



## The Child Health Care System of Serbia

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The health care system in Serbia is based on a network of public health institutions funded by the National Health Insurance and from the state budget. Access to public health institutions is free. Preventive and curative services are provided at the local level in primary health care centers. Over the past 5-7 years, the number of pediatricians in primary health care centers decreased because of reduced number of applicants for pediatric training, which endangers the maintenance of the traditional model of pediatric care. Secondary medical care is offered in pediatric departments of local and regional general hospitals or outpatient clinics, and in specialized hospitals for children or adults. Tertiary medical care is provided by inpatient or outpatient subspecialty services in 5 major university children's clinics. The health reforms undertaken in the recent 10 years have aimed at strengthening preventive health care and reducing the overall costs for pediatric care. Current initiatives of the Ministry of Health and national pediatric associations are aimed at reestablishing and strengthening the capacity of the primary pediatric health care model by increasing the number of physicians and developing new processes of care. (*J Pediatr* 2016;177S:S156-72).

The Republic of Serbia, with an area of 88 509 km<sup>2</sup>, is located in the Balkans and in the Pannonia basin. It is at the crossroads between Central, Southern, and Eastern Europe. The capital city is Belgrade has more than 1 600 000 inhabitants. Neighboring countries are Hungary (to the north), Romania (to the northeast), Bulgaria (to the east), the former Yugoslav Republic of Macedonia, Albania, and Montenegro (to the south and southwest), and Bosnia-Herzegovina and Croatia (to the west).

Serbia is the natural gateway for Southeastern, Western, and Central Europe, positioned at the intersection of Pan European traffic corridors on the banks of the river Danube, one of the longest European river routes. It is the aim of Serbia to become a major trading and market center in Southeast Europe.

Serbia is divided into 29 districts plus Belgrade: 7 districts in Vojvodina, 17 in Central Serbia, and 5 in Kosovo-Metohija. The districts are further divided into municipalities. Serbia has 2 autonomous provinces: Vojvodina in the north (46 municipalities) and Kosovo-Metohija in the south (30 municipalities). Kosovo declared its independence in 2007, but Serbia does not recognize Kosovo. Although it is recognized by more than 80 countries, Kosovo is not a member of the United Nations (UN).<sup>1</sup>

### Sociodemography

According to the 2011 census,<sup>2</sup> the Republic of Serbia had a total population of 7 186 862 people. The majority are Serbs, with Hungarians, Roma, Albanians, and Bosnians as the main ethnic minority groups. The autonomous province of Vojvodina, in the northern part of the country, has the most diverse population with 25 minority groups and 6 official languages (Table I).

The population of Serbia had been declining. Between 2002 and 2011, the total population decreased by 4.15% mainly because of a negative natural birth rate and continuing emigration. Serbia has one of the oldest populations in Europe; 17.5% of the population is over 65 years of age, and the proportion of persons less than 18 years of age is 18%. The urban population was 56.8% of the total population in Serbia in 2012.

The ratio of females to males was 1:1 in 2002. The female population of reproductive age declined throughout the last 15 years. The number of females 15-49 years of age decreased from 1 809 317 in 2002 to 1 749 888 in 2005, and to 1 615 289 in 2011. The number of females 15-19 years of age was 242 298 in 2002 and 195 026 in 2011.

Crude fertility rate declined from 43 per 1000 in 1991 to 41.6 per 1000 in 2012. Total fertility rate (births per woman) decreased from 1.7 in 1991 to 1.6 in 2002, and then to 1.4 in 2012. The average age of mothers at the time of birth of first child

CME	Continuing medical education	GDP	Gross domestic product
CSO	Civil society organization	MDG	Millennium development goal
ECD	Early childhood development	NHIF	National Health Insurance Fund
ENT	Ear, nose, and throat	PHC	Primary health center
EU	European Union	UN	United Nations
GP	General practitioner	UNICEF	UN Children's Fund

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**Table I.** Selected demographic indicators

	1991	1995	2000	2005	2010	2012	2013
Total population	7 824 589	7 796 858	7 516 346	7 440 769	7 291 436	7 199 077	7 223 887
Population 0-14 y (% of total)	1 455 317 (19.2)		1 240 197 (16.5)	1 259 845 (16.9)	1 102 260 (15.1)	1 033 950 (14.4)	(16.45)
Population 15-24 y (% of total)	998 526 (13.2)			889 950 (12.0)	890 902 (12.2)	837 595 (11.6%)	
Population over 65 y (% of total)	892 871 (11.8)		1 210 132 (16.1)	1 276 540 (17.2)	1 233 412 (16.9)	1 256 346 (17.5)	
Population growth (annual %)	0.0659 (1990)		0.0562	-0.3195	-0.3004	-0.4020	-0.4814
Population density (people per km <sup>2</sup> of land area)	86.737 (1990)		88.486	85.940	85.076	83.368	82.596
Average age of woman at first childbirth			24.9		27.2	27.7	
Fertility rate (births per woman)	1.73	1.65	1.46	1.5	1.4	1.4	1.32
Birth rate (per 1000 people)	11.6	11.1	9.6	9.7	9.4	9.3	
Adolescent fertility rate (birth per 1000 women ages 15-19 y)	39.17 (1990)	31.63	25.15	20.89	17.85	16.87	
Death rate (per 1000 people)	11.4	12	13.6	14.3	14.2	14.2	
Distribution of population (urban/nonurban %)	50.4/49.6	51.8/48.2	52.9/47.1	54.4/45.6	56/44	56.8/43.2	

increased from 25.3 years of age in 2002 to 27.5 years of age in 2011. Specific fertility rate for adolescents 15-19 years of age was 24.6 per 1000 in 2004 and 19.1 per 1000 in 2012.

From 1991 to 2011, the proportion of women and children decreased, and the proportion of older people increased within the total population. Net population has been decreasing every year in the last 2 decades, reaching -0.48% in 2013. General mortality rate (deaths per 1000 people) increased from 11.4 in 1991 to 14.2 in 2012; birth rate decreased to 9.3 per 1000 total population. Permanent negative population growth was caused by the reduction of birth rate and increase of general mortality rate, as well as decrease of fertility rate. At the same time, there was a great influx of refugees and immigration of young people. Life expectancy at birth increased over the last 60 years by 17 and 18 years in males and females, respectively; life expectancy for those born in 2013 was 71.6 (males) and 76.8 years (females) of age.<sup>3</sup>

## Economy

Until the onset of the global economic crisis in 2008, Serbia's economy experienced steady growth, mainly driven by significant foreign investment and increased domestic consumption (Tables I and II). By 2007, real gross domestic product (GDP) growth had reached a peak of 7.5% per annum. However, the global economic downturn put an end to this positive trend. In 2008, a real GDP growth of 5.6% was recorded, followed by several years of negative or near-zero growth. Serbia's economy remains in recession with negative economic growth of 2% in 2012 and decrease of the GDP per capita by 7.5%, from €4290 in 2011 to €3967 in 2012.<sup>4</sup> The social cost of the economic crisis in Serbia has been considerable. The unemployment rate has been steadily rising, peaking at 24% in 2012 and reaching 51% among young people.<sup>4</sup> From 2008 to 2010, the percentage of the total population living below the absolute poverty line increased from 6.1% to 9.2%. Children less than 14 years of age were disproportionately affected, and their poverty rates almost doubled from 7.3%

to 13.7% over the same period. In particular, households with 6 members or more and those with lower education levels were affected negatively.

In the same period, between 2008 and 2010, the overall at-risk-of-poverty rate rose from 17.9% to 18.3% with significantly higher rates recorded for households with dependent children.<sup>4</sup> In addition to rising poverty levels, there are significant disparities in socioeconomic development among population groups, with the Roma being the most vulnerable. Expenditures for health care, according to the recorded data, after years of a declining trend, started to grow in 2001. By 2012, the expenditure reached US \$561.14 per capita. The absolute increase in spending on health care is not accompanied by a corresponding relative increase in terms of share of GDP. In fact, the proportion shows a slight decrease from 6.7% in 2002 to 5.7% in 2007, but in 2012, it increased significantly, up to 10.47% of GDP. Compared with other European countries, the Republic of Serbia allocates relatively little funding per capita for health care. Considering the low level of GDP compared with the vast majority of European countries, the low spending on health care is understandable. Significant regional disparities in economic and social development also persist. Conditions in the southern part of the country lag behind the more developed north, and urban areas fare considerably better than the rural ones.<sup>5</sup>

## Political Context

Serbia is a stable democracy in transition, making steady progress toward social, economic, and political reforms. Regularly held elections have been generally well managed, and a proportional electoral system has enabled a large number of diverse interests and groups to be represented in the National Assembly, which is the highest political body responsible for passing new legislation. The difficulties in finding a sustainable solution to the issue of the Kosovo conflict have continued to play a major part both in domestic and foreign policy. Serbia is committed to increased regional

**Table II.** Selected health care indicators

	1991	1995	2000	2005	2010	2012	2013
Life expectancy at birth	71.3	72.2	72.1	72.7	74.0	74.8	71.6 m 76.8 f
Perinatal mortality rate (per 1000 live births)	14.3	14.1	11.2	9.3	9.0	8.9	8.6
Neonatal mortality rate (per 1000 live births)	12.8	9.9	7.7	5.8	4.6	4.5	4.8
Postneonatal mortality rate (per 1000 live births)	1.8	3.9	2.9	2.2	2.1	1.7	
Maternal mortality rate (per 100 000 live births)	15.5	12.8	9.5	13.9	17.6	14.9	
Infant mortality rate (per 1000 live births)	14.6	13.8	10.6	8.0	6.7	6.2	6.3
0-5 y mortality rate (per 1000 live births)	16.8	15.7	12.7	9.2	7.9	7.0	7.1
Immunization rates for measles	92.8	97.1	95.7	95.6	96.0	90.0	87.0
Immunization, DPT (% of children ages 12-23 mo)			89	95	98	91	91
Hospital beds (per 1000 people)					5.9		
Physicians (per 1000 people)	0.037	0.034	0.012		0.021		
Nurses and midwives (per 1000 people)						2.112	
Births attended by skilled health staff (% of total)				98		99.7	
Main causes of child death % communicable, noncommunicable, external							
Infancy (0-12 mo)							
Conditions related to preterm delivery						68	
Congenital anomalies						18	
Others						12	
1-5 y							
Conditions related to preterm delivery						62.7	
External factors (injuries, poisoning)						4.3	
Congenital anomalies, deformities, chromosomal aberrations						3.0	
Respiratory system disease						15.9	
Others						14.1	
6-14 y							
External factors (injuries, poisoning)						30.4	
Malignancies						23.9	
Nervous system disease						15.2	
Cardiovascular system disease						8.7	
Others						21.8	
Main causes of morbidity (%)							
Preschool age (0-6 y)							
Respiratory diseases				65.4		50.8	
Infectious diseases				2.5			
Poorly defined conditions				8.5		11.0	
External factor				1.3		4.6	
School age (7-9 y)							
Respiratory disease				59.4		44.0	
Poorly defined conditions				3.6		7.0	
Infectious disease				7.5		9.8	
External factors				3.3		4.6	
Main risk factors for ill health							
Tobacco						20.0	
Alcohol			22.9			53.0	
Physical inactivity (h/d)			67.9			5.5	
Overweight/obesity						18.8/5.5	
Adolescent pregnancy and birth rates (15-19 y) (per 1000)							22

f, female; m, male; DPT, diphtheria, pertussis, tetanus.

cooperation. Serbia became a candidate for European Union (EU) membership in 2012, and negotiations started in January 2014.

There are 3 administrative levels in Serbia: the level of republic, autonomous province of Vojvodina, and municipal/town level. Serbia has initiated a wide range of reforms aimed at decentralizing a growing portion of public service delivery, including the areas of education, social, child and adolescent care, health, and culture to the local level. The Serbian judiciary system is organized into regular courts, higher courts, appellate courts, and the Supreme Court of Cassation. The High Judicial Council oversees the independence and autonomy of courts and judges. A number of reforms have been launched to strengthen the independence and public standing of the judiciary system.

Since the adoption of the 2006 Constitution, Serbia has set up a number of independent institutions mandated to ensure transparent and accountable governance, fight corruption, and strengthen the law and protection of human rights. The 54 articles of the UN Convention on the Rights of the Child are included in the Constitution.<sup>6</sup> The Serbian President represents Serbia, yet his political influence in daily political life is limited. The Prime Minister leads the Government, which may be formed by one single political party or, as is more often the case, by a coalition of 2 or more parties. The improvement of the children's health care services system requires coordinated work of several different ministries such as the Ministry of: (1) Health; (2) Education, Science, and Technological Development; (3) Youth and Sport; (4) Labor and Social Affairs; and (5)

Agriculture and Environmental Affairs. Serbia is a member of the UN, Council of Europe, European Free Trade Association, and a signatory of the Convention on the Rights of the Child and European Human Rights Convention.

### Child Health and Well-Being Status

Serbia's infant mortality rate in 2013 was 6.3 (per 1000), which is higher than the European Union-27 average of 4.1 (per 1000). An analysis of routine statistical data suggest that Serbia is unlikely to achieve its national millennium development goals (MDGs) for both infant and mortality rate for children less than 5 years of age by 2015, set at 4.5 or 5.0 (per 5000 live births), respectively.<sup>7</sup> The national MDGs have brought together a number of actions aimed at identifying differences and improving the gaps. Progress is measured using the following indicators: infant mortality rate, perinatal mortality rate, neonatal mortality rate, and mortality rate of children less than 5 years of age. There has been a significant reduction in the mortality rates at the national level, particularly with regard to children less than 5 years of age, and progress with regard to perinatal mortality has been limited (Table II). From 1991 to 2013, mortality rates of children have declined as follows: less than 5 years of age: from 16.8 to 7.1; perinatal: from 14.3 to 8.6; infant: from 14.6 to 6.3 (per 1000 live births); and neonatal: from 12.8 to 4.8 per 1000 live births. The perinatal period accounts for by far the largest number of infant deaths, and its share in the 2010-2011 period rose from 49.3% to 60.1%, and neonatal and postneonatal mortality (combined) fell by 10.8%. Conditions and complications stemming from the perinatal period remain the most common cause of death in both the neonatal and postneonatal period, although these categories are on the decline. It should be noted that there is a significant number of deaths attributed to vaguely defined conditions in the postneonatal period (15.4%), which suggests difficulties in ascertaining the primary cause of death. Reduction of maternal mortality is a result of more than 99% of deliveries now being performed in health care facilities and improved coding of causes of death. The majority of perinatal deaths are due to pregnancy complications of the mother leading to premature delivery and consequent immaturity. Perinatal mortality was the highest in very low birth weight (<1500 g) and in the low birth weight (<2500 g) groups. Because the level of stillbirths is approximately 5 per 1000 live births, it is essential to lower the perinatal mortality by improving outcomes for premature births and reducing the numbers of low birth weight newborns. The national average share of live births with low birth weight (under 2500 g) has remained constant in Serbia in the last decade (5.3% in 1995 and 5.7% in 2010), with a somewhat higher rate of 6.1% recorded in 2011.<sup>8</sup> As a response to a persistently high perinatal mortality rate, the Expert Commission of Women, Children, and Youth Health Care proposed standards for a regional system of neonatal health care in

Serbia pending approval by the Ministry of Health. The leading causes of death of children less than 5 years of age are as follows: consequences of preterm birth, congenital anomalies, pneumonia, asphyxia during birth, and injuries. There has been a significant reduction of the mortality rate of children less than 5 years of age; however, it still remains higher in some regions. Although the consequences of preterm birth are the leading cause of death, children in this age group still die from preventable causes, such as pneumonia and injuries.<sup>8</sup> Diphtheria was eliminated in 1980 followed by tetanus in newborns by 1990, and Serbia remains a country without polio since 2002. Morbidity rates of measles, rubella, whooping cough, and mumps were all less than 1 per 100 000 inhabitants. Data from 2011 indicated that the leading preventable causes of death of adolescents were injuries, poisonings, and other trauma. Traffic accidents accounted for one-half of all fatalities within this category, and homicide and suicide rates have decreased. Specific mortality rates did not differ significantly by regions. Deaths from external causes in the entire population less than 19 years of age have been decreasing, with a mortality rate of 8.7 per 100 000 in 2011, almost reaching the national MDG target set at 8.65.<sup>7</sup> The most important health problems of children and young people are as follows: injuries, malignancies, anemia, inadequate nutrition (obesity or malnutrition), sexually transmitted infections, and other forms of risk-taking behaviors (eg, physical inactivity, smoking, alcohol and drug misuse). Among the long-term conditions, type 1 diabetes mellitus annually affects 160 children less than 14 years of age, corresponding to 17.3 per 1000, with an average annual increase of 3.2%. It should be noted that the current system does not allow for adequate reporting and monitoring of cases of children harmed by violence. The protocol for protection of children from abuse and neglect in the health care sector calls for the establishment of teams at the primary health center (PHC) level responsible for identification, assessment, response, and coordination with other sectors and reporting on cases of child abuse and neglect.<sup>9</sup> The 2006 National Health Survey provided data on health and lifestyles of adolescents. The study reported that 67.7% of 7- to 19-year-olds were adequately nourished. Obesity had increased from 4.4% in 2000 to 6.4%, and it was significantly higher among boys than girls with 11.6% of children being moderately overweight. More than one-half of adolescents did not meet the standards for expected physical activity.<sup>10</sup> According to the 2011 Global Youth Tobacco Survey, 20% of high school students had smoked at least 1 cigarette in the last 30 days (compared with 28% of the European average), and 13% smoked at least 1 cigarette per day. As many as 17% of the students tried their first cigarette before 13 years of age (20% of boys and 15% of girls). Moreover, adolescents in Serbia were more frequently exposed to passive smoking than their peers in other countries.<sup>11</sup> According to the 2011 European School Survey Project on Alcohol and other Drugs Survey, approximately one-half of 16-year-olds in Serbia drank alcohol at least once a month, which is close to the European average of 57%.

One-third reported drinking more heavily, consuming 5 or more drinks in a row in the past month. There was a significant sex disparity with boys much more frequently engaged in this unhealthy behavior (eg, 11% of these teenagers had suffered from an injury as a consequence of using alcohol). Alcohol use begins at a young age with 15% of boys who had experienced being drunk before 14 years of age.<sup>12</sup> According to the 2011 European School Survey Project on Alcohol and other Drugs Survey, 16.5% of high school students reported having used an illegal substance at least once.<sup>8</sup> Overall, the use of illicit substances is lower than in the rest of Europe.<sup>12</sup>

There has been a slight decline in the specific fertility rate among girls 15-19 years of age from 25.4 live births per 1000 girls in 2002 to 20 per 1000 girls in 2010.<sup>8</sup> However, in 2014 the specific fertility rate in the general adolescent population was somewhat higher (23.9/1000 girls) and significantly higher among Roma girls (158.5/1000 girls).<sup>14</sup> According to official statistics, 7.3% of all women who gave birth in 2011 were less than 20 years of age. The mean number of births to women less than 18 years of age was 19.2 per 1000, with marked regional differences ranging from 56.1 to 6.0 per 1000 women.<sup>8</sup> The most recent studies (The Multiple Indicators Cluster Survey)<sup>14</sup> revealed a significantly worse health condition in Roma children: (1) Both infant and under 5 mortality rates, being 13 or 14 (per 1000 livebirths), are almost two times higher than the rate of the general population; however, these figures are very close to the national MDG for Roma children, 12 or 14 (per 1000 livebirths), respectively; (2) low birth weight was recorded in 15% of newborns (5% in general population); (3) 10% of children were undernourished (4% in general population), and 19% exhibit growth retardation (6% in general population); (4) 44% of children aged 24-35 months were fully vaccinated (81% in general population); (5) development of children aged 36-59 months was satisfactory for 83% (95% in general population); (6) 43% of 15- to 19-year-old girls were married even before 15 years of age (4% in general population); and (7) 66% of children 1-14 years of age experienced at least 1 form of physical or psychological punishment (43% in general population). On the other hand, 92% of Roma participants in a survey reported that children with physical or sensory difficulties or other disability should stay with their family instead of being institutionalized (87% in general population); a similar attitude was noted for children having intellectual/learning difficulties (81% vs 79% in general population).<sup>14</sup>

### Organization and Governance of Child Health Care Services

The right to health and health care through mandatory health insurance is guaranteed in Article 68 of the Constitution of the Republic of Serbia. The Constitution specifies that publicly funded health care is to be provided for children, pregnant women, mothers on maternity leave, single

parents with children under 7 years of age, and the elderly population.<sup>6</sup>

### Overview of the Health System

The Ministry of Health is an umbrella authority for central regulation and supervision of health care. At the level of autonomous province, regional, and municipal/local levels, the responsible bodies are provincial, regional, or municipal/local health authorities. The National Assembly elects the members of the National Health Council and National Board of Ethics. The National Health Council is an expert advisory body that is responsible for the quality and development of the health care system, organization of health services, and health insurance system. The Ethics Committee is responsible for the implementation of the provision of health care in Serbia on the principles of professional ethics. The Ministry of Health is supported by several state authorities such as the National Public Health Institute with its network of regional branches, National Agency for Drugs and Medical Devices, Republic Expert Commissions, National Agency for Accreditation of Health Care Institutions, National Institute for Blood Transfusion, National Institute of Virology and Vaccines, and The Republic Statistical Office.

### Delivery

Health services are provided through a wide network of public health care institutions overseen by the Ministry of Health. In 2011, this network included 344 health institutions with a total of 113 384 employees.<sup>8</sup> The basic organizational structure of the Serbian health care system consists of a network of the state-owned health institutions. Medical institutions in private ownership are not fully integrated into the system because only a small number have signed agreements with the state and Health Insurance Fund. Provision of health services is organized on primary, secondary, and tertiary levels. All 3 levels are functionally interconnected to a single system in which the higher level supports the lower.

The primary level of health care, as a fundamental and central part of the health care system, covers at least two-thirds of all health care needs. It is delivered in PHCs and institutions of public health. Health care at the primary level is provided by 158 state-owned PHCs, with a multidisciplinary network of outpatient facilities and offices, covering the territory of one or more municipalities or towns according to the Health Care Facilities Network Plan.<sup>15</sup> Patients and families may freely choose a doctor who is either a general practitioner (GP) or a specialist (eg, general medicine, occupational medicine, pediatrics, gynecology, dentistry).<sup>16</sup>

Secondary and tertiary health care services are provided by hospitals to continue assessment, diagnosis, treatment, and rehabilitation initiated at the primary level, or when specialized care is required. There are 41 general hospitals, 36 specialist hospitals for acute and long-term conditions and rehabilitation (2 of them dedicated

exclusively to children and pediatric departments exist in others), 6 teaching hospitals (clinics), 16 institutes (clinics with additional work on the public health issues), 4 clinical hospital centers (at the metropolitan level, founded by the City of Belgrade), 4 clinical centers (at the national level, founded by the state), and 25 public health institutions.

National legislation allows private health care providers to operate, but their services are covered through out-of-pocket payments. At the present time, Serbia does not have a developed system of additional private health insurance. The private sector is also poorly regulated and has evolved largely without oversight and support of the state until very recently, when some initiatives for integration of private sector into health care system were undertaken by the Ministry of Health. Private clinics mainly employ medical professionals from the public sector who work on a temporary consultancy basis.

### Funding

The health system, which is publicly funded by general taxation and a rather modest contribution from user charges, dominates. Membership of a statutory health insurance is compulsory for all employees and self-employed citizens. The contribution for insurance for the unemployed and pensioners, including their family members, is provided by the state of Serbia. Citizens may choose a voluntary health insurance provided by the National Health Insurance Fund (NHIF) or private providers funded directly by patients (and not so widely used).

The basic principles of the Serbian social health insurance are completeness, social solidarity, and reciprocity, with protection of both insured persons and the public interest. Compulsory health insurance is provided for all children, schoolchildren, and students up to the end of required schooling and not beyond 26 years of age; this is also provided for women in relation to family planning, pregnancy, delivery, and 12 months after delivery.<sup>16</sup>

### Major Organizational Changes in the Past 10 Years

Major changes relate to the change in primary health care institutions established by local authorities and institutions at a secondary and tertiary level by the state. The point of first contact is either a doctor or a nurse, generally a pediatrician for younger children and either a pediatrician or a GP for school-aged children.<sup>16</sup>

### Health Care Planning Systems

On an annual basis, health care planning is reviewed according to the instructions of the Institute for Public Health and the guidelines of the NHIF. The scope and content of health care services in the field of therapeutic medicine are based on the health statistics of the previous year and the new health needs of the population. In the field of prevention, planning occurs in accordance with the established prevention programs for different population groups. Reviews of the proposed work plans are provided

by regional Institute/Department of Public Health. Based on the reviews, conformity assessments are made in the area of NHIF and subsequently, a contract between the NHIF with each health institution for the next year is signed. This is an integral part of the plan. Information on the health status of the population, health services (scope, content, and quality), financing of health care, and human resources, as well as a set of relevant data are generated in medical institutions at all levels of health care and delivered to Institute of Public Health and to the Ministry of Health. According to the regulations, all medical institutions (private or state) are required to keep medical records and deliver health statistical reports to the National Institute of Public Health.

### Ministries and Agencies across Government and Other Sectors

Intersectoral and interministerial support requires further improvement. The Ministry of Health cooperates mostly with the Ministries of Social Protection, Education, Youth, and Sports, and then with the Ministry of Environment and the Ministry of Labor. However, other ministries should also be involved to improve the protection of children from hazards and promote healthy lifestyles.

The legislation in different areas of health care for women and children is defined in key legal instrument and policies and is implemented through a number of strategies, policies, and programs. Examples include Reduction of Poverty Strategy (2003), Action Plan for Children (2004), Pro-Natal Strategy (2008), National Strategy on Protection of Children from Violence (2008), National Strategy for Promotion of Status of Women and Promotion of Gender Equality (2009), Strategy for Development and Health of Youth (2006), and Strategy for Improvement of the Status of Roma (2009). However, the progress made in policy formulation does not parallel policy implementation, mostly because of insufficient reform capacity of the Ministry of Health and the economic restrictions with which the country is presently struggling. Health Care Development Plan of the Republic of Serbia<sup>17</sup> sets a number of specific goals to be met by 2015, including the implementation, monitoring, and evaluation of strategies and plans aimed at improving health among children and adolescents.

### Inequalities in Health

Serbia, as a successor of former Republic of Yugoslavia, is a partner in several international and European-wide initiatives to tackle social and health inequalities. Among these are the Alma Ata Declaration (1978), UN Convention on the Rights of the Child (1989), Health for All (until 2000), Health for All-Policy for XXI Century, and European Strategy for Health and Development of Children and Youth (2005). The principles of equity in health are incorporated in national legislative documents such as Law on Health Care (2005), Reduction of Poverty Strategy (2003), Strategy for Development and Health of Youth (2006), National Plan or Action for Children

2004-2015 (2004), The National Millennium Developmental Goals (2006), Strategy for Improving the Position of Roma (2009), and Strategy for Empowerment of Persons with Disabilities (2006). Fair and equal access to health care for all citizens of Serbia and the improvement of health care for vulnerable populations is one of the 7 main objectives of the Health Care Development Plan of the Republic of Serbia.<sup>17</sup>

The vulnerable groups identified include women of reproductive age, children and adolescents, persons with disabilities, and socially marginalized groups of the population living below the poverty line. For individuals and families living below the poverty line, access and utilization problems of health care emerge because of the lack of awareness of their rights to health care. Poverty Reduction Strategy<sup>18</sup> contains a comprehensive action plan aimed at reducing the key aspects of poverty through which the implementation and use of health care will be achieved. The Strategy for Improving the Status of Roma<sup>19</sup> sets the basis for reducing the difference between the Roma population and the rest of the population, primarily in the areas of education and health. The introduction of the role of Roma health mediator has contributed to the increased use of health care. Campaigning to promote immunization in Roma settlements has significantly increased coverage of Roma and other children from marginalized groups with mandatory immunization. Intensive supervision and community nursing visits from mobile PHC teams increased the coverage of children by regular preventive examinations. With support of UN Children's Fund (UNICEF), the Pediatric Association of Serbia started in 2014 a project on strengthening the pediatric health care system capacity to support early childhood development (ECD). The project encompasses 10 PHCs across Serbia with inclusion of both Roma and non-Roma socially-deprived children into an 18-month program of stimulation, surveillance, and monitoring of ECD.<sup>20</sup>

The strategy to improve the lives of people with disabilities is aimed at promoting their rights comparable with that of nondisabled peers. The national program of health care for women, children, and youth describes the activities of the health care services and other sectors of society in order to provide comprehensive health care for children and youth with disabilities.<sup>21</sup>

### Information Systems

At present, there is no national child health information system that integrates existing sources of child health data, such as surveillance and screening activities and immunization for individual children. The present health-related information system consists of 3 subsystem units: (1) health-statistic system as a part of national statistical system operating through network of institutions of public health; (2) system of the NHIF; and (3) local information systems of health care facilities. The National Institute of Public Health reports annually on primary childhood immunization uptake, on the incidence or prevalence of communicable and noncommunicable disease, and on results of work in public hospitals. This Institute also reports on periodically conducted surveys on the health of

the people in Serbia. Recently, UNICEF supported surveys and reports on Multiple Indicator Cluster Survey in women and children.<sup>13,14</sup> The Development Plan of Health Care highlights the need for improvement of information system by the development of the above-mentioned subsystems and their integration into an efficient total information system.<sup>17</sup>

### Workforce and Postgraduate Pediatric Education

Official regulations mandate that pediatricians must provide health care for all children less than 7 years of age, and only school-aged children and adolescents also may be seen by GPs. The target norms are 1 doctor per 800 children less than 7 years of age, or 1:1500 children and adolescents 7-18 years of age. In all 3 levels of health care services, there were 112 587 employees in 2012 of whom 20 960 were physicians (291 per 100 000 inhabitants). In PHC, 746 doctors (84% pediatricians, 16% GPs) provided health care for children 0-6 years of age, and 732 (63% pediatricians, 37% GPs) provided health care for children or adolescents 7-19 years of age. However, the age structure is unsustainable with approximately 30% of pediatricians being older than 55 years of age. In 2012 and 2013, the number of retired pediatricians was above the annual average of retirement. Because Serbia faces a deficit of primary care pediatricians, there has been a delay in implementing the training of specialists. The actual number of pediatric subspecialists is not centrally monitored; however, it is the current practice that each regional pediatric department must have neonatologists and at least 2 other pediatric subspecialists (mostly respiratory specialists, cardiologists, gastroenterologists, or nephrologists). Specialized pediatric nurses care for children in hospitals and in pediatric outpatient clinics, and midwives look after newborns. Pediatric postgraduate training takes 4 years and is followed by a board examination. The 4-year pediatric training comprises of basic pediatric training in general clinical care, outpatient care, intensive care, and preventive care. Thus, pediatric training is mainly hospital-based; however, more than 75% of trainees will eventually work in primary health care centers. The training of GPs does not include periods of postgraduate pediatric education. Specialized training for pediatricians takes 2 years and is offered in university hospitals (in highly specialized pediatric departments). These programs are shared by pediatricians and internists, with the exception of neonatology, which is only offered to pediatricians. At the end of the 2-year training, doctors must pass a board examination before certification; the subspecialization is then completed with a written medical thesis. Licensing and relicensing of doctors is organized by the National Medical Chamber. Relicensing is required every 7 years, on the basis of annual continuing medical education (CME) points. To attain 24 points annually documenting CME, every practicing pediatrician must regularly attend medical conferences and courses. There are no further board examinations.

## Legal Aspects and Patients' Rights

Parents have the right to choose their doctors at a primary care level; the choice is limited within secondary and tertiary health care services. Parents may change a chosen doctor at the PHC after a year, if they are not satisfied. The NHIF will pay for the clinical examination, laboratory diagnosis, and other diagnostics, as well as drug treatment and rehabilitation. The choice of a private doctor is free, but parents have to pay for the services from their private health insurance or out-of-pocket. Patients' rights to health are regulated according to UNCRC articles, and young people older than 14 years of age are allowed to participate in treatment decisions. Patient information is provided by a physician. Adolescents have the right to access their medical records. Data protection is guaranteed. The participation of service users in the planning of health services is provided within the local community. Evaluation of quality of health care includes professional surveys and feedback from patients and families. In the national Constitution of 2006, children's rights are listed in Article 64, which is specifically entitled "Rights of the Child" and guarantees the child's right to protection from psychological, physical, economic, and other forms of abuse.<sup>6</sup> The Constitution includes a special paragraph on the role of parents (eg, they have the duty to support and provide an adequate upbringing and education for their children). Special protection must be provided for children without parental care and children with disabilities. Children less than 15 years of age must not be employed, and children less than 18 years of age should not be engaged in jobs detrimental to their health or moral values. Health care for children is provided from public revenues unless provided in some other way in accordance with the law.<sup>6</sup> Child-related laws and policies are primarily implemented by the relevant ministries and their decentralized entities, as well as local authorities. In 2002, the Government established the National Council for Child Rights as a cross-sectorial body, with representatives from relevant ministries and civil societies, and independent experts. The Council holds the status of a Counseling Body of the Government and, as such, has an advisory rather than decision-making role. The Committee on Child Rights of the National Assembly was established in 2012, stemming from a working group in place since 2008. It is chaired by the Speaker of the National Assembly and open to all members of Parliament who are interested in child-related issues. The mandate of the committee includes the broad areas of parliamentary responsibility (legislation, oversight, and representation).

The Protector of Citizens (ombudsman) is mandated to oversee and enhance the protection of human and minority rights and freedoms and supervise the fairness and legality of the work of public administration. Serbia does not have a specialized ombudsman for children, and the protection and promotion of the children's rights is integrated into the overall mandate of the ombudsman. Although one of the ombudsman's 3 deputies has delegated responsibility

for children's rights, sex equality, and rights of persons with disabilities, there is no provision in the law establishing the ombudsman for a dedicated child rights position. The Commissioner for the Protection of Equality, established in 2010, covers cases of discrimination against individuals and groups, which can take the form of an opinion or recommendation, to the offending institutions or individual, with a defined deadline for remedial action. Civil society organizations (CSOs) and nongovernmental organizations have played an important role in the systematic monitoring of the implementation of children's rights. The nongovernmental sector has expanded significantly in recent years, and today, there are several strong nongovernmental organization networks for children's rights. The network of CSOs for children comprising 71 member organizations is aiming at increasing the involvement of CSOs and children in policy making and at promoting cooperation between civil society and the local, provincial, and state authorities. CSOs produce independent reports to the Committee on the Rights of the Child, parallel to the Government's reports on the implementation of the Convention on the Rights of the Child.

## Financing

### Total Expenditure in Health

The data show that the Serbian health care system has an unusually high proportion of social care expenditure in its budget, although the total amount of money per capita is very low because of low GDP (**Table III**).

The health care system in Serbia is funded through the NHIF, with compulsory employee contributions as the major source of financing. The fund is overseen by the state; the present system with combined sources of financing is frequently described as a transitional stage between a health insurance-based system and a National Health Service.<sup>22</sup> The capacity of the mandatory health insurance system to provide adequate funding has come under considerable strain beginning in 2009 as a result of the economic recession and growing unemployment. Health care expenditures per capita rose over time, peaking in 2008 at €461 EUR,<sup>8</sup> mainly because of the overall growth of GDP (with the annual rate of 5.2%-6.9%) in the period 2005-2008 and measures taken by the government to collect revenues more effectively. In 2009, however, because of fiscal constraints and negative GDP rates (-3.1%), the total expenditure on health care per capita dropped to €412, but then rose slowly onward. Moreover, the collection of all contributions is not currently at a satisfactory level. By the end of 2012, it was estimated that 95% of citizens were covered by mandatory health insurance. However, it should be noted that out of the total number of the insured, only one-third actually paid contributions, and the rest were either dependent on family members, pensioners, or vulnerable groups whose health insurance is covered by the state.

**Table III.** Selected data of the country's current economic situation and implication for health

	1991	1995	2000	2005	2010	2012	2013
GDP per capita (in US \$)	4162.5	2248.9	2588.7	3391.4	3823.6	3855.7	
Employment to population ratio, ages 15-24 y, total (%) (national estimate)						15.199	14.5
Unemployment (% of total labor force)	-	-	-	20.8	20	23.9	
Unemployment, youth total (% of total labor force ages 15-24 y) (national estimate)						46.200	51.099
Health expenditure per capita (US \$)		76.72	50.67	307.01	546.03	561.14	
Health expenditure, % of GDP		7.32	7.42	9.05	10.74	10.47	
Poverty rate (total, and child)* (%)				-/6.5	-/9.2	8.8/12.3	8.6/11.4
Gini index					33.4	29.6	

\*People whose income consumer unit does not exceed 60% of the median of national income of consumer unit in the total population.

The private expenditure on health care increased over the same period reaching 38% of total health expenditures. This trend of increased out-of-pocket health spending by private individuals poses a considerable threat to equitable access to health care for disadvantaged groups. Thus, as the present model of health care financing looks likely to cause greater inequities of health outcomes, an analysis of individual health expenditures will need to be undertaken on the regional, district, and local levels, where considerable inequities persist.

### Health Budget Devoted to Child Health

The health budget devoted to child health is impossible to estimate. The data required do not exist in any accessible form. There is no established mechanism to ensure the fixed proportion of the annual budget to be spent on children.

### Physical and Human Resources

#### Number, Location, Size, and Age of Hospitals

In each of the 41 general hospitals, there is a children's department offering inpatient and outpatient services. In addition to pediatric university clinics and a few specialized children's hospitals, there are pediatric departments in most specialized clinics within hospitals for adults (orthopedics, ophthalmology, gynecology, neurosurgery, and rehabilitative medicine). In 2013, the total number of beds for children in the secondary and tertiary health care services was 2735 or 7% of all hospital beds in Serbia. University children's hospitals provide general pediatric services for the population of major cities; they also offer additional tertiary pediatric services. They vary in size ranging from 40 to 240 beds, and in 3 of them, there are pediatric surgery departments with additional beds. Both pediatric medicine and pediatric surgery departments contain subspecialty divisions and provide inpatient and outpatient care.

#### Facilities for Primary Care (First-Contact Care) Services for Children

Primary care is delivered in the community through PHCs, although private health services have emerged in the past 2 decades. Primary health care is organized through health centers with general medicine, pediatrics, gynecology, laboratory, patronage service, and emergency units as mandatory components. The pediatric units provide health care for children and adolescents through 2 subunits:

children of preschool age (0-6 years of age) and school-aged children/adolescents (7-18 years of age). In these subunits, preventive and acute care management is offered. The former consists of regular surveillance, screening, and checkups, according to National Program of Health Care for Women, Children, and Youth. It is provided by the pediatrician or either by pediatrician or GP in subunit for school-aged children and adolescents with a pediatric nurse (with a home-visiting nurse in the neonatal period). ECD counseling services or counseling services for school-aged children and adolescents are available in larger communities. The acute care management is almost entirely provided by the primary care team.

### Provision and Services

#### Public Child Health Care Services

The public child health care service in Serbia is provided through the publicly provided services covering primary and hospital health care. Private primary and hospital health care is not yet integrated into a state health care system, and the first private contracts for providers of primary care in the field of pediatrics and gynecology should be in place by 2016.

Primary health care of mother and child is provided at the local level through the PHC according to the National Program of Health Care of Women, Children, and Youth and accompanying guidelines for its implementation.<sup>21,23</sup> For all mothers in Serbia, antenatal, delivery, and postnatal (up to 12 months) care is provided, shared between community health center and a maternity hospital unit. All newborns, infants, children, and adolescents are entitled to free public provision of preschool and school health services. Currently, these services are delivered according to the above-mentioned national program and instructions for program implementation.<sup>21,23</sup> This includes early childhood and preschool developmental assessments, school health services, and a comprehensive program of immunization. During the postnatal 4 weeks, infants have a variety of screening and surveillance interventions performed, starting with newborn blood spot screening for phenylketonuria and hypothyroidism, a neonatal hearing test, and a general physical examination by the pediatrician (neonatologist or pediatrician at the neonatal ward). Vitamin K administration, bacillus Calmette-Guerin vaccine, and hepatitis B immunization are provided before leaving the postnatal ward.

In the first 4 weeks, a home-visiting nurse will visit the mother and newborn for 5 consecutive days to support the mother, advise her on health promotion, including breastfeeding, general care, and immunization, assess any risk factors, and ensure that the newborn is progressing satisfactorily. The neonatal period is completed with the pediatrician's checkup (for the newborn at risk, the first checkup is performed at the end of second postnatal week). Until the first birthday, infants are seen by the chosen pediatrician (at PHC) 6 times for screening and surveillance, including hip screening by ultrasound (at 3 months), dental screening, and total blood count (at 6 months). The chosen pediatrician provides the national primary immunization schedule. During preschool years, a further 3-5 checks per year are provided that are carried out by a pediatrician; psychologist, dental, ophthalmologic, and audiology officers are visited at school entry. The home-visiting nurse will see the child during its second and fourth years of life. During adolescence, special attention is paid to the prevention of mental and sexual health issues. If an infant or child needs further assessment or therapy, the patient is referred to the appropriate service as required. Concerns about newborn or infant neurodevelopmental disabilities are referred to the ECD counseling service at the local health center. These services are provided in health centers covering communities having at least 8500 preschool-aged children. The service consists of a developmental pediatrician, nurse, psychologist, social care worker, and specially trained pedagogue. For more complex neurodisabilities, children are referred to special hospital services. In the PHC covering communities with at least 7000 adolescents (10-18 years of age), youth counseling service is provided by a working team of specially trained pediatrician or GP, nurse, psychologist, gynecologist, and social care worker, with other specialists as required.

Provision of education for children with special needs has been only recently provided within mainstream schooling, with specialist support as required. There are also schools specifically established to educate children who cannot be supported in mainstream schools (in the past, all children with special needs attended these schools). Health promotion and education of children are incorporated into everyday practice of a pediatric team in the health center. In schools, a variety of health promotion interventions are provided; these include programs, such as Healthy School Program, School without Violence Program, those aiming to prevent obesity, or those aiming to care for adolescents' reproductive health. The Health Promotion Department of the National Institute of Public Health runs many initiatives and campaigns aimed at children, including breastfeeding promotion, immunization, reducing obesity, and reducing tobacco or alcohol use.

### Patient Pathways

The Expert Commission for Good Clinical Practice Guidelines of the Ministry of Health has produced a number of guidelines devoted mainly to adults. Some of these, dealing with chronic conditions (asthma, diabetes), also contain pe-

diatric sections. Expert Commission for Women, Children, and Youth Health Care also produced a few algorithms or recommendations on diagnosis and treatment of specific diseases. Major pediatric clinics and the Pediatric Association of Serbia, deliver guidelines, algorithms, or recommendations through CME courses.<sup>24,25</sup> Clinical pathways for asthma are in use in several pediatric departments of hospitals, but they differ in the range of their services. Some cover child care at all levels of health care, and others focus on inpatient or outpatient care. At the primary level of health care, clinical pathways identify 3 categories of patients: (1) treated in a health care center; (2) referred to hospital (at secondary level); and (3) suspected asthma who are referred to the respiratory clinic of children's departments (secondary or tertiary level) for diagnosis and treatment. At the secondary level of health care, clinical pathways recognize the difference between children who are hospitalized for urgent care for exacerbations and children who are referred for diagnosis and planned outpatient care. For children who are hospitalized for emergency treatment of asthma attacks, data on personal and family medical history, clinical condition on admission with the classification of the severity of the attack, the results of laboratory, radiologic and other examinations, treatment given and response, and health educational work with patient and parents are recorded. On discharge, the next checkup is scheduled and written instructions in the form of a care plan are provided. Planned outpatient care includes education about reducing trigger factors, including cessation of parental smoking and avoiding passive smoking in general, and education about the proper use of medicines. Each patient receives written instructions of all measures necessary for good control of asthma. Clinical pathways for asthma are regularly evaluated and improved.

### Primary/First Contact Care

Primary health care is provided in 158 PHCs, most of which have disseminated units in urban neighborhoods or rural areas. Health care for children is provided in health centers through the dispensaries; one for children up to 7 years of age and another for children 7-18 years of age. The team consists of a pediatrician (for children 0-6 years of age) or pediatrician or general physician (for children 7-18 years of age) and nurse. The staff is permanently employed in the health center. Activities include promotional and preventive work, which takes place within at least 6 visits in the first year and 3-5 visits per year during childhood and adolescence, according to the National Program for women, children, and youth health care and accompanying instructions for program implementation.<sup>21,23</sup> Visits on request are performed by a chosen doctor. Home-visiting nurses at health centers perform home visits immediately after birth and later, in children 2 and 4 years of age.

At the national level, the availability and accessibility of such teams are sufficient, but there are significant variations at the district level. The Health Care Development Plan calls for the development of a network of health care institutions in Serbia, including increased decentralization, in order to

address regional inequalities and disparities in the accessibility of health care services for children and women.<sup>17</sup>

For medical assessment at a subspecialist level in hospitals or for hospitalization, a referral letter is required from the referring physician, except in emergencies, when it is possible to go directly to the hospital. Although there is a referral system, there are numerous overlaps between the hospital and primary care. Department of children health care providers at PHCs work during the day (7:00 a.m. to 8:00 p.m.), including weekends; in a smaller number of health centers, health care providers work at night within the emergency services. Emergency services during the night are mainly provided by the children's departments in hospitals.

### Outpatient Hospital Care

Outpatient care is generally delivered by institutions providing secondary and tertiary levels of health care by subspecialists, mainly pediatricians, and rarely by adult health care subspecialists, such as in some branches of surgery (ear, nose, and throat [ENT], ophthalmology, physical therapy, neurosurgery) or in the field of mental health care. Data about these services are not readily available.

### Inpatient Care

Inpatient care is provided by pediatricians in the children's departments of general hospitals by pediatricians and pediatric subspecialists in children's tertiary referral centers with some care being provided to children in adult wards, such as in surgical branches (neurosurgery, ophthalmology, ENT, neurosurgery). A limited number of children are treated in private hospitals. Medical specialists are permanently employed in hospitals.

### Specialist Children's Hospitals

The 3 specialist children's clinics in Serbia are stand-alone facilities (Belgrade: University Children's Hospital and the Institute of Mother and Child Health Care of Serbia "Dr Vukan Čupić"; and Novi Sad: The Institute of Children's and Youth's Health Care of Vojvodina). In addition, 2 are attached to adult tertiary care clinical centers (Niš and Kragujevac). The pediatric clinic from Priština has moved to Gračanica after the North Atlantic Treaty Organization aggression in 1999. All pediatric clinics are linked with teaching hospitals of the respective universities. These 5 children's clinics receive tertiary referrals from regional and general hospitals, also functioning as secondary care facilities for the local population of greater Belgrade, Novi Sad, Niš, and Kragujevac. The 3 first-mentioned facilities provide all pediatric subspecialties, as well as surgical care of infants, children, and adolescents. The Institute of Mother and Child Health Care of Serbia also provides specialist or subspecialist care in the field of ENT, gynecology, and ophthalmology. The surgical care of children and adolescents in Niš and Kragujevac is provided by pediatric surgery wards within the adult surgical clinics. Dedicated pediatric intensive care units are also located in university clinics. Access to these beds is provided to the referring clinicians from regional and general

hospitals after discussion with the pediatric intensivist in the tertiary units.

### Special Children's Hospital

There are 4 special hospitals. The Institute of Neonatology (Belgrade) is dedicated to premature newborns, including intensive care, and serves as a referral center for major part of Serbia, with its own specialized transport service. The Special Hospital for Cerebral Palsy and Developmental Neurology (Belgrade) provides inpatient and outpatient care for children with neurodisabilities. In addition to pediatric clinics, the Clinic of Neurology and Psychiatry for Children and Youth in Belgrade serves as the tertiary care pediatric inpatient and outpatient facility for other specific conditions. It is linked with Medical Faculty, University of Belgrade. Children (and adults) with psychophysiological and speech disorders are treated in the respective stand-alone institution providing both inpatient and outpatient care.

There are also 2 special children's departments providing after care (rehabilitation) within adult facilities; one is devoted to after care and education of children and adolescents with diabetes mellitus, and the other is the Center for Prevention and Therapy of Obesity in Adolescents, established on the initiative of the Pediatric Association of Serbia.<sup>26</sup>

### General Hospitals

The size, number of departments, staffing, and equipment of general hospitals vary. Those at the county headquarters may be regarded as regional hospitals. The pediatric departments in these hospitals serve as the secondary care inpatient and outpatient facilities for a defined childhood population and also receive referrals from nearby smaller pediatric units attached to the local general hospitals. Pediatric departments within these hospitals have fully supported inpatient pediatric wards with pediatricians who are subspecialists whose number and subspecialties vary across the country. Larger general hospitals also provide pediatric acute general surgical care in pediatric surgery wards attached to adult surgery departments. A considerable proportion of routine ENT surgical procedures are also offered through general hospitals.

Neonatal units are attached to maternity wards within departments of gynecology and obstetrics in general hospitals. Most of the neonatal units are at level 1 with only a few at level 2, staffed with pediatricians and neonatologists. Smaller general hospitals, other than general hospitals at the county headquarters, also serve as the secondary care providers for pediatric inpatient and outpatient care for the local population, providing care for children with acute illness.

### Emergency Pediatric Care

Emergency care is provided at all 3 levels of health care. At the PHC, emergency care for both adults and children is provided through emergency care service, most often delivered by a GP or specialist in emergency medicine. In most

of the cities, emergency care for younger children is provided by pediatric departments of local/regional hospital. In major cities, emergency care is provided within special stand-alone facilities in which pediatricians deliver emergency care for children. Availability of urgent care is adequate in urban areas, whereas in remote rural areas, the situation is not good because of rough roads and lack of transportation. Patients requiring further treatment are referred to general hospitals. Emergency health care at the secondary level is provided within an emergency department of general hospitals where acutely ill or injured children are seen by a pediatrician or pediatric/general surgeon, respectively. Children needing hospital care are admitted to respective pediatric wards. Those children requiring highly specialized care are referred to pediatric emergency departments. There are 5 pediatric emergency departments within pediatric clinics in 4 major cities. Three of them (2 in Belgrade, 1 in Novi Sad) provide care for both acutely ill and injured children, and in the other 2 (Niš and Kragujevac), injured children are admitted to pediatric surgery wards within adult surgery departments. Two pediatric clinics in Belgrade also serve as secondary level of emergency care. In Belgrade, a proportion of children are seen within the emergency care center for adults, but most of them (except those needing neurosurgical treatment) are referred to one of the pediatric clinics.

Grade 1 emergency care (fever, cough, dehydration, pain, rash, etc), in most cases, is provided by the chosen pediatrician at the PHC during the day; few of these children are seen by emergency care service personnel at the PHC or emergency department of a general hospital. During the night, most of these children are seen by a pediatrician or GP at PHC or by pediatrician at the stand-alone emergency care services in major cities or in the secondary and tertiary care hospitals.

Grade 2 emergency pediatric care (trauma) is provided by a pediatric surgeon (in larger general hospitals or in tertiary pediatric care hospitals) or by a general surgeon (in general hospitals).

Grade 3 emergency pediatric care (severe illness, convulsion, loss of consciousness, shock, respiratory failure) is provided by tertiary pediatric care hospitals, where most of children who are temporarily hospitalized in secondary care facilities are referred. Unfortunately, the proportion of children seen by different providers of emergency care is not available.

To improve quality and access for both children and adults, the Health Care Development Plan of the Republic of Serbia proposes an integrated system of prehospital and hospital emergency care designed by a preceding strategy for development of emergency care. This strategy should create a new model of organization and establish standards of emergency care according to international standards.<sup>17</sup>

### Chronic Diseases and Long-Term Conditions

Children who suffer from severe or complex developmental disorders may be placed in an institution of social care if their biological family cannot provide the care that they need. The

relevant commission determines the degree of impairment and proposes further treatment. In these institutions, children are provided with the basic needs (meals, clothes, shoes), health care, rehabilitation, education, and work therapy according to their abilities. The Social Welfare Development Strategy stipulates that local authorities may establish institutions to serve as daycares for children and young people with disabilities. Health care, education, and social care are interconnected at these daycares.<sup>27</sup> Serbia's progress toward EU integration has pushed social inclusion higher on the Government's agenda. Good legislation is now in place to incorporate marginalized children into society, including the laws on comprehensive education, social protection, health care, and justice, backed by protocols and by-laws setting out the roles and accountability of service providers.

### Safeguarding/Child Protection

The right to safe and supportive environment and the right to protection from all forms of violence are basic rights of all children according to the UN Convention on the Rights of the Child and other international documents that have been ratified by the Republic of Serbia. Serbia adopted a series of documents at the national level, which determine objectives, procedures, and responsibilities of systems and individuals to protect children from violence, neglect, and all forms of abuse. In the National Plan of Action for Children adopted in 2004,<sup>28</sup> the National Millennium Development Goals in the Republic of Serbia made in 2007,<sup>7</sup> and the National Strategy of Youth adopted in May 2008,<sup>29</sup> protection of children from violence stands out as one of the high-priority objectives. The General Protocol for Protection of Children from Abuse and Neglect, adopted in 2005, defines more clearly the reference framework and procedures and the approach to the problem of child violence and abuse, which is binding for all individuals and institutions in the state.<sup>30</sup> The protocol for protection of children from violence and abuse was adopted in April 2009, and it defines roles and tasks binding all health care institutions and health workers and associates. This protocol mandates the formation and training of teams for the protection of children from violence and abuse within all health care institutions at every level.<sup>9</sup>

Primary health care level has a significant role in prevention, early recognition, assessment, and early intervention to prevent violence and abuse, then, referring children to specialized offices of secondary and tertiary health care institutions. Each health care institution must form its own expert team in accordance with the protocols of the institution and the environment, with the aim of recognizing cases of violence and/or abuse, reporting them to the competent body/office, assessing the risk, stating the needs of the child and their family, planning services and measures for child protection within its own organization, and working with other relevant institutions in the community. Beginning in 2010, with the support of UNICEF and the Ministry of Health, Serbia has developed child protection units and

completed the basic and advanced training in the application of the protocol in 4 regional university centers.<sup>31</sup>

Currently, Serbia is developing a sustainable system to report on the protection of children from abuse and neglect within the health care system; relevant information technology tools for data collection and reporting were developed for expert teams' work in health care. In 2013, a central national level database was created, and the data may be accessed by all authorized users.

### **Palliative Care**

The organization of palliative care for children is in its early phase. By the end of 2015, a National Program for Palliative Care of Children will be adopted (which already exists for adults). Today, palliative care is provided mainly in tertiary health care centers with much less in general hospitals or in the patient's home.

### **Mental Health Care**

In 2014, there were 5 child and adolescent psychiatric hospitals in Serbia. Developmental and youth counseling services operate within the PHCs, although they are constantly undergoing reforms because they still are not well supported by authorities. Adolescents with mental health problems are referred to youth counseling service at the PHC. Most interventions are completed within developmental counseling services or youth counseling services. If problems are beyond their level of competence, children and adolescents can be referred to local social services, specialized clinics, and departments for mental health care of children and adolescents within large hospitals (secondary health care). When the problems are beyond the scope of secondary health care, children are directed toward tertiary health care such as specialized departments for child and adolescent mental health care at university clinics. Most of the diagnostic procedures and treatment of children and adolescents with serious mental health problems take place at the tertiary health care level, clinics, institutes, and specialized hospitals in major cities. Fifty-two secure psychiatric beds are available for children 3-18 years of age (52 secure beds), and 24 beds are available for young people 15-25 years of age, which equates to 1 psychiatric bed per 28 748 young people. In addition, there is a children's day hospital in Belgrade, with a capacity of 15 beds, and 3 day hospitals for adolescents in Belgrade and Novi Sad, with a total capacity of 60 beds. Children with learning disabilities are integrated into schools throughout the country, and many projects have been dedicated to improve the training of teachers and to introduce new methodologies to increase inclusion. Children with speech and language difficulties are referred to speech and language therapists at the PHCs or at the special institution for psychophysiological and speech disorders in Belgrade. Elementary schooling is organized for children who have prolonged hospital stays. Key barriers to improvement include poor knowledge and training of health professionals regarding issues of learning difficulties, communication difficulties, negative attitudes, poor intersectoral collaboration, and the lack of reliable

health monitoring data for this population. The Social Welfare Development Strategy,<sup>27</sup> followed by a Strategy for Empowerment of People with Disabilities (2006),<sup>32</sup> included programs to be implemented to improve the position of children with disabilities (among them those with learning disabilities and behavioral problems) in society. Health care services for children with behavioral problems are insufficient and largely unavailable. This lack of health care system support is one of the factors that influence the decision by parents of children with behavioral problems to place their children in some form of health or social care institution. Children with psychosomatic disorders also lack comprehensive health care services; however, proper diagnosis is well established. Follow-up treatment is limited because of an insufficient number of professionals and poorly developed collaboration with other sectors. The National Strategy for Development of Mental Health Care was approved by the Government in 2007,<sup>33</sup> as well as the national programs for substance abuse and care of children and young people.<sup>34</sup> Unfortunately, these programs have not been implemented according to policy recommendations.

### **Dental Care**

Dental care is organized on a national basis. This includes water fluoridation and regular preventive dental care from 6 months to 18 years of age according to the respective national program.<sup>35</sup> Treatment is done in the dental service department of the PHC. Private dental practices cover a smaller portion the population of children.

### **Vulnerable Child Populations**

Although children's rights have been largely integrated into the national policies and legislation in Serbia, translation of these policies into professional standards and practice and into everyday life has been slow and requires additional support and time. The ratio of children treated in institutional vs foster care reversed from 2:1 to 1:2 between 2008 and 2011. Institutional care for children less than 3 years of age has ceased. The overall number of children in care (those cared for by the state rather than their biological family) has grown in recent years, with 7400 children in formal care in 2010, which is 500 more than in 2007. Most of those in residential care are children and young people with disabilities. However, in order to increase access to health care for vulnerable groups, the health system has developed a powerful network of health mediators that have, since their establishment in 2009, facilitated access to health care for more than 130 000 Roma people, among whom more than 51 000 are children. Proper education and general support will be achieved with the help of home-visiting nurses, and the entire program will reach most vulnerable families.

### **Maternity and Neonatal Care**

The need for the maternity services in Serbia continues to decline because the fertility rate is declining. There are 58 maternity units, 5 of which are colocated with a PHC. Each of the 4 largest maternity units delivers more than 3000 births

per year (total of 23 239 in 2013 or 35% of all deliveries in the country). A concern is that 21 units (ie, one-third of maternity units in Serbia) have fewer than 500 births per year. At the same time, there are relatively large regional maternity units that are short staffed and inadequately equipped, with approximately 2000 deliveries per year. In both cases, there is a risk of suboptimal care for newborns and women with complications. Moreover, only 40% of newborns with a birth weight below 1500 g are born at the regional maternity hospitals with on-site neonatal intensive care units, so the majority of high-risk newborns depend on transportation to centers with specialized care. Because transport is not always available, expectant mothers or newborns are unable to effectively access medical care and assistance, especially when complications arise. To overcome these and other difficulties, and with the aim at reducing high perinatal mortality rate, the Expert Commission of Women, Children, and Youth Health Care approved standards for a regional system of neonatal health care in Serbia, developed by the Experts' Working Group supported by UNICEF.<sup>36</sup>

More than 99% of births nowadays take place in a hospital setting with little demand for home births. All except a few maternity units are publicly funded, and all are colocated with clinical centers or general hospitals. However, there are 5 maternity units colocated with primary health care centers, although the recently launched initiative proposed their suspension.<sup>36</sup> The 4 large academic maternity hospitals have neonatal intensive care units and the others have special care infant units. Similar to other European countries, there is an increase in the number of first-time mothers having their first infant in their 30s; in Serbia, the average first-time mother is over 28 years of age. The cesarean delivery rate continues to escalate, averaging 29% in 2013.

A high proportion of infants born in the maternity units are delivered by midwives. All maternity units have an obstetrician (total = 689) and pediatrician or neonatologist available 24/7 in most units; in units having less than 500 births per year, an on-call service is provided after regular hours.

## Major Health System Reforms

The last decade of the 20th century was characterized by deterioration in most socioeconomic indicators of well-being and the collapse of all segments of the social system, including the health care system, although the segment of children's health care was relatively protected. In 2002, the Government adopted a document entitled Health Policy of the Republic of Serbia, which began the process of advocacy for health in line with the strategy of the EU.<sup>37</sup> The aim of this ambitious reform program was to strengthen preventive health care and services with the goals of decreasing rates of preventable diseases and reducing total health care costs. The reform also included the restructuring of hospitals to respond to patient needs more effectively and the development of a new basic package of health care services aligned with existing resources. The changes in the financing of the health care sys-

tem were supposed to introduce an approach where resources are allocated based on patient needs and not on staff or organizational structures. The payment system for primary health care was made dependent on capitation, and a mode of diagnostic-related groups was introduced as the framework for payments in the secondary and tertiary health care services.

The priority areas of the Health Care Development Plan<sup>17</sup> were: (1) integrated health care, bringing together territorial and financial decentralization, synchronous operation of the state and the private sector, and the development of various forms of partnerships in the local community; (2) increase of the capacity of human resources in the health system, improvement of legislation, capacity building for management, and staff training adaptation to the real needs; (3) an integrated health information system; (4) improvement in the quality of care and patient safety; and (5) creation of financial stability of the health care system by changing the financing model.

With this plan, the 5 improvements of the health of infants, young children, school-aged children, and adolescents were given high priority. These included the implementation, monitoring, and evaluation of multisectorial and sectorial strategies and plans aimed at improving health among children and adolescents. An important objective is to enhance health care for women of reproductive age, school-aged children and adolescents, people with disabilities, and socially-marginalized groups. The plan highlights the importance of continuing consistent implementation of all strategies and programs related to well-being and health of children and adolescents.

## Health System Assessments

Similar to other European countries, the Serbian health system does not systematically collect information on outcomes; however, the general consensus is that the system does provide access to reasonable care for most children. A considerable effort was expended, taking into account the children's need for health care. On the other hand, some groups of children, notably Roma and, to a lesser extent, children of poorer families, do have worse outcomes. With recently launched initiatives and programs, these health inequalities have been reduced. The reduction remains one of the major objectives for the future. The National Institute of Public Health collects and monitors data on the health status of the population in Serbia. These data are published annually in the series, Health Statistical Yearbook of Republic of Serbia, which, in a systematic manner, presents basic data on population, births, morbidity and mortality, environment and health, use of health care services, and population health indices.<sup>38</sup> The data on health and health care of children are included in chapters devoted to primary health care and inpatient health care, showing the data on total and average number of visits per doctor, as well as the leading causes of morbidity recorded in the PHCs. Inpatient care data show total number of hospital stays and leading

causes of morbidity using *International Classification of Diseases, Tenth Revision* categories, without separating children from adult data.<sup>38</sup> Similar data are also included in the series of selected health indices published annually.<sup>39</sup> The Study on Health and Health Care of Women, Children, and Youth, carried out in 2009,<sup>41</sup> formed the basis for the development of the National Program of Health Care of Women, Children, and Youth.<sup>21</sup> The National Institute of Public Health undertakes occasional nationwide representative health surveys. The most recent survey was conducted between October and December 2013, encompassing 15 999 participants, of which 1376 were children 7-14 years of age. The data obtained from each study subject 7-14 years of age included parent- or self-reported information regarding their subjective health status, health behavior, and physical activity.<sup>42</sup> According to the parents or the children themselves, 96.8% of children were in good general health, 1 of 9 children (11.5%) reported eye sight problems, and 6.6% used glasses. Girls were more likely (70.8%) than boys (53.3%) to regularly wash their hands; 58.4% of children brush their teeth more than once a day, significantly more than in the 2006 study (50.9%); 93.8% of children have breakfast every day; 74.2% consumed at least 1 cup of milk daily; 51% consumed fruit daily and 56.6% consumed vegetables; and 3.6% of the children added salt before tasting their food. Almost all children regularly attend physical education classes at school and in their free time; 86.7% of boys and 77.8% girls participated in physical activity at least twice a week. Risk-taking behavior in driving and traffic is a matter of concern. Only 53.3% of children always use a car seat belt; helmet and/or guards are used by children while roller skating (15%) or cycling (6.1%); and 52.5% of children cross the street outside the area of pedestrian crossings.

Among respondents older than 15 years of age, particular attention was paid to those 15-19 years of age. Young people 15-19 years of age were more likely to be injured in traffic accidents (7.0%) than the general population (5.2%). Risk-taking behavior at 15-19 years of age is not rare. Alcohol was consumed by 59% of boys and 46% girls; 39.9% of boys and 25.7% of girls entered into sexual relationships; average age of first sexual relations continues to shift toward a younger age (2% of adolescents in sexual relations before 15 years of age), with 73.8% of respondents using a condom and 1% of girls opt for abortion when pregnant.<sup>42</sup>

Recent causes for concern include: According to recent health survey,<sup>42</sup> the matters of concern include: (1) a decline in the percentage of breast-fed infants during the first 6 months to 13%, well below the National MDG target of 30% by 2015; and (2) unsatisfactory vaccination rates against measles, mumps, and rubella, hepatitis B, or *Haemophilus influenzae* of 90%, 93%, or 91.5%, respectively, in 2013,<sup>40</sup> instead of at least 95%, which is the target set as the national MDG.<sup>7</sup>

## Conclusions

The Serbian health system is adapting to the severe long-lasting economic crisis. There has been a considerable change

in resources but few changes in the structure of health care systems. Although the availability and accessibility of primary health care for children and adolescents are good at the national level, there are significant variations in access at the district level.

Although there has been a significant reduction in the mortality rates at the national level, particularly for infants and children less than 5 years of age, progress relative to perinatal mortality has been more limited, especially in some regions where this accounts for the largest number of deaths. The child mortality rates are still higher among people living below the poverty line and especially, among Roma children. These findings have generated important public health interventions to aid in the reduction of the identified health gaps. As a response to persistently high perinatal mortality rate, the Expert Commission of Women, Children, and Youth Health Care proposed standards for regional system of neonatal health care in Serbia, which is pending approval of the Ministry of Health. The stagnation or even reversal in the implementation of the 10 steps for the operation of infant-friendly maternity wards that were introduced as good practice in the previous decade prompted the Ministry of Health to establish a working group, which has prepared national standards of health care adjusted to the needs of mothers and newborns. More intensive efforts are needed for the implementation of proposed measures in mainstream guidance and practice of maternity and children hospitals and primary health care services. Progress has been achieved in increasing the promotion of ECD in the health system. A special working group established by the Ministry of Health has reviewed and revised standards and guidance related to the organization of the health system and workforce capacity to ensure that the promotion of ECD, as well as an early detection and response to developmental risks is better recognized and adequately resourced. Although this program is pending ministry approval, a pilot project based on the program, conducted by Pediatric Association of Serbia, and supported by UNICEF, began in May 2014. It is intended that these measures will alleviate the negative impact following the introduction of choice of doctor into system and payment in primary care dependent on capitation. These two measures led to removal of pediatricians from ECD counseling services, whose number dropped significantly. Over the recent 5-7 years, these services operated with little support, and ongoing health system reform has not clearly identified their financing.

The decreasing immunization coverage is a matter of concern, particularly in some regions, because of changes in immunization practice at the PHC, untimely and incomplete procurement of vaccines, and stagnation or even reduction rate of exclusive breastfeeding up to the age of 6 months.

Adolescent health is another matter of concern. The leading preventable causes of death of adolescents are injuries and poisonings, with traffic accidents accounting for one-half of all the fatalities within this category. Very recently, the Law on Traffic Security was amended regarding prevention of traffic accidents committed by young people.<sup>43</sup>

Prevention of accidents and injuries among adolescents has not been a priority in national health response. Pressing issues in adolescent health include obesity, alcohol or tobacco use, and mental health. Numerous health-specific and multisectorial measures and policies have been introduced in relation to adolescent health, including a range of preventive measures and health services that are in line with so-called “youth-friendly” standards. The law on patients’ rights confirmed the right to consent for competent children above 15 years of age, as well as their rights to confidentiality of medical records and provision of health information and counseling without parental consent.<sup>44</sup> However, the implementation of laws, strategies, and programs has not been fully realized in practice. The future of youth counseling services is another matter of concern, because their number has been reduced since the introduction of choice of doctor in primary health care. Local authorities also need to be more empowered to assume some of the responsibilities in this field. ■

## Author Disclosures

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