

# Allergy Practice Worldwide

## A Report by the World Allergy Organization Specialty and Training Council

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Allergic diseases constitute the most common causes of chronic illness in developed countries and incidences are rising in developing countries. It has been proposed that there is a worldwide epidemic of allergic diseases which is likely to be a consequence of the changing environment and improved general health, superimposed on a range of genetic susceptibilities. Therefore, the treatment of allergy should have high priority in most countries. However, around the world, allergy practice and so-called "allergy care pathways" differ enormously. There is a need for improving patient care, including better training for undergraduate medical students, primary care physicians and generalists, as well as ensuring that system specialists, who are likely to be dealing with allergic patients, have a higher level of training. Furthermore, there should be a sufficient number of specialist (tertiary) care centers in each country that are able to set the standards, advance research, organize training at a local level, and support secondary and primary care by establishing appropriate networks.

**Keywords:** allergy, standard of care, international, survey, training

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Allergic diseases constitute the most common causes of chronic illness in developed countries. Although rates may appear to be lower in developing countries, wherever prevalence studies have been conducted there is evidence of a steady increase over time in the proportion of populations suffering from allergies [1–7]. It has been proposed that there is a worldwide epidemic of allergic diseases which is likely to be a consequence of the changing environment and improved general health, superimposed on a range of genetic susceptibilities. Therefore, the treatment of allergy should have high priority in most countries, and the specialty of allergy should constitute an important branch of medicine.

In order properly to treat the large number of patients with allergic diseases, there needs to be a highly trained workforce specifically competent to handle their problems. However, around the world, allergy practice differs enormously. For some countries it does not even exist, either as a specialty or sub-specialty. So-called "allergy care pathways" also differ enormously, resulting in allergy patients being referred for care to organ-based specialists, clinical immunologists, or generalists.

The World Allergy Organization (WAO) is a global federation representing 74 regional and national allergy and clinical immunology societies. WAO exists to build a global alliance to advance excellence in clinical care, research, education, and training. WAO supports the rights of individuals with allergies worldwide to be seen by trained and certified allergists and for children to be seen by pediatricians with appropriate allergy training. To advance these objectives, the Allergy Specialty and Training Council was established to define the global outreach of, and need for, the specialty of allergy and clinical immunology. The Council's aim is to strengthen the specialty by providing guidance on training standards and certification requirements and to assist in the development of allergy training and accreditation programs.

The Council's first task was to define the current state of allergy training and services in the countries represented within the organization. A survey was sent to all WAO national society member organizations to obtain their subjective view of the state of the specialty of allergy within their countries. The questions were completed by allergists knowledgeable about their own countries, but in some countries the data were based on impressions rather than on published data. Some of the responses should be interpreted with caution, in that they represent the perspective of practicing allergists who may or may not have had access to accurate data. Nevertheless, the returns have provided a qualitative evaluation that will aid WAO in directing its energies to supporting the development of the specialty in collaboration with national organizations, to ensure that in the future patients suffering from allergic disorders receive a high standard of care.

**TABLE 1**  
SURVEY RESPONSES RECEIVED

Argentina	Edgardo Jares	Argentine Association of Allergy and Clinical Immunology
Bangladesh	Asif Mujtaba Mahmud	Bangladesh Society of Allergy and Immunology
Belgium	Wim Stevens	Belgian Society of Allergy and Clinical Immunology
Bulgaria	Vasil Dimitrov	Bulgarian National Society of Allergology
Colombia	Luis Caraballo	Colombian Association of Allergy, Asthma and Immunology
Czech Republic	Vit Petru	Czech Society of Allergology and Clinical Immunology
Denmark	Ronald Dahl	Danish Society of Allergology
Ecuador	Manuel Viteri-Acaiturri	Ecuadorian Society of Allergy and Immunology
Finland	Iikka Annila	Finnish Society of Allergology and Immunology
France	Daniel Vervloet	French Society of Allergology and Clinical Immunology
Germany	Gerhard Schultze-Werninghaus	German Society of Allergology and Clinical Immunology
Greece	Dimitrios Papaioannou	Hellenic Society of Allergy and Clinical Immunology
Hungary	Kristof Nekam	Hungarian Society of Allergology and Clinical Immunology
Israel	Meir Shalit	Israel Society of Allergy and Clinical Immunology
Italy	Sergio del Giacco	Italian Society of Allergology and Clinical Immunology
Japan	Yoichi Kohno	Japanese Society of Allergology
Lebanon	Fares Zaitoun	Lebanese Society of Allergy and Immunology
Malaysia	Ranbir Kaulsaly	Malaysian Society of Allergy and Immunology
Mongolia	Munkhbayarlah Sonomjamts	Mongolian Society of Allergology
The Netherlands	Anthony Dubois	Netherlands Society of Allergology
Philippines	Madeleine Sumpaico	Philippine Society of Allergy, Asthma and Immunology
Portugal	Celso Perreira/Angela Gaspar	Portuguese Society of Allergology and Clinical Immunology
Romania	Radu Jeana-Rodica	Romanian Society of Allergology and Clinical Immunology
Serbia/Montenegro	Vojislav Djuric	Association for Allergy and Immunology of Serbia and Montenegro
South Africa	Cas Motala and Paul Potter	Allergy Society of South Africa
Sweden	Mona Palmqvist	Swedish Association of Allergology
Switzerland	Urli Müller, Andreas Bircher	Swiss Society for Allergology and Immunology
Thailand	Pakit Vichyanond	Allergy and Immunology Society of Thailand
Turkey	Sevim Bavbek	Turkish National Society of Allergy and Clinical Immunology
United Kingdom	Chris Corrigan	British Society for Allergy and Clinical Immunology
Ukraine	Lyudmyla Yashyna	Ukrainian Association of Allergologists and Immunology
USA (AAAAI)	Lanny Rosenwasser	American Academy of Allergy, Asthma and Immunology
USA (ACAAI)	Michael Blaiss	American College of Allergy, Asthma and Immunology
Venezuela	Mario Sanchez-Borges	Venezuelan Society of Allergy, Asthma and Immunology

## Methods

Each WAO member society was sent a questionnaire soliciting general information about the country's population and the pattern of allergy services within the country. It requested information about the form of training and certification for adult and pediatric practice. Some information was obtained on care pathways in relation to specific allergic disorders.

Questionnaires were sent to 61 national member organizations. Thirty-four responses were received, representing 33 countries (see Table 1). A number of respondents were unable to provide information on all questions. While the data solicited has not been cross-checked by reference to external published information on exact population figures and numbers of allergists in each country, it was decided to compile a preliminary report on the data received in order to give a broad indication of

the current state of allergy services. Some of the highly populated regions of the world are not represented within this report, such as China, India, and Indonesia. Additional information on numbers of trained allergists was obtained from a regional survey completed in 2005 by the Latin American Society of Allergy, Asthma and Immunology, and from the WAO Emerging Societies Meeting held in Russia in 2004.

## Results

The total population of the world represented by the returns is 1.39 billion, with a total world population in 2000 of 6.1 billion. The prevalence rates for allergy in the countries where physicians responded to the survey ranged from 7.5% to 40%, suggesting an average mean of 22% across the populations sur-

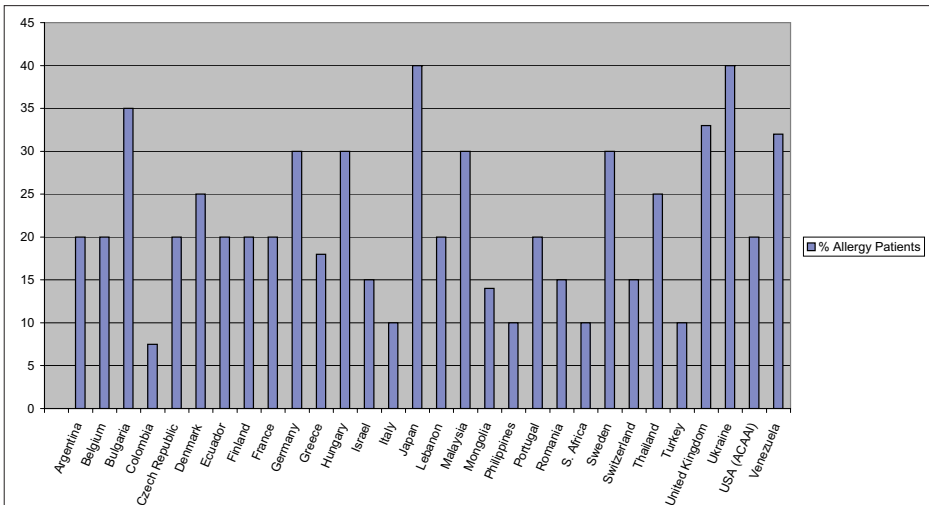


Figure 1. Estimated percentage of allergy patients per country surveyed.

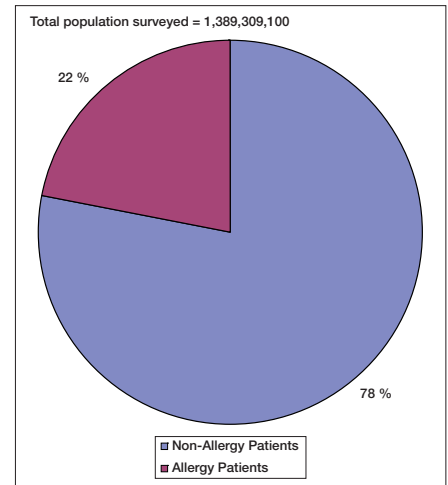


Figure 2. Allergy patients in the total population surveyed.

veyed (see Figures 1 and 2). However, these two extreme figures were significant outliers. The overwhelming majority of countries reported incidence rates between 15% and 35% (22 of the 30 countries that gave relevant figures). The countries reporting the lowest rates were Colombia, Italy, the Philippines, South Africa (although rates are rapidly increasing in South Africa, particularly with the migration of rural populations to urban areas [8]), and Turkey. The highest rates were from Ukraine, Japan, Bulgaria, Sweden, and the United Kingdom. While some of the figures quoted accurately reflect output from large prevalence studies, such as the International Study of Asthma and Allergies in Childhood (ISAAC), others show discrepancies with published findings. This may represent a misunderstanding of whether the question about allergy patients related to the percentage of the population with allergic sensitization, as distinct from allergic disease. The figures quoted for individual atopic illnesses much more clearly reflected published figures, but were only elaborated by a minority of respondents.

The number of certified allergists in each country varied enormously from zero in Bangladesh to 5,000 in Germany. Based on those countries that had at least 1 certified allergist, as was the case in Malaysia, the number of allergists per head of the population ranged from 1:25 million in Malaysia to 1:16,000 in Germany (see Table 2). Twenty-three out of the 30 countries giving information had some type of formal certification procedure, with a mixture of certification either in allergy alone, or combined as allergy and clinical immunology. Where allergy and clinical immunology were combined, the responsibilities of the certified clinicians included autoimmune disease and might also include infectious diseases, such as HIV, and primary immune deficiency. Additional information from the WAO Emerging Societies Meeting held with representatives from member countries of the Commonwealth of Independent States (CIS) indicates that allergy is a specialty, or a sub-specialty of internal medicine and/or pediatrics in Belarus, Tajikistan, Moldova, Azerbaijan, Russia, Turkmenistan, and Armenia, with formal certification reported by all countries except Tajikistan.

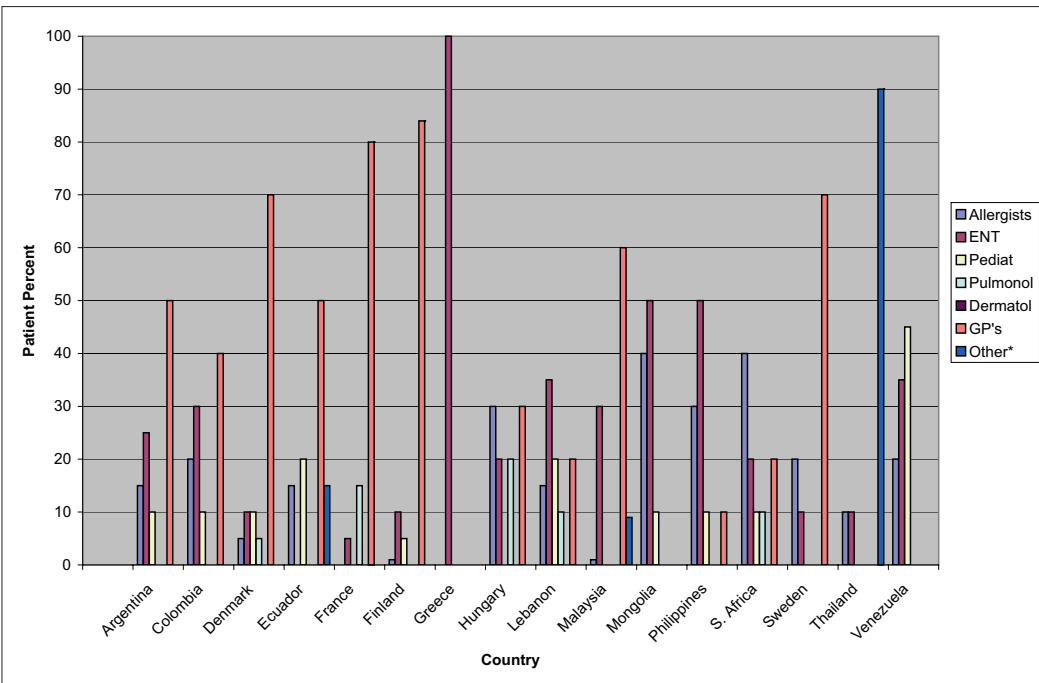
It is clear that allergy constitutes a component of postgraduate training in other specialties. In 16 countries, allergy is taught as part of respiratory medicine, in 15 as part of pediatrics, in 12 as part of dermatology, in 14 as part of otorhinolaryngology (ENT), and in 14 as part of internal medicine. In only 1 country was allergy part of the training for general practice, and in 1 country it was part of gastroenterology. These latter two figures are perhaps the most remarkable. Given the prevalence of allergy, the need to include allergy training in primary care training programs would appear to be overwhelming. Furthermore, food allergy constitutes a significant percentage of a gastroenterologist's clinical work. This information alone indicates the desperate need to improve training and expertise in order to ensure a good standard of care for patients with allergy. South Africa does not have a formal system for certification of allergists, but local allergists have taken a pragmatic approach to the need to create a level of competence amongst the clinicians who are the primary interface with allergy patients by creating an allergy diploma course. Points are accrued for attending specialist clinics, conferences, and participation in a wide range of educational activities related to allergy, and an examination for the award of the Diploma can be taken when 1,000 points have been attained.

With regard to specific clinical allergic problems, it is likely that the allergist may not be the primary referral in the overwhelming majority of countries. For allergic rhinitis, there is a rank order of the type of doctor most likely to be managing the patient in many countries; the most likely is the primary care doctor, and if referral occurs, it may be to an otorhinolaryngology specialist before the allergist (see Figure 3). For asthma, the most likely clinician is the primary care physician or internist followed by the pulmonologist, and then pediatricians, and only fifth on the list, the allergist. For eczema, the dermatologist is the most likely to be managing the disease, followed by general practitioner, pediatrician, and then allergist. For urticaria and angioedema, again, the primary care physician or internist is primarily involved, followed by the dermatologist, and fourthly the allergist. For sinusitis it is primary care/internal medicine, followed by ENT, and then pediatrics, and finally the allergist. It

**TABLE 2**  
ALLERGISTS PER HEAD OF THE POPULATION

Country	Allergists per head of the population	Country	Allergists per head of the population	Country	Allergists per head of the population
Argentina	1:46,353	Honduras*	1:1,380,000	Romania	1:197,577
Belgium	1:900,000	Hungary	1:50,000	Serbia/Montenegro	1:500,000
Brazil*	1:100,000	Israel	1:52,000	South Africa	1:1,666,666
Bulgaria	1:106,250	Italy	1:43,200	Spain*	1:44,000
Chile*	1:500,000	Japan	1:61,200	Sweden	1:42,857
Colombia	1:571,428	Lebanon	1:121,000	Switzerland	1:36,649
Czech Republic	1:17,543	Malaysia	1:25,000,000	Thailand	1:1,000,000
Denmark	1:135,000	Mexico*	1:175,000	Turkey	1:1,076,923
Ecuador	1:2,400,000	Mongolia	1:2,250,001	United Kingdom	1:1,083,333
El Salvador*	1:470,000	Paraguay*	1:200,000	Ukraine	1:94,441
Finland	1:94,545	Peru*	1:1,360,000	Uruguay	1:110,000
France	1:1,240,000	Philippines	1:66,115	USA (ACAAI)	1:65,546
Germany	1:16,000	Portugal	1:63,334	Venezuela	1:109,090
Greece	1:183,333				

\* Figures from LSAI Survey



**Figure 3.** Who sees rhinitis patients in individual countries?

is remarkable that these figures seem to be irrespective of the number of certified allergists in the country. Even in Germany with a very large number of allergists representing a large percentage of the total number of physicians in the country, it is the internists, systems specialists, and pediatricians who manage asthma rather than allergists.

Immunotherapy is performed in all but one country that responded (see Table 3) and is predominantly handled either by a specialist alone or by the specialist in collaboration with a primary care physician.

While the majority of countries have pediatricians who specialize in allergy, only 8 reported certified training programs. Remarkably, from a pediatrician's perspective, in the majority of countries, children with allergic problems could be seen by either a pediatrician or an adult specialist, whether or not the specialist had allergy or organ-based specialty training. Only 9 countries reported that children with allergic problems will be seen by someone with appropriate pediatric training (see Table 4).

**TABLE 3**  
IMMUNOTHERAPY PRACTICE

Country	Is immunotherapy performed?	By specialists only	By specialists and GPs	By untrained practitioners
Argentina	✓	✓		
Bangladesh	Very rarely			✓
Belgium	✓	✓		
Bulgaria	✓	✓		
Colombia	✓	✓		
Czech Republic	Not recorded			
Denmark	✓		✓	
Ecuador	✓		✓	
Finland	✓		✓	
France	✓		✓*	
Germany	✓		✓	
Greece	✓			
Hungary	✓	✓		
Israel	✓		✓	
Italy	✓		✓	
Japan	✓		✓	
Lebanon	✓		✓	
Malaysia	✓	✓		
Mongolia	No			
The Netherlands	Not recorded			
Philippines	Not recorded			
Portugal	✓	✓		
Romania	✓	✓		
Serbia/Montenegro	✓	✓		
South Africa	✓			
Sweden	✓	✓	✓	
Switzerland	✓			
Thailand	✓	✓	✓	
Turkey	✓			
United Kingdom	✓	✓		
Ukraine	✓	✓		
USA (ACAAI)	✓	✓		
Venezuela	✓	✓		

\*France: maintenance therapy by GPs

## Discussion

There is overwhelming evidence that allergic diseases constitute the most common cause of chronic problems in developed countries. These observations are consistent with other global surveys [1–7]. Despite these remarkable figures, health services worldwide have failed to respond to the need to help allergic patients with a change in provision of specialists suitable to handle this ever increasing problem. Even in Germany, which has a high rate of allergy training, studies of health care utilization suggest that the system is under substantial strain, with half of children with asthma symptoms making unplanned visits to health

care facilities [9]. Similar figures come from the USA [10]. Indeed, studies for the USA have shown that emergency department visits and hospital admissions account for around three quarters of the direct costs of asthma [11]. One might have expected that such figures would have prompted health care planners to evolve a system to improve this state of affairs; that it has not occurred has prompted a number of responses from the profession. In the UK, the Royal College of Physicians published a report in 2003, entitled *Allergy: The unmet need* [12]. This report subsequently led to a UK parliamentary response with publication of a document *The provision of allergy services* [13]. Sadly, hitherto this has not led to any changes in health care policies. It is a remarkable paradox that in the UK, a country which has an outstanding record in allergy research, there is a remark-

**TABLE 4**  
PEDIATRIC ALLERGY PRACTICE

Country	No. of pediatricians specializing in allergy	Is pediatric allergy a certified specialty?	Pediatric referrals to allergists	Pediatric referrals to organ-based physicians
	actual/estimated	Yes/No		
Argentina	160	No	B	P
Bangladesh		No	B	B
Belgium	5	No	B	B
Bulgaria	25	No	B	P
Colombia	7	No	B	B
Czech Republic	180	Not recorded	Not recorded	Not recorded
Denmark	30		P	P
Ecuador	5 (accredited overseas)	No	B	P
Finland	35	Yes, until 2005	P	P
France	20	No	B	B
Germany	11000*	No	B	B
Greece		No	A	B
Hungary	60	No	P	B
Israel	Not known	Yes	P	P
Italy	Not known	Not recorded	P	B
Japan	253	No	B	N
Lebanon	3–5	Yes	B	B
Malaysia	0	No	N	A
Mongolia	3	No	B	P
The Netherlands	Not recorded	Not recorded	Not recorded	Not recorded
Philippines	49	Not recorded	Not recorded	Not recorded
Portugal		No	B	B
Romania	110**		Not recorded	Not recorded
Serbia/Montenegro		No	P	P
South Africa	20	No	P	P
Sweden	10–20	Yes	P	P
Switzerland	20	No	B	B
Thailand	20	Yes	N	P
Turkey	3–4	Yes	P	P
United Kingdom	5	No	N	P
Ukraine	364	Yes	B	B
USA (ACAAI)	2590	No	B	P
Venezuela	50–60	No	B	N

\*In Germany, all pediatricians will see some allergy, hence the high figure of 11,000.

\*\*In Romania, the specialty of allergy and clinical immunology training program covers adult and pediatric allergy.

A = adult; P = pediatric; B = both; N = neither

ably poor clinical service for allergy sufferers [14]. These depressing facts appear to be reflected in all the countries surveyed and highlight the very pressing need for WAO to support national societies in furthering the interests of allergy sufferers.

In the absence of appropriately trained specialists, patients are predominantly seen by relatively poorly trained or allergy-naïve system specialists, generalists, or primary care physicians. It is not surprising, therefore, that morbidity statistics

are unacceptably high and health costs considerable. It is likely that a significant number of individuals with allergic problems are not seen by any physician, but either tolerate their symptoms or purchase over-the-counter remedies. Where the patient is seen by a non-allergist, they are presumably primarily being given pharmacotherapy with little probability of having appropriate triggers of their disease identified. In some countries, patients and their families resort to a range of complementary diagnostic and therapeutic procedures of dubious provenance.

Many allergy sufferers have more than one manifestation of their disease. Thus, the overwhelming majority of patients with asthma also have allergic rhinitis and up to 40% have had or continue to have eczema. Similarly, sinusitis occurs at an alarmingly high rate in asthmatics, especially in the more severely affected asthmatic. This constellation of allergic manifestations often means that patients are required to see 2 or 3 different system specialists in order to handle the range of their allergic problems. This inefficiency increases health care costs considerably [15]. The one-stop service provided by an allergist should certainly reduce these costs, although there are no data available to confirm this suspicion. Furthermore, there are significant dangers implicit in a lack of coordination of treatment between the different system specialties. One possible consequence of multiple physicians caring for individual aspects of allergic diseases is over-prescription of topical steroids to the skin, nose, and lungs with consequent potential for major unwanted effects. Over-reliance on pharmacotherapy without attempting to identify potentially avoidable triggers of the disease is likely to increase health care costs, morbidity, and potential for side effects.

The situation for pediatrics appears even more depressing. The number of countries with specific specialization in pediatric allergy and appropriate certification of training is small, and children with allergic diseases may be seen by adult physicians, primary care physicians, or general pediatricians. All countries would assert the importance of children with medical problems being seen by an appropriately trained pediatrician. The special needs of children can only be addressed by someone with complete pediatric training. However, in addition to this, there must be appropriate specialty training within pediatrics so that the specific problem is handled effectively. This is well iterated in a recently published document from the UK on a national service framework for children, young people and maternity services: "All children and young people who are ill or thought to be ill or injured, should have timely access to appropriate advice and to effective services which address their health, social, educational and emotional needs throughout the period of their illness" [16]. Implicit in this is that children need to be cared for by people with appropriate training and understanding of their specific needs.

It is important to appreciate the shortcomings of this survey. It did not include full information from some of the most populous areas of the world including Brazil, India, China, Russia, and Indonesia, and responses were not received from some WAO Member Societies in Westernized countries where allergy rates are known to be high. It has not been possible to substantiate all the figures quoted by individuals returning the questionnaire and in some cases, it is clear that the estimates do not match up with published data. The survey provides the subjective impressions of allergy specialists about the situation in their countries, and the data must be viewed as qualitative rather than accurately quantitative. There is, however, no doubting the fact that the prevalence of allergic disease is not matched by an appropriate development of clinical services to support sufferers. Even in countries with a well-developed system of training, there are still significant problems of morbidity and economic health costs accruing as a consequence of in-

adequacies in the care of patients [17]. WAO is in a position to provide strong support to all national organizations attempting to improve this state of affairs. There is the opportunity to define the levels of competence required to handle allergic problems and then to define the training requirements at the various levels of care. Given the prevalence of allergic problems, much attention must focus on training undergraduate medical students, primary care physicians and generalists, as well as ensuring that system specialists, who are likely to be dealing with allergic patients, have a higher level of training. Finally there must be a sufficient number of specialist (tertiary) care centers in each country that are able to set the standards, advance research, organize training at a local level, and support secondary and primary care by establishing appropriate networks.

## References

- [1] ISAAC Steering Committee. Worldwide variation in prevalence of symptoms of asthma, allergic rhinoconjunctivitis and atopic eczema: ISAAC. *Lancet* 1998; 351:1225–1232
- [2] European Community Respiratory Health Survey. Variations in the prevalence of respiratory symptoms, self reported asthma attacks and use of asthma medication in the European community respiratory health survey ECRHS. *Eur Respir J* 1996; 9:687–695
- [3] Grundy J, Matthews S, Bateman B, Dean T, Arshad, SH. Rising prevalence of allergy to peanut in children: Data from two sequential cohorts. *J Allergy Clin Immunol* 2002; 110:784–789
- [4] Sheikh A, Alves B. Hospital admissions for anaphylaxis: Time trend study. *BMJ* 2000; 320:1441
- [5] Garabrant DH, Schweitzer S. Epidemiology of latex sensitisation and allergies in health care workers. *J Allergy Clin Immunol* 2002; 110:582–595
- [6] Demoly P, Bousquet J. Epidemiology of drug allergy. *Curr Opin Allergy Clin Immunol* 2001; 1:305–310
- [7] Bousquet J. Allergy as a global problem: Think globally act globally. *Allergy* 2000; 57:661–662
- [8] Steinman H, Donson H, Kawalski, M Toerien A, Potter PC. Bronchial hyper-responsiveness in urban, periurban and rural South African children. *Pediatr Allergy Immunol* 2003; 14:383–393
- [9] Maziak W, von Mutius E, Keil U, Hirsch T, Leupold W, Rzehak P, Behrens T, Weiland SK. Predictors of health care utilization of children with asthma in the community. *Pediatr Allergy Immunol* 2004;14:166–171
- [10] Glaxo Wellcome Inc. *Asthma in America national survey*. Washington DC: Glaxo Wellcome Inc., 1998
- [11] Weiss KB, Gurgun PJ, Hogson TA. An economic evaluation of asthma in the United States. *New Engl J Med* 1992; 326:862–866
- [12] Royal College of Physicians Working Party on the provision of allergy services in the UK. *Allergy: The unmet need. A blueprint for better patient care*. London: Royal College of Physicians, 2003
- [13] House of Commons Health Committee. *HC 696-I The Provision of Allergy Services*. London: The Stationery Office, 2004
- [14] Warner JO. The allergy paradox. *Pediatr Allergy Immunol* 2004; 15:287–288
- [15] Grupp-Phelan J, Lozars P, Fishman P. Health care utilization and cost in children with asthma and selected comorbidities. *J Asthma* 2001; 38:363–373
- [16] National Service Framework for Children, Young People and Maternity Services. London: Department of Health Publications, 2004
- [17] van den Akker-van Marle ME, Bruil J, Detmar SB. Evaluation of cost disease: Assessing the burden to society of asthma in children in the European Union. *Allergy* 2005; 60:140–149

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