food, occupational and drug allergies. Reactions to nonsteroidal anti-inflammatory drugs presently can only reliably be identified by challenge tests. Controlled challenges with foodstuffs have shown to be indispensable in many cases of food allergy. Provocation tests are also used to prove certain drugs are safe or sometimes to demonstrate to patients the relevance of allergen exposure. Provocation tests with insect stings, although not performed on a routine basis, are relevant to evaluate the protective effect of venom immunotherapy. To safely perform and interpret allergen provocation tests, specific knowledge is required, both concerning the allergen preparation (e.g. raw or cooked food), updosing and measuring the physiological response. Provocation tests in general but especially provocation tests with anaphylactic agents must be performed under continuous control of vital functions in clinic and/or hospital allergy units/services where treatment of severe reactions is readily available.

Therapy: the patient expects optimal preventive advice and treatment

Treatment of patients with allergic symptoms encompasses prevention, pharmacotherapy, allergen immunotherapy and/or the application of new 'biologics'.

Prevention

Many young parents (often themselves atopic) ask about primary prevention for their offspring because information offered in the media on these matters is often biased and incomplete.

Secondary prevention advice should offer a reasonable chance of improving the patient's condition, should be affordable and feasible. Advice concerning the choice of profession requires adequate knowledge concerning professional exposures and risks. Another form of prevention concerns elimination diets in people with food allergy. Evaluation of the results of elimination diets and provocation tests require specific expertise and collaboration with a dietician. Advice concerning allergen avoidance and/or specific diets at a young age should not be given light-heartedly because untoward advice actually may increase the risk of allergic responses and have severe nutritional consequences. To summarize, the patient must be able to rely on the fact that prior to pharmacotherapy, all safe, effective and reasonable preventive measures have been evaluated. This principle is in accordance with the EU Sustainable Development Strategy stating that all European citizens should have the means to improve their quality of life, mental and physical health and have access to the best preventive measures (23).

Pharmacotherapy

Pharmacotherapy should be individualized for each patient. Because patients usually suffer from chronic ailments, they can be expected to need medication for many years. Medication advice could be based on the prophylactic use of drugs or on the use of 'as needed' medication. Patients should be informed accurately about the benefits and side-effects that can be expected from each type of medication. Type of allergy, severity and patient factors including patient preferences, drug efficacy/safety levels, national/international treatment guidelines and possible drug interactions next to price and availability should be taken into account while advising the patient.

Allergen immunotherapy

Allergen immunotherapy is the treatment of choice for patients with severe allergic insect sting reactions. Allergen immunotherapy has been shown to be remarkably effective in patients with rhinoconjunctivitis to pollens, mites, dander and/or moulds and also in cases of pollen allergic asthma (24). Moreover, treatment with inhalant allergens was shown to reduce the risk of sensitization to new allergens and also to reduce the development of asthma in rhinitis patients (25). Allergen immunotherapy, although very safe when administered properly, can also provoke severe allergic reactions. Performing allergen immunotherapy requires a specialized setting and extensive knowledge about indication and contraindications for this type of treatment. With respect to injection immunotherapy, the treatment should be performed by qualified medical personnel under direct supervision of the specialist. Injections should be given in a surrounding that enables treatment for anaphylaxis, with increased caution during the initial phase. A relatively recent development is the sublingual form of allergen immunotherapy, which may

start in the allergy practice and continue at home. So far, this treatment has shown to be very safe. However, effectiveness has only been shown for a small number of allergens. Deciding what type of allergen immunotherapy (injection immunotherapy, sublingual immunotherapy) is optimal for an individual patient requires careful evaluation and up-to-date literature knowledge (24–26).

A relatively new and costly modality is the humanized monoclonal antibody against IgE (omalizumab). This antibody is now marketed for severe asthma and has been shown to be effective in many cases. The antibody can be combined with allergen immunotherapy to reduce the side-effects of injections and increase the benefit. Moreover, small studies have also shown that omalizumab can be effective in other allergic conditions. It is expected that in the near future, the application of this and other biological factors will be extended to conditions beyond severe allergic asthma such as severe chronic urticaria. Considering the high cost, the use of omalizumab should be carefully regulated. A specialist in allergology (and clinical immunology) should be optimally trained to prescribe responsibly such medication and also other biologicals that may emerge during the next years (27).

Counselling and education: the patient may expect a 'communicator'

Many patients consult their allergist concerning their afflictions but also concerning lifestyle (work places, housing, hobbies, alcohol and smoking), medication use and preventive measures. They may expect understanding and a 'willing ear' for the burden of suffering from a chronic disease. It is important that the specialist is sensitive to the needs of his/her patients. This will not only make the doctor–patient contact more rewarding for both sides but will also increase compliance with any given advice and decrease patient 'medical vagrancy/shopping'. In many centres, other healthcare workers (nurses/technicians, dieticians) are also involved in communicating with patients and providing information.

Towards a rational distribution of tasks in the care for allergic patients

The general practitioner

If adequately trained, the general practitioner (GP) can diagnose many allergic conditions based on medical history and physical examination. He/she can be further educated to evaluate some laboratory tests. The GP can diagnose the medical condition in the majority of allergic patients, notably in straightforward cases, and prescribe medication. When the nature, complexity or severity of the symptoms requires this, the GP may want to refer allergic patients to an allergist or to an organ-based specialist. Referring to an organ-based specialist is rational, when the symptoms are clearly located in one organ. Referring to an allergist is more rational, when symptoms are located in several organs, when preventive measures are required, occupational symptoms as well as food, hymenoptera venom and drug allergies are suspected

or when generalized symptoms such as anaphylaxis have occurred. Also, when allergen immunotherapy is considered, referring to an allergist is desirable. In many cases, the patient can be referred back to the GP after diagnosis and initiation of the treatment.

The occupational health physician

The occupational health physician (OHP) is involved in the care of allergic patients in several ways: some industries require a specific health check-up before appointing employees to specific tasks. Furthermore, employees may develop allergic symptoms in the working place (animal workers, nurses, bakers, etc.). The OHP will know to which compounds the employee is exposed. He/she can evaluate the exposure and advice on allergen avoidance and preventive measures. In most countries, the OHP can refer patients directly to medical specialists. In case of occupational allergy, referring to the allergist will usually be required. Close collaboration between the allergist and the OHP is usually necessary to identify the culprit occupational agents.

The internist, emergency unit doctor and general paediatrician

Internists, anaesthetists and emergency unit doctors see allergic patients in acute cases such as anaphylaxis, drug allergy, asthma attacks or angio-oedema. Analysis of the causes of such reactions is usually beyond their scope and outside their routine. The general paediatrician frequently sees children with symptoms that are supposed to be allergic in nature. Asthma is the most frequent chronic disease in childhood. As in the case of the GP, the general paediatrician should be able to diagnose and manage mild and uncomplicated cases and consider referring severe and/or complicated ones. Notably, food allergy is a diagnosis often suggested, but seldom proven. Controlled food challenges are now considered to be the cornerstone of the diagnosis, and they are usually not done by the general paediatrician.

The organ-based medical specialists: otolaryngologist, dermatologist, pulmonologist, gastro-enterologist

Because organ-based specialists (OBSs) will practise their specialty in its full scope, they can usually only spend a limited amount of time on allergic problems. They are experts in single organs. During their training, organ-based specialists usually are not educated in a systemic approach to allergic diseases. Their diagnostic and therapeutic efforts will thus focus mainly on that organ. The OBS may use standard allergy tests, combined with laboratory and function tests relevant for their specific field (pulmonologist: lung function tests, bronchoscopy; otolaryngologists: nasal endoscopy; dermatologists: skin biopsy, physical tests for urticaria). The therapy is mostly also organ based. The OBS can refer patients to the allergist, if he/she considers further testing is relevant. This will usually occur in complicated cases especially concerning the (allergy) diagnosis and specific treatment.

The allergist/clinical immunologist

The patient spectrum seen by allergists differs between European countries. In some countries, the specialist sees both children and adults, and in other countries, there are separate specialties for children and adults. Also, the extent to which clinical immunological problems are addressed differs. Allergists get their referrals from GPs, OHSs, OBSs, internists or paediatricians. Usually, these referrals concern patients with multiorgan disease, where the nature of the allergic problem requires further analysis. This analysis is based on a very careful medical history, physical examination and skin and laboratory tests, using standardized commercial allergen extracts or sometimes native allergen preparations, both for skin testing and provocation. The allergist has access to a specialist laboratory where sensitization, cross-reactivity between allergens and allergen exposure can be investigated. The allergist is qualified to interpret the results of such specialist laboratory test. The allergist also gets many referrals of patients with acute symptoms such as patients with severe reactions to insect stings. He/she is qualified to evaluate and treat such medical problems and provides personalized advice. Patients of special interest to the allergist are individuals with a suspicion of food or drug allergy. From research, it is now evident that the perception of food allergy in the population is many times that of the true prevalence. Because psychological, social and economic consequences of a restricted diet in children and adults can be substantial, a critical diagnosis is of utmost importance. Where available, a close collaboration between paediatric allergists and adult or general allergists is both functional and economical. With respect to drug, allergy collaboration with internists and dermatologists and pharmacovigilance professionals is required.

A new and challenging development is the rapid desensitization of patients with allergy/hypersensitivity reactions to drugs, such as chemotherapeutic agents.

The allergist is often confronted with patients such as:

- 1 Patients with complicated problems related to exposure to industrial agents.
- 2 Patients requiring extensive preventive measures.
- 3 Patients with generalized allergic reactions such as acute urticaria/angio-oedema and/or anaphylaxis.
- 4 Patients with recurrent infections.
- 5 Patients with contradictory results from allergy tests.
- 6 Patients with unexplained eosinophilia and/or high IgE levels.
- 7 Patients under treatment with biologicals in other clinics for the monitoring of side-effects.

The allergist has at his/her disposal several preventive modalities, such as advising about allergen avoidance, specific allergen protection measures, choice of occupation and hobbies. Together with a dietician, the allergist can evaluate dietary triggers and propose changes in diet. Finally, the allergist has an arsenal of direct therapeutic measures, be it drug treatment, allergen immunotherapy or application of biologicals. The allergist is uniquely situated to chose between these possibilities and fit them to the requirements of the patient.

Clinical immunologist

Because of the immunopathogenic mechanism of allergic diseases, allergy is closely related to clinical immunology, so much that in some European countries, allergology and clinical immunology are recognized as a single medical specialty. In this context, specialists in allergology and clinical immunology are, besides the classical allergic diseases, also involved in the diagnosis and treatment of various types of immunodeficiency diseases (predominantly primary) and autoimmune diseases. A good knowledge of immunology is essential in situations where both allergic and immunodeficient mechanisms may play a role. This concerns not only patients with frequent and/or severe infections but also the differential diagnosis of oedemas (including hereditary angio-oedema), eczema (hyper-IgE syndrome, Wiskott–Aldrich syndrome), failure to thrive (combined immunodeficiencies) and various other conditions. The extent of involvement of specialists in allergology and clinical immunology in diagnosis and treatment of other immunopathological diseases, such as systemic autoimmune diseases and vasculitis, varies from country to country. Specialists in allergology and clinical immunology may also play a significant role in monitoring patients on various types of immune-modulatory treatment. In the clinical setting, an 'allergist' or 'clinical immunologist' is often required to dose and follow-up the treatment with novel biologicals. A good access to an immunological laboratory and experience in the interpretation of immunological laboratory tests plays a crucial role in establishing the diagnosis and in monitoring the efficacy of treatment of patients with all major groups of immune-pathological diseases (allergy, immunodeficiency, autoimmunity) and also of patients after transplantation.

A multidisciplinary approach

For a number of patients, a multidisciplinary approach is required for optimal diagnosis and treatment. Some examples are given below to better clarify these situations:

- 1 Patients with a suspicion of extrinsic allergic alveolitis: for optimal diagnosis, collaboration between the allergist and pulmonologist is necessary. The allergist will be able to analyse the suspected allergen(s) and perform provocation tests, while the pulmonary physician can monitor the response and perform a broncho-alveolar lavage and/or biopsies.
- 2 Patients with rhinitis and polyposis and complex allergic symptoms are helped by collaboration between an allergist and an otolaryngologist because of anti-allergic therapy or associated asthma/urticaria or aspirin desensitization and possible surgical interventions.
- 3 Patients with urticaria or eczema will sometimes need an evaluation of food allergy. To explain to the patient the relevance or irrelevance of food allergy, collaboration between the allergist and the dermatologist is often required.
- 4 Patients with angio-oedema will need combined diagnosis and treatment efforts from allergists, emergency unit doctors and laboratory physicians.

- 5 Patients with food allergies will benefit from collaboration between allergists and dieticians.
- 6 Patients with drug allergies will benefit from collaboration between allergists, dermatologist, pharmacovigilance professionals and the laboratory physician.
- 7 Care of patients from families with rare or orphan diseases (e.g. Muckle–Wells syndrome) will need a close collaboration with paediatricians.
- 8 Patients with recurrent/poorly understood infections will benefit from collaboration between allergists/clinical immunologists and laboratory physicians.

In conclusion, allergic patients present themselves with diverse symptoms, sometimes related to one organ, but usually to several. The symptoms may vary between simple and very complex. To guarantee optimal care for these patients, GPs as well as other medical specialists have their own specific expertise. Allergists play their role within this framework, notably by testing, counselling and treating patients with complex multiorgan allergies. To perform optimally, allergists need access to a laboratory for function testing and immunological tests. For optimal care on all levels, it is important that specialists, who take full responsibility for allergic problems, coordinate the health care in this field. The UEMS S&B on Allergology stimulates allergy specialists to collaborate closely with other medical specialists and with GPs, for instance, allergists could advise GPs on the interpretation of laboratory tests and referral policies. Moreover, allergists are usually very motivated to participate in post-graduate training of GPs. The allergist is ideally situated to serve as a 'quality control officer' concerning laboratory and skin tests and allergen immunotherapy. Allergists can, based on their specific knowledge, function as partners for government and the pharmaceutical industry, concerning allowance of allergen preparations for *in vivo* and *in vitro* use and new therapeutic modalities.

The allergy centre: focus on know-how and facilities

Optimal care for allergic patients requires active interaction between different medical and paramedical workers. Short communication lines with laboratory and function testing departments are essential for optimal patient care. It is rational and desirable to create a network, where the communication between several caregivers is quick and efficient. The Allergy Centre is a surrounding where such a network is optimally situated. Collaborators of such a centre can, next to direct patient care tasks, be an information point for other healthcare workers. Between the several collaborators in such a centre, a clear understanding must be reached concerning tasks and responsibilities; thus, many laboratory tests and investigations that are unnecessarily repeated can be avoided. The Allergy Centre aims at optimizing efficiency and increasing quality at all levels.

The Allergy Centre offers to private allergists, GPs and other medical specialists more extensive diagnostic and therapeutic possibilities. This will increase the quality of care within first-line health care. The centre can offer diagnostic tests and professional advices to GPs and other medical

specialists without referring (following-up) the patient. Standardized procedures as well as informal contacts smoothen referrals in both directions. The Allergy Centre can also offer support to nurses, dieticians and other healthcare workers. The efficiency of specialist care is increased by the collaborative possibilities. A clear agreement about tasks and responsibilities within the centre will stimulate optimal referrals and will prevent doublings.

Within the Allergy Centre, the organ-based specialist and the allergist may support each other. This could concern patients, who, because of their complex allergic problems, need a multidisciplinary approach. Such an approach will avoid 'medical shopping' and excursions to the 'alternative medicine' circuit. The Allergy Centre should have excellent access to the relevant medical literature, both in the form of standard handbooks, relevant medical journals and internet-based sources. It is advisable that journal clubs and 'critical appraisal of literature' sessions are regularly held. Databases on occupational, drug, hymenoptera and food allergy should be available. The optimal location for an Allergy Centre is in a university hospital or a large regional hospital, where all relevant specialties are adequately represented. A well-qualified outpatient department and the possibility to hospitalize patients (e.g. for provocations and treatment) should be available. The Allergy Centre is the ideal setting for performing patient-bound scientific work. Data management must be structured in such a way that physiological data can easily be combined with laboratory parameters. Thus, rare allergic complications can be recognized and changes in trends (e.g. drug or food allergies) can be readily identified. Allergists from the Allergy Centre could be encouraged to have practices outside of the centre, for example, in smaller regional hospitals or private offices. The centre should offer its services to allergists in the region concerning tests that are performed more economically on a larger scale (e.g. drug, food or insect sting provocation). The optimal number of allergists pro capita of the population will be different between countries in Europe. In the USA where there has been a full specialty for many years, the number is approximately 1 in 75.000 inhabitants (28). The average number for European countries where there is a full specialty is about 1 in 50.000 inhabitants. The optimal number of allergy centres will depend on geographical factors and on how health care is structured in each country. Too many centres in one region will hamper efficiency and may lead to fragmentation of the available knowledge and expertise. Too few centres, however, would jeopardize the continuity of quality and of patient care. We consider that to guarantee patient care and training of specialists, there should be at least one centre for 750.000 inhabitants.

Specialist training and recertification in allergology

Training requirements for allergists may differ between countries; however, minimum training requirements (Table 3) have been described in the Logbook and the Core curriculum on Allergology (1). Quality control of care should be along lines operative in each European country. In countries where allergology was not, but will be recognized as a (full)

specialty, retrograde recognition of specialists with an adequate CV is promoted. Recent developments in Europe point in the direction of recertification for all medical specialists, based on postgraduate training, visitation of practices and adherence to diagnostic and therapeutic protocols. The UEMS S&B on Allergology and EAACI seek to improve and harmonize standards of care in allergy, within and between European countries. To prevent that the quality of care in one or several countries within Europe lags behind developments in other countries, the UEMS S&B on Allergology advocates the status of a full specialty of allergology in each European country because a full medical specialty offers the best guarantee for optimal specialist training and postgraduate quality control. Moreover, the EAACI/UEMS Knowledge Examination in Allergology and Clinical Immunology offers a highly professional tool for international har-

monization. The European Academy of Allergy and Clinical Immunology fully supports UEMS activities. The UEMS S&B on Allergology is available for discussion and advice to national and European authorities, medical associations, hospitals and individual medical specialists.

Acknowledgments

The blueprint was originally produced by the Dutch Society of Allergology but was reworked extensively by the authors. We thank the national delegates of the UEMS Section and Board on Allergology for their valuable suggestions.

Conflicts of interest

The authors declare no conflicts of interest.

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