



# Diversity of Pediatric Workforce and Education in 2012 in Europe: A Need for Unifying Concepts or Accepting Enjoyable Differences?

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**Objective** To evaluate differences in child health care service delivery in Europe based on comparisons across health care systems active in European nations.

**Study design** A survey involved experts in child health care of 40 national pediatric societies belonging both to European Union and non-European Union member countries. The study investigated which type of health care provider cared for children in 3 different age groups and the pediatric training and education of this workforce.

**Results** In 24 of 36 countries 70%-100% of children (0-5 years) were cared for by primary care pediatricians. In 12 of 36 of countries, general practitioners (GPs) provided health care to more than 60% of young children. The median percentage of children receiving primary health care by pediatricians was 80% in age group 0-5 years, 50% in age group 6-11, and 25% in children >11 years of age. Postgraduate training in pediatrics ranged from 2 to 6 years. A special primary pediatric care track during general training was offered in 52% of the countries. One-quarter (9/40) of the countries reported a steady state of the numbers of pediatricians, and in one-quarter (11/40) the number of pediatricians was increasing; one-half (20/40) of the countries reported a decreasing number of pediatricians, mostly in those where public health was changing from pediatric to GP systems for primary care.

**Conclusions** An assessment on the variations in workforce and pediatric training systems is needed in all European nations, using the best possible evidence to determine the ideal skill mix between pediatricians and GPs. (*J Pediatr* 2015;167:471-6).

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From the perspective of understanding how to improve child health care systems, Europe's pediatrics community is unaware of the diversity of provision of primary care offered in 53 different countries and is lacking a comprehensive understanding how this diversity impacts health outcomes.<sup>1</sup> Neither the workforce resources nor the training capacities and confidence in pediatrics are fully understood.<sup>2</sup> After the fall of the Berlin wall in 1990, health care services in general changed in several East European countries from the former Soviet Union system to a Western-orientated structure. After the 2008 financial crisis, many East European countries started discussing changes in existing health care systems, essentially as part of cost containment.<sup>3,4</sup>

Differences in outcome of child health care have been reported constantly for European countries<sup>1</sup>; however, the underlying "root-cause-effect-outcome relationships" are mostly unclear for many diseases.<sup>5</sup> The existing inequalities in the health status of children and adolescents within Europe are unacceptable and therefore should be of common concern to all pediatric societies and, above all, to politicians.<sup>1,6</sup> Unfortunately, the health of children and health care systems for children are seldom discussed by others who are not physicians. In addition, learning across borders about the inequity of child health care services has been hampered by the gap existing between public health research and clinical research as well as by the lack of data.<sup>7</sup> Children and young people often are considered one of the healthiest groups in the population, especially compared with the elderly population, and thereby not viewed as a priority for the health system of country. However, many diseases and conditions of adults and elderly people originate in early life and adoption of the maternal and child health life course model would suggest that investment in services for children would reap benefits in adulthood.<sup>8</sup>

The Strategic Pediatric Alliance (SPA)<sup>9</sup> is a consortium of pediatric associations, societies, and confederations lead by the European Academy of Paediatrics, European Confederation of Primary Care Paediatricians, and the European

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EPA	European Paediatric Association
EU	European Union
GP	General practitioner
PPC	Primary pediatric care
SPA	Strategic Pediatric Alliance

Paediatric Association (EPA), whose intent is to strengthen the individual efforts of pediatric European professional health care organizations to collectively work more effectively to influence the opinions of governmental administrators, politicians, and relevant European Union (EU) institutions on aspects related to the well-being and services for children. Recent surveys conducted by the SPA have been aimed at identifying the existing pediatric health care systems in 46 European countries, which comprise a population of more than 200 million children. On the basis of analyses of these surveys, SPA aims to improve future services by understanding variations and translating research into practice with a focus on “learning across borders and making a difference.”

The intention of this article is to reveal the spectrum of country profiles on child health and national health care systems and policies concerning age-dependent primary child health care as well as to present information regarding pediatric education and pediatric workforce in Europe as of 2012. The data presented are intended to examine different national approaches to the organization and delivery of child health services and also to provide the basis for comparative analyses.

## Methods

In 2012, a 2-part questionnaire was mailed to the Presidents or leading experts in primary child health care of each of the 42 national pediatric societies belonging both to EU ( $n = 27$ ) and to European non-EU-member countries ( $n = 15$ ). A letter accompanied the questionnaire to explain not only the purpose of the project but also the definitions of specific terms used to assure consistent understanding of what was being asked. Part One of the questionnaire contained questions related to what type of health care provider (pediatrician, general practitioner [GP]/family practitioner, or other) cared for children in the 3 different age groups considered (birth to 5.99 years, 6-11 years, and older than 12 years), and 10 specific questions regarding pediatric education and pediatric workforce (**Appendix**; available at [www.jpeds.com](http://www.jpeds.com)). Part Two included questions on emerging medical and social conditions related for instance to care of children with chronic medical/health conditions, “new” types of families, and new “minority” immigrant populations. This article will focus on data from Part One.

## Results

Responses to the questionnaire were received from 40 of 42 countries (95% response rate); no data were available from Denmark and Montenegro. Results reported are for these 40 countries unless otherwise specified. Fifty-three percent of countries defined childhood until 18 years of age, 1 country up to 11, 3 up to 14, 4 up to 15, 6 up to 16, and 1 up to 17 years of age. Two countries reported the upper age limit for children in pediatric services to be 19 and 1 country 26 years.

## Delivery of Primary Child Health Care

The proportion of children receiving first access care in 2012 by pediatricians varied according to countries and according to the age of patients (**Figure 1**). In children aged birth to 5.99 years, two-thirds of the countries (24/36) reported that 70%-100% of children were cared by primary care pediatricians. One-third (12/36) of countries reported to offer health care to 60%-100% of young children via a GP.

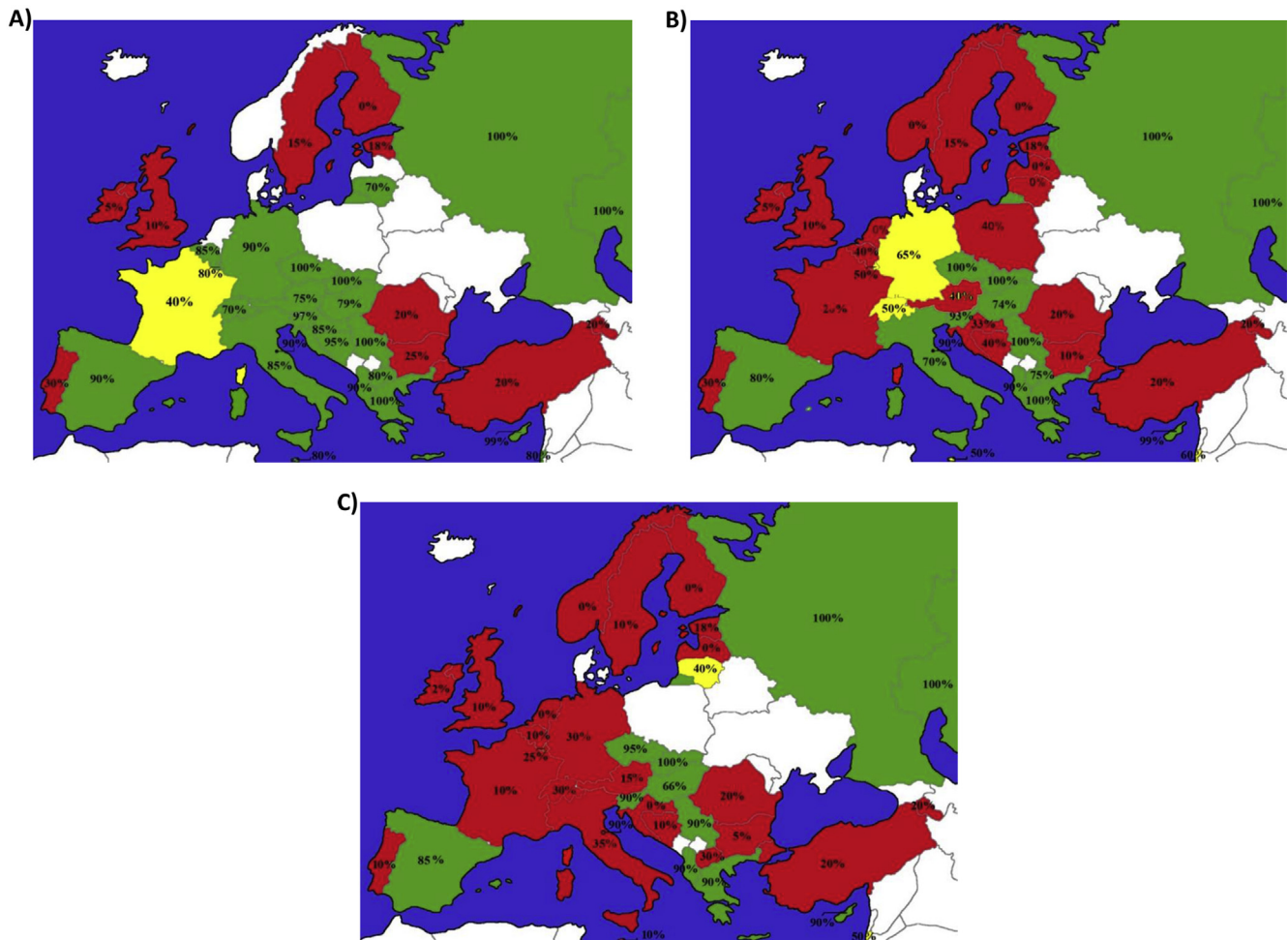
The median percentage of children receiving primary health care by pediatricians declined from 80% in age group 0-5 years to 50% in age group 6-11 years and to 25% in young people 12 years and older. The proportion of children switching from primary care pediatricians to GPs increased with age in one-half of those countries providing a primary pediatric care (PPC) system for infants and preschool children, and in the other one-half of countries the older children kept being followed by pediatricians. Analyzing the proportion of children seen by pediatricians according to the age groups reveals an increasing number of countries reporting an age dependent switch from pediatric to GP care (**Figure 2, A and B**).

Twelve countries reported to have national discussions of changing from a pediatrician based primary child health care to a GP/family physician based system (**Figure 2, C**). Different reasons were reported, including economical in 9 countries, political in 6, professional power in 4, historical aspects in 2, and geographical in 1.

## Pediatric Education and Workforce

The number of years in pediatric training to become an accredited pediatrician after graduating from medical school ranged from 2 to 6 years (**Table**; available at [www.jpeds.com](http://www.jpeds.com)). The majority of countries had a 4- or 5-year training period. Those countries with a 2- or 3-year training period had specialized pediatric faculties that were attended by students from the beginning of their medical studies, which meant that they had undergone more extensive undergraduate training in pediatrics. Trainees in those countries with a 6-year training period had to spend up to a year in a medical-related specialty other than pediatrics. No data are available to answer the question of how many years the trained pediatricians had to spend before or after specialization as a generalist, eg, in remote areas of their country. Thus, the mean age for starting work as a qualified pediatrician could not be analyzed in the different countries.

The recommendation of the Union Européenne des Médecins Spécialistes to have a 3-year common trunk was accepted by 20 of 38 countries; however, it was not possible to give the percentage of national training programs putting the common trunk into practice for individual countries. The median percentage of practical and theoretical training was 70% and 30%, respectively. In-training examinations were reported by 27 of 36 reporting countries. Eleven of 37 countries did not perform a board examination after the full training period. A special PPC track was defined as general pediatric care, first access care, preventive care, health



**Figure 1.** Proportion of children receiving first access care by pediatricians in children ages **A**, 0-5 years, **B**, 6-11 years, and **C**, 12-18 years. *Green*, countries with more than 70% of children seen by pediatricians. *Yellow*, between 30% and 70%. *Red*, less than 30%. *White*, no data available.

education, community care, rehabilitative care, and coordination of all care givers. Such a track in PPC was offered in 52% of the countries. Training in pediatric subspecialty care—such as pediatric cardiology—occurred after the common trunk in 78% of countries and was thus given more often than training in PPC.

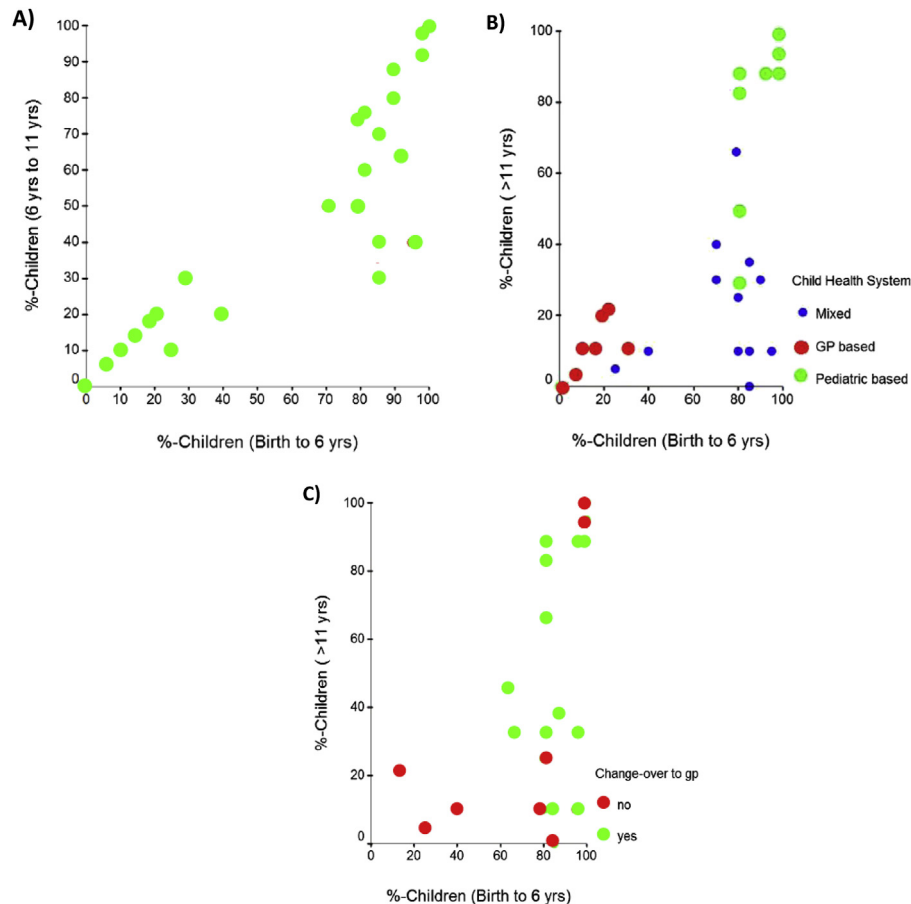
Concerning the future pediatric workforce, based on the number of pediatricians being trained and those retiring, one-quarter (9/40) of the countries reported to have a stable number of pediatricians, whereas one-quarter (11/40) reported increased numbers and one-half (20/40) the countries had decreasing numbers of pediatricians, the latter mainly in countries with a change from pediatric to the GP system of PPC. The total number of pediatricians reported ranged from 49 (Luxemburg) to 67 000 (Russia) per country. The ratio of children younger than 15 years of age per one pediatrician ranged from one pediatrician per 408 children to 1 per 11 250 children (mean = 1 per 1707; median = 1 per 1026). The number of annually trained pediatricians per one million child population ranged from 0 to 130 (Figure 3). The annual

percent of trained pediatricians ranged from 0.5% of all practicing pediatricians to a maximum of 19%. The median annual percentage of newly trained pediatricians was 4.7%.

## Discussion

There is an evidence gap to understand why morbidity and mortality varies across the nations of Europe.<sup>1</sup> The culture of learning across borders was highlighted 20 years ago,<sup>10</sup> and it is unclear whether the expansion of the EU from 15 to 28 member countries will change the situation. Our data support previous findings that there are still very marked differences in child health care systems across European countries. Furthermore, one-half of the countries reported a decrease in numbers of pediatricians and an age-dependent decrease of the proportion of children receiving primary care by pediatricians.

Putting the management of pediatric workforce and its impact on health outcomes for European children at the center of our survey may be criticized because it is not only

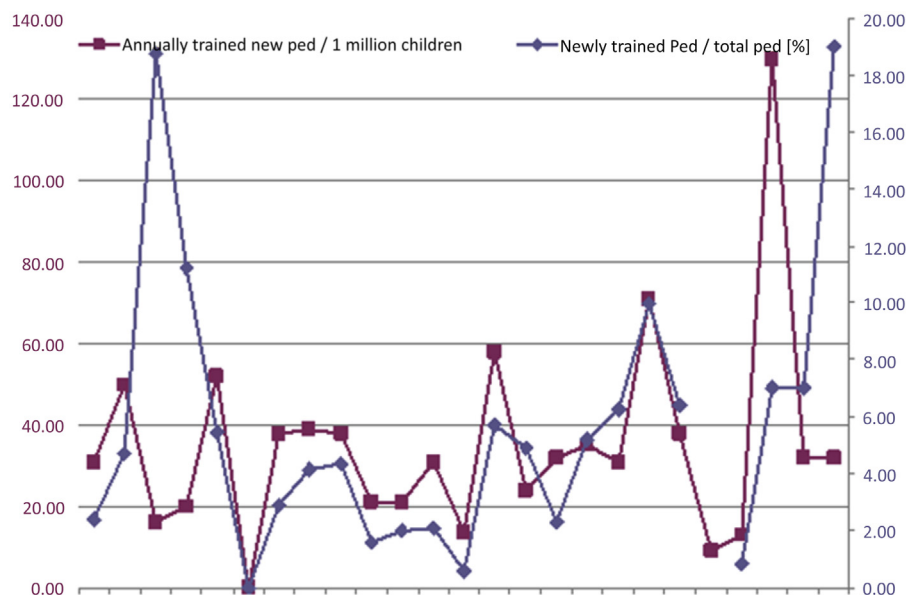


**Figure 2.** **A**, Proportion of children receiving primary care by pediatricians in European countries showing an age-dependent shift to care provided by GPs. Each dot represents at least one country. **B**, Proportion of children receiving primary care by pediatricians in European countries showing a shift to care provided by GPs in 12-18 years old children according to previously defined primary health care systems.<sup>2</sup> **C**, Number of European countries discussing a switch from the pediatric system to the GP system of primary child health care. The **Figure** shows that not only those countries with a low proportion of school children ages 6-11 years receiving medical care by pediatricians will in the future offer primary care by GPs but also those countries with a high rate of PPC in children younger than 6 years of age.

pediatricians but also family physician/GPs and nurse practitioners who deliver primary care for children. Furthermore, there is evidence that multiprofessional teams covering different aspects of primary care may offer better safety, efficiency, and cost effectiveness than the traditional model of uniprofessional practice. In fact, recent data showed that the differentiation of management of PPC into 3 different systems—respectively a pediatric system, a GP/family physician system, and a mixed system with both systems coexisting—no longer reflects the reality of PPC in 2010 in Europe.<sup>1,2,11,12</sup> Although pediatricians and GPs were the main providers of first access care during day-time “office hours” in almost all European countries, multiprofessional teams with nurses were the main providers of emergency care on weekends and in the evening/overnight in 59% of 46 European countries (EPA survey 2009: data unpublished). Preventive care was offered by nurses in 22% of countries, by GPs in 22%, and by pediatricians in 56%. Health care at

schools was offered by nurses in 41% of countries, by pediatricians in 43%, and by GPs in 16% of countries (EPA survey 2009: data unpublished).

This article does not want to contribute to the long-standing discussion in academic literature<sup>2,5</sup> as to who is the preferred physician for treating children in the community but rather to focus on the competencies required for the different elements of PPC. Our data clearly show that younger children were treated more often by pediatricians than by family physicians. Although adolescence medicine has become a subspecialization in some European countries (with accreditation in only one country), there seems to be an ongoing tendency that older children switch from pediatric to GP offices; the question is what age is the most appropriate. This practice will be influenced by national regulations limiting pediatric care to the age of 11 years in one country and to 14-16 years in 13 other countries. However, it also raises the question as to whether pediatricians are sufficiently confident to meet



**Figure 3.** Proportion of number of annually trained pediatricians in relation to 1 million child population and to the total number pediatricians (in %) according to different European countries.

the needs of adolescents whose medical needs are often related to psychosocial disorders and risk-taking behavior. Two of the most worrying findings of our survey were the reported data that pediatric training programs were lacking a specific primary care track in one-half of the countries and subspecialty tracks in one-quarter of reporting countries.

The Presidents of several national pediatric societies reported during a round table workshop in 2009 in Moscow that the mean age of practicing pediatricians had increased in recent years to such an extent that there may be an upcoming shortage of pediatricians within the next 10 years. Our database supports this assumption. The alarming signal is the fact that according to the numbers of newly qualified pediatricians in 2012, there seems to be no improvement in all those countries with a proportion of less than 3% newly trained pediatricians of all practicing pediatricians. Assuming that the mean duration of a pediatric working life is 30 years, there is a need to train 3.3% of all practicing pediatricians each year to maintain a steady state of pediatricians. This calculation does not include factors such as feminization of the workforce, part-time working, early retirement, changing specialties, and immigration, but does clearly indicate that countries with a percentage below 3% will have to rely on migrant pediatricians or on other health care givers, eg, GPs or children's nurses replacing the roles of pediatricians. It is understandable that this conclusion has raised considerable concern among parents and pediatricians.

Thus, the question remains how to develop and provide a sustainable service to children training a workforce that is competent to undertake the care expected of them by families. The principle of a child rights-based approach to health is the requirement that states are deemed subject to progressive realization of the right to health. State obligations fall

into three categories, namely obligations to: (1) respect, which requires states to refrain from interfering directly or indirectly with the right to health; (2) protect, which requires states to prevent third parties from interfering with the right to health; and (3) fulfill, which requires states to adopt appropriate legislative administrative, budgetary, judicial, informational, educational, promotional and other measures to fully realize the right to health.<sup>5</sup>

Children should be considered as a population group in their own right. Changing the existing health care systems merely as a means of cost containment should be discussed in an open, democratic way in society before any action is undertaken by governments or health service planners. There are certainly many more reasons than economic reasons why many European countries have diverging strategies to the organization of their health care systems for children and why they failed recently to standardize their child health care services within the EU and outside the EU according to the new needs.<sup>3,4</sup> Some Eastern European countries had been more or less forced for financial reasons to change their pediatric care system from a former Soviet Union pediatric care concept to a GP system.<sup>3,4</sup> However, the Presidents of national pediatric societies of 6 of these 8 Eastern countries reported to be unsatisfied with the newly created primary health care services for children, which is based upon a GP system (EPA survey 2009: data unpublished).

The Council of Europe guidelines on Child Friendly Health Care<sup>13</sup> proposed an approach to be adopted and adapted locally, that highlighted the importance of implementing best evidence, delivered by competent practitioners working in teams, to ensure all parts of the patient journey through health care systems were present and working well together. Primary care is best delivered by a team with the

experience and expertise to deliver all the constituent parts, which range from preventative care, through to urgent care and the management of long-term conditions.

In conclusion, there is an enormous diversity of child health care offered in European countries which appears to be based not on science but on historical factors. The range and quality care offered by pediatricians is endangered in some European countries. The crisis is not only caused by a switch from a pediatric to a GP health care system but also by a decreasing number of newly trained young pediatricians. It is unclear to what extent this holds true for only primary care pediatricians or also for pediatric subspecialists. There is also a lack of adequate training in primary care pediatrics in some countries; however, this situation seems to be even worse for GPs.<sup>14-16</sup>

Despite an overall decrease of mortality in children younger 14 years of age in Europe there is considerable concern about the fact that some countries did severely worse than others, irrespectively of their Gross National Product.<sup>1</sup> Future research should focus on the question whether this unacceptable variation could be improved by better organization of services and well trained teams of care givers including nurse practitioners, family physicians, and pediatricians, the latter functioning as coordinators of all care givers, and tackling social determinants and reducing inequalities as they have done throughout Scandinavia. ■

Acknowledgments available at [www.jpeds.com](http://www.jpeds.com)

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**A. General Information:**

**1) Compiler of Questionnaire:**

Name : \_\_\_\_\_ Country \_\_\_\_\_

Society Represented : \_\_\_\_\_ Position \_\_\_\_\_

Age:	Sex : ♂ <input type="checkbox"/> ♀ <input type="checkbox"/>	N° of yrs in practice;	As a: PC <input type="checkbox"/> Hosp <input type="checkbox"/> Univ <input type="checkbox"/>
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PC: Primary care; Hosp: Hospital based; Univ: University based

**2) Who cares for children in the following age groups and to what extent (approximate %)**

	Pre-schoolers (birth to 6yrs)			pre-adolescence (6 to 11 yrs)			Adolescents (≥ 12 years)			up to what age (yrs) is considered "paediatrics"
	Yes	No	approx %	Yes	No	approx %	Yes	No	approx %	
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		
Pediatrician:	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		
GP (or FP)	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		
Other (specify below*)	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		
*	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		
*	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		

**3)**

If in your country the Primary Care for children is Paediatrician based, is there any talk of a change-over to a General Practitioner/Family Physician - based system?	Yes <input type="checkbox"/>
	No <input type="checkbox"/>

**a)**

If answer to previous question is "Yes", Do you know the reason?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
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If above answer is "Yes", does the reason appear to be:

Historical <input type="checkbox"/>	Economical <input type="checkbox"/>	Political <input type="checkbox"/>	Professional power <input type="checkbox"/>	Geographical <input type="checkbox"/>	Other <input type="checkbox"/>
explain as best you can:					

**Appendix.** Part One questionnaire of a survey on child health care in Europe promoted by the SPA among experts of 42 National European Pediatric Societies and Associations. (Continues)



**B: Paediatric Education and Paediatric Work-Force (WF):**

1) How many years is paediatric training in your country?	3yrs <input type="checkbox"/> 4 yrs <input type="checkbox"/> 5 yrs <input type="checkbox"/> ≥6 yrs <input type="checkbox"/>
2) Does your country follow the UEMS-EAP recommendation of a 3yr common trunk?	Yes <input type="checkbox"/> No <input type="checkbox"/>
3) What percent of the training program is:  practical, hands-on work →  and theoretical work →	Practical: %  Theoretical: %
4) Do training programs in your country have In-Training* <b>formative*</b> exams?	Yes <input type="checkbox"/> No <input type="checkbox"/>
5) Do training programs in your country have a Final <u>National</u> <b>summative*</b> exams?	Yes <input type="checkbox"/> No <input type="checkbox"/>
6) Do training programs in your country have a specific " <b>primary care</b> " track?	Yes <input type="checkbox"/> No <input type="checkbox"/>
7) Do training program in your country have " <b>sub-specialty</b> " tracks?	Yes <input type="checkbox"/> No <input type="checkbox"/>
8) Are any paediatric sub-specialties recognized by your Government?  (if "yes", please list them in the section "Additional Comments" under the heading "B8")	Yes <input type="checkbox"/> No <input type="checkbox"/>
9) How many Paediatric physician are formed/year in your country	/yr
10) Based on the Number of paediatricians being formed and retiring each year, what does your country foresee, in the next 15 years, regarding the Paediatric Work Force	Increased <input type="checkbox"/> Decreased <input type="checkbox"/> Stable <input type="checkbox"/>

*\* Refer to following definitions.*

**In-Training examination:** A formative type of examination which serves as a self-evaluation allowing learners to identify strengths and weaknesses in the general knowledge of the specific discipline at the time of the examination and thus enable them to focus their personal study programs and provide direction for future learning.

**Formative assessment:** Assessment used to provide feedback to the trainee about their progress and is aimed at providing insight into their strengths and weaknesses with the objective of improvement

**Summative assessment:** Assessment with the primary purpose of establishing whether or not performance measured at a single defined point in time meets established performance standards, permanently recorded in the form of a grade or score

**Chronic medical/health condition:** any disorder that persists over a long period, is biologically based, requires more than usual access to healthcare services for support and has a significant impact on the life of a person affecting physical, emotional, intellectual, vocational, and social functioning

**ADDITIONAL COMMENTS:**

**(Please print)**

"B 8": If answered "YES", list each (horizontally) separated by "1)", "2)" etc. If "NO" leave next line blank

1) \_\_\_\_\_

2) \_\_\_\_\_

\_\_\_\_\_ Name \_\_\_\_\_ cell phone contact \_\_\_\_\_ e-mail \_\_\_\_\_

**Appendix.** Continued.

**Table.** Duration of pediatric training until accreditation in 38 European countries

Duration of pediatric training (2-6 y)	No. countries (N = 38)	Percentage (100.0%)
2 y	1	2.6%
3 y	1	2.6%
4 y	13	34.2%
5 y	16	42.2%
6 y	7	18.4%