



The Child Health Care System of Croatia

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The Republic of Croatia is a Parliamentary Republic with a population of 4.2 million people that sits on the Adriatic coast within Central Europe. Gross domestic product is approximately 60% of the European Union average, which in turn, limits health service spending. The health system is funded through universal health insurance administered by the Croatian Health Insurance Fund based on the principles of social solidarity and reciprocity. The children of Croatia are guaranteed access to universal primary, hospital, and specialist care provided by a network of health institutions. Pediatricians and school medicine specialists provide comprehensive preventive health care for both preschool and school-aged children. Despite the Croatian War of Independence in the late 20th century, indicators of child health and measures of health service delivery to children and families are steadily improving. However, similar to many European countries, Croatia is experiencing a rise in the “new morbidities” and is responding to these new challenges through a whole society approach to promote healthy lifestyles and insure good quality of life for children. (*J Pediatr* 2016;177S:S48-55).

Pediatric health care in Croatia has a long tradition dating back more than 110 years to the establishment of the first pediatric department. The values behind health care in Croatia adhere to the principles published in 1919 by Professor Andrija Štampar, the first secretary of the World Health Organization¹ who stated that health care for children should be the highest priority for public health and that their well-being should be the direct responsibility of the government.¹ In practice, child health care in Croatia is regulated by law to be accessible, equitable, and comprehensive.² The resources invested in child health care are provided by the state national insurance budget.³ They are guaranteed by measures within the network of the health institutions and services of the Republic of Croatia.^{2,4}

Geography and History

Croatia (Hrvatska) is an Adriatic and a Central European country that covers an area of 56 542 km² with a coastline length of 5835 km. Zagreb is the capital and the largest city with approximately 800 000 inhabitants. Regional and local government is organized on 2 levels: 20 counties plus the City of Zagreb and then 128 towns with 428 municipalities. Counties are regional territorial units, each governed by a county assembly and a county head. County and municipality representatives are chosen through regional elections every 4 years.

The Croats settled in the territory of present-day Croatia in the seventh century. From the ninth century, the first rulers of Croatia were a domestic dynasty called the Trpimirovic. This dynasty died out and in 1102 Croatia became the integral part of Hungarian-Croatian Kingdom until 1526, when the Croatian nobility elected Austrian archduke as their ruler so Croatia became part of Habsburg Monarchy, with the coastal part under the Venice Republic. At the end of the First World War, Croatia gained independence and united to form the Kingdom of Yugoslavia, which then disintegrated in 1941 with the beginning of the Second World War. After the Second World War, Croatia became one of the 6 Republics within the federation of the Republic of Yugoslavia. In 1991, Croatia claimed independence; this was followed by the Croatian War of Independence between 1991 and 1995 to defend this independence. In 2013, Croatia became a fully pledged member of the European Union (EU).

Demography

According to the 2011 Census, the Republic of Croatia had 4.3 million inhabitants with a density of 77.5 inhabitants per square km and about 60% of the population living in urban areas.⁵ Demographic data are shown in the [Table](#). The average age of the population is 41.7 years, which places Croatia among one of the oldest aged nations in Europe.⁵ During the past 50 years, the average age has increased by

CPD	Croatian Pediatric Society
EU	European Union
UNICEF	United Nations Children's Fund

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<http://dx.doi.org/10.1016/j.jpeds.2016.04.040>

almost 10 years (from 32.5 years in 1961 to 41.7 years in 2011) because of the combined effects of a long-term fertility decrease and the increase in life expectancy. In the 2011 Census, the number of people over age 65 years (17.7%) outnumbered the number of population aged less than 15 years (15.2%).⁶ The average age of women at first childbirth was 27.9 years in 2011. Birthrate, mortality, general fertility, and total fertility rates are 9.8/1000, 12.1/1000, 4.3/1000 women age 15-44, and 1.52, respectively,⁷ with life expectancy at birth of 80.1 years for women and 73.9 years for men.⁵ The mortality of children in Croatia does not differ significantly from the average mortality in the other EU countries. Perinatal mortality is 4.6/1000 for infants weighing \geq 1000 g, whereas the mortality for all live born infants is 4.5/1000.⁷ Sixty-two percent of deaths during infancy are from perinatal origins, whereas in children older than 1 year, the main cause of death is injury.⁷

Economy, Income, and Poverty

At-risk-of-poverty rate in Croatia was 19.5% in 2013, which was higher than EU-28 (the European Union comprising of 28 member states, including Croatia) average of 16.7%.⁸ The highest at-risk-of-poverty rate was 23.4% for people aged over 65 years, and for children 0-17 years, it was 20.3%.⁸

Education

Progression to secondary school was 99% in 2009, which places Croatia in 27th position out of 177 countries.⁹ In 2011/2012, primary schools were attended by 340 116 students, secondary schools were attended by 183 807 students,¹⁰ and universities were attended by 112 848 students.¹¹ Adult literacy rate was 98.83% in 2010.

Employment

According to Central Bureau of Statistics, 1 364 000 people were employed in Croatia in 2013.¹² Most employment is concentrated in the service sector, followed by the industrial and agricultural sectors. In 2013, there were 318 000 unemployed in Croatia, giving an unemployment rate of 17.3%.¹² Unemployment remains one of the biggest problems within the economy. This is especially true for Croatia's

young people, aged 15-24 years, where unemployment rates (50.0%) have been very high both in comparison with overall national unemployment rates and average rates for young people in the EU.

Political Context

Croatia is a parliamentary democracy established by the Constitution. The May 1991 referendum voted in favor of independence from the Federal Republic of Yugoslavia, and Croatia officially declared independence on October 8, 1991. Power is organized on the principle of distributional responsibility within 3 branches: legislative (Croatian Parliament), executive (President of the Republic and the Government), and judicial, with Constitutional Court as an independent body protecting constitutionality and legality. The head of state is the President who is elected for a 5-year term and may be re-elected for a further single term. The government consists of the Prime Minister, 2 Vice Prime Ministers, and 13 Ministries. The President appoints the Prime Minister and Cabinet members with the consent of the Parliament. The parliament (Sabor in Croatian) contains the House of Representatives and members are elected by popular vote to serve 4-year terms. The Government of the Republic exercises executive powers within the framework of the Constitution and national legislation. Its internal organization, operational procedures, and decision-making processes are defined by the Law on Government and the Rules of Procedure of the Government. The government passes decrees, introduces legislation, proposes the state budget, and implements laws and other regulations enacted by the Parliament. The Constitutional Court ensures that laws passed by the Parliament conform to the constitution. Judges are elected for 8-year terms by the Judicial Council of the Republic of Croatia.

History of Croatian Pediatrics and School Medicine

The first pediatrician in Croatia was Radovan Marković who founded the first Children's Department in Zagreb in 1904. The first Pediatric Department of the Medical School in Zagreb was founded in 1923, and the first Head was Professor

Table. Demographic data of population of Croatia

	1990	1995	2000	2005	2011	2012
Total population	4 778 007	4 776 012	4 404 989	4 441 900	4 284 889	4 267 600
Population 0-14 y	948 711	921 186	867 785	707 800	652 428	640 088
Population 15-24 y	657 401	655 951	594 913	584 000	505 835	502 280
Population over 65 y	555 453	589 157	548 137	784 000	758 634	769 091
Annual growth rate of population	0.7	-0.1	-1.5	-2.1	-2.2	-2.3
Population density	84.6			79.4	78.5	77.5
Average family size	3.1			2.99		2.8
Average age of woman at first childbirth	24.3	25	25.6	26.5	27.9	28.3
Fertility rate	1.69	1.58	1.39	1.42	1.41	1.52
Birth rate (per 1000 people)	11.6	11.2	10	9.6	9.4	9.8
Death rate (per 1000 people)	10.9	11.3	11.5	11.7	11.6	12.3
Age dependency	28.98	28.21	29.26	23.7	22.7	22.4
Ratios: child dependency ratio population 0-14 y:15-64 y (population 0-14 + y > 65 y:15-64 y)	45.73	46.25	47.75	48.75	49.1	45.42
Distribution of population (rural/urban)	54.2			55.8		57.8

Ernest Mayerhofer who, in 1939, wrote the textbook *Pediatrics*. Professor Marković and Professor Mayerhofer are well known for their health promotion work educating parents and advocating for policies to improve child health. A pediatric section within the Croatian Medical Association was established in 1930 and continued until 1993 when the Croatian Pediatric Society (CPD) was founded. Besides CPD, there are 8 subspecialist pediatric societies, 5 sections, and a great number of working groups. CPD and all the subspecialist societies and sections organize regular national meetings and symposia. The national journal is *Paediatrica Croatica*, which publishes articles in both Croatian and English.

The history of school medicine in Croatia started in 1924, when the first polyclinic for school children was established in Zagreb, which provided general, dental, ophthalmology, respiratory, and ear, nose and throat care. Since then, polyclinics have evolved to include medical teams consisting of a school medicine specialist and a nurse trained in school medicine who work together in all the elementary and high schools in Croatia. School (school/adolescent) medicine specialists are members of the Croatian Society for School and University Medicine of Croatian Medical Association. The first textbook *Hygiene and School* was published in 1978.

Children in Contemporary Society

The increasing prevalence of “new morbidities” has created new challenges and responsibilities for Croatian pediatricians and school/adolescent medicine specialists.¹³ Traditional health problems such as infectious diseases and malnutrition have largely been resolved by vaccination programs and improved living conditions together with better nutrition. However, long-term conditions such as obesity, mental health problems, and neurodisabilities (eg, attention deficit and autistic spectrum disorders) are now replacing these traditional morbidities to create a new burden for child health services. For example, problems with mental health, addictions, depression, family relationships, bullying, and school failure represent the huge challenge for the future organization of services because they often require a multi-agency and multiprofessional approach.¹⁴ A symposium entitled the Child in Contemporary Croatian Society, which was organized by CPD, the Croatian Academy of Sciences and Arts, the Ministry of Health and Social Welfare, and United Nations Children’s Fund (UNICEF) Croatia office, was held in Zagreb in December 2009,¹³ and the Fourth Congress of School and University Medicine with international participation, which was organized by Croatian Society for School and University Medicine in Split in 2012, both demonstrated this epidemiologic transition toward the “new morbidities,” which are becoming more and more prevalent in the contemporary world and demand a new approach from professionals who work with children and families across all sectors. These new conditions have not always been included in the training of clinicians. Because of the complexity of these conditions, a multidisciplinary approach is required to integrate health, education, and so-

cial service responses to support these children and their families. This multi-agency approach requires a clear national consensus and political support to create a practical integrated approach that improves the health of future generations.

Injury Prevention Program and Reduction of Deaths Because of Injuries

Injuries are the leading cause of death and disability in childhood and represent a potential threat to the health of all children. Programs of injury prevention and safety promotion provide a good example of how multidisciplinary programs requiring the support of multiple sectors within society have taken responsibility and collaborate to achieve results. By adopting this multisectorial approach to injury prevention, the injury mortality for children 0-19 years of age has decreased significantly for children in Croatia from 291 deaths in 1995 to 76 deaths in 2013.¹⁵

Organization and Governance of Child Health Care Services

The Croatian Health Care Law Act ensures that population-based interventions are delivered by public health and primary health care, whereas secondary and tertiary health care is based on individual need.² The health insurance market is divided into basic, additional, and private sectors.³ Basic health insurance is mandatory and is organized by the Croatian Health Insurance Fund.³ The fundamental entitlements arising from basic health insurance include the right to health care and the right to financial compensation. All pregnant women and children up to 18 years of age, or till the end of education (maximum 27 years), have access to free health services.

The health sector collaborates with many other sectors, which have wider responsibilities that contribute toward health. Examples include financial benefits for disabled persons provided by the social care sector; nutritional safety provided by the agricultural and food processing sectors; national or regional programs for road safety provided by Ministry of Interior Affairs and nongovernmental organizations; alcohol, drug, and gambling control provided by Ministry of Interior Affairs with Ministry of Science, Education, and Sports, Ministry of Health, and other sectors.

Postgraduate Training of Medical Health Professionals

Postgraduate training of health professionals working with children including pediatricians, family medicine specialists, and general practitioners is organized through university hospitals and the Schools of Medicine located in the 4 big cities of Zagreb, Rijeka, Split, and Osijek.¹⁶ Pediatricians undergo 5 years of postgraduate training, residency, and postdoctoral studies for subspecialty practice, whereas school/adolescent medicine specialists undergo 4 years of training. The license to practice is issued for a period of

6 years and is a public document stating that a medical doctor is professionally qualified and accredited to practice medicine in the area of general practice, specialty, and subspecialty areas in the Republic of Croatia.¹⁶

Primary Health Care

There are a total of 277 pediatric primary health care teams.⁷ Each team comprises of a pediatrician and a nurse, and they care for 85% of the 293 000 preschool children. In the areas where pediatric health care teams are not available, preschool children receive care by teams led by family medicine specialists or general practitioners. The pediatric network is almost complete in larger cities, but nationally, there is a lack of some 48 teams,⁷ particularly in poorer regions of the country and remote zones, such as the islands where there are not enough children to merit a full pediatric team. A total of 103 primary health care teams operate within health centers, and 174 have the status of concession holders (meaning they rent their accommodation from the government) when performing their work. Families can choose which pediatric primary health care teams they attend as open access is enshrined by law, and no payment or participation fees are incurred.

Future recruitment into pediatrics is a major concern because a large group of pediatricians are over 55 years of age, and there is decreasing recruitment into pediatric training programs. The ratio between the number of specialists and residents is 4:1, and 32.3% of residents intend to opt for primary health care.⁷ The impact is likely to be an increase in the number of children per primary care team. Currently, 1 team on average cares for 1511 children, with the majority (1017) being preschool children. Out of 1000 visits of children to pediatric teams, 450 are for preventive visits. Preventive check-ups include recognition of deviations from appropriate growth and development, prevention of deficiency diseases, vision and hearing checks, detection of locomotor system disorders, and hypercholesterolemia in children with positive family history.⁴ Health education is provided for both parents and children on nutrition and lifestyles, as well as on children's habits depending on their age: breastfeeding, nutrition, physical activity, smoking, sexual behavior, and prevention of injuries.⁴

Preventive Health Care for School Children

Until the mid-1990s, primary health care for children was entirely the responsibility of pediatricians and school medicine specialists who provided an integrated preventive and curative health care system for both pre-school and school-aged children. In 1998, preventive health care for school-aged children was separated to function independently within the Institutes for Public Health. In practice, this results in school-aged children who are sick being cared for by family medicine specialists (family doctors) instead of school/adolescent medicine specialists or pediatricians.^{2,4}

Midchildhood is commonly regarded as a healthy time of life because illness and death rates are usually very low during this period.^{14,17,18} However, it is during this time that young people develop behaviors that may either promote their future health or compromise their short- and long-term health.^{17,19,20} By focusing on health behaviors of school-aged children, the overall objective is to prevent problems in later life. The preventive health care for school children consists of (1) primary prevention through health promotion, health protection, and immunization; (2) early detection of health issues through screening and surveillance; and (3) ensuring children with long-term conditions, including disabilities and learning difficulties, reach the maximum of their potential.^{2,4}

All schools are covered by a school health team consisting of a school/adolescent medicine specialist and a medical nurse. The preventive health care for school-aged children (age 6-18 years) is structured around 4 general examinations and 5 screening tests for pupils at risk according to their medical conditions. In addition, there are several specific checks for sporting activities or attendance at boarding schools.

Hospital Care

Secondary and tertiary health care of children in Croatia is provided in hospitals that are organized by the level of services they provide. There are a total of 1111 pediatric beds in Croatia.^{7,19} Four university hospitals offer a full spectrum of care including emergency, general, and specialist care² and a further 19 general hospitals with pediatric departments providing inpatient care, outpatient care, emergency care, and day care with the accompanying specialized outpatient departments, departments for emergency pediatric admissions, and day care hospitals. The 467 pediatric beds in general hospitals treat 26 262 patients a year (average bed occupancy rate is 71%) with an average length of stay of 4.6 days.⁷ The 657 pediatric beds in university hospitals treat 202 534 patients a year (average bed occupancy rate is 84%) with an average length of stay of 7.6 days.⁷ In addition to these general and university hospitals, there are a few special hospitals that serve children with chronic diseases, such as neurologic, respiratory, and mental health problems.^{7,21}

Palliative Care

Palliative care for children with life-limiting conditions is provided in hospitals by special palliative care teams, but there are no dedicated wards or hospices for palliative care. Community teams (home care services and field teams) provide palliative care of children and families at home.⁴

Outpatient Care

Outpatient or ambulatory care is provided mostly outside hospitals by a range of health professionals who work with children including pediatricians, family medicine specialists, general practitioners, therapists, and nurses.^{4,19} Outpatient

care in hospitals is provided mainly by pediatric subspecialists and when special diagnostic and therapeutic interventions are required, day beds are available to reduce hospital admissions.

Emergency Care

Emergency care on the scene is provided by teams from the Croatian Institute for Emergency Medicine organized in departments that cover all of Croatia.^{2,4,19} Children who attend hospital are treated in pediatric emergency departments that work closely with pediatric departments. For some children living in rural areas, emergency medicine is also provided by family medicine specialists or general practitioners.⁷

Children with Disabilities

According to the Register of Persons with Disabilities, there are 27 674 children who receive some form of special education, which represents 4% of children age 5-19 years.⁷ Children are supported to reach the maxim of their potential, with the type and content of their individual programs determined by the expertise of a range of professionals that include a school psychologist, therapists, and a school/adolescent medicine specialist. The majority of children and young people (87%) receive support in mainstream schools, with 13% attending specialized institutions.⁷

Psychiatry and Mental Health

Pediatric psychiatrists provide a service based in hospitals and in outpatient clinics^{2,4,19} together with other professional groups including psychologists, speech therapists, special education teachers, and social workers who formed a multidisciplinary team.² There are a total of 6 departments for child psychiatry in the 4 larger cities (Zagreb, Split, Rijeka, and Osijek).¹⁹ However, the service provided by these departments is insufficient to cope with the increasing incidence of mental health problems such as depression, emotional and behavioral difficulties, and substance misuse. There are only about 30 pediatric psychiatrists in the country so they are unable to provide a comprehensive 24-hour service and because there are very few hospital beds, most treatment is organized on an outpatient basis. Within the network of Public Health Institutes, mental health care is provided by psychologists, whereas school/adolescent medicine specialists provide counseling for school-aged children.^{2,7}

Dental Health Care

There have been several reforms during the last 15 years and prevention of tooth decay is no longer a national priority. Routine examination of the teeth is included within examinations at a primary health care level,^{4,7} and dental examination is a prerequisite for the primary school enrollment at age 6 years. Only 3 hospitals in Croatia have departments of pediatric dentistry,¹⁹ and the distribution of some dental

subspecialists, such as the orthodontists, is not uniform all over the country. Similar to pediatricians, there are concerns about recruitment into dentistry because the average age of pediatric dentists is over 50 years, and recruitment lags behind retirement figures.

Information and Patient Choice

Information regarding access to health services, information about patents rights, and complaints are covered by 3 initiatives developed by the Ministry of Health, which are the “white telephone” (free of charge), “meetings with the Minister” for patient organizations, and the e-program entitled “e-health.” Nongovernmental organizations representing patient interests come together through a Coalition of nongovernmental organizations and are very active on promoting patients’ rights including the provision of information about conditions and access to health services via their respective web sites. Many health care facilities also have web pages that provide information for patients; however, the primary health care team remains the predominant source of information for the majority of families.⁴

Parents receive relevant information and participate in decision making in relation to all the diagnostic and therapy procedures planned for their child with verbal consent for investigations and written consent for interventional procedures.²⁰ Families have the right to choose their primary health care team, which includes pediatrician, family doctor, gynecologist, and dentist. However, the choice of school medical team depends on the school the child attends, whereas access to the community nursing service depends on the place of residence.² Choice of secondary and tertiary health care relates to health care facilities instead of individual professionals, such as subspecialists.²

Implementation of the United Nations Convention on the Rights of the Child

The Republic of Croatia endorsed the United Nations Convention on the Rights of the Child in 1991. Since then, those principles have been enshrined into law and other strategic documents relating to children and families. The Ombudsman for Children monitors the implementation of Croatian law and other national regulations concerned with the protection of the rights and fulfillment of the obligations, outlined in other international treaties, conventions, or declarations to secure the best interests of children.

Croatia has been very successful in implementing the UNICEF programs of Baby Friendly Hospitals, which started in 1991 and the Child Friendly Hospital program, from 1999. Almost every child in Croatia is born in a maternity hospital. Today, 30 out of 31 maternity hospitals in Croatia have received the Baby Friendly Hospital award, which places Croatia among the most successful countries in implementing this program. Likewise, the majority of children’s

hospitals and children's departments have received the prestigious Child Friendly Hospital award.

The UNICEF office for Croatia is very active in promoting programs to support children and has launched the following national campaigns: Stop Violence among Children, Every Child Needs a Family, First 3 Years are the Most Important, Together from the Start, Break the Chain, and First 3 Years are Even More Important.

In 2010 UNICEF, the United Nations Global Compact and Save the Children, have launched an initiative in Croatia entitled Children's Rights and Business Principles, which promotes the responsibility of businesses to consider the well-being of children throughout their operations by including guidelines on the realization of children's rights, product safety, the rules of marketing and advertising, and care for the environment in which children are growing up and are in need of protection in crisis situations.

National Health Strategy

National Health Care Strategy 2013-2020 sets out the future context, vision, priorities, goals, and key measures for health care in the Republic of Croatia.²¹ It combines health indicator data and socioeconomic data with a planning function and describes: (1) organization of the health care system; (2) workforce including the professions and other human resources; (3) health care areas from the perspective of health promotion, prevention, diagnostic, early detection, therapy, care, and rehabilitation; and (4) health care system funding from the perspective of financing, ownership, health insurance, and the relationships between public and private sectors in health care.²¹

The Strategy was developed with the engagement of professional organizations, the general public, and representatives of patients' organizations. Health responsibilities are distributed across many ministries/sectors, and the national preventive programs combine responsibilities from many different sectors including social, education, health, interior affairs, media, transport/infrastructure entrepreneurship, and trade. The current priorities within child health care are the prevention of domestic violence and reducing injuries, suicide, and obesity.²¹

Medical Information Systems

Several institutions are responsible for collecting, analyzing, and reporting data on service activity and quality of health care. The Croatian National Institute of Public Health is responsible for national medical statistics (disease registers, workforce, hospital discharges, causes of death, high cost equipment, etc). There are 3 ongoing complementary projects to improve (1) data management efficiency; (2) health information quality and analytic capacity; and (3) cross-border health data interoperability on EU level (Patents Registries Initiative Joint Action). The National Health Insurance Fund is responsible for enforcing public health sector involvement through contracting clinical services with

providers and through monitoring provision, accountability, and administrative commitments including reporting. The Agency for Accreditation and Quality in Health monitors implementation of the health care quality system, which includes quality indicators and quality assurance and improvement. The Minister of Health has endorsed health care quality standards, which cover continuous improvement of clinical and nonclinical procedures, patient and personnel safety, medical documentation, patient rights and experiences, personnel satisfaction, infection control, deaths and autopsies, monitoring of drug side-effects and harmful events related to medical products, internal assessment and monitoring of the insurance system, and improving the quality of health protection.

Systems and Mechanisms for Ensuring Quality of Health Care

According to the Law Act on Quality of Health Care and Social Welfare, all health care providers in Croatia are bound to establish, develop, and maintain systems for achieving and improvement of health care quality.²² This plan defines priorities for health care quality improvement and guidance to develop a uniform system of health care quality standards supported by clinical quality indicators. The Agency for Quality and Accreditation in Health Care and Social Welfare responsibility includes implementation of a mandatory system of quality and safety, establishment of an accreditation system, education, development and research, health technology assessment, and supervision over health insurance standards.^{2,22}

Quality of Training Professionals

The Croatian Medical Chamber is the independent regulator and professional organization of medical health care professionals.¹⁶ According to the Statute of the Croatian Medical Chamber, the Chamber has the official authority to issue, renew, and revoke the license to practice and establish the framework and assessment procedures for revalidation of medical doctors' fitness to practice with regard to medical license issue (relicensure).¹⁶

An Example of a Patient Pathway: A Child with Asthma

All children have direct access to primary care pediatricians who will undertake the initial assessment and therapy for a child with asthma. However, further assessment, definitive diagnosis, and long-term treatment strategy is undertaken by subspecialists in respiratory medicine and allergy based in hospital outpatient clinics.

Acute Exacerbations

Primary care pediatricians manage acute episodes of asthma and refer children to the local hospital with more severe asthma exacerbations. Children also have direct access to pediatric emergency departments in any hospital. The

indication for hospital admission depends on the severity of asthma exacerbation with some children who do not need to be admitted being treated in the day care unit. Children from the remote areas (eg, islands) may remain in hospital longer until they no longer need asthma relievers on a regular basis. All hospitalized children are discharged with specific recommendations for further asthma treatment and care, which are discussed with parents and children before discharge. Follow-up visits are usually planned on a 1- to 3-month basis.

Chronic Treatment: Diagnostics and Follow-Up

Primary care pediatricians or family doctors, refer more complex children with asthma to the specialist consultants in respiratory medicine and allergy for specific diagnostic purposes and additional management. Children with asthma are usually seen by consultants in hospitals within 4-8 weeks from referral but can be seen within a few days if the clinical presentation is more urgent. Specific diagnostic procedures (eg, skin prick test, specific IgE levels, spirometry with bronchodilator test or bronchoprovocation test, fractional exhaled nitric oxide) are performed by consultants in outpatient clinics. All medicines for children with asthma are available and paid for by the Croatian health insurance. Recently, for some medication for relief, copayment is needed. There are 2 seaside centers where children with asthma can be sent for climatotherapy.

Written Plans for Avoiding Exacerbations

On discharge from the hospital or after the first visit to a consultant, parents and children get full explanation and written instructions about the disease and a treatment plan. The plan includes instructions on how to avoid asthma triggers, recommendations for the use of rescue/reliever medications, and chronic anti-inflammatory treatments. The plan explains how to manage mild exacerbations, including the principles of step up and step down therapy, how to complete symptom dairies, how to check asthma control, and how to complete a patient satisfaction record. The education of parents and children with asthma is undertaken in some centers in the form of the so-called "asthma schools," which last 1-3 days.

Public Health Measures

Beginning in 2012, smoking was prohibited in public places in Croatia,²³ and parents are discouraged from smoking in the presence of children. Daily reports on pollen concentrations in 5 regional centers are announced by radio transmissions. In regions abundant with ambrosia (ragweed), Public Health Laboratory Service collaborates with patients organizations to alleviate the risk of exacerbations before the pollen season.

Conclusions

The health of children is of immeasurable value, and it is the responsibility of society to promote the very best health and well-being of every child. Croatia has successfully improved

the health of its children through public health measures tackling the determinants of health as well as creating an effective health system to manage problems as they arise. However, "new morbidities" are increasing in prevalence and the health service, together with multiagency partners, have not yet fully adapted to best meet the needs of children with these conditions. ■

Author Disclosures

The authors declare no conflicts of interest.

We thank Tatjana Paveskovic (Croatian National Institute of Public Health) and Simon Lenton (European Paediatric Society Council member) for assistance with editing for English.

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