



# EPA/UNEPSA SCIENTIFIC ACTIVITY (2017)

Paediatric Health Reports 2018  
Volume 2, March 2018

*Editorial series of  
EPA-UNEPSA, the  
European Paediatric  
Association,  
Union of National  
European Paediatric  
Societies and  
Associations*



**UNION OF NATIONAL EUROPEAN PAEDIATRIC  
SOCIETIES AND ASSOCIATIONS (EPA-UNEPSA)**

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## **EPA/UNEPSA SCIENTIFIC ACTIVITY:**

*a collection of articles dedicated to child health promotion and care, published by EPA/UNEPSA, its executive officers, and several independent experts, documenting the scientific activity of the Union of European Paediatric Societies during the year 2017*

### **Editors:**

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“EPA/UNEPSA scientific activity - 2017”. Published in 2018 by EPA-UNEPSA Editions. Headquarter, Allt. Center, Zimmerstraße 69, D-10117, Berlin, Germany

Graphics and Layout: ZEROUNO by Alessandro Tellini

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## FOREWORD

*The European Paediatric Association, Union of National Paediatric Societies and Associations (EPA/UNEPSA) complies with the strategy of building bridges between and among medical and non-medical experts.*

*The aim of EPA/UNEPSA is to educate without being limited by boundaries, across country borders, while respecting national idiosyncrasies. Throughout the years, EPA-UNEPSA has brought 50 national paediatric associations and societies closer to stimulate together “learning across borders” and to start the debate on different issues of child health care ranging from psychological to medical, legal and economic topics. Furthermore EPA-UNEPSA expanded on planning, performing and publishing studies on child health care services in Europe.*

*Last but not least EPA attracted not only paediatricians but also other experts in child health care who were willing to be actively involved in projects aiming at improving child health care on a European level. The aims of the European Paediatric Association are to improve the health of children and young people in Europe, and to improve the quality of health care services for children and their families in Europe.*

*The articles included in this e-book have been published by EPA/UNEPSA, its executive officers, and several independent experts and deal with a great variety of topics reflecting current discussions and controversies, idiosyncrasies and standards, gaps and bridges as well as challenges and achievements.*

*With respect to the enormous benefit of successful communication between professionals, we have chosen to make most of our previous publications available to as many pediatricians as possible. EPA has to broaden its intellectual basis by creating a multidisciplinary society to avoid fragmentation of paediatrics, and to allow to tackle the legal, economic and organisational challenges of child health care in Europe, and last but not least to put the children and young people into the centre of EPA activities.*

*Enjoy reading the articles and please do not hesitate to contact the EPA-UNEPSA Scientific Advisory Board by sending your questions and comments to the articles. Our motto is “starting the debate”.*

**Jochen H.H. Ehrich**, Chief Editor

**Massimo Pettoello-Mantovani**, Editor

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## “Pediatrics Building Bridges across Europe” – the Eighth EUROPAEDIATRICALS Congress in Bucharest, Romania, June 7-10, 2017

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The European Paediatric Association and Union of National European Paediatric Societies and Associations, the umbrella organization of the 49 national pediatric member societies from across Europe, invites pediatricians and other professionals involved in child health to attend the Eighth EUROPAEDIATRICALS Congress, jointly cohosted by the Romanian Paediatric Society (<http://www.europaediatrics2017.org>). The congress will be held June 7-10, 2017, in Romania's capital and its largest community, the historic and dynamic city of Bucharest. The congress language is English.

### Pediatrics Building Bridges across Europe

The program of EUROPAEDIATRICALS 2017 follows the motto “Pediatrics building bridges across Europe.”<sup>1</sup> After more than a quarter of a century has passed since the iron curtain between the East and the West of Europe has come down, EUROPAEDIATRICALS 2017 will explore similarities and differences in current challenges and approaches to child health across Europe. EUROPAEDIATRICALS 2017 has a particular potential to understand and address differences in pediatric policy and practice between different nations.<sup>2</sup>

### Scientific Program

The scientific program will also address the contributions of pediatric medicine and pediatricians working toward unifying standards across Europe and improving health, development, and opportunities for children regardless of their origin and nationality.

The EUROPAEDIATRICALS congress is held every other year and serves as the central meeting point for general pediatricians and pediatric subspecialists from both ambulatory and hospital care from across Europe and the world. The scientific program is developed in close collaboration with several pediatric subspecialty societies. These include the European Paediatric Neurology Society, European Society for Paediatric Gastroenterology, Hepatology and Nutrition, the Paediatric Assembly, European Respiratory Society, the Paediatric Section, European Academy of Allergy and Clinical Immunology, the Royal College of Paediatrics and Child Health (UK), the Faculty of Paediatrics of The Royal College of Physicians of Ireland, and others, as well as the European

Young Paediatricians Association. The European Young Paediatricians Association aims to support the efforts of the new generations of young European pediatricians up to 40 years of age and provide them with the necessary tools to achieve their personal professional endeavors. We build upon the critical analyses of pediatric conferences in Europe and the needs of our pediatric colleagues.<sup>1,2</sup> The speakers will review recent developments in diagnostic and therapeutic approaches and their practical application. Information is shared in plenary sessions with keynote lectures provided by internationally renowned leading experts, in parallel with symposia, debate sessions, and smaller workshops. Latest guidelines relevant for pediatric practice will be presented. Current developments in research on child healthcare and child healthcare services also will be discussed.

### Interactive, Hands-on Workshops, and Oral and Poster Presentations

Interactive and hands-on workshops will enable the sharing of good practice, where leaders in their fields report their experience and approaches to manage important pediatric disorders. Oral and poster presentations of submitted abstracts will provide an opportunity to learn about latest results on issues related to the health and well-being of children and young people, and to discuss these issues with the investigators.

### Postgraduate Training Workshops

On Wednesday, June 7, 2017, interactive postgraduate training workshops in smaller groups will be held to enhance practical skills. Delegates can obtain continuing medical education credits.

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The authors declare no conflicts of interest.

0022-3476/\$ - see front matter. © 2016 Published by Elsevier Inc.  
<http://dx.doi.org/10.1016/j.jpeds.2016.09.055>

## Location of EUROPAEDIATRICS 2017

The congress will be held at the International Conference Center in the Romanian Palace of the Parliament, formerly called the House of the People, which is the second largest building worldwide after the Pentagon. The grand neoclassical building in the center of Bucharest provides for an unforgettable experience and excellent conditions for the congress.<sup>3</sup>

The bustling and rapidly changing metropolis of Bucharest is known for the beautiful banks of the Dambovitza River, its tree-lined broad boulevards, grand classical buildings from the late 19th century, and its tradition for a vibrant social life, which has earned the city its nickname, "Little Paris." There are endless attractions for visitors, including museums, Orthodox churches from the 17th and 18th centuries, charming art nouveau villas, beautiful parks, trendy cafes and restaurants, and numerous cultural activities and events. Come and join us for an unforgettable experience at the EUROPAEDIATRICS 2017

congress at Bucharest! Updates on the program are available at <http://www.europaediatrics2017.org>. ■

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## References

1. Ehrlich J, Stengritt D, Jaeger D, Namazova-Baranova L, Pettoello-Mantovani M, Lenton S. The dilemma of International Pediatric Congresses in Europe: starting the debate. *J Pediatr* 2015;166:504-6, e1. doi:10.1016/j.jpeds.2014.11.025.
2. Koletzko B, Cochat P, de Groot R, Guys JM, Hazelzet JA, Lagae L, et al. Paediatric conferences: only a profit making enterprise? *Acta Paediatr* 2012;101:1194-5. doi:10.1111/apa.12003.
3. [https://en.wikipedia.org/wiki/Palace\\_of\\_the\\_Parliament](https://en.wikipedia.org/wiki/Palace_of_the_Parliament). Accessed October 23, 2016.

# The Role of Retired Pediatric Professors in European Child Healthcare Services

Jochen Ehrich, MD, DCMT<sup>1,2</sup>, Ndidi Nwaneri, MA<sup>3</sup>, and Natale de Santo, MD<sup>4</sup>

European child care service systems are faced with a situation in which further delay in implementing changes will worsen the problem of child healthcare in the short term, leading to more serious, society-wide problems over time.<sup>1</sup> The improvement of healthcare systems requires first a clarification of the current status, then a posing of the question “given the current circumstances, what can be expected to happen in the future,” and finally a definition of the urgency of the concern to eliminate deficits. The results of the survey of the European Paediatric Association on the diversity of child healthcare services in Europe implies that stakeholders seem aware that pediatric care cannot continue to be practiced as it is done today.<sup>2</sup>

Although there is a general consensus among those affected and involved in pediatric care that something must be done about the situation, many of the policies implemented in the past have been unable to address this crisis.<sup>2</sup> The policy slogan “better medical care for less money” leads to a catch-22 situation that does not resolve, but merely describes, the dilemma. We hold the position that improvement of child healthcare systems requires increased investments that rely both on human and economic capital. These combined efforts are tasked to improve the current way of implementing maternal and neonatal care, community child healthcare, hospital pediatrics, and highly specialized pediatric care in national and international centers of competence.

This report is based on the result of discussions with 80 participants at the multidisciplinary conference “The Human Capital of Age,” held on September 16-17, 2016, in Naples, Italy.<sup>3</sup> The focus of one of the discussions was to consider unexplored options that could be used to address the crisis of child healthcare in Europe. On the basis of this discussion, our article will argue that, with regard to the European pediatric crisis, the human capital of age is an unused resource that could mitigate the present problems of child healthcare services.<sup>4,5</sup> We present arguments that could support the idea of retired pediatric professors serving as a standby option in countries with a crisis of child healthcare services.

## Survey on the Role of Retired Professors of Pediatrics in Europe

Given the lack of data in 2016, the European Paediatric Association undertook a study of the role of retired professors (emeriti) of pediatrics in Europe. The study covered 28 of 53 European countries, including 18 of 28 countries in the European Union; 8 East European countries, including Russia and Turkey, as well as Israel and Switzerland. Respondents were

mostly presidents or other board members of national pediatric societies. Because of the lack of official statistical data on retired professors, the questionnaire relied on estimated data from the respondents. The results of the analysis on rights and duties of an emeritus showed great variations between countries, as well as variations within universities.

A total of 24 of 28 countries had fixed ages for retirement (in 10 countries at 65 years of age, 7 at 67 or 68 years, 7 at 70 years); 4 countries had flexible age limits, with women having the option to retire at the age of 55 years and men at the age of 60 years.<sup>6</sup> Five of 28 countries did not have a clearly established status of emeritus in their university constitutions. Ten countries had written rules for selecting an emeritus, 8 did not, and 10 presidents were not informed about the current status. The extracted rights and duties of emeritus professors in pediatrics are listed in the [Table](#) (available at [www.jpeds.com](http://www.jpeds.com)). Thirteen of 28 countries reported that more than 5% of retired professors were still active in research, teaching, and clinical care; however, the mean proportion of emeriti involved in academic activities in a given country was on the order of 50%, ranging from 10% to 100%. These results, which were derived from a study of 350 European medical faculties, seem to indicate that emeriti are not well integrated into the academic life of more than one-half of the 28 European countries studied.

## Falling Back to Experience: Retired Pediatric Professors as a Solution to Europe’s Child Healthcare Crisis

Could retired pediatricians reverse the success-mistrust-paradox that exists between the high pediatric cure rates and the low trust of families in medical care, as can be seen in phenomenon such as vaccine refusal and hesitancy? Retired pediatricians have the advantage of a long career in which they have had the opportunity to learn from interacting with children in their care. Their experience and age opens up the possibility for them to take on the role of a trusted physician and a surrogate grandparent for both children and their parents.

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The authors declare no conflicts of interest.

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<http://dx.doi.org/10.1016/j.jpeds.2016.10.055>

## Interaction among Caregivers

Communication between caregivers is an equally demanding challenge. Cooperation always has been an important value and the basis of modern science, and the ability of medical colleagues to cooperate is a determinant of the success of clinical care and research. Competition ranks among the top motivators in modern medical research. Pediatric scientists want to be the best; there is, however, a considerable risk in deleterious competition. It is inevitably counterproductive. Although retired professors also could be just as ambitious, because they have already had a successful career, they might be able to mitigate the deleterious, poisonous scientific competition, leading to a better scientific environment.

## Global Medical Care

Global medical care means provision of information and standardized healthcare for all. By the end of the 20th century, increased global cooperation in pediatric care sought to open a new chapter of global cooperation and learning in pediatrics. This initiative was based mainly on personal friendships among leading worldwide pediatricians, who frequently met at international meetings. Younger pediatricians are vulnerable to distortions stemming from 2 directions. First, they tend to be cocooned within the implicit perceptions of their own culture. Second, in many cases, they have been taught theories, assumptions, and hypotheses that create barriers between them and other cultures. These 2 factors create barriers in acquiring cross-border knowledge. Retired professors have been in these situations and should have learned from the past, making them eligible to become advisers of younger researchers without blocking their academic development.

## Effective Learning

Effective learning depends on active participation rather than passive engagement. Learning clinical medicine is not so much based on abstract intelligence but more of a healthy “master and apprentice” or “mentor and student” relation, and on coaching, motivation, and practice, as well as intuition. Who could do this better than a professor emeritus, who can teach that medicine is both a science and an art? Retired professors in pediatrics often have a biography of basic research during their early years in medicine, then a longer phase of translational research and clinical research during their most active years, and healthcare research at the end of their career.

Both old and young pediatricians have access to global media, which creates the possibility of establishing systematic knowledge on child health; however, young pediatricians lack long-term experience, which may limit their understanding of biological and metaphysical aspects of the complicated life of patients.

## The Role of Emeriti in the Future of Pediatrics and Child Healthcare

Scientists in the intercultural field are vulnerable to distortions. Subconsciously, they look at another culture through eyes that were conditioned to see things in a particular way. Until now, there has not been an easy way to transcribe national behavior from one culture to another. There is no better way for pediatricians to understand cultural differences than studying and working abroad. Most retired professors have spent parts of their career in foreign countries. The emeritus knows well that national goals might not be the same because countries sometimes have different priorities. Retired professors could be able to transfer their knowledge and experience to younger people on a team, leading to improved international communication and cooperation. In a competitive medical world, there is also need for competent experts who support a culture of consensus. Such a consensus culture should be based on good clinical leadership and governance, shared values, common protocols, and last but not the least, clear decision-making processes. In general, it is thought that young people are more flexible and creative in life than old people, which is a factor that could facilitate changes in the medical world. While teaching career seminars in Germany to advanced students and young physicians, we observed that young physicians suffered from considerable indecisiveness when planning their own career and when establishing their own views and ideals on healthcare service systems. There is a need to stimulate those young people with a lack of initiative and who are lacking a trial-and-error culture and thereby prefer strategies of pain prevention.

What are the pitfalls of our concept of proposing retired pediatric professors as a standby option in countries that face a crisis of healthcare services? A professor emeritus of pediatrics usually ends her/his career as head of the department, meaning that power (the desire to be important) and intellect (the desire to stay informed and creative), and a mixture of both, have been a part of one's career. It is not unusual that some individual characters have a gap between power and intellect, the degree of which is influenced by culture and politics. In our opinion, it would not be a good idea to ask a power-seeking emeritus to continue her/his clinical work as a senior professor in the routine clinical services within hospital because she/he may block the career of young shooting stars in the team.

We conclude that the medical faculties should develop career pathways for senior academic pediatricians<sup>7</sup> and that the Council of Europe and the European Commission should start an initiative on empowering emeriti in pediatrics in Europe to act as promoters for the well-being of children. ■

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

## References

1. Wolfe I, Thompson M, Gill P, Tamburlini G, Blair M, van den Bruel A, et al. Health services for children in western Europe. *Lancet* 2013;381:1224-34.
2. Ehrich J, Namazova-Baranova L, Pettoello-Mantovani M. European co-operation in child health care: the aims of the European Paediatric Association. *J Pediatr* 2016;177(suppl):S1-10.
3. Italian Institute for Philosophical Studies. International Conference on the Human Capital of Age. <http://www.iisf.it/capitaleumano.pdf>. Accessed October 31, 2016.
4. De Santo NG, Altucci P, Heidland A, Stein G, Cameron JS, Rutkowski B. The role of emeriti and retired professors in medicine. *Q J Med* 2014;107:405-7.
5. De Santo NG, Heidland A, Stein G, Cameron SJ, Rutkowski B. Il ruolo e l'attività dei professori clinici emeriti o in pensione [The role and activity of clinical emeriti and retired professors]. *L'Acropoli* 2014;XV:151-62.
6. Steele RW. Why do pediatricians retire? *Clin Pediatr* 2015;54:1309-10.
7. Hall JG. The challenge of developing career pathways for senior academic pediatricians. *Pediatr Res* 2005;57:914-9.

**Table. Reported rights and duties of emeritus professors in pediatrics**

### Rights

1. Office (eg, shared with another emeritus) plus personal computer and Internet access, free telephone line
2. Free parking
3. Support for application of research grants
4. Laboratory bench in case of own research project (annually renewable contracts according to external funding)
5. Training of research fellows
6. Receiving an extra salary

### Duties

1. Teaching and training of students, young pediatricians, and research fellows
2. Advisor in leadership and good governance
3. Liaison officer with international pediatric societies
4. Liaison officer with editorial boards of pediatric journals
5. Ombudsman



# Conceptual Design of Future Children's Hospitals in Europe: Planning, Building, Merging, and Closing Hospitals

Jochen Ehrich, MD, DCMT<sup>1,2</sup>, Eleanor Molloy, MB, PhD, FRCPI<sup>3</sup>, and Massimo Pettoello-Mantovani, MD, PhD<sup>1,4</sup>

**D**esigning children's hospitals requires new solutions for the re-organization of services, and renovating, merging, or closing old hospitals, as well as building new children's hospitals. This article is the first of a 3-report series opening the debate on the future of children's hospitals in Europe.

## Planning of Children's Hospitals

The planners and decision makers regarding children's hospitals are heterogeneous groups of institutions and stakeholders. To remain relevant, child care in hospitals must function at the intersection of health, economy, and human rights. In our opinion, public and private sector health policies, systems, and practices have not responded sufficiently to the complexity of the social, economic, political-civil, environmental, and cultural factors that contribute to health in children's hospitals. The effective conceptual designing of future children's hospitals requires an integration of all these factors (**Table**; available at [www.jpeds.com](http://www.jpeds.com)). Another challenge in the economic analyses of children's hospitals is that child health care involves the entire life cycle with potential outcomes for 80-90 years. Interventions such as intensive care for newborns are especially challenging, where the gains will be accrued far into the future. Moreover, nobody can foresee whether future innovative interventions could make current economic analyses irrelevant.

One of the key organizational challenges of children's hospitals is the gap between clinical and administrative leadership. In 2009, a survey of the European Paediatric Association/Union of National European Paediatric Societies and Associations revealed that the heads of pediatric departments in 43% of the responding 42 European countries were not in charge of their unit's annual budget; 90% of countries affirmed that the heads of pediatric departments were regularly informed about the yearly budget, and income from inpatient and outpatient care and expenses. According to individual reporting from the presidents of national pediatric associations in Europe, the time interval of the regular exchange of information between administrators and clinical directors, the content of these conferences, and the depth of information, as well as the active role of pediatric directors in planning the budgets varied considerably between hospitals in European countries.

## Types of Children's Hospitals

A European Paediatric Association/Union of National European Paediatric Societies and Associations survey in 2009

identified 4 different types of children's hospitals in Europe: general hospitals with pediatric departments; stand-alone, independent children's hospitals; university children's hospitals; and highly specialized pediatric centers of competence and mother and child centers. Day clinics and neonatal intensive care units were found in all 4 types of hospitals. The number of all pediatric units or hospitals per country varied from a few in small countries to more than 2000 children's hospitals in Russia. Standalone children's hospitals were reported from 80% of the 46 responding countries, 21 countries having fewer than 5 standalone children's hospitals. Leading pediatricians from 22 European countries reported that the number of children's hospitals per child population and the numbers of beds showed a great variation. Unfortunately, they report the lack of a definitive database that would allow the evaluation and validation of all the underlying reasons for the different proportion of children's hospitals and hospital beds per 1 million child population.

## Building New Children's Hospitals

Several major cities in Europe have recently built new children's hospitals (eg, Dublin, Moscow, Bratislava), replacing or expanding existing structures. Some old children's hospitals had become progressively inefficient and unable to provide their communities with well-integrated and regularly updated cutting edge health care. Merging the need for healthcare efficiency with the importance of offering socially compatible physical spaces to children and their caretakers is now the leading approach in projects devoted to building new children's hospitals. Curbing costs and maintaining high quality standards in clinical care are certainly among the main aims. The architectural philosophy behind building children's hospitals extends beyond functional and aesthetics-based assessment to include considerations of ethics, social and political philosophy, and philosophical reflections on psychology and behavioral sciences.

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The authors declare no conflicts of interest.

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<http://dx.doi.org/10.1016/j.jpeds.2016.11.068>

## Merging of Children's Hospitals

Presidents of national pediatric societies in Europe concluded during previous symposia of EUROPAEDATRICES that the trend of decreasing numbers of hospital beds for children will continue for the next decade. Various models for merging children's hospitals in urban areas were discussed. Three types of merging were identified: complete integration of 2 hospitals at 1 site and the disappearance of the other site, partial integration with common management and medical care in 2 locations, and 1 central management without full integration of hospitals thereby avoiding unnecessary overlap of functions and destructive competition. All experts agreed that a successful merger of children's hospitals depends on a number of essentials, such as substantial financial investments in the new institution, transparency of the steering committee's proceedings, and the willingness of the staff to embrace change. The advantages of merging were identified as better regional integration and supervision, achievement of more efficient organization of care, and economy by rationalizing provision of services, reducing capacity and cost, and offering more subspecialty services. The argument that size matters was put forward with the slogan, "Small is beautiful but large is more efficient." This argument may hold true for neonatal intensive care units and for highly specialized pediatric centers of competence<sup>1</sup>; however, there is a lack of evidence of this motto in relation to the organization of general children's hospitals in Europe. For example, larger neonatal intensive care units and more intense resource utilization at admission were associated with higher odds of a composite adverse outcome in very preterm infants in the Canadian Network.<sup>2</sup> We conclude that the risks of failing when trying to merge children's hospitals should not be underestimated. The underlying causes for failure are conflicts owing to different priorities of managers, clinicians, and other staff members. Among the negative factors may be the pace of decision making, because too fast may be as negative as too slow. Unintended side effects of merging processes are increases in workload for staff members, psychological stress, and uncertainties limiting integration and cooperation of staff members.

## Closure of Children's Hospitals

Reducing the number of beds in a children's hospital may prompt the question of when it will be better to close the children's hospital entirely. It is relatively easy to close the hospital if it is situated in a city where 1 or more children's hospitals are providing additional services. The decision-making process will be difficult in rural areas where the next hospital is located more than 50 kilometers away. During the various symposia of EUROPAEDATRICES it was discussed that, in these cases, it may be adequate to keep small pediatric units with 30 beds or less for the treatment of routine childhood disorders in general

hospitals to allow family-friendly access to in-patient care. This could mean a reduction of quality of care, for example, night shifts may have to be covered by nonpediatric residents, with an experienced pediatrician being only available on call outside the hospital.

We conclude that the discussion on the closure of small children's hospitals must be based on the demand to improve quality of care rather than on the wish to keep availability within an ill-defined distance between patients and hospital. There has been a shift from common to highly specialized forms of treatment. Pediatricians in small children's hospitals also want to use modern therapies and technologies, and these require special skills of pediatricians that are difficult to obtain in small institutions. We conclude that large children's hospitals attached to general hospitals and highly specialized pediatric centers of competence will continue to prosper, whereas the number of isolated standalone children's hospitals and mother and child centers will decrease because they may lack quality in child health care and economic and medical efficiency.

## Conclusions

Children's hospitals should be child friendly and safe, thus creating a "small world in itself." They must communicate with the outside world and offer a comprehensive expertise to the regional territory. Large children's hospital should provide specialist tertiary and quaternary services for children, including highly specialized equipment and access to rare procedures and clinical trials that may involve experimental treatments and procedures. Furthermore, each specialist unit should provide outreach clinics in regional centers, bringing their expertise closer to the patient, and also should be able to engage in shared care arrangements with local pediatricians working in regional pediatric units. It is conceivable that such hospital model, proposing high quality standards of safe and reliable care for all children, would become progressively the preferred alternative to standalone children's hospitals and mother and child centers. These centers may become less relevant to the population and therefore less likely to maintain any political support that may have favored their survival throughout the years, despite a likely substantial inefficiency. ■

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## References

1. Shah PS, Mirea L, Ng E, Solimano A, Lee SK. Canadian Neonatal Network. Association of unit size, resource utilization and occupancy with outcomes of preterm infants. *J Perinatol* 2015;35:522-9.
2. Ehrich J, Kerbl R, Pettoello-Mantovani M, Lenton S. Opening the debate on pediatric subspecialties and specialist centers: opportunities for better care or risks of care fragmentation? *J Pediatr* 2015;167:1177-8.

**Table. Recommendations for designing future children's hospitals (European Paediatric Association/Union of National European Paediatric Societies and Associations Scientific Advisory Board—working group)**

Concepts for a health economic design of children's hospitals requires:

1. Robust and valid data on the status quo and the effect of existing interventions.
2. Valid quality and outcome measures that include mortality, morbidity, and health-related quality of life and educational achievement at the end of the hospital stay.
3. A health economic framework based on child rights. Developing equity with adult services.
4. Health insurances and providers amenable to change.
5. Engagement of politicians and other stakeholders at a national and European level.

Concepts for a psychosocial design of children's hospitals requires:

1. A baby- and child-friendly healthcare model according to the terms of references of the Council of Europe.
2. Understanding the benefits of improving communication between children and caregivers.
3. Psychomental care aiming at some kind of normalcy: kindergarten, playground, story tellers, adequate media (child-friendly videos), library, visits of hospital clowns, child friendly food, interpreters, spiritual care providers, and so on.

Concepts for an environmental design of children's hospitals requires:

1. Child-friendly architecture (eg, pleasant entrance/registration/waiting zone), easy way finding and need for extra signs for children, bright corridors (normal light, friendly colors eg orange, yellow), 2-4 bed rooms, flexibility of rooms according to seasonal variation, playroom, open to family members from 8am until 8pm, etc.
2. Participation of children and adolescents, and designers and artists during the architectural planning period of hospitals.
3. Built in architectural flexibility on floors.
4. Beds allocated according to specialties' needs rather than history.

Concepts for a cultural design of children's hospitals requires:

1. Respecting child's rights, equity, and social justice. Priority given to noninvasive care, short duration of in-patient care, 24-hour presence of parents on the wards. No adult patients in same room or ward. Security (eg, guarded entry doors), safety (eg, fire alarm and emergency exits), hygiene (prevention of cross infections), air conditioning, and other measures.
2. Social and educational care: access to health educators, schooling in hospital.

Concepts for health policy designing of children's hospitals must respect the following rules:

1. An adolescent is not a young adult.
2. A school-child is not a small adolescent.
3. An infant is not a small child.
4. A neonate is not a small infant.
5. A premature newborn is a not small neonate.
6. A pediatrician is not a "small" doctor.
7. A children's hospital is not an inexpensive hospital.
8. Investing in children is a profitable enterprise for society, but not always for hospital economists.
9. Integrating child health research in hospitals will improve the outcome of care.

# Conceptual Design of Future Children's Hospitals in Europe. The Role of Public and Private Stakeholders as Transferors of New Concepts from Theory into Practice

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In part 1 of this series debating the conceptual design of future children's hospitals in Europe, we discussed the planning, building, merging and closing hospitals.<sup>1</sup> We now discuss the role of public and private stakeholders as transferors of new concepts from theory into practice.

## Profiling Children's Hospitals

Institutional public and private stakeholders have an important role in the transfer of new concepts from theory to practice to provide efficient, effective, and inclusive care to hospitalized children. In the current world of epidemiologic transition, characterized by multiple variables including changing patterns of diseases, mortality, fertility, and life expectancy, as well as by social changes, the ability of adapting to changing physical, mental, and social health dimensions and pressing economic challenges is an unavoidable prerequisite for effective and efficient healthcare management. Therefore, public and private institutional stakeholders in healthcare "markets" should be fully aware of several important aspects characterizing the evolving profile of a children's hospital.

As isolated stand-alone children's hospitals will be faced with considerable organizational and economic challenges concerning efficiency and efficacy of care, the question arises how the departments of pediatrics can be integrated into a large general hospital without neglecting a child friendly atmosphere. We strongly suggest that all patients with a chronological or a developmental age under 18 years should be treated in the child care departments. Neonates, infants, young school children, and adolescents as well as disabled young adults should ideally have their own wards. However, this arrangement may not be easily established in smaller children's hospitals with too few patients in each age group. This assumption raises the important but difficult question on the ideal size and number of beds per ward that may vary from 18 to 28 beds according to the non-age-dependent subspecialty of the wards. Locating the neonatal wards (including the neonatal intensive care unit) next to the department of obstetrics should not be a major problem. Furthermore, the pediatric wards should not be situated too far away from all the different core facilities such as operating theaters and imaging units. Finally, many newly built

hospitals have tall buildings to optimize on space. However, it is highly questionable whether a fifth floor would be an adequate location for children. Children should have easy access to an indoor and an outdoor playground, which are overseen to guarantee the safety of children.

## The Role of the European Union

In recent years, the European Commission, the executive body of the European Union (EU), has focused on specific health conditions, supporting the research on severe and rare communicable and noncommunicable chronic diseases. This activity is aimed at improving and implementing the quality and standards of care for the European citizens. However, in our opinion there has been a lack of support for establishing criteria that should govern the planning, building, and managing of future children's hospitals. In 2015, the European Observatory started an initiative to publish the shared visions and clear directions of chosen experts on future hospitals in Europe. The authors of this article are also co-authors of the chapter in a book on the future of European children's hospitals of the European Observatory. Here we want to start the debate by illustrating the complexity of the process of establishing criteria that could be used throughout Europe. In fact, international recommendations should respect common quality standards in the delivery of care, their proper administration, and they should be able to meet the national challenges of progressively evolving socioeconomic conditions and health dimensions. Establishing and governing efficient communication channels among the multiple key players involved in the healthcare provided in children's hospitals, may allow the EU to play a relevant role in coordinating combined efforts according to the different needs of the 53 European countries. In the absence of the unifying role of the EU, single projects

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The authors declare no conflicts of interest.

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<http://dx.doi.org/10.1016/j.jpeds.2016.12.001>

EU European Union

developing in different European areas are at risk of producing inefficient children's hospitals, which lack the necessary international networks of mutual co-operation, despite their intrinsic excellence. This may result in a missed opportunity to develop efficient cross-border European healthcare planning.

## The Role of European Countries

It is widely assumed in the media that healthcare systems are relatively resistant to change. The complicated coordination of all political decision makers may slow down the implementation of changes in children's hospitals and may lead to secondary controversies reducing the motivation of the medical personnel. Depending on the political system of European nations, the planning of children's hospitals may involve several ministries (eg, Health, Labor and Social Affairs, Family Affairs, Transportation, Building, and Urban Affairs). In some countries, such as Russia, the state is the main planning and executive branch, whereas in others, such as Germany, the activities of the state may be limited to an umbrella and observer function.

## The Role of Health Insurance Funds

Since 1990, more East European countries have introduced the health system with health insurance funds. These are not only responsible for paying for the care of hospitalized children, but they are also part of the opinion and decision making for future hospitals. We are unaware of any data demonstrating how they interact in different European countries when planning renovation of old children's hospitals or in new hospital design.

## The Role of European Child Health Care Organizations

European pediatricians working in 53 countries are not represented by a coordinating umbrella association resembling the American Academy of Pediatrics in the US. For example, there is no single European society of pediatrics that issues widely accepted guidelines for planning children's hospitals in Europe. Instead there are competing European pediatric associations, which have almost no voice in society and in Europe, neglecting the motto of "United we stand, divided we fall." Putting the child at the center of all activities and respecting national traditions and idiosyncrasies will play a crucial role when implementing new strategies for hospitals in different countries in East, West, North, and South Europe.

Even within a given European country, there may be 2 or more competing national pediatric associations (eg, one for academic and/or hospital pediatricians, another one for general and primary care pediatricians, and a third one for social

pediatrics such as Germany). Differing aims in these associations may inhibit consensus among pediatricians diminishing their impact when negotiating with politicians and policy makers. Another important stakeholder is the nurses' associations. However, the communication among the different organizations of pediatricians, general practitioners, and nurses is currently scarce at national and international level. This fact further contributes to the inefficiency of a proper interaction of all decision makers. We conclude that the lack of unifying international concepts is one of the main obstacles in planning and adapting child healthcare in hospitals to the new needs.

## The Role of Hospitals

Hospitals are an important part of the national and local economy, for example large hospitals rank among the top employers in many cities. Pediatric hospital care also has become a business in many countries with health insurance systems. However, hospital care for children is more than a business. From a management business point of view, pediatric care is usually less profitable for the hospital than adult specialties, such as cardiology or cardiac surgery. However, from a national economic position, cost-effectiveness calculations spread over the whole life span of an individual person may produce completely different results.<sup>2</sup> Additional costs related to child care (compared with adult care) include hospital school, kindergarten, speech therapists, psychologists, social workers, career advisers, playgrounds, admission of parents, and meals for parents. This extra cost is often not adequately covered in a diagnosis-related group system, health insurance, or national health systems.

## Conclusions

Participation of hospital pediatricians in planning, financing, and decision making should be encouraged to reduce unnecessary cost and to increase the quality of hospital care. Therefore, training in public health, health economics, and systems for pediatricians and nurses would allow better understanding of the strengths and limitations of health economics and health economic analyses to participate in resource allocation decisions. ■

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## References

1. Ehrich J, Molloy E, Pettoello-Mantovani M. Conceptual design of future children's hospitals in Europe: planning, building, merging, and closing hospitals. *J Pediatr* 2017;182:411-2.e1.
2. Heckman JJ. Schools, skills, and synapses. *Econ Inq* 2008;46:289-324.

# Conceptual Design of Future Children's Hospitals in Europe: The Role of Caregivers in Transferring New Concepts from Theory into Practice

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In this third article in a series debating the conceptual designing of future of children's hospitals in Europe, we discuss the role of caregivers as transferors of new concepts from theory into practice.<sup>1,2</sup>

## The Role of Pediatric Directors and Heads of Department

Establishing a good balance among quality of medical care, teaching and training, research, economic stability, and child friendly care may be achieved in different organizational ways in small and large hospitals. The alternative models range from hierarchical systems resembling a military system to democratic systems based on sharing responsibilities by elected senior staff members. Filling the gap between power and intellect when managing children's hospitals means strengthening those persons who have taken the leadership role and who are responsible for implementing good governance (Table I; available at [www.jpeds.com](http://www.jpeds.com)). Highly qualified medical scientists might not necessarily be good hospital managers; management skills combined with clinical experience is a good model. Spreading power among different pediatric subspecialists in more or less independent subspecialty units in university children's hospitals may result in unproductive competition between different units, leading to fragmented care. The number of beds per subspecialty unit is probably not the critical aspect when discussing the implementation of fair play rules with units; however, because each of these subspecialties, such as cardiology, neonatology, and nephrology, must have a full team of coworkers to be able to offer 24-hour services, there will be competition for the annual budgets. In some countries, like Germany and Italy, that use the diagnosis-related group system, some subspecialties will benefit from the payment system—thus showing a profit at the end of the year— whereas others may end up in a deficit.

The crucial question in a departmental system is how to convince all heads of subspecialties that they must also feel responsible for the entire children's hospital. Neither the ideal size of such subspecialty teams nor their total numbers in highly specialized pediatric centers of competence are well defined, given the scarcity of research data on the pros and cons of the different ways of organizing all 38 pediatric subspecialties reported in Europe.<sup>3</sup> Thus, future research activities in this field will need to provide guidelines for managing large modern children's hospitals. Leaders of future children's hospitals should train to transform services through a permanent learning culture of all staff members by defining the values of innovation, learning, and improvement as a central theme.

## The Role of Hospital Managers

Positive and balanced interaction between the medical directors and management (ie, finance, administration) plays a key role in planning the children's hospital of the future (Table I). In fact, the pressure to "deliver more for less" often seems to be the driving force in political strategic decisions in the area of pediatric healthcare, usually in response to global economic pressures and often in obedience to generalized budget restrictions imposed by local financial policies.

## The Role of National Hospital Organizations and Federations

National hospital organizations or federations represent hospital owners (the state, the church, or private companies, or all 3 in some countries) in health policy affairs at the national level and the European Union level, advocate for hospital interests, and promote awareness of issues concerning the hospital sector. In cooperation with government authorities and other institutions in the healthcare sector, hospital federations aim to sustain and improve hospital performance as part of their statutory obligations. Usually they pursue only public, noncommercial objectives by promoting exchange of knowledge and supporting scientific research in healthcare.

Hospitals are an important economic factor in every country's growing healthcare market. In some regions, hospitals are one of the most important employers. Health policy reforms of the recent past—prompted in part by the financial crisis of 2008—have led to a growing scarcity of financial resources for hospitals in many countries. This trend is affecting children's hospitals as well, and will continue to affect child health care services in the future. One of the key objectives of children's hospitals is to ensure accessible and child-oriented care in the face of growing competition among hospitals.

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The authors declare no conflicts of interest.

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<http://dx.doi.org/10.1016/j.jpeds.2016.12.017>

## The Role of Pediatricians

In many European countries, one-half of the pediatricians work in hospitals and the other one-half work in private practices or state-owned polyclinics or other settings. A key factor in ensuring the provision of integrated, efficient, and adequate care to children both in children's hospitals as well in the office-based healthcare settings undergoing reform will be the ability of primary care pediatricians, general practitioners, and hospital pediatricians to coordinate the care of children at the interface of private practices or polyclinics on one side and children's hospitals on the other side. Currently, each group of physicians represents and lobbies its own members. Primary care pediatricians play a limited role in designing future children's hospitals, but an integrated health system involving primary, secondary, and tertiary care is essential with a hub-and-spoke system. On the other hand, hospital pediatricians may be biased, because they tend to focus on in-patient care without filling the gap between primary and secondary/tertiary care services. If both sides continue to take a typical union type of approach, this behavior may mislead European legislators to believe that professionals, not children, are central to pediatric care. Our approach is to seek a strategic integration of all pediatric care and by putting the child and family into the center of all activities.

## The Role of Physicians Other Than Pediatricians

Not all hospitalized children are treated by pediatricians or pediatric subspecialists. Many children are treated by adult specialists (eg, neurosurgeons, ophthalmologists). The trend toward transferring children into children's hospitals differs from country to country and from hospital to hospital, not all of which offer the complete spectrum of medical care. In some countries, like Germany, the rapid progress of further subspecialization and fragmentation of care has given rise to the concept that adult organ specialists might be the best experts and thus could care for patients of all ages, including children. Although this idea has not gained widespread acceptance, the ongoing discussion may have negative effects on the planning of children's hospitals of the future. Likewise, the idea that neonatology can become part of obstetrics and gynecology grew out of the close collaboration between obstetricians and neonatologists. Given that the long-term care of sick neonates must be provided by competent pediatric teams, we conclude that this care should continue to be provided mainly by pediatricians.

## The Role of Nurses

Nurses are a pillar of strength during the hospital care of children. Similar to pediatricians, they are experiencing increasing demands of administrative work, which is reducing their precious time to spend with young patients. Based on our experience, we conclude that in Ireland and the United Kingdom, where nurses often move into senior management positions, nurses are very closely involved in planning; however, in other

European countries, the role of nurses in children's hospitals has become increasingly difficult, and nurse specialists have become rare. There is currently a shortage of nurses in Eastern European countries, owing in part to the migration of nurses to wealthier countries. Furthermore, some countries (eg, Germany) have abandoned the 3-year training program for specialized pediatric nurses. Other countries have failed to broaden the training of nurses from the grade of helper nurse to the grade of nurse practitioner or academic nurse. Thus, more cohesion is needed between health care workers and the huge variations in nursing involvement across Europe.

## Prototypes for Implementing New Highly Specialized Pediatric Centers of Competence in a Country

The Working Group of the European Paediatric Association/Union of National Paediatric Societies and Associations Scientific Advisory Board has developed prototypes aimed at implementing new highly specialized pediatric centers of competence in the European countries. **Table II** (available at [www.jpeds.com](http://www.jpeds.com)) describes 3 potential models aimed at reducing the number of subspecialty units in highly specialized pediatric centers of competence, emphasizing the potential impact of public funding into the planning of new types of children's hospitals.<sup>4</sup>

## Conclusions

The ultimate aim of our 3-article series is to spark a debate among the key players engaged in providing efficient and effective updated care in children's hospitals and to stimulate positive interactions among all decision makers concerning hospital care. The future of children's hospitals and their ability to effectively respond to the challenges generated by a world in continuous social and economic evolution depends to a great extent on the ability to establish effective and positive communication among all the experts involved in such an important enterprise for children and their health. ■

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## References

1. Ehrich J, Molloy E, Pettoello-Mantovani M. Conceptual design of future children's hospitals in Europe: planning, building, merging and closing hospitals. *J Pediatr* 2017;182:411-2.e1.
2. Ehrich J, Molloy E, Kerbl R, Pettoello-Mantovani M, Gerber-Grote A. Conceptual designing of future children's hospitals in Europe: the role of public and private stakeholders as transferors of new concepts from theory into practice. *J Pediatr* 2017;183:204-5.
3. Ehrich J, Kerbl R, Pettoello-Mantovani M, Lenton S. Opening the debate on pediatric subspecialties and specialist centers: opportunities for better care or risks of care fragmentation? *J Pediatr* 2015;167:1177-8.
4. Institute for Public Policy Research, Pike M. Mass collaboration: how we can transform the impact of public funding. <http://www.ippr.org/publications/mass-collaboration-how-we-can-transform-the-impact-of-public-funding>. Accessed November 11, 2016.

**Table I. Cooperative aims shared by medical and administrative management**

1. Stimulating cooperation of staff members (eg, avoid negative competition when expanding or reducing the services)
2. Integrating child units into general hospitals (eg, children must be admitted to children's wards)
3. Installing effective control (eg, heads of departments must be informed regularly about the success and failure of services)
4. Anticipating financial and organizational crises, including inadequate funding, shortage of subspecialists, etc
5. Implementing cross-funding between subspecialty units to support whole systems thinking
6. Adapting to the European Union regulations for working hours of hospital personnel and developing new working structures (eg, on night shifts and weekend services)
7. Stimulating positive and balanced interaction between the medical directors and management (finances, administration)

**Table II. Prototypes for implementing highly specialized pediatric centers of competence in European countries (European Paediatric Association/Union of National Paediatric Societies and Associations Scientific Advisory Board Working Group)**

Proposed models aimed at reducing the number of subspecialty units in existing tertiary care hospitals and at creating a limited number of highly specialized pediatric centers of competence with a broader spectrum of pediatric subspecialties:

1. Top-down model

National or regional governments or other funding institutions are planning the number, location, structure, and management of new highly specialized pediatric centers of competence. This will be followed by inviting professional hospital architects and public health managers to develop a road map for building these pediatric centers of competence. If a monolithic (hierarchical) leadership system is chosen for the center, its new pediatric director will act as a liaison officer between the owners of the center, the administration, the medical team, and the patients and their families.

2. Bottom-up model

Several leaders of tertiary care children's hospitals will have to create a committee that will design a plan for how the adequate provision of subspecialty care in their region or country can be best implemented. Such a consensual decision making process may be complicated and may take many years.

3. Combination of both models

National or regional governments are planning the number, structure, and financing of new highly specialized pediatric centers of competence. Their proposal will be presented to a committee of leaders of tertiary care children's hospitals who will have to report the results of their discussions on the location and management of the new centers back to the government. The subsequent period of planning the implementation of new centers should have a deadline; however, it may take up to 5 years to find a structure that will be accepted by all key players.

# Improving Community and Primary Care Services for Children, Adolescents, and Their Families in Europe

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Many healthcare systems in Europe are undergoing significant reconfigurations toward a more population-oriented delivery model<sup>1-3</sup> to tackle the “new morbidities.” These transformations should be backed by reforms, which emphasize the importance of community and primary care services for children, adolescents, and their families, and the key roles that legislators and governments contribute to Public Health. In fact, equitable financial investment in public health policies are a key factor to overcome the current concerns of rising healthcare costs, substantial gaps in quality, and increasing demand for services. This approach will require greater collaboration and coordination between traditional health service sectors, public health, and nonclinical services to accomplish cost containment, while simultaneously improving patient outcomes. New models and programs that link clinical, social, community, public health, and governmental programs are needed. We will describe the essential elements of a consensus statement that examines the community and primary care elements of the system.

## Background

European Paediatric Association/Union of the National European Pediatric Societies and Associations,<sup>4</sup> the European Academy of Paediatrics,<sup>5</sup> and the European Confederation of Primary Care Paediatricians,<sup>6</sup> the leading medical organizations advocating for children’s health and representing pediatricians in Europe, combined forces to develop a consensus report,<sup>7</sup> which highlight the issues that should be considered when reconfiguring community and primary care services. This initiative was triggered by 3 main factors: (1) variations in outcomes, which include both morbidity and mortality; (2) inequities of provision, both within and between nations; and (3) the difficulties with recruitment, training, and retention of an appropriately trained and competent workforce, which includes pediatricians, family doctors, general practitioners, children’s nurses, and other professional groups.

## Why Was This Consensus Written?

Each country in Europe has a unique and individual combination of factors that influence the health and health services outcomes for children and young people; of particular concern are variations in outcomes and inequities in provision, coupled with difficulties in recruiting and maintaining a competent pediatric workforce.

The article does not attempt to describe an ideal model of care, but rather explores the factors that need to be considered when planning how best to improve services for children and families.

Although the article concentrates on services that are provided outside hospital settings it recognizes the interdependence between community-based, hospital-based, and specialist center-based services. The primary focus is on the child and the family and improving the experience and outcomes of their “journey” through a healthcare system. The intention is to help guide the future development of services based on values contained within the United Nations Convention on the Rights of the Child and the best available evidence, as described in Council of Europe Child Friendly Healthcare initiative,<sup>8</sup> with a balance between prevention and intervention, to create a dynamic future system that has the capacity to continually improve and learn.

The purpose of the consensus document is, therefore, to ensure that any future changes to the organization or provision of services actually benefit children, young people, and their families. At the very least, any future changes should improve health, improve the outcomes of services, improve the experience of services, reduce unnecessary variations and inequalities, and also be sustainable. In addition, services should be safe, provided as close to home, enable children and young people to participate in their own healthcare, and balance prevention with provision.

## Who Should Read the Consensus?

The document intends to be equally relevant to general practitioner-based, pediatrician-based, and mixed systems of primary/community care in Europe; this is particularly relevant reading for those experts involved with future strategies and their respective partners responsible for resource distribution within health systems, namely those people with policy, planning, and commissioning roles.

## What is Included in Community Delivered Care?

What can be delivered in community settings has changed dramatically over the last 30 years. Some children requiring chemotherapy, intravenous antibiotics, long-term ventilation, and

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The authors declare no conflicts of interest.

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<http://dx.doi.org/10.1016/j.jpeds.2017.02.027>

rehabilitation no longer require prolonged hospital admission. However, the majority of care overlaps with what has traditionally been provided by primary care practitioners (**Table I**; available at [www.jpeds.com](http://www.jpeds.com)).

## What are the Health and Health Service Challenges Posed by Children Today?

Morbidity in childhood is constantly evolving. Infectious disease and some injuries are on the decline, but obesity, mental health problems, and the consequences of risk-taking behavior are all on the increase, particularly for teenagers and young adults. Children who may have died in the past are now living with complex disabilities or long-term conditions often with multiple comorbidities. The impact of austerity and growing inequalities has resulted in a group of children and young people living in relative poverty and at risk of poor health. Finally, throughout Europe many health systems are struggling to manage the health problems of new migrants.

## What are the Current Concerns about Services?

There are considerable variations in the way primary/community care is delivered to children and families across Europe illustrated in **Table II** (available at [www.jpeds.com](http://www.jpeds.com)).

## Future Planning

Demography, morbidity trends, and new technologies are constantly evolving, but not all services are keeping pace with these changes. Any future planning must be on the basis of a “whole system approach” to acknowledge the interdependency of different parts of the system because changing one part may result in unintended consequences in another. Therefore, nations should review those parts of their healthcare systems, which are considered problematic or inadequate to improve safety, experience, and outcomes.

## Workforce

The outcomes of any system are highly dependent on the quality of the workforce and the clinical decisions they take. Ensuring sufficient workforce numbers, with the right skills and competencies all working effectively in teams, collaborating within networks, and all striving for improvement, are essential prerequisites for quality and good outcomes. Therefore, nations should review their workforce plans to ensure a viable, competent, and sustainable workforce to work with children, young people, and their families.

## Evidence

Wherever possible, clinical decisions should be based on best possible evidence, likewise changes to service delivery should be based on good health services research. Nations should then ensure practitioners have easy access to evidence-based guidelines and protocols to support both clinical decision-making and service improvement.

## Training

Practitioners working with children and families should have initial training relevant to their future roles and then their competence must be maintained throughout their working lives. Practitioners undertaking team leader, management, and broader planning/policy roles should have access to further training to ensure success in these roles. Where appropriate, skill mix within teams should be reviewed to ensure the right balance to meet local needs. Nations have a key role in reviewing the initial and ongoing training programs to make sure that they are fit for future purposes.<sup>9</sup>

## Prevention and Health Promotion/Protection

Prevention strategies and health promotion/protection programs must be integrated into service delivery at every stage, aiming to prevent conditions and their secondary comorbidities. Nations should, therefore, review their prevention and health promotion/protection programs to ensure they are having maximum impact to improve health.

## Service Improvement

Service improvement, based on best possible science, must be an integral part of service delivery, with the expectation of incremental quality improvement year-on-year, and nations should review their capacity for service improvement and develop systems to identify “weakest links” in patient pathways, which is where their improvement should start.

## Conclusions

Investment to improve community services for children and families is essential and makes economic sense because many adult conditions have their origins in childhood. Traditional models based on primary, secondary, and tertiary care may inhibit the future development of comprehensive team-based models required to address the broader concerns identified. A better model is based on patient journeys, grouped in pathways, delivered by teams who collaborate within a network.<sup>8</sup> There are considerable opportunities for prevention, either primary prevention to reduce the incidence of a condition or secondary prevention to reduce demand for more complex interventions.

However, although the consensus concentrates on community-delivered services, it is important to view hospital and specialist services as a whole system, which should be integrated from the perspective of children and families, meaning that all parts are in place and working well together to improve outcomes.<sup>10</sup>

This transition to whole systems planning, delivery, and improvement will require considerable thought and leadership and as different models of care evolve (eg, between urban and rural communities), and it will be important to evaluate and learn from this process of change. ■

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

## References

1. Black MM, Walker SP, Fernald LC, Andersen CT, DiGirolamo AM, Lu C, et al. Early childhood development coming of age: science through the life course. *Lancet* 2017;389:77-90.
2. Britto PR, Lye SJ, Proulx K, Yousafzai AK, Matthews SG, Vaivada T, et al. Nurturing care: promoting early childhood development. *Lancet* 2017;389:91-102.
3. Richter LM, Daelmans B, Lombardi J, Heymann J, Boo FL, Behrman JR, et al. Investing in the foundation of sustainable development: pathways to scale up for early childhood development. *Lancet* 2017;389:103-18.
4. European Paediatric Association. Union of National European Societies and Associations. [www.epa-uneapsa.org](http://www.epa-uneapsa.org). Accessed November 16, 2016.
5. European Academy of Pediatrics. The paediatric section of the European Union of Medical Specialists, the representative organisation of the National Associations of Medical Specialists. <http://eapaediatrics.eu/>. Accessed November 16, 2016.
6. European Confederation of Primary Care Paediatricians. Who we are and what we do. [www.ecpcp.eu](http://www.ecpcp.eu). Accessed November 16, 2016.
7. Lenton S, Wettergren B, Huss G. A consensus on the improvement of community and primary care services for children, adolescents and their families in Europe. [http://www.epa-uneapsa.org/EPA%20EAP%20ECPCP\\_A%20consensus%20on%20improvement%20of%20community%20and%20primary%20care%20services%20for%20children%20in%20Europe%20November%202016.pdf](http://www.epa-uneapsa.org/EPA%20EAP%20ECPCP_A%20consensus%20on%20improvement%20of%20community%20and%20primary%20care%20services%20for%20children%20in%20Europe%20November%202016.pdf). Accessed November 22, 2016.
8. Kilkelly U. Council of Europe guidelines on child-friendly health care. Available from: [https://search.coe.int/cm/Pages/result\\_details.aspx?ObjectID=09000016805ccc07](https://search.coe.int/cm/Pages/result_details.aspx?ObjectID=09000016805ccc07). Accessed November 22, 2016. <https://rm.coe.int/CoERMPublicCommonSearchServices/DisplayDCTMContent?documentId=090000168047ac50>. Accessed November 22, 2016. [https://www.each-for-sick-children.org/images/2015/Council\\_of\\_Europe\\_guidelines\\_on\\_child-friendly\\_health\\_care.pdf](https://www.each-for-sick-children.org/images/2015/Council_of_Europe_guidelines_on_child-friendly_health_care.pdf). Accessed November 22, 2016.
9. Pettoello-Mantovani M, Ehrlich J, Romondia A, Nigri L, Pettoello-Mantovani L, Giardino I. Diversity and differences of postgraduate training in general and subspecialty pediatrics in the European Union. *J Pediatr* 2014;165:424-6, e2.
10. Pettoello-Mantovani M, Campanozzi A, Maiuri L, Giardino I. Family-oriented and family-centered care in pediatrics. *Ital J Pediatr* 2009;35:12-20.

**Table I. Traditional care provided by primary care practitioners in Europe**

- Urgent and emergency care with referral systems for potentially life-threatening events, which includes medical, surgical, and psychiatric conditions.
- The management of undifferentiated concerns presenting to the “first contact practitioner”; effective triage and initial management.
- The provision of “preventative” services that range from health surveillance, the delivery of screening programs, and immunizations.
- Caring for vulnerable children, including safeguarding roles.
- Some public health programs delivered at the community level, such as injury prevention.
- Care for children with long-term conditions, which include medical, psychological, social, and practical care; sometimes called “chronic care.”
- Some “tertiary (specialist) care” that does not require the high tech environment of a specialist care center.

**Table II. Variations in primary/community care delivered to children and families across Europe**

- The type of office: eg, solo-practice, multidisciplinary practice, polyclinic
- The type of care givers: eg, pediatrician, general practitioner, family doctor, nurse practitioner
- Availability of home visits during day and at night
- The age of transition from pediatric and adult care,
- Accessibility and availability of 24/7 urgent care in community settings, proximity of care from home
- The training and skill mix of the pediatric workforce,
- Provision of on-site diagnostic and therapeutic measures
- Provision of psychosocial and mental health services
- Fragmented care for children with complex conditions with multiple comorbidities
- Differences in public health prevention programs
- Poorly understood variations in service outcomes



## European Paediatric Association, the Union of National European Paediatric Societies and Associations Turns 40 Years: What This European Platform Offers to Pediatricians

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In 2016, European Paediatric Association, the Union of National European Paediatric Societies and Associations (EPA/UNEPSA), a union of national pediatric associations and societies, celebrated its 40th anniversary; we will review the mission statement of EPA/UNEPSA, including information regarding policymaking and the work of the Council and the Scientific Advisory Board (SAB) of EPA/UNEPSA. This work serves as a common platform for all healthcare providers for children in Europe,<sup>1</sup> offering them the necessary tools to stay up-to-date and to feel empowered to achieve their personal professional endeavors. The important issues affecting many children and young people with a high potential for improvement should be addressed before addressing issues in which there is little room for improvement. Pediatricians of different nationalities tend to assume that any deviation from what they perceive as a priority occurs because other countries lack the knowledge, the resources, the organization, the awareness, or the importance. This view assumes that everyone in Europe is working toward the same goals; however, some of the 53 countries are providing aspects of healthcare more successfully than others. Even if theoretically attributing unlimited financial resources to all, the healthcare goals may differ, because of different priorities related to dissimilar cultures.

Thus, the biannual Europaediatrics congresses of EPA/UNEPSA and the EPA publications in *The Journal of Pediatrics* have become a platform for discussion, communication, cooperation, and a consensus-finding process for all national pediatricians and also for all those providing care for children. Because individual membership met neither the purposes of EPA/UNEPSA nor that of pediatricians, it was stopped in 2015. Membership in the EPA/UNEPSA provides national pediatric associations with the experience and expertise of other European associations, a platform to discuss current and “hot topic” health issues, and also professional support during conflicts with national politicians and administrators. All individual pediatricians who are interested in the work of EPA/UNEPSA should become members of their national pediatric societies, which are full members of EPA/UNEPSA, and all nonpediatricians should become a member of an organiza-

tion that deals with other aspects of child health and is an affiliated member of EPA/UNEPSA.

### The EPA-SAB

The EPA-SAB wishes to act as an EPA/UNEPSA network and catalyst for national pediatric associations and societies in Europe and other parts of the world. Its aims are to correct the healthcare deficiencies in quality of child healthcare between 53 European countries comprising close to 200 million children <18 years such as child mortality within primary, secondary, and tertiary pediatric care and within general healthcare and medical care. Its activities include expanding the knowledge and database of EPA/UNEPSA by research on the diversity of healthcare systems, starting the debate among policy makers, learning without boundaries across borders, and transferring theory into practice. The team of EPA-SAB cooperates with national key persons, representing a well-balanced spectrum of expertise relating to pediatric subspecialties and European regions. EPA-SAB is an integral part of the EPA Council. Members of the EPA-SAB attend national pediatric congresses in foreign countries to present conclusions from the EPA database and to discuss policies on preventing unnecessary variations of child healthcare in Europe. The motto will be sharing expertise, guidelines, tool kits, and research projects across European borders. The EPA-SAB wishes to train national pediatricians in leadership and management to be prepared for developing visions and motivating all care providers involved in child healthcare. Communication with members preferably will be organized via Skype teleconference and other electronic media to reduce time-consuming travel and cost.

EPA/UNEPSA	European Paediatric Association, the Union of National European Paediatric Societies and Associations
SAB	Scientific Advisory Board

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<http://dx.doi.org/10.1016/j.jpeds.2017.03.060>

## Priorities of the EPA/UNEPSA Council

According to its constitution, the aim of the EPA/UNEPSA is to promote the child's rights to health, equity, and social justice by science, research, public healthcare, and education. No organization can achieve everything to which its members aspire because resources will limit aspirations. The framework for priority setting of the EPA/UNEPSA is described in **Table I** (available at [www.jpeds.com](http://www.jpeds.com)). Very few priority-setting frameworks for international medical organizations have been developed and reported in the literature; thus, the framework presented here has been constructed based on issues identified from literature review and multidisciplinary discussion across countries that are of the most concern to children, families, and health providers. The framework is constantly changed and adapted in relation to new needs. This flexible framework provides a system for the prioritization of topics within the EPA/UNEPSA based on whether the topic falls within the scope of EPA and whether the topic is important for children and their families, followed by a weighting system using score points that may change at intervals (**Table I**).

For example, EPA/UNEPSA came to the conclusion that too many international pediatric congresses exist and many of them are lacking pediatric governance and ethical framework.<sup>2</sup> Therefore, EPA/UNEPSA recommended that the focus, purpose, methods, location, and costs of future international pediatric congresses should be revisited. All activities of EPA/UNEPSA are based on the assumption that the outcome of care can be improved, not only if patients and families adapt to the existing healthcare systems and if they adhere to treatment recommendations but also if healthcare systems continuously adapt their services to the needs of patients and their families.

The Council of EPA/UNEPSA performs surveys on child health and child healthcare service systems, participates in policymaking projects that EPA/UNEPSA wishes to support, discusses priorities for publications and the Web site, and plans the work of individual members of the Council. **Table I** reflects the many projects that the EPA/UNEPSA has undertaken in recent years.

## Challenges in the Next Decade

We perceive many major challenges for key areas of child healthcare both at a general healthcare level and at the level of medical care systems (**Table II**; available at [www.jpeds.com](http://www.jpeds.com)). The changes of existing structures of child healthcare not only have the potential for opportunities but also entail serious risks, such as in reproductive medicine relating to sperm donors and surrogate mothers, or if well-functioning systems of care are destroyed, such as the economization of pediatric care<sup>3</sup> or the destruction of the successfully designated pediatric polyclinic system of outpatient care in some former countries of the Soviet Union.<sup>4</sup> These pitfalls of negative changes in pediatric care must be evaluated efficiently, discussed openly, and corrected otherwise they may lead to a metamorphosis<sup>5</sup> of child health services associated with neglect of the life course model

and systems thinking, resulting in adverse health and wellbeing in later childhood and adult life.<sup>4</sup>

## E-Health

E-health is a prominent example of the current challenges penetrating all levels of healthcare. It is expected to contribute to a greater quality and effectiveness in healthcare and may at the same time also heighten efficiency. The many challenges—starting with e-health legislation, leading to big-data collection and telemonitoring or proposing open end developments—may lead to patient anxiety and paralysis of professionals, along with data-protection issues (**Table III**; available at [www.jpeds.com](http://www.jpeds.com)). The various activities of EPA/UNEPSA aim to contribute to advances in e-health with a positive outcome for all children across Europe. This will all be under the primary directive of data protection, safety, and confidentiality along with awareness of the ethical difficulties and possible adverse effects, such as exposure to misinformation associated with the increasing usage of e-health. Patients should have access to their data at all times. This will allow for a quantum leap forward in integrated care and empowerment.

## Joint Efforts to Improve Child Health

Disparity is increasing according to the latest figures on the gradient in European societies. In addition, nationalistic ideas are becoming more socially acceptable. These developments will in particular need a strong coherence and solidarity among all European pediatricians to advocate for all children and for high-quality, cross-border care, as many of the smaller European countries can neither build up their own centers, nor will they have the volume of cases to conduct sound research in many areas of pediatrics and adolescent medicine. EPA/UNEPSA has developed over the past 40 years a very effective platform for building bridges between national and international pediatric societies with the aim of initiating and supporting joint projects for the benefit of child health.<sup>6</sup> ■

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## References

1. Ehrlich J, Pettoello-Mantovani M, Rubino A. Thirty-six years of the European Paediatric Association-Union of National European Paediatric Societies and Associations (EPA-UNEPSA). *J Pediatr* 2012;161:374-5.
2. Ehrlich J, Stengritt D, Jaeger D, Namazova-Baranova L, Pettoello-Mantovani M, Lenton S. The dilemma of international pediatric congresses in Europe: starting the debate. *J Pediatr* 2015;166:504-6.
3. Maio G. Von der Umwertung der Werte in der oekonomisierten Paediatric. *Monatsschr Kinderheilkd* 2016;164:1150-3.
4. Ehrlich J, Namazova-Baranova L, Pettoello-Mantovani M. European cooperation in child health care: the aims of the European Paediatric Association. *J Pediatr* 2016;177(suppl):S1-10.
5. Beck U. The Metamorphosis of the World: How Climate Change is Transforming Our Concept of the World. <http://www.wiley.com/WileyCDA/WileyTitle/productCd-0745690211.html>. Accessed April 19, 2017.
6. Lenton S, Namazova L, Vural M, Pettoello-Mantovani M. Improving community and primary care services for children, adolescents and their families in Europe. *J Pediatr* 2017;185:256-7.e1.

**Table I. Scorecard for prioritization of topics within EPA/UNEPSA****Framework of EPA/UNEPSA for encouraging scientific co-operation between national and international societies/associations in Europe for improving child health**

Topic selection in 2016	Points*
I. Joint research projects on child healthcare	
1. with national pediatric societies	6
2. with other European pediatric societies	5
3. maternal and neonatal care services	4
4. child healthcare systems in the community	6
5. hospital pediatrics	6
6. highly specialized pediatric centers of competence	4
7. diagnostics of diseases in primary and secondary care	1
8. therapeutic studies of diseases	1
9. epidemiology of childhood diseases	6
II. Joint research projects on child healthcare systems	
1. with national pediatric societies	6
2. with other European pediatric societies	5
3. rights of the child	4
4. child-friendly healthcare	6
5. vulnerable children	5
6. prevention of diseases	4
7. protection of children	4
8. promotion of child healthcare improvement	6
9. salutogenic health promotion factors	4
10. pathogenetic health factors	6
11. gaps of care	6
12. fragmentation of care	6
13. pediatric subspecialty care	4
14. e-health and digitalization of pediatric services	6
15. economic challenges of child healthcare and their influence on medical ethics	6
16. evaluating changes of pediatric services across borders	5
17. supporting cross-border care for individual patients	5
III. EPA/UNEPSA projects on translating research findings of specialists and experts to generalists in healthcare by	
1. publications	6
2. congresses	3
3. Web site	4
4. newsletters	6
IV. EPA/UNEPSA strategies on implementing theory of research into practice by	
1. statements to national pediatric organizations	6
2. statements to national governments	4
3. statements to international organizations	2
4. sending out newsletters to presidents of societies	5
V. EPA/UNEPSA educational strategies	
Education of the public, patients, families, and care givers by translating special knowledge to generalists during congresses, Web sites, and by publications	6

\*Very important/frequent = 6 points, unimportant/rare = 1 point.

**Table II. Main challenges of child healthcare and services needing immediate interventions and remodeling in 53 European countries**

Challenges of child healthcare	Challenges of child healthcare services	
1. New morbidities	10. Equity of pediatric care	17. Adequacy of integrated care
2. Migrant health and wellbeing, including language and cultural diversity	11. Efficacy of pediatric care	18. Care management of children with increasingly complex conditions and diseases
3. Adequate nutrition	12. Efficiency of pediatric care	19. Lack of pediatricians' awareness of environmental hazards
4. Risky lifestyles	13. Affordable treatment because of financial pressure due to increasing costs of diagnostics and therapeutics	20. Increasing demands for "personalized medicine"
5. New types of families (patchwork families, single-sex families, etc)	14. Ethnic minorities	21. Increasing demands for pediatricians' instructions on lifestyle, nutrition, and interfamily relations
6. Exposure to all kinds of new media	15. Constrained access to primary and secondary pediatric care settings because of lower numbers of children leading to decreasing local medical services and increasing distances to pediatric settings	22. Guided transfer of adolescents with long-term conditions from pediatric to adult services
7. More survivors of long-term conditions	16. Availability of genomics and epi-genetics	
8. Vaccine hesitancy and refusals		
9. Violation of child's rights to health		

**Table III. Terms and definitions in e-health**

Terms	Definition
HIT	Health information technology = broad term for the application of information technology to health and healthcare
E-health	Umbrella term for all sorts of services combining health services and informatics
EHR	Electronic health record = a digital version of all health records. Information is shared among different service providers including in- and outpatient care, results from laboratory tests, etc
EMR	Electronic medical record = often used interchangeably with EHR; a digital version of the collection of all information on a patient at (the site of) a health provider (hospital, physician, etc)
CDSS	Clinical decision support system = integrate a medical knowledge base, patient data, and an inference engine (computer program that applies artificial intelligence) to generate patient-specific advice
Telemedicine/telemonitoring	Telemedicine is the accelerated exchange of medical information from one location to another by using electronic communication and aiming to improve the patient's health status
Electronic prescription	Electronic prescription services aim to save the time of patients and pediatricians
E-learning	This applies to the use of media as well as to new didactic concepts for lifelong learning of pediatricians irrespective of their place of living and to filling the gaps and shortcomings of classical continuous medical educational systems
Big data application	The use of predictive analytics, behavior analytics, and other advanced analytics methods of complex data



## Caring for Infants and Children Following Alternative Dietary Patterns

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The number of people that refrain from eating meat has apparently increased. This is due to a variety of factors other than economic constraints or religious concerns, which have long been reasons for such dietetic conduct. Several reasons for adopting diets excluding meat include improved health, concerns regarding animal welfare, the use of antibiotics and hormones in livestock, and the excessive exploitation of environmental resource. Consequently, the number of children whose parents decide to follow alternative diets, such as vegetarian, vegan, macrobiotic, or fruitarian, is also growing.

Clinical research regarding adults adopting such diets has expanded, and their nutritional impact is now well documented. However, data on children following dietetic regimens excluding meat and the impact on their health are limited. We would like to raise the awareness among pediatricians regarding advising parents during pregnancy and for regularly caring for infants and children who grow up in families consuming atypical dietetic regimes, such as vegetarian and vegan diets.

### People Following Vegetarian and Vegan Diets

Vegetarianism is defined by the practice of abstaining from the consumption of the flesh of any animal, which means that meat and fish are excluded from the diet.<sup>1</sup> The most common is lacto-ovo-vegetarianism, which excludes meat and fish but includes consumption of milk, cheese, and eggs. Vegan diets exclude all animal food sources including dairy products or eggs<sup>2</sup> (Table I; available at [www.jpeds.com](http://www.jpeds.com)).

A recent update on vegetarianism, reported in the Gallup's Consumption Habits survey, revealed that 5% of the American adult population was vegetarian and 2% of the same population considered themselves to be vegans.<sup>3</sup> Worldwide, the percentage of vegetarians varied from 11.2% (0.02% vegan) of the Australian and 10.3% of the New Zealand adult population<sup>4</sup> to 5% of the Israel population,<sup>5</sup> whereas the Indian population counted the highest number of vegetarians (approximately 30%).<sup>6</sup>

In Europe, surveys conducted during the last 5 years reported a percentage of vegetarian population below 5% in countries like Spain (0.5%-1%), Portugal (2%), France (2%), Finland (3%), Poland (3.2%), and Denmark (4%). Larger percentages of vegetarian populations were reported for Germany (9%), Austria (9%), Sweden (10%), and Italy where recent data indicated that vegetarians and vegans have been increasing at a rate of 1600 per day, rising from 6% in 2013 up to 10% in

2016, of which 1% claimed to be vegan<sup>7,8</sup> (0.6% in 2015). The highest rates of vegetarianism in Europe were reported in the United Kingdom, where 12% of the adults and up to 20% of the young population ranging from 16 to 24 years old followed a vegetarian or vegan diet.<sup>7,9</sup> In particular, the number of vegans had risen by 350% in the past decade. The majority of the data reported are limited to the adult population, and scarce information is available on the use of vegetarian and vegan diets in infants and children.<sup>10</sup>

### Health Risks in Infants and Children Following Vegan Diets Lacking Supplementary Constituents

In Europe, several case reports have described that children hospitalized because of various nutritional deficiencies (vitamins, iron, calcium), which developed after they were breastfed or weaned according to vegan regimes.<sup>11,12</sup> For instance, in Italy an 11-month-old child weaned according to a vegetarian diet was hospitalized in 2015 because of a serious vitamin B12 deficiency, and in 2016 a 2-year-old infant, whose diet was exclusively based upon breastfeeding from a mother following a long-lasting vegan diet, was hospitalized because of a severe nutritional deficiency caused by his diet. In both cases, their diets had not been combined with appropriate supplements. Furthermore, several cases of children presenting severe vitamin B12 deficiency following a vegan diet were reported in Italy requiring hospitalization.<sup>13</sup> In 2016, a case report described a malnourished 14-month-old child with growth failure, 5.5 kg body weight, and hypocalcemia who was brought to hospital by his grandparents against the will of the parents. In this case, a court order was issued, forcing the child to remain in the custody of the hospital.<sup>13</sup> The proposed "criminalization of the vegan lifestyle"<sup>13</sup> has sparked debate in public opinion in Europe and the US.

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The authors declare no conflicts of interest.

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<http://dx.doi.org/10.1016/j.jpeds.2017.04.053>

## Nutritional Deficiencies because of Rigorous Diets Excluding Meat in Children

Special attention should be paid to intensify communicating with parents when caring for infants and children growing up in families practicing vegetarian or vegan diets. It is mandatory to ensure that an adequate nutrient intake is provided during the breastfeeding and complementary feeding periods.<sup>14</sup> In fact, several fundamental nutrients are reported to possibly become insufficient in children practicing meat excluding diets, such as vegetarian and vegan (Table II; available at [www.jpeds.com](http://www.jpeds.com)). The number of such deficient nutrients increase if the diet becomes more restricted.<sup>14</sup>

Human milk is recommended as the exclusive nutrient source for full-term infants during the first 6 months after birth, as it provides sufficient support to optimal growth and development.<sup>15</sup> In many countries, breastfeeding is expanded by appropriate supplementations of vitamin D and iron, and it could be continued after weaning for the first 12 months and thereafter for as long as mutually desired if the mother feeds normally.<sup>15</sup>

The maternal diet influences the composition of breast milk.<sup>13</sup> In vegan mothers, breast milk is deficient in multiple vitamins.<sup>16</sup> On the other hand, it has been shown that milk of vegan women has lower concentration of saturated fat and eicosapentaenoic acid and a higher concentration of linoleic and linolenic acid.<sup>17</sup> Furthermore, milk of vegetarian women has a lower level of environmental pollutants such as DDT, chlordane, and polychlorinated biphenyls, compared with the milk of omnivorous women.

Vegan infants unable to breast feed are usually given a formula based on methionine-fortified soy protein isolate. The exclusive use of soy-based formula in these children is still debated. In fact, although some studies have reported that vegan infants exclusively fed with this soy-based formula grow and develop normally,<sup>18</sup> others suggest that commercial soymilk should not be introduced before the first year because of inadequate intake of protein, sodium, potassium, and chloride; even if the content of micronutrients such as iron and zinc in soymilk is higher and similar to that present in cow milk, respectively, their bioavailability is reported to be relatively lower.<sup>18</sup> Yet, a soy-based infant formula is the most recent recommendation for infants, including vegan, who are not receiving breast milk.<sup>14</sup>

Current guidelines suggest that solid food should be introduced by the age of 6 months in all children, despite of their families being vegetarian or vegan, and a gradual introduction of a variety of food is recommended to promote good eating habits.<sup>19</sup>

Considering that commercial products provide a limited selection for older vegan infants, their parents may opt for preparing homemade vegan food for their own baby, particularly those foods typically included in a vegan diet such as legumes, tofu, and leafy green vegetables.<sup>20</sup> Thus, families who wish to wean their baby on a vegan diet may face extra challenges that include the risk of inducing multiple nutritional deficiencies, such as vitamin B12, iodine, calcium, and a general energy deficit.<sup>14</sup> Therefore, a specific supplementation must be provided to all vegan infants during weaning under the supervision of a pediatrician, who may also advise vegan families to request a dietetic referral prior to commencing weaning.

## Conclusions

The popularity of vegetarianism and veganism in the adult population can be explained by health beliefs that differ from the majority of people in society. These health beliefs are based on a variety of factors that may not match those of the majority of pediatricians, thus, leading to a more complicated communication between parents and caregivers. In particular, young vegetarian parents may want their children to share their own eating habits.<sup>1</sup> However, dietetic regimens excluding meat, particularly vegan diets, should be practiced by parents under appropriate pediatrics or dietary supervision to ensure that the infant receives a sufficient supply of nutrients. European Paediatric Association-Union of National European Paediatric Societies and Associations would like to encourage pediatricians to play a proactive and fairly friendly key role<sup>21</sup> in informing and advising those parents who intend to raise their children with a strict meat excluding dietetic regimen, such as vegan diets. In fact, parents should be advised about the importance of a proper diet supplementation. They must be informed on the serious consequences of failing to follow the advice and prescriptions regarding supplementation of the diet, which may include irreversible cognitive damage from vitamin B12 deficiency and death.<sup>14</sup> However, the discussions on whether differing health beliefs as vegan diets with appropriate supplements allow normal growth and development, provided that regular pediatric and dietetic supervision ensures nutritional adequacy of the diet, should not affect the relationship with the pediatrician.<sup>14</sup> ■

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

## References

- Di Genova T, Guyda H. Infants and children consuming atypical diets: vegetarianism and macrobiotics. *Paediatr Child Health* 2007;12:185-8.
- Van Winckel M, Van deVelde S, De Bruyne R, Van Biervliet S. Clinical practice: vegetarian infant and child nutrition. *Eur J Pediatr* 2011;170:1489-94.
- Gallup, Newport F. Well-being section: in U.S., 5% consider themselves vegetarians. <http://www.gallup.com/poll/156215/consider-themselves-vegetarians.aspx>. Accessed January 22, 2017.
- Vegvic Australia. Statistics, 2010 report. <https://vegvic.org.au/statistics>. Accessed January 25, 2017.
- Reuters, Choen T. In the land of milk and honey, Israelis turn vegan. <http://www.reuters.com/article/2015/07/21/us-israel-food-vegan-idUSKCN0PV1H020150721> Accessed January 22, 2017.
- ScoopWoop News, Sreeraj TK. How many Indians are non-vegetarians and which state is the least vegetarian. <https://www.scoopwhoop.com/This-Survey-Found-Out-How-Many-Indians-Are-Non-Vegetarians-And-Which-State-Is-The-Least-Vegetarian/#.494b7iqp9/>. Accessed January 25, 2017.
- Mintel Research. Fehler! Hyperlink-Referenz ungültig. <http://www.mintel.com/press-centre/food-and-drink/number-of-global-vegetarian-food-and-drink-product-launches-doubles-between-2009-and-2013>. Accessed January 22, 2017.
- Corriere della Sera, Querzè R. Quanto valgono vegetariani e vegani [http://www.corriere.it/cronache/16\\_febbraio\\_06/vegetariani-vegani-veggy-quanto-valgono-c4facec0-cd15-11e5-a5a3-6d487a548e4e.shtml](http://www.corriere.it/cronache/16_febbraio_06/vegetariani-vegani-veggy-quanto-valgono-c4facec0-cd15-11e5-a5a3-6d487a548e4e.shtml). Accessed January 22, 2017.
- World Atlas. Society: countries with the highest rates of vegetarianism. <http://www.worldatlas.com/articles/countries-with-the-highest-rates-of-vegetarianism.html> Accessed January 22, 2017.
- Moss R. Number of vegans in Britain soars in past decade, here's why. [http://www.huffingtonpost.co.uk/entry/number-of-vegans-in-uk-half-million\\_uk\\_573c2557e4b0328a838b92a3](http://www.huffingtonpost.co.uk/entry/number-of-vegans-in-uk-half-million_uk_573c2557e4b0328a838b92a3). Accessed May 9, 2017.
- Gasperetti M. Eleven months, son of vegans: hospitalized for malnutrition, The parent's dilemma. [http://www.corriere.it/cronache/15\\_luglio\\_03/undici-mesi-ricoverato-malnutrizione-si-indaga-genitori-0b9de3a8-214f-11e5-be97-5cd583b309bb.shtml](http://www.corriere.it/cronache/15_luglio_03/undici-mesi-ricoverato-malnutrizione-si-indaga-genitori-0b9de3a8-214f-11e5-be97-5cd583b309bb.shtml). Accessed May 9, 2017.
- Genoa, Vegan diet: 2 year old baby resuscitated. <http://www.rainews.it/dl/rainews/articoli/Genova-dieta-vegana-bimba-di-2-anni-ricoverata-in-rianimazione-d810566f-85d5-403f-aabd-0029e0bf6ce0.html>. Accessed May 9, 2017.
- Il Fatto Quotidiano, Patitucci D. Dieta vegana ai bimbi, parla l'esperto. <http://www.ilfattoquotidiano.it/2016/07/08/dieta-vegana-ai-bimbi-parla-lesperto-danneggia-e-compromette-la-salute/2891253/>. Accessed January 22, 2017.
- Fewtrell M, Bronsky J, Campoy C, Domellöf M, Embleton N, Fidler Mis N, et al. Complementary feeding: a position paper by the European Society for Paediatric Gastroenterology, Hepatology, and Nutrition (ESPGHAN) Committee on Nutrition. *J Pediatr Gastroenterol Nutr* 2017;64:119-32.
- American Academy of Pediatrics, Work Group on Breastfeeding. Breastfeeding and the use of human milk. *Pediatrics* 1997;100:1035-9.
- Guez S, Chiarelli G, Menni F, Salera S, Principi N, Esposito S. Severe vitamin B12 deficiency in an exclusively breastfed 5-month-old Italian infant born to a mother receiving multivitamin supplementation during pregnancy. *BMC Pediatr* 2012;12:85.
- Sanders TAB, Ellis FR, Dickerson JWT. Studies of vegans: the fatty acid composition of plasma choline phosphoglycerides erythrocytes, adipose tissue, and breast milk, and some indicators of susceptibility to ischemic heart disease in vegans and omnivore controls. *Am J Clin Nutr* 1978;31:805-13.
- American Academy of Pediatrics, Committee on Nutrition. Soy protein based formulas: recommendations for use in infant feeding. *Pediatrics* 1998;101:148-53.
- Vail B, Prentice P, Dunger B, Hughes IA, Acerini CL, Ong KK. Age at weaning and infant growth: primary analysis and systematic review. *J Pediatr* 2015;167:317-24, e1.
- Messina M, Messina V. The dietitian's guide to vegetarian diets. issues and applications. Gaithersburg (MD): Aspen Publishers, Inc; 1996.
- Pettoello-Mantovani M, Campanozzi A, Maiuri L, Giardino I. Family-oriented and family-centered care in pediatrics. *Ital J Pediatr* 2009;35:12.

Table I. Classification of dietary patterns

Dietary patterns	Definition	Beef	Poultry	Fish	Dairy/eggs
Nonvegetarian	Eat red meat, poultry, fish, milk, and eggs more than once a week	Yes (++)	Yes (++)	Yes (++)	Yes
Semivegetarian	Eat red meat, poultry, and fish less than once per week and more than once per month	Yes (+)	Yes (+)	Yes (+)	Yes
<b>Vegetarians</b>					
Pescatarian (pesco)	Eat fish, milk, and eggs but no red meat nor poultry	No	No	Yes	Yes
Lacto-ovo	Eat milk and eggs but no red meat, poultry nor fish	No	No	No	Yes
Vegan	Eat no red meat, poultry, fish, dairy, and eggs	No	No	No	No

Table II. Nutrients deficiencies reported in vegetarian and vegan diets

Nutrients	Vitamin A	Vitamin B2	Vitamin B12	Vitamin D	Iron	Zinc	Calcium	n-3 fats (DHA)	Protein
Diets									
Vegetarian									
Ovo			●	●	●	●	●	●	●
Lacto				●	●	●		●	●
Lacto-ovo				●	●	●		●	●
Vegan	●	●	●	●	●	●	●	●	●

DHA, docosahexaenoic acid.

# Learning from Others: Child Health and the European Observatory on Health Systems and Policies

Martin McKee, CBE, MD, FMedSci, and Ellen Nolte, MPH, PhD

**A**lthough much less often than in the past, children in every European country sometimes fall ill, and for broadly the same reasons. These include their genes and the conditions in which they live, including the risk of infection, injury, and mental illness. The burden of disease that these conditions generate is changing rapidly, however.<sup>1</sup> Improved living conditions and immunization have greatly reduced the burden of infectious disease. Safer environments are reducing risks of injury, even though progress varies greatly.<sup>2</sup> Diseases that were once fatal are now successfully treated, and children survive at much higher rates than ever before.<sup>3</sup> Children with complex genetic disorders are now surviving into adulthood, but only because they can receive complex ongoing care. Dramatic improvements in neonatal care have allowed premature babies who once would have perished to survive, but sometimes with multiple disabilities.

## Child Health

Collectively, these developments have led to changes in how illness in children is managed, and these changes have been driven by evidence in most cases. The clinical management of ill children, including the medicines they take and the procedures they undergo, have, hopefully, been evaluated in rigorous studies. Although there is still some way to go, it is increasingly recognized that children are not simply small adults. Even when they contract the same illnesses as adults, children may present in different ways. And children may respond differently to the same treatments because of differences in the absorption, distribution, and metabolism of medicines. For these reasons, they should not be given treatments that have not been tested on children, and, rightly, there has been a substantial increase in the numbers of children enrolled in randomized controlled trials. A visit to any European generalist or specialist paediatric conference will reveal the intensity of collaborations and discussions sharing and learning from this evidence, and a new treatment implemented successfully in 1 country will spread rapidly to others.

## Child Health Care Service Systems

Yet the same cannot be said of the current models of care, which are often products of history. Arbitrary divisions, such as which services are provided in the hospital and which are provided in the community, may have their origins in professional boundaries established decades ago. Many things that should be done are not being done. There is now clear evidence that

the care of the child with complex problems is better undertaken by a multidisciplinary team, bringing together a group of people from different professional backgrounds, working with each other but also with the child and her parents as partners. But in many countries, this remains no more than an aspiration. The scale and nature of the multidisciplinary team approach is often heavily influenced by the financial incentives in place in each health system, incentives that frequently inhibit rather than facilitate the necessary collaborations.

The challenges of implementing appropriate models of care are also apparent during the transition between adolescence and adulthood,<sup>4</sup> even to the extent of the different rules for defining when this transition should take place. Claims that the patient is at the center of the health system are rarely more than rhetoric.

## European Observatory on Health Systems and Policies

Given the diversity that exists among its health systems, Europe provides a natural laboratory for evaluating different models of care. This is the philosophy that underpins the European Observatory on Health Systems and Policies.<sup>5</sup> A unique international collaboration of universities, governments, international organizations (including the World Health Organisation and European Commission), and a large public insurer has over almost 2 decades become the leading source of evidence to inform health policy and systems across Europe and, where appropriate, in relevant comparator countries, such as those in North America, Asia, and Australasia.

The Observatory collates and synthesizes evidence from primary and secondary research, drawing on a network of researchers and policymakers. It presents options for policymakers and practitioners based solidly on peer-reviewed research, typically brought together in a series of major studies. These take a multidimensional approach to health systems, including (1) the components of systems, such as funding or payment of providers; (2) settings of care, such as hospitals, and exploring such issues as their operation and design,<sup>6,7</sup> or primary care<sup>8</sup>; (3) how health systems respond to disease categories, such as

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The authors declare no conflict of interest.

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<http://dx.doi.org/10.1016/j.jped.2017.05.045>

complex chronic diseases,<sup>9</sup> infectious diseases,<sup>10</sup> cancer,<sup>11</sup> and mental illness<sup>12</sup>; and (4) particular patient groups, such as children. The latter of these was exemplified by a 2013 study on health systems and services for children across Europe.<sup>13</sup> Beginning with a review of the changing burden of disease afflicting children, this study examined differences across European countries in such areas as primary care; the management of long-term conditions, public health, and prescribing; the role of schools; and promotion of the health of children and services for vulnerable and maltreated children. The data revealed substantial differences in outcomes of common childhood disorders, especially in such areas as common acute illnesses.<sup>14</sup> The Observatory showed that children with similar conditions might be treated very differently depending on what country they lived in, concluding that in many parts of Europe, outcomes were not as consistently good as they could be. There were missed opportunities to maximize health and well-being, often a failure to translate the rhetoric of the rights of the child into reality, and lack of a comprehensive strategy for improving health services for children.

## Dissemination of Evidence

It is not enough to produce evidence if we want to change policy, which remains the fundamental goal of the Observatory. A very high priority must be the dissemination of evidence, drawing extensively on the substantial literature on knowledge brokering,<sup>15</sup> including the role played by cognitive biases.<sup>16</sup> This literature emphasizes the importance of linking evidence to context. Health systems are complex adaptive systems. They are products of history and politics, including existing institutional structures and political views about such issues as the relationship between the individual and society or the economy of professionals. The challenge is to take the evidence and adapt it to different circumstances.

## How the European Observatory Works

The Observatory ensures that those synthesizing the evidence have a detailed understanding of the diversity of European health systems. The Observatory produces structured Health System Reviews that provide an overview of national health systems across the European region.<sup>17</sup> These reviews follow a detailed template that recognizes the many definitional challenges of comparisons. In health systems, Lewis Carroll's view that "words mean what I choose them to mean"<sup>18</sup> is a persistent problem. The health system reviews are complemented by the Observatory's Health Systems and Policy Monitor, a continually updated resource that describes policy innovations in a large number of European countries.<sup>19</sup>

The second goal of the Observatory is to understand the needs of health policymakers and work with them to translate the evidence into messages that are salient and practical for them. This is done mainly by means of policy dialogues that bring together a range of stakeholders from similar countries with international experts. If the need is urgent, Observatory staff and the experts with whom they collaborate will undertake a rapid response for a partner, drawing on their own knowledge and what information can quickly be assembled from the wider network to answer the particular question.<sup>20</sup>

These products are complemented by others, such as policy briefs, shorter documents that address specific questions raised by policymakers, and the quarterly journal *Eurohealth*, which publishes short practical articles describing innovations or synthesizing the evidence on topical questions.

## Summary and Conclusions

Since it was established, the Observatory has contributed substantially to health policy in Europe at regional, national, and European levels. The Observatory's work on patient mobility provided much of the evidence base for the European Directive on Cross-Border Care. The Observatory's policy dialogues have shaped legislation in several European countries. The Observatory has created a community of researchers and policymakers across the continent and beyond, bringing them together not only to share evidence and experiences, but also to speak a common language, so that the researchers are answering questions posed by the policymakers.

There remains much to be done. The persisting variation in outcomes achieved by European health systems confirms the scope for shared learning. This is as true for child health as for any other aspect of health systems. What is needed is the intensity of discussion on models of care that already exist for advances in clinical management. The Observatory is working increasingly with the pediatric community across Europe, a community that is contributing to a forthcoming book on the changing role of the hospital. That book, and many other aspects of the work of the Observatory, seek to promote a much-needed dialogue between the clinicians who deliver care to our populations and the policymakers who design the health systems within which they work. ■

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

## References

1. Wolfe I, Thompson M, Gill P, Tamburlini G, Blair M, van den Bruel A, et al. Health services for children in western Europe. *Lancet* 2013;381:1224-34.
2. Armour-Marshall J, Wolfe I, Richardson E, Karanikolos M, McKee M. Childhood deaths from injuries: trends and inequalities in Europe. *Eur J Public Health* 2012;22:61-5.
3. Wijlaars LP, Gilbert R, Hardelid P. Chronic conditions in children and young people: learning from administrative data. *Arch Dis Child* 2016;101:881-5.
4. Crowley R, Wolfe I, Lock K, McKee M. Improving the transition between paediatric and adult healthcare: a systematic review. *Arch Dis Child* 2011;96:548-53.
5. European Observatory on Health Systems and Policies. Available at: <http://www.euro.who.int/en/about-us/partners/observatory>. Accessed January 22, 2016.
6. McKee M, Healy J, eds. *Hospitals in a changing Europe*. Buckingham (UK): Open University Press; 2002.
7. Rechel B, Wright S, Edwards N, Dowdeswell B, McKee M. *Investing in hospitals of the future*. Brussels (UK): European Observatory on Health Systems and Policies; 2009.
8. Saltman R, Bankauskaite V, Vrangbaek K. *Primary care in the driver's seat: organizational reform in European primary care*. Berkshire (UK): McGraw-Hill Education; 2005.
9. Nolte E, McKee M. *Caring for people with chronic conditions: a health system perspective*. Berkshire (UK): McGraw-Hill Education; 2008.
10. Coker R, Atun R, McKee M. *Health systems and the challenge of communicable disease: experiences from Europe and Latin America*. Berkshire (UK): McGraw-Hill Education; 2008.
11. Albrecht T, McKee M, Alexe DM, Coleman MP, Martin-Moreno JM. Making progress against cancer in Europe in 2008. *Eur J Cancer* 2008;44:1451-6.
12. Knapp M, McDaid D, Mossialos E, Thornicroft G. *Mental health policy and practice across Europe*. Berkshire (UK): McGraw-Hill Education; 2007.
13. Wolfe I, McKee M, eds. *European child health services and systems: lessons without borders*. Berkshire (UK): McGraw-Hill Education; 2013.
14. Wolfe I, Cass H, Thompson MJ, Craft A, Peile E, Wieggersma PA, et al. *Improving child health services in the UK: insights from Europe and their implications for the NHS reforms*. *BMJ* 2011;342:d1277.
15. Innvaer S, Vist G, Trommald M, Oxman A. Health policy-makers' perceptions of their use of evidence: a systematic review. *J Health Serv Res Policy* 2002;7:239-44.
16. McKee M, Stuckler D. Reflective practice: how the World Bank explored its own biases? *Int J Health Policy Manag* 2015;5:79-82.
17. European Observatory on Health Systems and Policies. *Health system reviews (HiT series)*. Available at: <http://www.euro.who.int/en/about-us/partners/observatory/publications/health-system-reviews-hits>. Accessed January 22, 2017.
18. Carroll L. *Alice's adventures in wonderland*. London: Collins Classics; 2010.
19. European Observatory on Health Systems and Policies. *The health systems and policy monitor*. Available at: <http://www.hspm.org/mainpage.aspx>. Accessed January 22, 2017.
20. Rechel B, McKee M, Haas M, Marchildon GP, Bousquet F, Blümel M, et al. Public reporting on quality, waiting times and patient experience in 11 high-income countries. *Health Policy* 2016;120:377-83.



# Call for a European Paediatric Association/Union of National European Paediatric Societies and Associations Survey on National Child Health Care Services for European Children with Malignancies

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**H**ighly specialized pediatric centers are needed for the diagnosis and treatment of rare but life-threatening conditions, including malignant diseases, because children with these disorders require complex diagnostic procedures and high-end therapeutic interventions, such as stem cell transplantation.<sup>1,2</sup> Centralization of subspecialty care is instrumental to ensure the quality of care that correlates with experience and consequently with the number of rare cases diagnosed and treated, as is seen in pediatric oncology, as well as in maternal and neonatal care.<sup>3,4</sup> Beyond such centralization, it was crucial to the success of pediatric oncology that centers started to cooperate and engage in prospective, randomized, and controlled multicenter clinical trials that included other subspecialties to work toward the best possible outcomes for children with cancer.

Because the resources available for pediatric subspecialty care are not equally available in all 53 European countries, the organization and the structure of care in pediatric oncology are heterogeneous. Therefore, in 2007 the European Paediatric Association/Union of National European Paediatric Societies and Associations (EPA/UNEPSA) investigated the pediatric oncology landscape of care in 31 European countries. These data, presented at the 2011 EUROPAEDIATRICALS congress in Vienna,<sup>5</sup> concluded that less well-resourced countries in Eastern Europe faced the dilemma of how best to develop and finance hemato-oncologic care in the future. Better-resourced countries in Western Europe faced the problem of how best to rationalize and colocate interdependent specialist services to improve outcomes. Last, but not least, small countries looked for ways of developing effective cross-border care.

Our goal is to inform the European pediatricians about previous findings and to reopen the debate on the structure of health care services for European children with malignant diseases. We hope to motivate national pediatric oncologists to support a new survey in 2017 on the development of health service systems in Europe during the last 10 years.

## Human Workforce and Hospital Care

The almost 10-year-old EPA/UNEPSA survey covered 31 of the 53 countries (59%), with 632 million of the total 879 million European inhabitants (72%). The questionnaire was answered

EPA/UNEPSA	European Paediatric Association/Union of National European Paediatric Societies and Associations
GDP	Gross domestic product
pmcp	Per million child population
PHO	Pediatric hemato-oncologist

by members of International Society of Paediatric Oncology (52%), EPA/UNEPSA (39%), and other pediatric organizations (9%). The median number of fully trained and accredited pediatric hemato-oncologists (PHOs) was 18 PHO per million child population (pmcp), and there was no significant difference between Western European countries and Eastern European countries with a low gross domestic product (GDP); however, the proportion of PHO per total number of pediatricians was lower in Eastern Europe (1.3% vs 2.7%;  $P = .003$ ). Eighty-four percent of PHOs worked in children's hospitals, compared with 43% of all pediatricians. The median number of specialized oncology centers was 3.3 pmcp (2.8 in the East and 3.8 in the West;  $P = .088$ ). A median of 1.3 centers pmcp offered human stem cell transplantation, with a significant difference between Eastern and Western European countries (0.5 vs 1.7;  $P = .013$ ). There was a positive correlation ( $r = 0.559$ ;  $P < .001$ ) between the number of stem cell transplantation pmcp and GDP.

## Postgraduate Training, Registries, and Clinical Trials

Sixty percent of reporting countries fulfilled the European criteria for postgraduate subspecialty training in pediatric hemato-oncology. Continuous medical education was offered for these specialists in 80% of countries, and there was no significant difference in availability and accessibility of training between Eastern and Western Europe; however, the content of teaching and training sessions was not studied.

Ninety percent of the 31 countries had a national registry for malignancies in childhood, and one-third of these reported their statistics to international registries as well. In 25 European countries, the proportion of children with malignancies reported to a registry exceeded 90%, and less than 10% were not reported to any registry. The median incidence of malignancies during childhood was 15.2 per 100 000 children aged <15 years.

Prospective, randomized, and controlled multicenter clinical trials were in place in 27 of 31 countries, and

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The authors declare no conflict of interest.

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<http://dx.doi.org/10.1016/j.jpeds.2017.06.047>

**Table. Reports of national pediatric oncologists in 2007 on priorities of future investments in health care services for children with malignancies in 31 European countries**

Priorities	No. of countries
Improvement of working conditions for oncologists	9
Participation at multicenter clinical trials	7
Improvement of psychosocial care for patients	6
International cooperation and cross-border care	5
Adaptation of local treatment to international standards	4
Postgraduate training of pediatric oncologists in countries with high standards of care	4
Improvement of financing the care of children with malignancies	3
Investment in research facilities	3
Improvement of follow-up and long-term care	3
Establishing a national registry for children with malignancies	2
Establishing a national registry for bone marrow donors	1
No wishes	6

Each country could report 1 or more wishes.

approximately one-half of the children with malignancies were enrolled in these trials (range, 5%-100%). The number of trials and the proportion of children recruited into trials were lower in Eastern Europe compared with Western Europe. Seventy-four percent of countries reported follow-up care of pediatric oncology patients performed in specialized pediatric or adult oncology centers. Therapeutic guidelines for standardized diagnosis and treatment of children with malignancies were reported from 94% of countries.

### Open Question on Financing and Provision of Services

Although the cost of care may be low for children in general, those with malignancies significantly influence the overall cost of care in pediatrics,<sup>6</sup> creating a considerable financial burden for national social health insurance systems. However, there is limited information concerning the variation of costs among European countries. The impact of GDP as well as the presence or absence of either a system of health insurance funds or a national health service may have an impact in this respect. Three-quarters of the 31 European countries reported financing by health insurance funds and one-quarter by taxes and a national health service. There is also a lack of data on the influence of different health care systems on outcomes of care. Furthermore, the roles of major health system reforms and of health system assessment remain to be clarified. Pediatric oncologists of 65% of the countries reported that the quality of care in their own country was comparable to that of most other European countries, whereas the situation was estimated to be superior to average in 19% and lower than normal in 16% of countries. Unfortunately, the previous EPA/UNEPSA survey did not study the survival rates of children with different malignancies according to countries. When asking the reporting PHO what she or he considered the most important future challenges and wishes, the most frequent answer was “better working conditions” (Table). Further research is needed to determine the optimal size of specialist centers for childhood malignancies based on the primary outcomes of effectiveness, equity, and effi-

ciency, given varying circumstances, and the optimal population size covered by specialist centers. Research should also be undertaken to determine the collocation of hemato-oncological centers with other pediatric subspecialties. Integrating PHO centers into the traditional organizational structures of primary, secondary, and tertiary pediatric care is of utmost importance to avoid fragmentation of pediatric care. A future survey should analyze whether a successful network could include centralized management and decision making by specialized PHO teams with decentralized provision of treatment whenever possible.

There is a list of questions that had not been asked in the previous survey. Therefore, new questions should relate to the rights of children to health, such as consent to treatment, the role of rehabilitative and palliative care in special centers, social integration, and schooling, as well as differences in long-term care.

### Conclusions

There is a need for a follow-up survey on the diversity of national child health care services for European children with malignancies that not only will repeat the previous questions, thus showing the developmental changes within the last 10 years, but also will add new questions that concentrate on differences in quality of care and outcomes, in training programs of caregivers, numbers and qualifications of all specialists, costs of treatment, quality measures relating to competence and service provision, future workforce planning, and the difficulties in achieving significant changes or reorganization in provision. EPA/UNEPSA plans to start the new survey at the end of 2017. For further information, please visit the EPA/UNEPSA website in October 2017. ■

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### References

- Ehrich J, Kerbl R, Pettoello-Mantovani M, Lenton S. Opening the debate on pediatric subspecialties and specialist centers: opportunities for better care or risks of care fragmentation? *J Pediatr* 2015;167:1177-8.e2.
- Khandelwal P, Millard HR, Thiel E, Abdel-Azim H, Abraham AA, Auletta JJ, et al. Hematopoietic stem cell transplantation activity in pediatric cancer between 2008 and 2014 in the United States: a Center for International Blood and Marrow Transplant Research report. *Biol Blood Marrow Transplant* 2017. doi:10.1016/j.bbmt.2017.04.018. [Epub ahead of print].
- Poeran J, Borsboom GJ, de Graaf JP, Birnie E, Steegers EA, Mackenbach JP, et al. Does centralisation of acute obstetric care reduce intrapartum and first-week mortality? An empirical study of over 1 million births in the Netherlands. *Health Policy (New York)* 2014;117:28-38.
- Berlanga P, Vicente ML, Cañete A, Alberich C, Castel V. Cancer in children and adolescents in Spain: incidence, treatment setting and provider specialty. *Clin Transl Oncol* 2016;18:27-32.
- Ehrich J, Namazova-Baranova L, Pettoello-Mantovani M. Introduction to “Diversity of child health care in Europe: a study of the European Paediatric Association/Union of National European Paediatric Societies and Associations”. *J Pediatr* 2016;177S:S1-10.
- Neff JM, Sharp VL, Muldoon J, Graham J, Myers K. Profile of medical charges for children by health status group and severity level in a Washington State Health Plan. *Health Serv Res* 2004;39:73-89.



# Public Health Practice and Policy to Improve Child and Adolescent Health in Europe

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Many chronic and long-term conditions of children and adolescents are caused by modifiable behavioral and environmental factors, requiring a shift in focus of practice and policy toward preventing, rather than treating, disease.<sup>1</sup> These changes are best addressed by public health, the discipline that addresses prevention and health promotion. Public health can be defined as “the art and science of preventing disease, prolonging life, and promoting health through the organized efforts of society.”<sup>2,3</sup> Public health focuses on primary prevention from a population perspective. It encompasses organized collective activities such as screening and surveillance to identify population health problems, their contributing factors and opportunities for intervention, and collective activities to promote health and to reduce or remove risk factors that lead to health problems.

The European Public Health Association (EUPHA)<sup>4</sup> is an international, multidisciplinary, scientific organization bringing together ~10 000 public health experts from 39 European countries for professional exchange and collaboration throughout Europe. The EUPHA section on Child and Adolescent Health (CAPH), 1 of 21 sections, is investing to meet the needs of the changing face of disease burden by facilitating and generating communication between policymakers, researchers, and practitioners from different disciplines, by enhancing visibility of the evidence, and by strengthening the capacity of public health professionals (Figure; available at [www.jpeds.com](http://www.jpeds.com)).

CAPH also provides a platform for the exchange of information, experience, and research. Advancing the evidence base, practice, and policy for child and adolescent public health is a priority to secure the health of future populations. Within EUPHA, this requires strong links with other disciplines, in particular pediatrics.

## Priorities for Child and Adolescent Public Health

The aim of child and adolescent public health is to support children and adolescents to achieve and maintain their health by preventing health problems, for example, through behavior change, skill acquisition, or use of health services. Here, we highlight 5 public health priorities: (1) injuries,<sup>5,6</sup> (2) mental health,<sup>7</sup> (3) child maltreatment,<sup>7,8</sup> (4) risky behaviors in

adolescents<sup>9-11</sup> and (5) obesity<sup>12-14</sup> (Table; available at [www.jpeds.com](http://www.jpeds.com)).

We considered these as priorities primarily because of the attributable burden in the European child and adolescent population. Second, we prioritized health issues that have a major impact on the child itself as well as on health systems and society. Third, we prioritized those problems for which the burden of disease is unequal between and within European countries. Fourth, we prioritized health problems that are amenable to public health intervention. Tackling these problems requires every agency to do its part and cooperate in an interdisciplinary manner. We recognize there are many opportunities for closer cooperation between public health, pediatricians, and other professionals such as primary care physicians to address these issues in a more effective manner.

## Tackling Social Determinants of Child and Adolescent Health

From the numerous studies conducted on public health issues, it is clear that health care varies not only between, but also within, countries. This counts for injuries, mental health problems, child abuse, and behaviors that affect health. Children and adolescents in poorer countries and those from poorer families in more affluent countries suffer a greater burden of disease. In addition to poverty and income inequality, other major determinants of child and adolescent health are also of social and economic origin: education, social support, physical and social environment, and health service provision. The services that are responsible for general health care and for medical care must work closely together, and any fragmentation of care should be avoided, eg, the medical care model that attempts to only “repair” the health problem would be incomplete without support from other health care services. For example, operating on injuries after an accident, detoxification after excessive alcohol use, or placement of a gastric bypass

CAPH Child and Adolescent Health  
EUPHA European Public Health Association

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The authors declare no conflicts of interest.

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<https://doi.org/10.1016/j.jpeds.2017.07.043>

surgery for adolescents are not solutions for the problems of society and are putting health systems and budgets under considerable strain.<sup>15</sup>

Although the medical model has proven extremely successful and essential in many contexts, the determinants of child and adolescent health show that social and economic factors need more attention from health professionals, including pediatricians and other health care professionals such as general practitioners. How can the different services in society ensure adequate and equal access to health resources? What are the best approaches to activate healthy behaviors in children and adolescents? What needs to be done to decrease psychosocial stress, which is related to so many health problems in adolescents? Public health researchers already play a major role in identifying public health problems and in improving the evidence base of public health interventions. A good example is the use of helmets: from a systematic review of studies evaluating the effect of bicycle helmets on injury prevention, it appears that helmets lead to a 63%–88% reduction in the risk of severe brain injury for cyclists.<sup>16</sup> Another example is offering a smoking-cessation program to the parents of a child who has been discharged from the pediatric clinic after an asthma attack.<sup>17</sup>

### Future Steps to Improve Collaboration between Pediatrics and Public Health

Most pediatricians already are aware that it is not possible to improve the health of children without focusing on family relations and social background factors. Mobilizing action across the whole of society, including pediatricians, is necessary to address the rise of public health problems and the social gradient in health outcomes. Public health professionals, pediatricians, and primary care physicians have a role to play in raising awareness among politicians and shaping policy, in close cooperation with industry, to ensure that children's health is safeguarded and promoted. EUPHA in general and CAPH in particular is dedicated to working in partnership with European pediatricians and their umbrella organizations to improve the current and future health of children and adolescents in Europe.

This partnership can be achieved in different ways. The first way can be the formalization of sustainable cooperation between public health experts and the European umbrella organization of pediatricians in an official international membership of EUPHA. The purpose of this membership is to

commit to cooperation in the combating health problems in children and adolescents. A second way to work in partnership is to write EUPHActs, a 2-page summary on important health issues mainly aimed at policymakers. By jointly writing an EUPHAct, both partners formally establish a joint statement and position regarding important health issues. A third way to fill the gap between pediatricians and public health experts is centered on conferences—pediatricians and public health experts should contribute to each other's scientific programs. Organizing a joint conference with a balance between both fields would build bridges between the work of pediatricians and public health experts. Other ways might include joint research projects aiming at improving international child and adolescent health and jointly designing training programs for pediatricians in public health.

### Conclusion

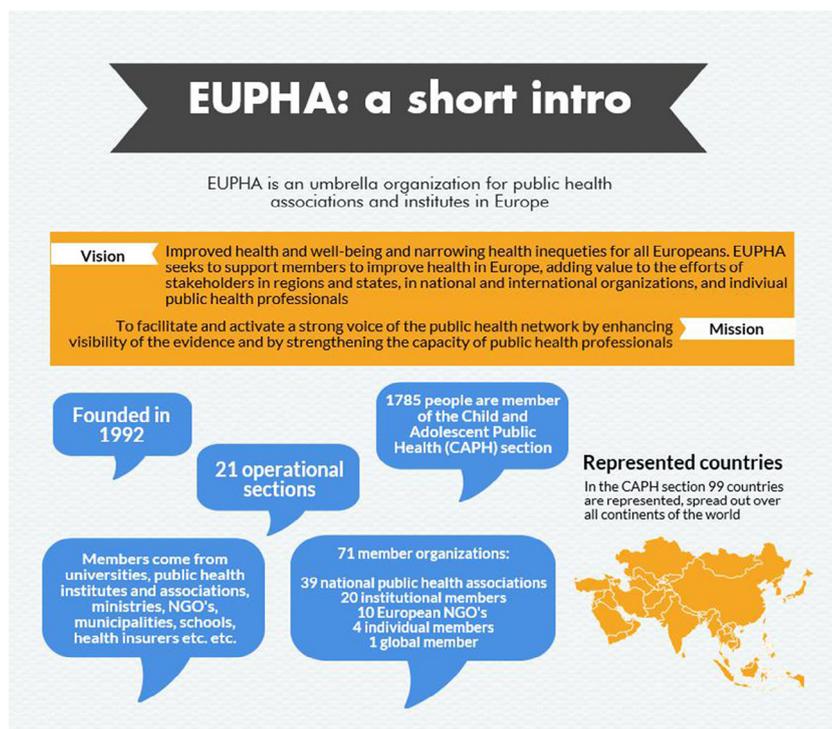
The rise in global prevalence and burden of noncommunicable disease is evidence that preventive programs are failing. Worldwide, >3000 adolescents die every day from largely preventable causes such as road injuries, lower respiratory infections, and suicide.<sup>18,19</sup> According to the World Health Organization, the greatest barrier to effectively combating preventable child health problems is a lack of political commitment and the failure of governments and other actors to provide leadership and action.<sup>20</sup> EUPHA and pediatricians can apply pressure on governments to act. A concerted, sustained, and multidisciplinary effort of different disciplines such as public health, pediatrics, and general practitioners could bring about health improvements. In prevention strategies, cooperation between different sectors should be ensured to bundle the forces and knowledge to achieve optimal children's health outcomes. In their goal to contribute to combat public health problems, pediatricians should focus not only on the individual patient but also consider a population-based approach. Thus, healthcare professionals do have a role in combatting public health problems, but a really big driver will be the joint pressure of public health professionals and other professionals applied to make governments act. ■

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

## References

1. Proimos J, Klein JD. Noncommunicable diseases in children and adolescents. *Pediatrics* 2012;130:379-81.
2. Committee of Inquiry into the Future Development of the Public Health Function. *Public health in England: the report of the Committee of Inquiry into the Future Development of the Public Health Function*. London: HM Stationery Office; 1988.
3. MacKay JM, Vincenten JA. Leadership, infrastructure and capacity to support child injury prevention: can these concepts help explain differences in injury mortality rankings between 18 countries in Europe? *Eur J Public Health* 2010;22:66-71.
4. EUPHA: The European Public Health Association. About us. <https://eupha.org/index.php>. Accessed July 14, 2017.
5. World Health Organization. Mortality in children and adolescents from unintentional injuries (falls, drowning, fires and poisoning). [http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0004/96979/2.2.-Mortality-from-unintentional-injuries-EDITED\\_layouted\\_V3.pdf](http://www.euro.who.int/__data/assets/pdf_file/0004/96979/2.2.-Mortality-from-unintentional-injuries-EDITED_layouted_V3.pdf). Accessed May 29, 2017.
6. Sengoelge M, Hasselberg M, Laflamme L. Child home injury mortality in Europe: a 16-country analysis. *Eur J Public Health* 2010;21:166-70.
7. Evans D. Investing in children: the European child and adolescent health strategy 2015-2020. <https://pdfs.semanticscholar.org/724b/8653cf3205db7056a1081cfb0561d98adb8.pdf>. Accessed May 29, 2017.
8. World Health Organization. European report on preventing child maltreatment. [http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0019/217018/European-Report-on-Preventing-Child-Maltreatment.pdf](http://www.euro.who.int/__data/assets/pdf_file/0019/217018/European-Report-on-Preventing-Child-Maltreatment.pdf). 2013. Accessed May 29, 2017.
9. World Health Organization. Tobacco: data and statistics. <http://www.euro.who.int/en/health-topics/disease-prevention/tobacco/data-and-statistics>. Accessed May 29, 2017.
10. Bendtsen P, Damsgaard MT, Huckle T, Casswell S, Kuntsche E, Arnold P, et al. Adolescent alcohol use: a reflection of national drinking patterns and policy? *Addiction* 2014;109:1857-68.
11. Bräker AB, Soellner R. Alcohol drinking cultures of European adolescents. *Eur J Public Health* 2016;26:581-6.
12. Bibiloni Mdel M, Pons A, Tur JA. Prevalence of overweight and obesity in adolescents: a systematic review. *ISRN Obes* 2013;2013:392747.
13. World Health Organization. Adolescent obesity and related behaviours: trends and inequalities in the WHO European Region, 2002-2014. [http://cdn.basw.co.uk/upload/basw\\_85049-8.pdf](http://cdn.basw.co.uk/upload/basw_85049-8.pdf). Accessed May 29, 2017.
14. Centers for Disease Control and Prevention. Childhood obesity: causes & consequences. <https://www.cdc.gov/obesity/childhood/causes.html>. Accessed May 29, 2017.
15. Nielsen JDJ, Laverty AA, Millett C, Mainous AG III, Majeed A, Saxena S. Rising obesity-related hospital admissions among children and young people in England: national time trends study. *PLoS ONE* 2013;8:e65764.
16. Robinson DL. Head injuries and bicycle helmet laws. *Accid Anal Prev* 1996;28:463-75.
17. Winickoff JP, Hillis VJ, Palfrey JS, Perrin JM, Rigotti NA. A smoking cessation intervention for parents of children who are hospitalized for respiratory illness: the stop tobacco outreach program. *Pediatrics* 2003;111:140-5.
18. World Health Organization. More than 1.2 million adolescents die every year, nearly all preventable. <http://www.who.int/mediacentre/news/releases/2017/yearly-adolescent-deaths/en/>. Accessed May 29, 2017.
19. Molcho M, Walsh S, Donnelly P, Matos MG, Pickett W. Trend in injury-related mortality and morbidity among adolescents across 30 countries from 2002 to 2010. *Eur J Public Health* 2015;25(suppl 2):33-6.
20. World Health Organization. Report of the commission on ending childhood obesity 2016. Geneva, Switzerland: WHO Document Production Services; 2016.



**Figure.** The EUPHA at a glance. NGOs, nongovernmental organizations.

**Table. Five public health priorities in children and adolescents according to EUPHA****1. Injuries**

According to the World Health Organization, unintentional injuries, such as road injury, drowning, poisoning, and falls, cause approximately 42 000 deaths in 0- to 19-year-old children and adolescents in Europe, and the morbidity burden of these injuries is many times greater.<sup>5,6</sup> The majority of these injuries are due to unintentional and potentially preventable causes.

**2. Mental health**

Depression is the leading cause of illness and disability among children and adolescents, followed by anxiety disorders, behavioral (conduct) disorders, and substance-use disorders. Suicide in some groups is the main cause of death among adolescents.

**3. Child maltreatment**

Child maltreatment, including physical emotional and sexual abuse, is a significant public health problem in Europe. Estimates suggest that it affects 18 million children, with prevalence rates greater in countries in Eastern Europe.<sup>7,8</sup>

**4. Risky behaviors in adolescents**

Among the World Health Organization regions, Europe has one of the greatest prevalences of tobacco use among adolescents, with an average of 11%-12%, ranging within European countries from 5% to 51%.<sup>9</sup> Tobacco smoke exposure often results in respiratory health problems such as asthma and reduced lung function in children but also creates lifelong addiction that threatens the health of future populations from cardiovascular risk and cancer. Also, adolescent alcohol use is common in the European region. Results of the Health Behaviour in School-aged Children study 2009/10 showed that in Europe, among 13-year-old adolescents, the overall prevalence of drunkenness and weekly drinking were 18.3% and 7.8%, respectively. The corresponding figures for 15-year-old adolescents were 46.5% and 21%. Alcohol use is associated closely with a number of health problems such as injury, smoking, illicit drug use, and unprotected sex.<sup>10,11</sup>

**5. Obesity**

Childhood obesity is one of the most serious public health challenges of the 21st century. Rising prevalence across in Europe indicates that currently up to 1 in 3 boys and 1 in 5 girls aged 6-9 years is now obese and that 22%-25% of European adolescents are overweight or obese.<sup>12-14</sup> Obesity is associated with many physical and psychological problems that already have begun to manifest in childhood, with an associated economic burden on health systems.

## Internet Addiction: Starting the Debate on Health and Well-Being of Children Overexposed to Digital Media

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Previous articles published in the European Paediatric Association (EPA) pages have discussed the importance of children's well-being and its role in different areas of children's health, such as well-child care<sup>1</sup> and child-friendly health care.<sup>2</sup> The goal of this commentary is to raise pediatricians' awareness on the risks of children's overexposure to digital media. It is important to protect the psychological and emotional health of children from uncontrolled external influences to preserve their well-being. We also emphasize the importance of alerting parents and tutors to the risks related to the unrestrained use of the Internet.

### Child Well-Being

The definition and measurement of childhood well-being has engaged researchers across several disciplines and involved international organizations for many years. The well-being of young individuals in their developmental age channels is in fact a complicated notion, which is difficult to describe, mainly owing to its multifactorial nature. The concept of well-being was described in the final document of the 1978 International Conference of Alma-Ata on Primary Health Care, and it was considered to be essential in establishing the state of health in children.<sup>3</sup> According to the Alma-Ata conclusions, children's well-being is based on the accomplishment of complete physical, mental, and social comfort, not only the simple absence of disease or infirmity.<sup>3</sup>

Well-being is not a static, but rather a dynamic state of health, which is multidimensional and needs to be contextualized,<sup>4</sup> given the substantial differences among the diverging analyses of data collected in different nations.<sup>5</sup> For instance, child health was often regarded as physical health, including factors such as fitness levels, nutritional status, and risky behaviors. However, depending on the various interpretations of the concept of health, such a vision would underestimate the importance of emotional health factors.

### Children Using the Internet

The Internet is an integral part of modern society and provides a quick and easy way for communication, socialization, and education.<sup>6,7</sup> Internet use has grown world-wide to nearly 2 billion users belonging to all age groups, and the trend is most marked among youth.<sup>6,8,9</sup> The average age of first Internet use has progressively decreased to 8 years of age in several

European countries. A similar increased use of Internet by children has been reported for the US, where in 2013 almost 57% of children aged 3 to 17 years used the Internet at home, which is 5 times higher than in 1997 (11%).<sup>9</sup> Furthermore, recent reports show that children across Europe start using the Internet 1 year before they are given a mobile phone, which currently occurs at the age of 9.<sup>9</sup>

Children use the Internet for a variety of activities besides gaming; they frequently fill their free time with social networking, instant messaging, blogging, and downloading a wide range of information. Heavy Internet use has been associated with potential side effects, such as loss of control over the use of the Internet, adverse effects on other daily activities, emotional status, and communication among family members.<sup>7,10</sup> In absence of appropriate guidance, the use of the Internet may in fact easily expose users to misuse, and it has been reported that, particularly for those belonging to complicated social environments, users may develop deviation in personality and mental health problems.<sup>11</sup> Several warning signs, summarized in the **Table** (available at [www.jpeds.com](http://www.jpeds.com)), may help in detecting a pathologic use of the Internet.

The opinions regarding the impact of the Internet on children were widely articulated, and several researchers argued that, although there were several situations in which the Internet can harm, it may also be beneficial during the developmental years, by improving socialization skills, helping the collection of information, and gaining new knowledge, thus becoming the child's best tool for learning.<sup>12,13</sup> Therefore, views on whether the impact of the Internet would be positive or negative on children remains controversial. However, it is a shared opinion that adults (ie, parents, guardians, tutors) play a teaching and training role in influencing children's behavior, ranging from adequate use to inadequate worshipping of modern technology.

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The authors declare no conflicts of interest.

0022-3476/\$ - see front matter.

<https://doi.org/10.1016/j.jpeds.2017.09.054>

## The History of Internet Addiction

Ivan Goldberg, a New York–based psychiatrist, first described in 1995 a condition which he called Internet Addiction Disorders<sup>14</sup> with the aim of filling gaps in the newly released 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-4) from the American Psychiatric Association. Goldberg defined Internet Addiction as a maladaptive pattern of Internet use leading to clinical impairment or distress, characterized by the presence of typical symptoms.<sup>14</sup> In 1996, Internet Addiction entered in the medical lexicon for the first time,<sup>15</sup> and over the time an increasing number of studies investigated epidemiology, diagnostic criteria, neurobiological, psychosocial, and neuropsychological aspects, as well as pharmacologic and nonpharmacologic management,<sup>16</sup> thus providing a sufficient knowledge base to conceptualize, detect, diagnose, characterize, treat, and prognosticate Internet Addiction as a pathologic condition.<sup>14,16</sup>

## Definition of Internet Addiction

Internet Addiction, which is included in section 3 of the 5th edition of the DSM (DSM-5), (Emerging Measures and Models),<sup>17</sup> is also gaining progressive attention by public opinion. Internet Addiction was defined by preoccupation with the use of the Internet, repetitive thoughts about limiting and controlling the use of the Internet, failure to control the desire of access to the Internet, continuous use of the Internet despite the impairments at various levels of functionality, spending gradually increasing periods of time on the Internet, seeking use of the Internet in the case of inability to access, and uncontrolled desire to get access to the Internet.<sup>7,18,19</sup> However, until today, no gold standard of Internet Addiction classification exists and at least 21 different assessment instruments have been identified.<sup>18</sup>

## Epidemiology of Internet Addiction

In 3 US surveys, Internet Addiction prevalence ranged from 0.7% to 8.1%. A greater variation in the prevalence of Internet Addiction, ranging from 2.4% to 37.9%, was reported in Asia among adolescents and young people.<sup>18</sup> In Europe, the prevalence of Internet Addiction was reported in 2012 to be 2% in Norway, 3.1% in Finland, 5.4% in Italy, 5.8% in Poland, 8.2% in Greece, and 18.3% in England.<sup>8</sup>

A recent meta-analysis examining the prevalence of Internet Addiction in 31 nations across 7 world regions<sup>10</sup> generated an overall prevalence estimate of 6.0%, and major differences in the prevalence of Internet Addiction were also reported across world regions. The prevalence rate was more than 3-fold higher than that of pathologic gambling (0.2% vs 2.1%),<sup>10</sup> another impulse control disorder that has been listed and compared with Internet Addiction in the addictive disorders category of the DSM-5.<sup>17</sup>

In particular, a higher Internet Addiction prevalence was detected in countries with a poor perception of life satisfaction, greater overall pollution, high traffic, high unemployment rate, poor health conditions, and lower national and family income, suggesting an inverse ratio between Internet Addiction prevalence and quality of life.<sup>20</sup>

## Prevention and Control

The suggested inverse link between Internet Addiction and quality of life should be taken into consideration by policymakers.<sup>20</sup> Increasing the efficiency of social services provided to the population, as well as careful environmental protection, improve the general well-being of a population, and single individuals may be less likely to escape into the virtual world of the Internet to search for emotional comfort.<sup>20</sup> Furthermore, improving the quality of environmental conditions may encourage young people to engage more in outdoor activities rather than relying solely on browsing the Internet at home for stress relief.<sup>20</sup> This recommendation had also been emphasized by the Task-Force on Child Abuse of the Italian Society of Pediatrics in previous articles published in the *Journal of Pediatrics*.<sup>21-23</sup> An important challenge for stakeholders consists in achieving a balance between empowerment and protection of children to increase their well-being through maximizing the opportunities while minimizing the risks of Internet use.<sup>24</sup>

## Conclusions

Evidence leads to the conclusion that excessive and/or unskilled use of the Internet can negatively impact physical, psychological, and social dimensions, as well as some aspects of the material and developmental well-being of children.<sup>24</sup> Child well-being is related to Internet use in several different and multifaceted ways, and it depends on a complex set of circumstances and factors based on interindividual diversity, as well as on the institutional and social context. Pediatricians are on the frontline in the evaluation of children's health and well-being,<sup>25</sup> and therefore have a key role in informing parents and/or guardians on risks and advantages of Internet use. The European Paediatric Association-Union of National European Paediatric Societies and Associations (EPA/UNEPSA) emphasizes the importance of further raising pediatricians' awareness on both risks of children's overexposure to digital media and on positive opportunities. In fact, using the Internet in a safe and skilled manner may also have a considerable positive impact on children's developmental and social well-being. Therefore, the EPA/UNEPSA will foster a debate among its European pediatric societies by creating a transnational task-force that will be able to study and identify different national patterns of Internet Addiction. Identifying the national idiosyncrasies according to the underlying various European socioeconomic contexts will help to improve the capability of managing Internet Addiction by pediatricians. ■

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

## References

- Jenni OG. Starting the debate: rethinking well-child care in Europe. *J Pediatr* 2016;179:276-7, e1.
- Lenton S, Ehrich J. Approach to child-friendly health care. *The Council of Europe. J Pediatr* 2015;167:216-8.
- World Health Organization. Declaration of Alma-Ata International Conference on Primary Health Care, Alma-Ata, USSR, 6-12 September 1978. [http://www.who.int/publications/almaata\\_declaration\\_en.pdf](http://www.who.int/publications/almaata_declaration_en.pdf). Accessed October 2, 2017.
- UNICEF. Child poverty in perspective: an overview of child well-being in rich countries. Innocenti Report Card, Vol 7. Florence, Italy: UNICEF Innocenti Research Centre; 2007. <https://www.unicef.org/media/files/ChildPovertyReport.pdf>. Accessed October 2, 2017.
- Axford N. Child well-being through different lenses: why concept matters. *Child Fam Social Work* 2009;14:372-83.
- Kaess M, Durkee T, Brunner R, Carli V, Parzer P, Wasserman C. Pathological Internet use among European adolescents: psychopathology and self-destructive behaviours. *Eur Child Adolesc Psychiatry* 2014;23:1093-102.
- Koyuncu T, Unsal A, Arslantas D. Assessment of internet addiction and loneliness in secondary and high school students. *J Pak Med Assoc* 2014;64:998-1002.
- Durkee T, Kaess M, Carli V, Parzer P, Wasserman C, Floderus B. Prevalence of pathological internet use among adolescents in Europe: demographic and social factors. *Addiction* 2012;107:2210-22.
- Child Trends DataBank. Home computer access and internet use: indicators of child and youth well-being. CTDB; 2015. [https://www.childtrends.org/wp-content/uploads/2015/12/69\\_Computer\\_Use.pdf](https://www.childtrends.org/wp-content/uploads/2015/12/69_Computer_Use.pdf). Accessed October 2, 2017.
- Kawabe K, Horiuchi F, Ochi M, Oka Y, Ueno S. Internet addiction: prevalence and relation with mental states in adolescents. *Psychiatry Clin Neurosci* 2016;70:405-12.
- Ge Y, Se J, Zhang J. Research on relationship among internet-addiction, personality traits and mental health of urban left-behind children. *Glob J Health Sci* 2014;7:60-9.
- Dhyan S. A systematic review of literature on effect of Internet use on students in India. *Online International Interdisciplinary Research Journal*; 2014. [https://www.researchgate.net/publication/273538253\\_A\\_Systematic\\_Review\\_of\\_Literature\\_on\\_effect\\_of\\_Internet\\_Use\\_on\\_Students\\_in\\_India](https://www.researchgate.net/publication/273538253_A_Systematic_Review_of_Literature_on_effect_of_Internet_Use_on_Students_in_India). Accessed October 2, 2017.
- Sugata M, Vivek R. Children and the internet: experiments with minimally invasive education in India. *Br J Educ Technol* 2001;32:221-32.
- Goldberg I. Internet Addictive Disorder (IAD) diagnostic criteria; 1996. <http://www.webcitation.org/query?url=http%3A%2F%2Fwww.psychom.net%2Fiadcriteria.html&date=2013-02-06>. Accessed October 2, 2017.
- O'Reilly M. Internet addiction: a new disorder enters the medical lexicon. *Can Med Assoc J* 1996;154:1882-3.
- Dalal PK, Dabasish B. Twenty years of Internet addiction. . . . quo vadis? *Indian J Psychiatry* 2016;58:6-11.
- American Psychiatric Association (APA). *Diagnostic and statistical manual of mental disorders*. 5th ed. Washington, DC: APA Press; 2013.
- Kuss DJ, Griffiths MD, Karila L, Billieux J. Internet addiction: a systematic review of epidemiological research for the last decade. *Curr Pharm Des* 2014;20:4026-52.
- Leung L. Predicting Internet risks: a longitudinal panel study of gratifications-sought, Internet addiction symptoms, and social media use among children and adolescents. *Health Psychol Behav Med* 2014;2:424-39.
- Cheng C, Li AY. Internet addiction prevalence and quality of (real) life: a meta-analysis of 31 nations across seven world regions. *Cyberpsychol Behav Soc Netw* 2014;17:755-60.
- Ferrara P, Corsello G, Ianniello F, Sbordone A, Ehrich J, Pettoello-Mantovani M. Impact of distressing media imagery on children. *J Pediatr* 2016;174:285-6, e1.
- Ferrara P, Corsello G, Sbordone A, Nigri L, Ehrich J, Pettoello-Mantovani M. Foster care: a fragile reality needing social attention, and economic investments. *J Pediatr* 2016;173:270-1, e1.
- Ferrara P, Corsello G, Sbordone A, Cutrona C, Ehrich J, Pettoello-Mantovani M. The role of pediatricians in caring for the well-being of children living in new types of families. *J Pediatr* 2016;176:226-8, e1.
- Kalmus V, Siibak A, Blinka L. *Handbook of child well-being. Internet and child well-being*. Dordrecht, The Netherlands: Springer Editor-Business Media; 2014.
- Pettoello-Mantovani M, Maiuri L, Giardino I. Family-oriented and family-centered care in pediatrics. *Ital J Pediatr* 2009;35:1-8.

**Table. Warning signs indicating a pathologic use of the Internet**

- Hours of sleep reduced in exchange for time spent online.
- Checking emails or messages multiple times a day.
- Lying about the amount of time spent online when alone.
- Developing anger when access to Internet is not allowed.
- Altered time-perception while online.
- Spending time online in place of studying and/or practicing sport or socializing activities.
- Developing new relationships with people met online and neglecting the old friends.
- Spending time online instead of being with family and friends.
- Developing distress and irritation if online time is interrupted.
- Contravening the established time limits for Internet usage.
- Developing frustration and moody attitudes when not online.
- Developing anxiety and feeling pressed to get back online when away from the computer.
- Losing interest in activities formerly enjoyed before Internet was available.

# The Human Capital of Age

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*Witnesses of the times*



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*La scuola di Pitagora editrice*

*Via Monte di Dio, 54*

*80132 Napoli*

*info@scuoladipitagora.it*

*www.scuoladipitagora.it*

*ISBN 978-88-6542-601-2*

# **Falling back to experience: retired paediatric professors as a solution to Europe's child health care crisis?**

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## **Child health care crisis in Europe**

Although differences exist in the quality of child health care services in the 53 European countries, it is safe to say that child health care service delivery systems in the majority of European countries are in crisis (1). This problem could be traced to a number of factors, however, the 2008 economic crisis was indisputably a major contributor. In addition to economic challenges, Europe's child health care crisis is worsened by external factors like climate change and other socio-political global factors, which negatively affect child health in Europe. Despite these circumstances, astonishingly, many opinion makers still act on the principle of "business as usual".

Between 1980 and 2010, mortality rates of children under 15 years of age in Europe reduced substantially – from 120 to 40 children per 100,000 children (2). However, a closer examination of the data paints a more complex picture. As an example, the data reveals that if Germany and the United Kingdom (UK) offered the same kind of health care system as Sweden, 815 German, and 1951 UK children would not have died in 2010.

The list of old and new problems and challenges of child health care service systems is long, and includes many risk factors. Some of which are listed in Tab.1. In our opinion, the problems of child health care are exacerbated by factors like inadequate application of mind-models like the "root-cause-effectoutcome" (Tab. 2), and the "lifecycle model" (Tab. 3) (3). Social financial investment in the health of children is also inhibited by an underlying premise that children are the healthiest age group in society. This is taken as justification for comparatively low financial investment in child health care.

This article seeks to answer two questions: 1. Is the older generation of paediatric professors (emeriti) an under-utilized resource that could mitigate the present problems of child health care services in Europe? 2. Could retired paediatric professors thereby serve as a stand by option in countries with a crisis of child health care services? Although this is a connected issue, this article will not

discuss the appropriate age, or circumstances under which paediatricians should be obligated to retire (4).

The results of the surveys of the European Paediatric Association on child health care in Europe implies that stakeholders seem aware that paediatric care cannot continue to be practiced as it is done today (1). There seems to be a general consensus among those affected and involved in paediatric care that something must be done about the situation. However, at both the national and regional levels, there remains a lack of consensus on how best to improve the quality of child care. Although the policy slogan, “better medical care for less money” is widely used, in many cases, this merely leads to a “catch 22 situation”, making the slogan more of a description than a clear guide of how to resolve the dilemma. It must also be noted that there have been some major changes in the health systems of many West European countries. Unfortunately these policy changes were unable to address the crisis.

In many cases, both in Eastern and Western Europe, investments in child health care went in the wrong direction, leading to wrong changes in many European Countries, particularly in Eastern Europe.

European child care service systems are now faced with a situation in which further delay of implementing changes will worsen the problem of child care in the short term, leading to more serious, society-wide problems over time. We therefore argue for the position that improvement of child health requires that future increased investments should be channelled through different federal or National ministries (Tab. 4). This will improve the current situation by implementing new types of 1. maternal and neonatal care, 2. Community child health care, 3. Hospital paediatrics, and 4. highly specialised paediatric care in National and international centres of competence.

## **The old professor and the young patient, undergraduate student and postgraduate trainee: why could this match?**

“Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information?” – this question formulated by T. S. Eliot is a challenge for child health care in western societies. Our medical system is mainly based on technology and the belief in information. As such it is in danger to perceive the child as an object of health care. In order to empower the child to become a subject of its salutogenesis paediatrics has to recover the potentials of narratives. Franklin H. Littell tells the following story:

*Martin Buber has told of a rabbi whose grandfather was a disciple of the Baal Shem Tov, founder of Hassidism. Once upon a time, when the rabbi was asked to tell a story, he said: A story must be told in such a way that it constitutes help in itself. My grandfather was lame. Once they asked him to tell a story about his teacher. And he related how the holy Baal Shem used to hop and dance while he prayed. My grandfather rose as he spoke, and he was so swept away by his story that he himself began to hop and dance to show how the master had done. From that hour on he was cured of his lameness. That’s the way to tell a story.*

Human beings are story dwellers. By living in stories one becomes human. Through story-telling one develops an active self-identity always connected with others, because stories are always linked to the stories of others. Child health care

needs to include this fundamental human dimension. The wisdoms of stories have the power to reveal the risk of a strict separation of recognition and sensuality in information-technological societies. Through stories we are connected with the sensual. That's why narratives could help us to connect with the world around us. Abstract knowledge is always knowledge of the general, not the particular; though reality is always the particular and never the general. Child health care fails to find reality without facing the particular. With regard to the human being that means: To know of a human as a human is insufficient. We have to experience them as human beings, we have to be affected by them. General, abstract knowledge does not prevent us from hurting other humans.

Narratives could be tools of being affected by the concrete other. Telling stories and listening to stories presupposes courage and time.

### **The old professor might have the time to empower children and even young paediatricians by helping them to tell their stories.**

Listening to such stories confronts the paediatrician with values of life and forces him/her to rediscover the values of caring which are often times neglected by the power of information and technology. A subject-oriented child care health recovers itself when it includes a narrative method, cultivated by wise professors, for dealing with the problems of children through the eyes of the children.

#### **Knowledge, technology, caring and values**

Four key elements characterize the essence of child health care and the clinical and scientific interchange among paediatricians. These are, **knowledge, technology, caring and values**. These four elements include a variety of subgroups, and are all usually present in the practice of every area of medicine.

However, depending on the circumstances, the nature, quality and mix of these four indicators could vary widely. This chapter will argue that **values** are the most neglected of the four elements.

Effective physician to child communication is a necessary prerequisite for comprehensive paediatric care. The benefits of successful **communication between paediatricians and patient families are well documented**. However, communication between paediatricians, children and young people, differs fundamentally from communication between general practitioners and adults, thus making a specific child communication training an indispensable requirement to the improvement of child care services.

Vaccine refusal and hesitancy is an example of the success-mistrust-paradox – despite high paediatric cure rates, caregivers remain mistrustful of medical practitioners. Retired paediatricians have the advantage of a long career in which they had the opportunity to learn from interacting with children in their care. Their experience and age opens up the possibility for them to take on the role of a trusted physician and a surrogate grandparent for both children and their parents. Retired paediatricians could thereby be able to reverse the tendency of families in medical care to mistrust medical practitioners.

**Communication between professional care givers** is an equally demanding challenge. The teamwork approach at the end of the 20th century has proven to be superior to the 19th century approach of an isolated researcher. However, teamwork could become even more efficient if it was designed in such a way as not to hinder team members from having enough time for individual study. Thus,

there may be a need for coaching a team of physicians by a relatively independent experienced mentor, supervisor and trainer such as an emeritus who will help finding a balance between conformism and autonomous thinking.

**Cooperation** has always been an important value and basis of modern science, and the ability of medical colleagues to cooperate is an important determinant of the success of clinical care and research. “Sportive” **competition of experts** ranks among the top motivators in modern medical research. Paediatric scientists want to be the best of the best, at the top. In brief, they want to be the champions. However, deleterious competition is almost inevitably counterproductive. Retired professors are just as ambitious, but because they have already had a successful career, they might be able to mitigate the poisonous, deleterious scientific competition, and in thus creating to a better scientific environment.

**Global medical care** means provision of information and standardized health care for all. Younger paediatricians are vulnerable to distortions stemming from two directions.

Firstly, they tend to be cocooned within the implicit perceptions of their own culture. Secondly, in many cases, they have been taught theories, assumptions, and hypotheses that create barriers between their respective cultures.

These two factors create barriers for acquiring cross-border knowledge. Retired professors have gone through these episodes and should have learned from the past, making them eligible for becoming advisers of younger researchers. By the end of the 20th century, increased global cooperation in paediatric care sought to open up a new chapter of global cooperation and learning in paediatrics. This initiative was mainly driven by personal friendships of leading paediatricians from around the world, who frequently met at International events.

### **Effective learning depends on active participation rather than passive engagement.**

Learning medicine is not so much based on abstract intelligence, but more of a healthy “master - apprentice” relation. Who is able to teach better than a professor emeritus who is able to teach that medicine is both science and art. Retired professors in paediatrics often have a biography of **basic research during their early years in medicine, then a longer phase of translational research and clinical research during their most active years, and public health care research at the end of their career.** A basic three-year common trunk training in general paediatrics followed by two to three years’ higher specialty training in a subspecialty was not offered in all European countries (1). As of 2013, there was no European-wide standard definition of training and accreditation for general and academic paediatricians (6).

National guidelines for training in paediatrics showed great, and in many cases, unnecessary and avoidable variations. Where could teaching and training be better performed than in higher specialised paediatric centres of competence, providing excellent research facilities with a high throughput of patients with severe and rare diseases (6). In many cases, such centres also offer a full range of diagnostic facilities and interdependent specialties and facilities for the treatment of acute and chronic diseases.

Both old and young paediatricians have access to global media, which creates the possibility of the establishment of **systematic knowledge** on child health. However, young paediatricians lack **long term experience** which may limit their **understanding of metaphysical aspects** of the complicated life of patients.

**The need to promote child health care services that matches the changing needs of children** It can surely be said that the European academic paediatric community has attained a level of mutual understanding in child health care. What, however, are the common goals of child health care services to be achieved in our lifetimes? What have leading European paediatricians achieved and what do they desire to achieve for children in the future? What is the weight of the political voice of paediatricians? Contrary to the situation in the 50 United States of America, the paediatricians of 53 European countries do not yet speak with one voice. Unlike the 66,000 members of the American Academy of Paediatrics, the 200,000 paediatricians in Europe have not established a similar society. It might also be possible to fill this gap by a European Society of retired professors of paediatrics. Such a smaller and more efficient group might have a better chance to fill the gap of promoting national and international social responsibility concerning child health. A group of enthusiastic emeriti is in the process of establishing a European Society of Professors Emeriti which will not only include retired paediatricians but all kinds of still active professors from all over Europe. In the founding declaration it was stated that “We believe that a university professor is called to continue his vocation as an educator, counsellor and researcher for life (7), “Based on the discussions at the multidisciplinary conference on “The Human Capital of Age”, held on September 16th and 17th 2016 in Naples, Italy (8). Our article argues that – with regards to the European paediatric crisis – the **human capital of age** is an under-utilized resource, which could promote the present problems of child health care services (9, 10) not only in terms of becoming heard by politicians but because emeriti can talk to all people who are in a position to change public opinion on child health.

**Scientists in the intercultural field are vulnerable to distortions.**

Subconsciously, such scientists look at other cultures in a manner conditioned by their own culture. Until now, there has not been an easy way to transcribe national behaviour from one culture to another. There is no better way for paediatricians to understand cultural differences than studying and working abroad. Most retired professors have spent parts of their career in foreign countries. Assuming unlimited financial resources of countries, the emeritus knows well that national goals might not be the same, because countries sometimes have different priorities. Retired professors could be able to transfer their knowledge and experience to younger people in a team, leading to improved international communication and cooperation. In a competitive medical world, there is also need for competent experts who support a culture of consensus. Such a consensus culture should be based on good clinical leadership and governance, shared values,

common protocols, and last but not least, clear decision making processes. In general, it is thought that young people are more flexible in life than old people, which is a factor that could facilitate changes in the medical world. When one of the authors was teaching career seminars to advanced students and young physicians, he observed that young physicians suffered from a considerable indecisiveness when planning their own career or when establishing their own views and ideals on health care service systems. In Germany for instance, there is a need to stimulate those young people who seem to lack initiative and a trial and error attitude, who thereby favour strategies of pain prevention.

Creativity means bringing up novel ideas during an incubation process of thinking (sometimes unconscious thoughts). Autonomy and non-conformism are prerequisites of creativity. Creativity is only the first step of a process of inspiration

which should be followed by activities of teams of people, then productivity and later on by changes in the world. Do retired professor have less curiosity, intuition and creativity than young ones? How could this be measured? Is autonomy age dependent? Financial autonomy is probably more often found in the group of emeriti than in younger paediatricians. In the course of his or her career as a paediatrician, there may be an influence of age on the productive stages. However, as history shows, the age of a scientist is not a criterion for assessing the value of medical discoveries. As Aristotle says, "He who sees things from the beginning will have the best view". Thus, there is certainly an influence of experience on deciding upon priorities (to do the right thing at the right time at the right place for the right people with the right methods). During the decision making process the cognitive dissonance - which means a gap between conviction (I wish) and actions (I can) - must be taken into account, and the elderly generation may have developed a kind of wisdom or the obligation to be wise. More specifically this could mean that emeriti should aim at developing less passion, fewer emotions, less desire, fewer wishes for themselves. Elderly people are the offsprings of their past. Experience and the use of the philosophical model of deconstruction will encourage emeriti to test the opposite extremes of conflicts e.g. young and old. Deconstruction means searching for the common of young and old that is detectable and positive for and in both age groups.

All these questions will arise in a situation when an emeritus will become an important member of a team of scientists and paediatricians, thus creating a cultural and scientific "parabiosis". This metaphor parabiosis defines a special symbiosis, in which two or more people occupy the same professional "nest site" combing the "fountain of youth" with the "source of age".

### **What are the pitfalls of our concept of proposing retired paediatric professors as a stand by option in countries that face a crisis of health care services?**

A professor emeritus of paediatrics usually ends her/his career as head of department. Becoming the number one of a ranking list means that power (**the desire to be important**), and intellect (**the desire to stay informed and creative**) – in many cases a mixture of both - had been a feature of his/her career in the past. It is not unusual that some individual characters have a gap between power and intellect, the degree of which is usually influenced by culture and politics. In our opinion, it would certainly not be a good idea to ask a power-seeking emeritus to continue her/his

clinical work as a senior professor in the routine clinical services within hospital because she/he may block the career of young shooting stars in the team.

There could also be reasons why retired paediatricians may not be interested or able to continue working on a voluntary and honorary basis e.g. as an active emeritus who is not adequately paid for his/her work. Some of these reasons could be health problems, loss of skills, family issues, burnout and other psychological issues, etc. We should therefore not be taken to be advocating for the compulsory retention of retired professors. Retired professors should not be pressured into continuing to practice. The choice must be made on a voluntary basis.

### **What are the legal hurdles to change the current role of emeriti in Europe?**

In many European countries, an employer can legally force a professor of paediatrics to retire at a certain age. To the best of our knowledge, no European country has in place the equivalent to the US-American Older Workers Benefit

Protection Act (OWBPA 1987). This is a law which states that you cannot be fired on account of age. Since the legal conditions of retirement are heterogeneous in Europe, we are describing “pars pro toto”, the current situation in Germany.

Germany seeks to become a country that is characterized by a non-discriminatory culture. The new General Act on Equal Treatment (*Allgemeines Gleichbehandlungsgesetz, AGG*) of August 1, 2006 ensured equal treatment for all in the workplace. As a result, employers are now expressly prohibited from discriminating against job applicants or employees on the basis of gender, race or ethnic origin; religious belief; disability; or sexual orientation, and age. To achieve the goal of becoming a no-discriminatory culture, Germany will have to be more aggressive in the incorporation of measures against discrimination into society to a larger extent than it currently does.

There must no longer be different treatment between old and young persons. The current laws now require that the same level of protection be made available to both old and young persons. There are however specific exceptions in German law with regard to retirement. In Germany, the legal retirement age was recently raised from 65 to 67 (for individuals born 1964 or later). Therefore, an employee can be forced to retire upon reaching the retirement age. In some Federal States of Germany, a different legal retirement age applies for **civil servants**, i.e., retirement of professors may be deferred until the age of 68.

### **Survey on the role of retired professors of paediatrics in Europe**

How would the idea of the empowerment of retired paediatric professors fit into the youth obsessed culture of the Western world? Should these old paediatricians fill the gap that arises from a lack of newly trained paediatric subspecialists (11)? Where should a retired professor have her/his office? Should a senior professor get a salary in addition to her or his pension? The improvement of health care systems require first to clarify the current status, then to answer the question, “What will happen in the future?” and finally, to define the urgency of the concern in order to eliminate deficits. Unfortunately, data on the current role of retired paediatric professors in European countries was lacking. With these thoughts in mind, the European Paediatric Association studied the role of retired professors of paediatrics in 2016 in 28 European countries. These were made up of 18 of the 28 European Union countries; 8 East European countries, including Russia and Turkey, plus Israel and Switzerland. The questionnaires were answered mainly by presidents of national paediatric societies. In the Mini-Questionnaire we were asking mainly for estimated data on the role of retired professors, because no country had official statistical data on their activities. The results of the analysis on rights and duties of an emeritus are very heterogeneous from country to country; and within countries, from university to university. 24 of 28 countries had fixed ages for retirement (10 countries at 65 years of age, 7 at 67 or 68 years, 7 at 70 years). Four countries had a flexible age limit with the option for females to stop working at the earliest at 55 years and for males at 60 years. Five of 28 countries did not establish the status of emeritus in their university constitutions. 10 countries had written rules for selecting an emeritus, 8 did not, and 10 presidents did not know.

The extracted rights and duties of emeritus professors in paediatrics are listed in Tab. 5. These results have led us to believe that the emeriti were not well integrated into the academic life of half of the 28 European countries studied. This assumption is supported by the results that less than 5% of retired professors were active in clinical care, research and teaching in 6 countries. In 6 countries, Presidents of national paediatric societies were not informed about the rights and

duties of an emeritus. There was a trend that retired professors were more often involved in postgraduate, rather than undergraduate teaching. Thirteen of 28 countries reported that a wide range of 10-80% of retired professors were still active in research. Of the 28 countries studied, 11 countries reported that retired professors were still active in clinical care.

### **Conclusions**

Our findings of the survey show that retired professors tend to play a marginal role in the academic life of university children's hospitals of the majority of 28 representative European countries. This lack of integration contrasts with the potentials of retired professors of paediatrics concerning knowledge and experience in supporting child health care services and in developing strategies for coping with the crisis of child health care. In cases where the rules no longer match the reality, it is usually easier to change the rules first, in order to bring the reality closer to the ideal. We therefore conclude that medical organizations in Europe should discuss career pathways for senior academic paediatricians (12) and subsequently the Council of Europe and the European Commission should start an initiative on empowering emeriti in paediatrics in Europe to act as promoters for the well-being of children.

**Table 1 - Barriers and challenges of child health care**

<p><b><i>Socio-cultural problems of child health care concerning health care in general</i></b></p>
<p><b><i>a. Pathogenetic factors</i></b></p> <ol style="list-style-type: none"><li>1. Poverty</li><li>2. Lack of health education</li><li>3. Lack of safety E.g. pollution E.g. traffic E.g. inadequate nutrition</li><li>4. Psychomental threats E.g. brutalization of media E.g. drug addiction</li><li>5. Children are not in the centre of national interests</li><li>6. Child's rights to health are not listed in national constitutions</li></ol>
<p><b><i>b. Missing salutogenic factors</i></b></p> <p>Lack of:</p> <ul style="list-style-type: none"><li>- physical activity</li><li>- music and dance activities</li><li>- child adequate free time</li><li>- cultural activities e.g. reading, visits of museums, etc.</li><li>- child friendly behaviour of adults</li><li>- stable relations of family members</li></ul>
<p><b><i>c. Problems of child health care services concerning paediatric care in particular</i></b></p> <ol style="list-style-type: none"><li>1. Supply gaps on weekends</li><li>2. Supply gaps during night times</li><li>3. Fragmentation of child health care E.g. gap between ambulatory and hospital care E.g. gap between generalists and specialists</li><li>4. Lack of physicians' adherence E.g. to guidelines and quality standards E.g. to recommendations on adequate communication with children E.g. to the rights of children E.g. to the recommendations of participation of children</li><li>5. Professional selfishness of different paediatric subspecialties</li><li>6. Imbalanced distribution of financial and human resources leading to a lack of: - high tech diagnostics and therapeutics - undersupply and oversupply - lack of paediatricians</li></ol>

**Table 2 - An example for the root-cause-effect-outcome-model of child health care.**

*The root-cause-effect-long-term outcome-model in paediatrics means for example that inadequate postnatal nutrition can be the root for obesity which causes a metabolic syndrome which can then negatively affect the cardiovascular system and lead to long-term complications such as stroke and heart attack.*

**Table 3 - The lifecycle model of health care**

*Many diseases have their roots and causes in the foetal period and early childhood: e.g. poverty, lack of protection and prevention. If these risks are detected early and treated during pregnancy and infancy, then the total of life long cost of the individual for the health care system will be much lower. If undetected and left untreated the long term complications will lead to higher treatment cost. Every EURO invested into children below 2 years of age is well spent and pays out 7 times more after a latency of 40-50 years.*

**Table 4 - The following national or federal policy makers should be involved in planning and financing child health care programmes**

**Ministries:**

1. of Health,
2. of Labour and Social Affairs,
3. for Family Affairs,
4. of Transportation, Building and Urban Affairs,
5. of Education and Science,
6. of Food, Agriculture and Consumer Protection,
7. of Justice,
8. of Finances,
9. of Environmental Protection.

**Table 5 - Selection of rights and duties of emeritus professors in paediatrics which were reported by presidents of national paediatric societies in Europe**

<p><b>A. Rights</b></p> <ol style="list-style-type: none"> <li>1. Office (e.g. shared with another emeritus) plus personal computer and internet access, free telephone line), secretarial support.</li> <li>2. Free parking</li> <li>3. Support for application of research grants</li> <li>4. Laboratory bench in case of own research project (renewable contracts according to external funding)</li> <li>5. Cooperation with research fellows</li> <li>6. Regular information on local conferences and grand rounds</li> <li>7. Extra salary</li> </ol> <p><b>B. Duties</b></p> <ol style="list-style-type: none"> <li>1. Mentoring, teaching and training of students, young paediatricians and research fellows</li> <li>2. Consultants to hospital business and advisors in leadership and good governance</li> <li>3. Liaison officer with international paediatric societies</li> <li>4. Liaison officer with editorial boards of paediatric journals</li> <li>5. Ombudsman</li> </ol>
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## References

1. Ehrich J, Namazova-Baranova L, Pettoello-Mantovani M. European cooperation in child health care: the aims of the European Paediatric Association. *J Pediatr* 2016; 117S:S1-S10.
2. Wolfe I, Thompson M, Gill P, Tamburlini G, Blair M, van den Bruel A, Ehrich J, Pettoello-Mantovani M, Janson S, Karanikolos M, McKee M. Health services for children in western Europe. *Lancet* 2013; 381:1224-1234.
3. Heckman JJ. Schools, skills, and synapses. *Economic Inquiry* 2008; 46:289-324.
4. Steele RW. Why do pediatricians retire? *Clin Pediatrics* 2015; 54:1309-1310.
5. Damm L, Leiss U, Habeler U, Ehrich J. Improving care through better communication: understanding the benefits. *J Pediatr* 2015; 166:1327-1329.
6. Ehrich J, Kerbl R, Pettoello-Mantovani M, Lenton S. Opening the debate on pediatric subspecialties and specialist centers: opportunities for better care or risks of care fragmentation? *J Pediatr* 2015; 167:1177-1180.
7. Cokkinos DV: The birth of the European Association of Professors Emeriti. *Archives Hellenic Medicine* 2017; 34:8-9.
8. [https://www.google.de/?gws\\_rd=ssl#q=Naples+the+human+capital+of+age](https://www.google.de/?gws_rd=ssl#q=Naples+the+human+capital+of+age).
9. De Santo NG, Altucci P, Heidland A, Stein G, Cameron JS, Rutkowski B. The role of emeriti and retired professors in medicine. *Q J Med* 2014; 107: 405-407.
10. De Santo NG, Heidland A, Stein G, Cameron SJ, Rutkowski B. Il ruolo e l'attività dei professori clinici emeriti o in pensione. *L'Acropoli*, 2014; XV: 151-162.
11. Ehrich J, Tenore A, del Torso S, Pettoello-Mantovani M, Lenton S, Grossman Z. Diversity of pediatric workforce and education in 2012 in Europe: a need for unifying concepts or accepting enjoyable differences? *J Pediatr* 2015; 167:471-474.
12. Hall JG. The challenge of developing career pathways for senior academic pediatricians. *Pediatric Research* 2005; 57:914-919.

