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The roadmap for Allergology in Europe: the subspecialty of Allergology as 'stop-over' on the way to a full specialty. An EAACI position statement.

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Disclaimer: We unconditionally support allergology as a full speciality in every country of the world. This position paper is however outlining the optimal circumstances related to the organisation of training of subspecialists in allergology . It is meant to help countries, where allergology is not recognized as a full specialty, to set up surrogate health care in the field. It is not intended as a legal/mandatory document.

Abstract

The vision of EAACI and the UEMS Section and Board (S&B) on allergology is to promote and to establish a full specialty of allergology in all European countries. In many European countries a full specialty does not exist. In those countries organ-based (sub)specialists or paediatricians and internists with an expertise in allergology may deliver allergy care. There are no generally accepted requirements for the training of subspecialists available. To fill the gap between the need and availability of experienced and accredited physicians who can deliver optimal care to the allergic patients the EAACI Specialty Committee proposes the minimal requirements for training and certification of subspecialists in allergology. This paper describes the required theoretical knowledge, skills, competences and training facilities (staff and institution). The subspecialist as described in this paper should ideally show the necessary competence in providing good quality care to patients in an environment lacking those full specialists in allergology or tertiary care paediatric subspecialists in allergy.

Introduction

The prevalence of allergic diseases is high with allergic rhinitis ranging from 17-29% in Europe (1), and asthma fluctuating from 1.3-11% in European surveys among children and adults(2). Increasing trends are also recorded in childhood and allergic rhinoconjunctivitis and asthma affects up to 20% of children worldwide(3, 4). In the UK, from 1990-2004, hospital admissions for anaphylaxis have increased by 700%, for food allergy by 500%, for urticaria by 100%, and for angio-oedema by 40% (5).

The high burden of allergic diseases imposes substantial demand on health care services. The vision of the European Academy of Allergy and Clinical Immunology (EAACI) and the Union of European Medical Specialists (UEMS) Section and Board (S&B) on allergology is to promote and to establish full specialties of allergology in all European countries. However, allergology is recognized as a full specialty in only 12 (data from 2013 (6)) and as subspecialty in six European countries . Some countries do not recognize at all specialists with expertise in allergy. There is an obvious gap between the need and availability of experienced and accredited physicians who can deliver optimal care to the allergic patients. In those countries, where no full specialty in allergology exists, organ-based (sub)specialists or paediatricians and internists with an expertise in allergology may cover allergy care. The different medical systems across Europe do not always stipulate for well delineated care and training curricula in allergology, and consequently physicians with different backgrounds like, internists, paediatricians or organ-based specialists with an interest in the field, should receive specific training in allergy and/or immunology to fill up the gap. Although the minimal requirements for the training of a full specialist have been described in the Logbook and Core curriculum of allergology (7) there are no generally accepted requirements for subspecialists available. Consequently, there is a need to harmonise the education and training for such subspecialists across Europe. This subspecialist is not meant to replace the full specialist, but to provide adequate services. Moreover,

the institution of subspecialists should pave the way towards the full specialty, recognized in all European countries. One example is France, which started with allergology as a competence for general practitioners, subsequently instituted a subspecialty and finally established apart from the subspecialty the full specialty in allergology in 2017.

This paper aims to propose the minimal requirements for training and certification of subspecialists in allergology.

Methods

This consensus document was prepared by the EAACI Specialty Committee. Contributors were Roy Gerth van Wijk (chair) and Norbert Muelleneisen (secretary), both representatives of the UEMS S&B, Jacques Gayraud and Ted Popov representing the European Committee of Continuous Education for Allergologist Practitioners (CEFCAP), Ibon Equiluz-Gracia, Jan Gutermuth, Eckhard Hamelmann, Enrico Heffler, Peter Schmidt-Grendelmeier, Peter Valentin Tomazic, Olympia Tsilochistrou representing EAACI. In January 2016, the EAACI Specialty committee and a representative of the EAACI National Societies Council met in Zurich to discuss and draft the paper setting minimal requirements for a subspecialist in allergology. The committee convened on 8-1-2016, 10-6-2016 and 3-2-2017 to prepare and finalise the paper.

General aspects of the subspecialty of Allergology

Allergology, unlike other medical specialties, does not deal with single-organ/system diseases, but it applies by definition to systemic diseases. Therefore, a systemic approach to allergic diseases has to be the major component of education and training of residents in allergology subspecialty. Allergology either full or sub-specialty deals with allergic diseases and involves the diagnosis and comprehensive management of disease while it is strongly related to basic and/or clinical research. This subspecialty programme of EAACI aims to guide fellows towards the training programme to become medical experts and professionals in the allergy field(8). This programme may offer national authorities a framework to ensure a standard of qualifications of the allergy subspecialists as well as their unrestricted move for training across Europe. We believe that organ specialists involving systems where allergic mechanisms originate and/or take place (eg dermatologists, ENT or respiratory physicians), and those with a systemic approach and management of diseases such as internal medicine doctors and paediatricians should be given the opportunity to obtain dedicated training in order to receive accreditation as subspecialists in allergology. The training in the subspecialty should be focused on competences and skills applicable for all allergy-fellows, but these competences and skills can be tailored to the different full specialties. The theoretical background knowledge should be identical for all fellows. EAACI organises annually the EAACI/UEMS Knowledge Exam in Allergology and it is highly desired that this accreditation becomes accepted by national authorities across Europe to certify skills in allergology.

The duration of training must be commensurate with the complexity and variety of topics which will be dealt with both in their theoretical background and in practical settings. Therefore, we believe that a minimum duration of 18 months is required to capture the basic aspects of the subspecialty. This training may not provide the broad spectrum of knowledge and skills as described in the core curriculum of the full specialist in allergology.

The requirements for the proposed paediatric subspecialty are not comparable with the already existing demands for paediatricians trained as tertiary care specialists with the capacity for independent practice (2 to 3 years training after common trunk). This training has been described in the European Syllabus in Paediatric Allergology as approved by the European Board of Paediatrics and UEMS (9) and published on the EAACI website(10). The subspecialist as described in this paper should be competent to provide good care to patients in an environment lacking those full specialists or tertiary care paediatric subspecialists. We also did not touch Clinical Immunology. At the level of UEMS Clinical Immunology is not recognized as a full specialty. Clinical Immunology in Europe is predominantly covered by internists, rheumatologists and allergologists with a combined specialty of Allergology and Clinical Immunology.

Theoretical knowledge

Fellows successfully taking the EAACI/UEMS Knowledge Exam, have the theoretical knowledge of allergy/immunology topics as described in the related Catalogue which is proposed to the participants of the Exams (Sixth version, 2/2013)(11). The topics are listed in table 1. However, passing the EAACI/UEMS Exam is not yet a prerequisite for registration either as a subspecialist or full specialist in allergology, with the exception of a few countries that have allergology as a full specialty (Switzerland, Sweden and Lithuania). This exam must be considered as an excellent tool to test one's theoretical knowledge in the field of allergology and clinical immunology. EAACI is currently in the progress of organising a dedicated module of the Exam which will address the paediatric allergy field and as such it is expected to represent a highly-esteemed certification for paediatric allergists.

Skills

Allergic disorders are systemic in nature and have a broad spectrum of organ manifestations. Taking this into account, an acceptable level of competence is required for all physicians who take care of allergic patients but who are not allergy specialists(12) . This competence should encompass theoretical knowledge and practical skills.

Table 2 gives an overview of skills for all subspecialists and skills tailored to the different backgrounds of specialists.

Competences

The essential competences of physicians for optimal care are thoroughly defined in the CanMEDS framework(8) (i.e. medical expert, communicator, collaborator, leader, health advocate, scholar and professional) and should apply for all physicians at all disciplines and hence to allergy specialists and subspecialists. Professional competence is developmental, impermanent, and context-dependent(13).

In general, competence in medicine comprises three different dimensions:

(i) a cognitive function: acquiring and using knowledge to solve real-life problems;

(ii) a relational function: communicating effectively with patients and colleagues;

(iii) an affective function: willingness, patience, and awareness to use knowledge and skills to serve the patient.

Upon completion of training, fellows are expected to be competent subspecialists in allergology capable of assuming a consultant's role. For this reason, they must have developed efficient communication skills, fundamental knowledge, technical skills, clinical reasoning and appropriate attitude for professional patient-centered service and care.

Allergology is a multidimensional and interdisciplinary specialty. Training should thus always include treatment of children and adults with a focus on children in paediatric and adults in adult allergology programs, and of the specific medical aspects of allergic diseases. Still, the allergy sub-specialist may have a focus on the management of allergic diseases that are related to his/ her primary specialty. Therefore, besides general competences in allergy, specific competences are required for the different subspecialists in allergology. The list of competences represents minimal requirements and is therefore not extensive, moreover the list partly overlaps with the general competences for organ based specialists.

All these aspects are detailed as following:

General competences

The competent subspecialist in allergology is able to:

1. **Acquire and apply knowledge:**

- Understand the pathology and mechanisms of allergic disease
- Apply this knowledge to real-patient situations
- Recognize weaknesses in his/ her own knowledge and skills
- Use various systems and tools to acquire new knowledge by asking, learning, communicating, searching
- Solve daily and general problems in patient care and management
- Communicate with patients and colleagues

2. **Acquire and apply technical skills (see table 1)**

- Physical examination skills
- Procedural skills

3. Integrate knowledge and skills (see table 1)

- Use clinical reasoning strategies.
- Integrate knowledge of external (allergic) causes with history taking and assessment of sensitization
- Link basic and clinical knowledge across the disciplines of allergology (pediatrics/ ENT/ pneumology, dermatology)

4. Take care of the patients

- Respect the patient's needs and worries
- Tolerate different gender, religion, ethical and social backgrounds
- Apply emotional intelligence
- Provide the best clinical result for the individual patient regardless of treatment duration.

Specific competences

1. The competent paediatrician subspecialised in allergology is able to:

- Understand the development and mechanisms of allergic diseases in childhood and adolescence
- Understand the concept and limitation of the "united airway, allergic march" or the currently debated term "one organ- one disease"
- Communicate with young allergic patients and their parents / caretakers
- Examine infants, toddlers and school-age children
- Educate children and caretakers on the risk and management of anaphylactic reactions/ shock
- Educate children and caretakers on the basics and management of atopic eczema/ dermatitis
- Educate children and caretakers on the basics and application of inhalation (including nebulizer, MDI, DPI and spacer)
- Diagnose and treat patients with food allergy
- Understand the concept and apply the means of primary and secondary prevention of allergy and asthma
- Understand and translate the risk and benefit of anti-allergic therapies (allergen avoidance, pharmacotherapy, allergen immunotherapy)

2. The competent dermatologist subspecialised in allergology is able to:

- Understand the development and mechanisms of allergic diseases in the skin
- Understand the concept of impaired skin barrier function as a risk for allergies
- Educate patients on the basics and management of atopic eczema/ dermatitis
- Educate patients on the basics and management of contact allergies
- Educate patients on the basics and management of urticaria and angioedema of various origin
- Educate patients on the risk and management of anaphylactic reactions/ shock
- Understand and translate the risk and benefit of anti-allergic therapies (allergen avoidance, pharmacotherapy, allergen immunotherapy)
- Manage cutaneous manifestations of drug hypersensitivity
- Diagnose and treat patients with food allergy
- Educate patients on the risk and management of anaphylactic reactions/ shock

3. The competent ENT doctor subspecialised in allergology is able to:

- Understand the development and mechanisms of allergic diseases of the upper airways
- Understand the concept and limitation of the "united airways**,** allergic march or the currently debated term "one organ – one disease". "
- Educate patients on the risk and management of anaphylactic reactions/ shock
- Educate patients on the basics and application of inhalation (including spacer, MDI, nebulizer)
- Understand the concept and apply the means of secondary prevention of asthma in rhinitis patients
- Understand and translate the risk and benefit of anti-allergic therapies (allergen avoidance, pharmacotherapy, allergen immunotherapy)
- Educate patients on the risk and management of anaphylactic reactions/ shock

4. The competent respiratory physician subspecialised in allergology is especially able to:

- Understand the development and mechanisms of allergic diseases of the lower airways
- Understand the concept and limitation of the "united airways ,allergic march" or the currently debated term "one organ- one disease"
- Educate patients on the risk and management of anaphylactic reactions/ shock
- Educate patients on the basics and application of inhalation (including spacer, MDI, nebulizer)
- Understand the concept and apply the means of secondary prevention of asthma in rhinitis patients
- Understand and translate the risk and benefit of anti-allergic therapies (allergen avoidance, pharmacotherapy, allergen immunotherapy)

- Educate patients on the risk and management of anaphylactic reactions/ shock

5. The competent internist subspecialised in allergology is able to:

- Understand allergies as a systemic disease
- Apply this knowledge to real-patient situations
- Understand the concept and apply the means of secondary prevention of asthma in rhinitis patients
- Understand and translate the risk and benefit of anti-allergic therapies (allergen avoidance, pharmacotherapy, allergen immunotherapy)
- Diagnose and treat patients with food allergy
- Diagnose and treat patients with insect allergy
- Diagnose and treat patients with drug allergy
- Educate patients on the risk and management of anaphylactic reactions/ shock

Training requirements

In countries where allergology has not attained recognition as a full specialty, training programs should be instituted to address a wide-range of skills, knowledge, and competencies to allow adequate care for patients with allergic diseases. The aim is to achieve at least the minimal standards which should be periodically updated in line with the most current medical literature, practice-changing innovations and the needs of the population served. At a national level these training programs need to be accredited. International / European guidelines and position papers should provide basis for harmonization across the countries. The duration of the training should ideally involve at least 18 months of allergy training apart from the training within the context of the main (organ) specialty.

The following recommendations for the institution and standardization of such training programs can be considered (1):

- The guiding factor in the development of a program should be that it will benefit both patients and physicians.
- The program should contain a didactic element; the process to implement it needs to be a learning experience ending with an examination, which demonstrates increased medical knowledge.
- Multiple sources of information are necessary in line with the diversity of allergology as a specific medical discipline.
- Multiple assessment tools are necessary including log-books, testing of knowledge, practice assessment, analysis of patient care outcomes, and quality improvement.
- The training needs to be flexible and adaptable to changes in medicine, science, and the practice of allergy and clinical immunology, and it should recognize local needs, availability of medications and diagnostic tests, and service capabilities

- Outcomes should be identified from the beginning and be monitored and quantified to verify that the process is beneficial.

Staff and institution

Trainers for allergology need to be either fully licensed allergists or need to be board certified in one of the basic specialties (internal medicine, paediatrics, ENT, dermatology, pneumology) and need to have a subspecialty certification, depending on the national legislative situation. Two years of professional experience is necessary to serve as a supervisor for a trainee in allergology. The director of training program in allergology in particular institution is required to have five years of relevant experience in training of residents.

Every two years, all staff members providing patient care should be trained and certified in basic life support. Nurses, dieticians and other health allies working in the facility need to be specifically trained to deal with allergic patients.

EAACI is currently in the process of acknowledging comprehensive allergy centres based on co-operation between different disciplines. Upon fulfilment of the requirements, centres could also be involved in training the subspecialists. An allergology training centre needs to meet the following organisational requirements, either under its jurisdiction or through cooperation with other institutions:

- **Access to a library**:
    - With relevant textbooks for specialty students
    - Minimum online access to relevant medical and scientific journals covering allergology, the organ specialties and general medicine
    - A quiet space for retreat to check the literature
- **Clinical unit to perform**
    - Skin prick testing, intradermal testing
    - Patch testing and advanced experimental methods (atopy patch)
    - Nasal provocation
    - Conjunctival provocation
    - Spirometry, bronchial challenge
    - Oral food challenge, drug challenge
    - Allergen immunotherapy
    - Monitoring, access to emergency care (incl. life support)/ acute treatment of anaphylaxis
    - Dietary counselling/ intervention
- **A laboratory to perform basic and advanced testing relevant to allergology:**
    - Haematology, clinical chemistry
    - Total and specific IgE testing, component resolved diagnosis

- Additional experimental testing as basophil activation tests (flow cytometry) and lymphocyte transformation test

- **Facilities for multidisciplinary case discussions**

UEMS/EAACI can provide expert teams for national authorities for accreditation/ auditing of allergy training centers or clinical centers. Training and clinical allergy centers need to be accredited by the relevant national authorities based preferably on UEMS/ EAACI defined common criteria, which take into account:

- **The spatial prerequisites for registering an Allergy training center:**
  - Presence of consultation rooms, material and devices to perform the necessary clinical investigation, technical, serological and cellular tests as outlined above (training centers can be registered for selected competencies, e.g. dermatology-related competencies of the subspecialty)
  - Defined number of patient contacts in the training center depending on the number of staff and fellows in training (3000-6000/year based on consensus between committee members)
  - In training centers, a program director with 5 years of relevant experience, teach-the-teacher trained
  - At least 2 supervisors should be available to guarantee the continuity of the training.
  - Per two residents, one full-time supervisor with at least 2 years of experience should be part of the team

Registration & Revalidation

- **Registration (licensing) of an allergist / subspecialist**
  - Passing relevant national board exams (primary specialty, followed by allergology exam after at least 18 months of allergology training)
  - National board exams need to be aligned with the UEMS/EAACI learning objectives, since the European citizens are moving across the continent.

- **Re-validation/accreditation of the subspecialty holder** needs to be kept active by regular monitoring of the educational status and clinical activity (one to five year cycles):
  - Subspecialists aiming for accreditation should gain a predefined number of 120 CME points per 3 years, 84 from the field of Allergology and at least 36 from fields of personal choice, thus on average 40 points annually.
  - A clinical activity of at least two clinical working days (16 hrs.) for 40 weeks within one year

- Any other requirements depend on national regulations. For instance, in the Netherlands a visitation of clinical practices by the national allergy society is a prerequisite for re-registration.

Perspectives: the road to the full specialty

In terms of allergy services and allergy care, Europe is characterized by substantial heterogeneity (figure 1) As stated in the blue print(6) quality criteria in allergy health care comprise the availability of physicians trained in allergy who are able to perform a comprehensive medical allergy history and physical examination. Patients expect safe and adequate allergy testing, optimal preventive advice and treatment and a doctor who is a good communicator in counselling and education. The key person in allergy health care should be the full specialist interacting with general practitioners, occupational health physicians, general and organ based specialists. Ideally such care should be delivered by an Allergy Centre, staffed by allergists and supported by appropriately trained allied health professionals. EAACI takes the position that this level of allergy care should be achieved in every European country.

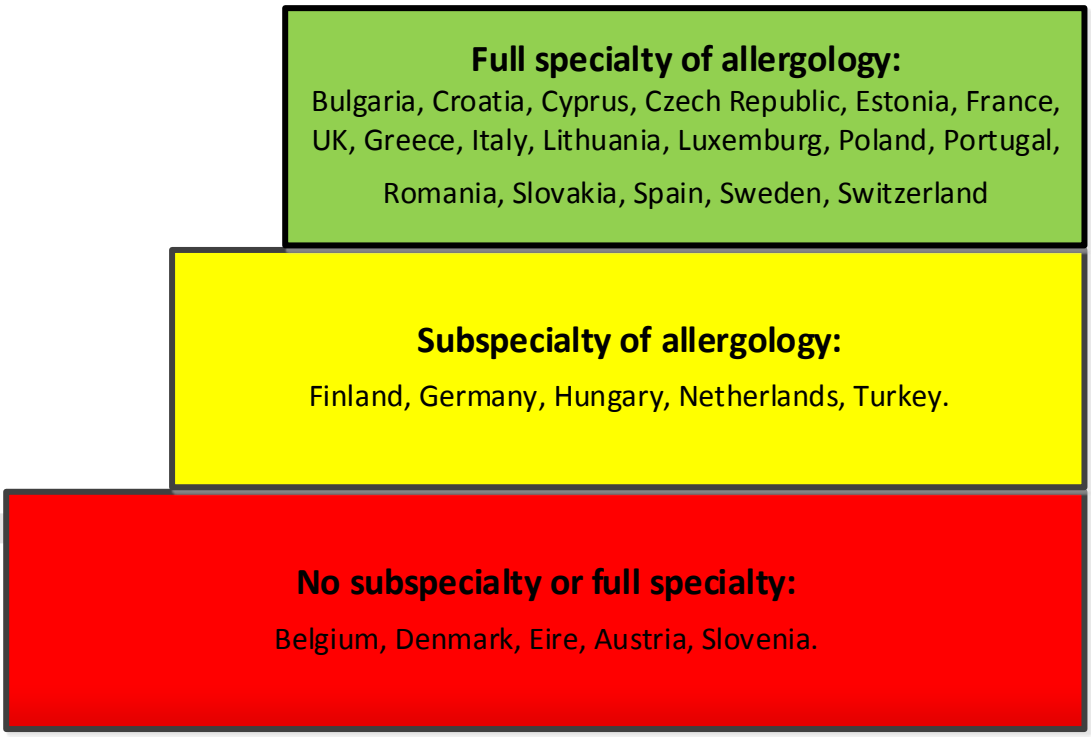

Figure 1: different allergy services in Europe according to the UEMS S&B (updated from: https://uemsallergology.eu/specialty-in-europe/our-way-of-working)

However, also in countries lacking the full specialty of allergology, patients are entitled to have access to the best possible allergy service. Subspecialists can meet the needs of these patients provided that they are competent in diagnosing and treatment of these patients. In the absence of well-defined

and well-accepted criteria for the training of such subspecialists, this paper aims to give guidance regarding the A) minimal requirements for the disciplines and countries that would like to establish subspecialties in allergology and B) common criteria for existing subspecialties as well. Without a leading or co-ordinating allergist, such subspecialists with different backgrounds need to cooperate, share competences and speak a common language. Harmonization in training is the only way to achieve that.

For several European countries like Switzerland and France, subspecialties were the starting point for establishing full specialties. Some other countries are far away from the full specialty. Development of recognizable subspecialties in allergology may be the first step in these countries.

The subspecialties proposed in this document do not have a formal status at the UEMS level which is reserved for the full specialty of Allergology as all subspecialists are already part of a recognized specialty. Developing competing specialties is not the aim and the ultimate goal is to set general standards for all specialists dealing with allergic patients.

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Conflict of interest.

The authors declared that they have no conflict of interest.

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Table 1

1. BASICS / EPIDEMIOLOGY ALLERGOLOGY/IMMUNOLOGY
1.1. Basic principles of immune response
1.2 Epidemiology/genetics
1.3 Allergens
2. CLINIC, DIAGNOSIS AND THERAPY OF ALLERGIC DISEASES
2.1 Allergic diseases: allergic respiratory diseases, allergic skin diseases, food hypersensitivity, drug hypersensitivity, insect venom allergies, anaphylaxis as a consequence of these diseases, mastocytosis or mast cell related diseases, diseases with hypereosinophilia, controversial symptoms.
2.2 Diagnosis of allergic diseases
2.3 Therapy
3. CLINICAL IMMUNOLOGY
Basic knowledge of: 3.1 Immune deficiencies (primary and secondary) 3.2. Autoimmunity
4. APPENDIX
Characterization and occurrence of individual allergens
Seasonal inhalation allergens
Perennial inhalation allergens
Occupational inhalation allergens
Food allergens (for children and adults)
Contact allergens
Lipid transfer protein-, profilin-, bet v1-families etc. and other cross-reactivity clusters
Agents inducing drug hypersensitivity
Pseudo-allergy
Research principles

Table 2.

Skills	**pulmonology**	**dermatology**	**ENT**	**pediatrics**	**Internal medicine**
Diagnostic skills					
Taking history of patients with allergy and atopy					
Skin allergy tests and recognize the differences between prick, epicutaneous, subcutaneous and intradermal tests					
Patch tests and photo patch tests					
Indication, performing labs and the interpretation of in vitro diagnostic of IgE antibodies including recombinant allergens and component resolved diagnostic.					
Indication, performing labs and interpretation of methods to identify inflammatory mediators.					
Interpretation of symptom diaries					
Provocation tests and to recognize the specific subtleties of oral, nasal, conjunctival or bronchial challenges					
Indication and interpretation of spirometry and airway hyperresponsiveness tests					
Nasal provocation tests and/or conjunctival provocation test					
Examination techniques: rhinoscopy,					
Endoscopy, rhinomanometry, nasal peak flow, acoustic rhinometry, smell tests nasal and/or sinus endoscopy					
Nasal cytology: sampling, staining, reading and interpretation					

Lung function test					
Bronchial provocation tests					
Exhaled breath analysis (NO-analysis)					
Induced sputum: induction, processing, staining, reading and interpretation					
Diagnostic diet. Oral provocation tests (open vs double blind, titrated vs one dose, ambulatory vs inpatient).					
Indication, execution and monitoring of food provocation test					
Drug allergy diagnostic algorithm in vivo and in vitro procedures					
Indication, execution and interpretation of drug allergy tests					
Procedures with mastocytosis					
Skills in treatment/management					
Management of anaphylaxis					
Provide anaphylaxis training including explanation and instruction of emergency medication, emergency training with cardiopulmonary resuscitation and intubation.					
Anaphylaxis training including explanation and instruction of emergency medication					
Indications and treatment with specific immunotherapy (short term SCIT, perennial SCIT, cluster-SCIT, pre or co-seasonal SLIT, insect sting allergy).					
Indication to operations at the nose, the sinuses, the nasopharynx and the middle ear.					
Knowledge and demonstration of inhalation technics of all metered dose inhalers, nebulizers and dry powder inhalers in asthma procedures					

Demonstration of breathing techniques and inhalation techniques and inhalation aids /devices					
Expert opinion statements concerning occupational allergies e.g. occupational rhinitis and asthma					
Setting up of a plan for ASS-Deactivation in case of Samter Triad.					
Expert opinion statements concerning occupational allergies (e.g. contact allergy)					
Epidemiology, Indication and execution of management of urticaria and angioedema. Treatment of urticaria/angioedema.					
Establish a therapeutic elimination diet eventually with accompanying substitution					
Counseling and patient education					
Provide patient education on allergies, asthma, atopic dermatitis, anaphylaxis, different types of urticaria and angioedema					
Explain meaning and practical use of allergology emergency health pass and /or anaphylaxis certificates					
Explain to patients the indications and the different kinds of specific immunotherapy (short term SCIT, perennial SCIT, cluster-SCIT, pre or co-seasonal SLIT, insect sting allergy).					
Demonstrate and provide council to patients about inhalation techniques with different inhalatory devices					
Council patients about insect sting prevention,					
Demonstrate therapy including techniques of care and how to perform skin care in atopic dermatitis.					
Professional nutritional education including elimination diet and additional dietary procedures, while taking the normal development of children into account.					
Professional nutritional education including elimination diet and additional dietary procedures					
Counseling about primary allergy prevention					

Counseling about secondary allergy prevention					

Knowledge	
Knowledge and practice	

Legends.

Table 1.

Required theoretical knowledge (topics)

Table 2.

Overview of skills (theoretical and practical) based on consensus between the committee members