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INDICATORS OF DEVELOPMENT OF THE HEALTH SYSTEM OF SERBIA AND THE EFFECTIVENESS OF THE CURRENT ECONOMIC MODEL IN HEALTH CARE

Indikatori razvijenosti zdravstvenog sistema Srbije i efektivnost aktuelnog ekonomskog modela u zdravstvu

Abstract

The subject of this analysis is the health system of Serbia. After consulting relevant sources, we present the indicators of health of the Serbian population and other parameters of development of the health system of Serbia. Special focus is on the analysis of the current economic model in the health sector in Serbia, primarily in terms of the method for creating public budget, its amount and structure of spending. Based on this analysis, the author presents a number of recommendations for improving the efficiency of spending public money. Some of the substantiated recommendations are as follows: transfer the savings from generic to innovative medicines, correct the list of services in the basic package of health insurance by the NHIF, give greater attention to the collection of contributions for health insurance, change the management model of the healthcare institutions, rationalization of non-medical staff, improving the transparency of public procurement, introduction of an integrated IT system, greater investment in prevention and primary care, more active use of special contracts which would enable the NHIF to more easily control spending of money for drugs, restructuring of Galenika through quality strategic partnerships and the integration of private and public health systems.

Keywords: *population health, health system, health economic model*

Sažetak

Predmet analize je zdravstveni sistem Srbije. Konsultovanjem objektivnih izvora prikazani su indikatori zdravlja stanovništva Srbije i drugi parametri razvijenosti zdravstvenog sistema Srbije. Poseban fokus rada je analiza aktuelnog ekonomskog modela u zdravstvenom sektoru Srbije, pre svega u pogledu načina kreiranja javnog budžeta, njegove visine i strukture trošenja sredstava. Na bazi te analize autor je izveo čitav niz preporuka za poboljšanje efektivnosti trošenja javnog novca. Neke od argumentovanih preporuka su sledeće: preliti uštede sa generičkih lekova na inovativne lekove, korigovati listu usluga u osnovnom paketu zdravstvenog osiguranja RFZO, dati veći značaj pitanju naplate doprinosa za zdravstveno osiguranje, promeniti model upravljanja zdravstvenim institucijama, racionalizacija nemedicinskog osoblja, podizanje transparentnosti javnih nabavki, uvođenje integralnog IT sistema, veće ulaganje u prevenciju i primarnu zaštitu, aktivnije korišćenje specijalnih ugovora kojima bi RFZO lakše kontrolisao potrošnju novca za lekove, restrukturiranje Galenike kroz kvalitetna strateška partnerstva i integracija privatnog i javnog zdravstva.

Ključne reči: *zdravlje stanovništva, zdravstveni sistem, ekonomski zdravstveni model*

Introductory remarks

This paper deals with the health system of Serbia, i.e. the indicators of its development, from the perspective of the state of health of the Serbian population and from the perspective of the effectiveness of spending money. The aim of the detailed analysis of individual indicators, which are derived from relevant sources, is not to criticize the decision makers in the health system of Serbia, but to point out the negative gaps in relation to best practice and to provide suggestions regarding possible improvements, especially in the area of effectiveness of managing limited financial resources.

To put it simply, the health sector in Serbia can be viewed through the health system (public and private system of treating patients) and the pharmaceutical system. The health system of Serbia employs some 130,000 workers. The largest number is employed in health institutions, primarily in the 70 state hospitals [16]. There are about 1,200 private medical entities in Serbia, out of which 60 are hospitals. They employ over 3,700 doctors, accounting for about 10% of the total number of doctors in the health sector in Serbia. The pharmaceutical sector in Serbia consists of domestic and multinational pharmaceutical companies, 300 drug wholesalers and the network of tens of thousands of pharmacies. It is estimated that the total pharmaceutical market is worth about EUR 600 million.

This paper is divided into four parts. The first part analyzes the indicators of population health as a basic measure of success of any national health system. The analysis is complemented by specific parameters of development of the Serbian health system, this from the perspective of the relevant researchers and evaluators, such as EHCI, GCI, Bloomberg, IMS and Ipsos. The second part scans the current economic model in the health system of Serbia. Especially, we analyzed the amount and structure of the budget of the health insurance Fund, as well as the cash flow in the so-called private flows, in the form of supplementary health insurance and out-of-pocket spending. Based on the analysis in the second part, the third part, as the key part of this paper, endeavors to provide specific recommendations for improving the current economic model in the health sector in Serbia. The final, fourth part gives important conclusions of analysis and shows all the specific recommendations and the arguments of the author in one place, in a summarized form.

The indicators of population health and the development of health system in Serbia

Indicators of population health represent a common denominator of the parameter of development of the health system of a country and the health culture of its inhabitants. Below we analyze these indicators from the perspective of different relevant sources: Euro Health Consumer Index (EHCI), Global Competitiveness Index (GCI), Bloomberg, IMS Report, Globocan Report and IPSOS report.

Euro Health Consumer Index – EHCI

EHCI analyzes the parameters of development of health systems in 36 countries in Europe [3]. On the basis of a large number of criteria, EHCI runs the score of each state on a scale from 0 to 1,000 points. All the criteria are grouped into six categories: 1. Patient right and information, 2. Accessibility (in terms of waiting times for treatment), 3. Outcomes, 4. Range and reach of services provided, 5. Prevention, and 6. Pharmaceuticals. Generally speaking, the result of the analysis is not to provide a ranking of countries, but to identify gaps in the development of national health systems and indicate possible ways of filling negative gaps. The report for 2014 points to several general conclusions.

The overall indicators of the health system of Europe are getting better, regardless of the restrictive measures due to budget savings in health care in most countries. For example, the degree of cure (life extension) for heart disease, stroke and cancer is increasing. In addition, infant mortality is in constant decline.

In most countries, the rights of patients are in the focus of the regulatory framework, and functional approach to patient's medical record has become the standard. Travelling for the purpose of treatment is supported by the EU directive, so that through the mobility

of patients effective treatment is provided. Overall, the results of medical treatment are constantly improving, although there is evidence of increased restrictiveness of the introduction of new drugs, primarily due to the aforementioned budgetary restrictions.

The gap in the level of development of health systems of European countries is increasing. Nine of the most developed countries of Western Europe are allocated at the top with a score higher than 800 points. In this group we could include Austria, France and Sweden, with the score slightly lower than 800 points. Compared to the 12 leading countries a significant gap is formed in the rest of the set, as evidenced by Figure 1.

Some countries have made significant progress, taking into account much lower benefits at PPP (purchasing power parity) per capita. This is primarily the Czech Republic, Estonia and Macedonia. For example, Macedonia has made an incredible jump from 27th to 18th place, mainly thanks to the huge reduction of waiting lists as a result of the introduction of the electronic scheduling of interventions in real time. Also, Macedonia has highly successfully integrated public and private health sectors.

Serbia occupies 30th place with a total of 554 points out of 1,000 points, which is up 3 ranks and 81 points since 2014. In 2015, Serbia has overtaken Albania, Poland, Romania and Bulgaria. However, it still has a long way to catch up with more developed EU states.

The EHCI points to several negative phenomena in the health system of Serbia. These are: inadequate IT support (e.g. no e-prescriptions), poor access to the system of treatment and long waiting times, adverse outcomes of treatment (cancer survival, stroke deaths), overemphasis of hospital care (probably due to long waiting by hospitalized patients for a check-up), poor prevention mechanisms, low range of services provided, and pharmaceuticals (number of innovative drugs, e.g. novel cancer drugs deployment rate). A significant number of parameters in all 6 categories are still in the red zone. For example, the indicators related to oncology, as a therapeutic area, are dramatically low. More than 50% of patients waiting for chemotherapy wait longer than 21 days, the CT scan is waited upon for longer than 21 days, the cancer survival rate is less than 50%. More broadly, particularly concerning are the results of treatment outcome (category Outcomes), where Serbia is rated among three worst overall.

Certain improvements of rank are evident, mainly in the area of access to doctors in primary health care 24/7, in the presentation of data on the effectiveness of therapy, and in the area of combating corruption (a special adviser to the Minister was delegated to lead the organization Doctors Against Corruption). Overall, there is much room for improvement of the health system, as evidenced by the following illustration of the position of Serbia (see Table 1).

Figure 1: Euro Health Consumer Index Ranking
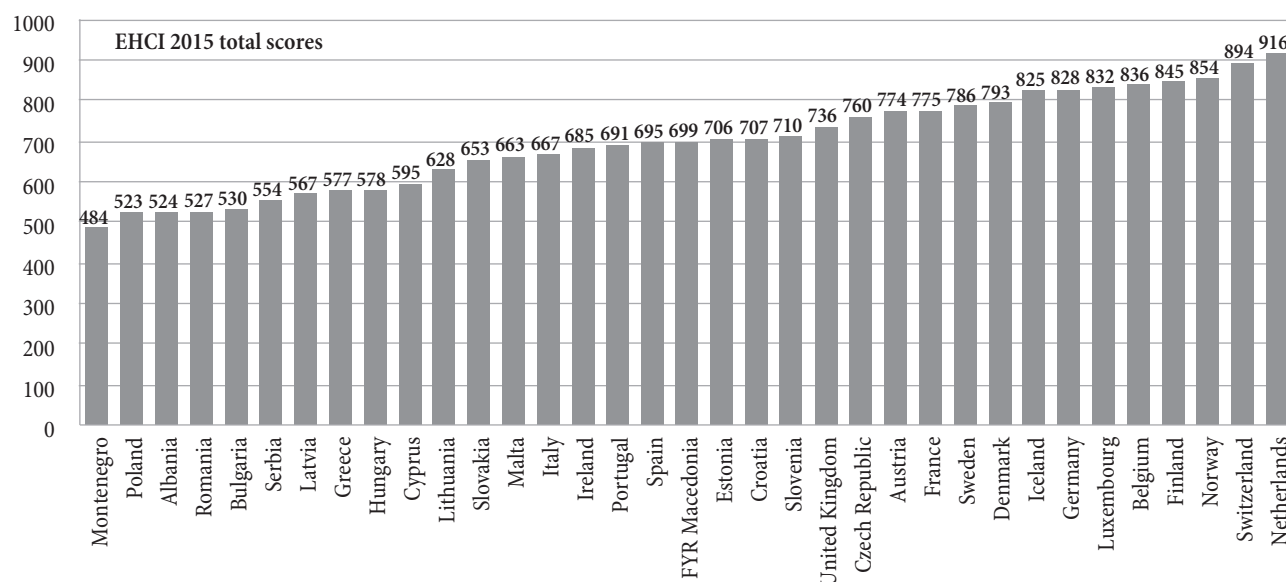
Source: [3]

Table 1: The structure of Euro Health Net Consumer Index (EHCI) of the Republic of Serbia for 2014

Subdiscipline	Indicator	Serbia
1. Patient rights and information	1.1. Healthcare law based on Patient's Rights	√
	1.2. Patient organizations involved in decision making	-
	1.3. No-fault malpractice insurance	-
	1.4. Right to second opinion	√
	1.5. Access to own medical record	√
	1.6. Registry of bona fide doctors	√
	1.7. Web or 24/7 telephone HC info with interactivity	√
	1.8. Cross-border care seeking financed from home	n.ap
	1.9. Provider catalogue with quality ranking	x
	1.10. EPR penetration	x
	1.11. Patient's access to online booking of appointments	x
	1.12. E-prescriptions	x
	Subdiscipline weighted score	*104*
2. Accessibility (waiting times for treatment)	2.1. Family doctor same day access	√
	2.2. Direct access to specialist	-
	2.3. Major elective surgery < 90 days	x
	2.4. Cancer therapy < 21 days	x
	2.5. CT scan < 7 days	x
	2.6. A&E waiting times	√
	Subdiscipline weighted score	*138*
3. Outcomes	3.1. Decrease of CVD deaths	x
	3.2. Decrease of stroke deaths	-
	3.3. Infant deaths	-
	3.4. Cancer survival	x
	3.5. Preventable years of life lost	x
	3.6. MRSA infections	x
	3.7. Abortion rates	-
	3.8. Depression	-
	Subdiscipline weighted score	*125*
4. Range and reach of services provided	4.1. Equity of healthcare systems	x
	4.2. Cataract operations per 100 000 age 65+	x
	4.3. Kidney transplants per million population	x
	4.4. Is dental care included in the public healthcare offering?	-
	4.5. Informal payments to doctors	x
	4.6. Long term care for the elderly	x
	4.7. % of dialysis done outside of clinic	-
	4.8. Caesarean sections	-
	Subdiscipline weighted score	*69*
5. Prevention	5.1. Infant 8-disease vaccination	-
	5.2. Blood pressure	x
	5.3. Smoking prevention	x
	5.4. Alcohol	-
	5.5. Physical activity	√
	5.6. HPV vaccination	x
	5.7. Traffic deaths	-
	Subdiscipline weighted score	*71*
6. Pharmaceuticals	6.1. Rx subsidy	x
	6.2. Layman-adapted pharmacopoeia	√
	6.3. Novel cancer drugs deployment rate	x
	6.4. Access to new drugs (time to subsidy)	n.a.
	6.5. Arthritis drugs	x
	6.6. Metformin use	n.a.
	6.7. Antibiotics/capita	-
	Subdiscipline weighted score	*48*
	Total score	*554*
	Rank	*30*

Source: [3, p. 25]

GCI and Bloomberg

The Global Competitiveness Index (GCI) measures the competitiveness of a national economy based on over 400 competitiveness factors, which are located in the 12 pillars of competitiveness, which again comprise three sub-annexes, which eventually provide a summary index value on a scale from 1 to 7 [2]. According to the WEF report for 2014 [19], Serbia according to the level of overall competitiveness occupies 94th place out of 144 countries in the sample. According to the pillars of health and primary education, Serbia occupies 68th place, which is not all that bad. A more detailed description of the structure factors of competitiveness within this pillar is given in Table 2.

According to the Bloomberg survey [1], which is based on parameters similar to the WEF survey, Serbia is ranked 74th out of 145 countries on the list of the healthiest countries in the world. The list is established by each country with a population over one million getting health assessment based on factors such as life expectancy and health risk factors, such as the proportion of smokers among young people, the number of people with high cholesterol as well as the level of vaccination. The first place on the list of the healthiest countries is occupied by Singapore, followed by Italy, Australia, Switzerland and Japan. While Serbia is placed in the middle of the list, countries from the region are better placed, so that Slovenia ranked 25th, Bosnia and Herzegovina 34th, Croatia 36th and Macedonia 43nd. Serbia, according to this ranking, has the poorest health status of the population, when compared to other countries of the former Yugoslavia.

IMS and Globocan report

These reports summarize the parameters of cancer incidence and cancer mortality for all countries of the world [6], [22]. According to the cancer incidence Serbia is in the 18th place in Europe with 270 incidences of cancer per 100,000 of population (see Table 3). What is even more worrisome is cancer mortality, according to which Serbia is at the infamous second place in Europe, with 148 deaths per 100,000 of population (see Table 3). The crossing of these two parameters leads to the conclusion that to the treatment of cancer we must devote much more attention in the future given that the mortality rate is higher than 50%. This disappointing result is not only a consequence of an inadequate system of treating cancer, but also of the absence of health culture of the population of Serbia and irregular health scanning, as well as poor primary care. For example, the mammograms donated by the government of Japan stood unused for years, because we did not have enough "trained personnel" for their activation. Also, one should not ignore the fact that the population of Serbia is aging and that the share of the population older than 65 years stands at 18.5%, and that the projection says that in 2030 the participation of the oldest segment of the population will be 23.6% [14].

Such data become even more significant when one looks at the ranking list of countries according to the rate of death from cardiovascular disease. Serbia is unfortunately in the first place in Europe with 775 deaths per 100,000 inhabitants.

Table 2: The structure of the fourth pillar of the GCI index

4th pillar: Health and primary education		
4.01 Malaria cases/ 100,000 pop.*	M.F.	n/a
4.02 Business impact of malaria	N/Appl	n/a
4.03. Tuberculosis cases/100,000 pop.*	23.0	50.0
4.04 Business impact of tuberculosis	6.4	31.0
4.05 HIV prevalence, % adult pop.*	0.1	1.0
4.06 Business impact of HIV/AIDS	6.5	14.0
4.07 Infant mortality, deaths/1,000 llive births*	5.7	37.0
4.08 Life expectancy, years *	75.2	52.0
4.09 Quality of primary education	3.8	78.0
4.10 Primary education enrollment, net %	91.4	94.0

Source: [20, p. 329]

Table 3: Cancer incidence and cancer mortality in Europe

	Cancer Incidence in Europe			Cancer Mortality in Europe	
1	Denmark	338.1	1	Hungary	152.1
2	France	324.6	2	Serbia	147.8
3	Belgium	321.1	3	FYR Macedonia	141.6
4	Norway	318.3	4	Montenegro	139.0
5	Ireland	307.9	5	Croatia	136.7
6	The Netherlands	304.8	6	Poland	131.0
7	Slovenia	296.3	7	Lithuania	129.0
8	Czech Republic	293.8	8	Latvia	128.8
9	Switzerland	287.0	9	Romania	127.1
10	Hungary	285.4	10	Slovakia	125.8
11	Iceland	284.3	11	Slovenia	125.4
12	Germany	283.8	12	Denmark	124.9
13	Luxembourg	280.3	13	Russian Fed.	122.5
14	Italy	278.6	14	Czech Republic	121.7
15	Slovakia	276.9	15	Belarus	120.6
16	United Kingdom	272.9	16	Bulgaria	120.5
17	Sweden	270.0	17	Republic of Moldova	120.3
18	Serbia	269.7	18	The Netherlands	117.0
19	Croatia	266.9	19	Belgium	116.2
20	Finland	256.8	20	Ukraine	113.9
21	Austria	254.1	21	Albania	112.4
22	Lithuania	251.9	22	United Kingdon	110.0
23	Spain	249.0	23	Ireland	108.4
24	Latvia	246.8	24	France	107.9
25	Portugal	246.2	25	Estonia	104.6
26	Malta	242.9	26	Austria	103.5
27	Estonia	242.8	27	Italy	101.8
28	FYR Macedonia	239.3	28	Germany	100.8
29	Montenegro	238.3	29	Norway	99.3
30	Bulgaria	234.8	30	Portugal	99.0
31	Poland	229.6	31	Greece	98.6
32	Romania	224.2	32	Spain	98.1
33	Belarus	218.7	33	Luxembourg	96.9
34	Cyprus	204.7	34	Bosnia Herz.	95.1
35	Russian Fed.	204.3	35	Switzerland	92.5
36	Republic of Moldova	194.1	36	Sweden	92.2
37	Ukraine	192.9	37	Malta	89.5
38	Albania	178.3	38	Iceland	87.7
39	Greece	163.0	39	Finland	86.1
40	Bosnia and Herzegovina	161.1	40	Cyprus	78.4

Source: [22]

Devastating statistics on mortality rates certainly have to do with the general level of health services provided to the population. One of the indicators taken into account under this criterion is the number of doctors per 100,000 inhabitants in a country. In Serbia in 2011 there were 272 doctors in the aforementioned relation. That year, only four countries had a fewer number of doctors compared to Serbia, namely Poland (217.5), Italy (236.9), Slovenia (243.9) and Britain (271.2). It is quite interesting that in all these countries there are fewer or significantly fewer deaths from diseases that can be rehabilitated. Another indicator that is often used to reflect the capacity of the health system is the number of available beds for hospitalization per 100,000 inhabitants. According to this parameter, Serbia with 565 beds per 100,000 of population would occupy the 14th place among the EU member states. According to this calculation, 15 of the EU countries have fewer beds available in hospitals, yet in all these countries the nation's health statistics present better results than in our country.

IPSOS Report

The main objective of this research in 2013 was to obtain – through a survey of population in Serbia, i.e. through self-assessment – a description of the health status of the population, both at the national level and at the level of four statistical regions (Vojvodina, Belgrade, Sumadija and Western Serbia, Southern and East Serbia) [7]. The basis of the research is the need to provide information on how people perceive their health, the extent to which they use health care and how they take care of their health by adopting certain lifestyles or relying on preventive and other health services. In order to achieve the main goal of the research, the following specific objectives were identified: identification of major health problems, description of the health status and health needs of the population, estimate of the prevalence and distribution of health data, analysis of social inequalities in health and access to health services, study of the degree of utilization of health care and its determinants, as well as forecast of possible trends in health status of the population.

A large number of the citizens of Serbia (57.8%) perceive their overall health as very good and good. 26.6% of the population perceive their health as average,

while 15.6% of citizens perceive their health as poor or very poor. Residents of Belgrade most often describe their health positively (61.7%), and residents of Southern and Eastern Serbia (52.5%) most rarely. Also, men have a more positive image of their own health than women: 64.5% of men rated their state of health as good or very good, while no more than 51.5% of women did the same. In line with expectations, self-assessment of health status is associated with the age of the individual: as one gets older, he is more likely to assess his health as bad or very bad.

40% of citizens of Serbia reported a long-term illness or health problems. It is characteristic that the incidence of long-term diseases and health problems is greatest among the citizens of the poorest categories. As many as 50.5% of the poorest citizens report the existence of the above symptoms, while improving of material conditions reduces the frequency of symptoms. In terms of residence, long-term health problems are somewhat more common among residents of Southern and Eastern Serbia (43.6%) and Vojvodina (40.8%), and less frequent among residents of Belgrade (36.9%). Also, a higher incidence of long-term illnesses or health problems was observed among females (45.1%) compared to males (34.6%).

It is indeed useful to take a look at indicators of mental health of the population of Serbia. Slightly more than half of the adult population in Serbia in the period of four weeks before surveying was confronted with tension or stress. Everyday pressure and stress were most often reported by people between 45 and 54 years of age (66.6%), females (61.5%), as well as residents of Southern and Eastern Serbia (62.9%). However, the majority of the population in Serbia does not suffer from depression (95.9%), while the emergence of depressive symptoms is associated with the age of the citizens: the older the person, the greater the incidence of depressive symptoms.

The level of health culture of the population can be measured by the rate of preventive examinations. The coverage of the population vaccinated against flu was 3%. If we consider the population aged 65 and over, vaccination coverage against flu was 8.7%, and among the population of this age group most highly educated persons were vaccinated (16.3%) together with citizens belonging to the richest group (13%). The percentage of the population which had

their blood pressure taken by a health professional more than five years ago or have not had it taken ever reached 12.7%. Measuring of cholesterol more than five years ago or never at all was recorded by 17.6% of the population, while the same frequency of measuring of blood glucose was found in 17.3% of the population. It is characteristic that it was mostly men who reported that they never had experienced the mentioned measurement by health care workers, or not in the last five years. In the last three years, 7.6% of those aged between 50 and 74 years carried out a test to the naked eye invisible blood in the stool, while 7.4% of the population in this age group had undertaken a colonoscopy in the past ten years.

Recent changes to the "Regulations on the content and scope of the right to health care" [11] in December 2012, significantly limited the ability of preventive health care of certain categories of the population. Based on these regulations, citizens of both sexes aged between 23 and 35 are entitled to a routine physical examination at the expense of the health insurance Fund only once in five years. Those older than 35, as a somewhat more risky category, can request routine inspection every two years. One gets the impression that only the sick and risk groups are in a position to make full use of the system of (preventive) health care. Denial of preventive examinations for the most vital and healthiest part of the population is indeed a paradox of a kind, as preventive treatment and regular controls are intended for them in the first place, and should serve to detect disease symptoms in time, in order for healing to be faster, more efficient and cheaper.

Another way to measure the level of health culture is (not) respecting health risks. Among adults in Serbia who are aware that their own behavior, such as lack of exercise, lack of fruit and vegetables in the diet and smoking, causes the risk of getting heart and blood vessels, as much as 91% practice undesirable behavior. Similarly, among those who are aware of the risk of developing lung diseases 71.4% are smokers and persons with risk factors for developing lung disease.

As far as access to the health care system is concerned, the results are presented below. In the period of one year before the examination 18.2% of Serbia did not receive medical care, although they had a need for it. According to the respondents, the need for health care was mostly unrealized in Vojvodina (22.6%) and Belgrade (22.8%), and less frequently in the Southern and Eastern Serbia (17%) and Sumadija and Western Serbia (11.4%). The long wait for medical care is more often a problem in comparison with the inability to get to health care due to the distance (16.6% of Serbian citizens did not realize the need for medical care due to waiting too long on the appointment or visit, while 5.7% of the population specified problems with transport to the health care system as the main obstacle). In addition to the limitations caused by the long wait or a long distance, financial reasons were an obstacle for the realization of the need for health care. One in four people in Serbia had a need for health care in the past year, which did not materialize due to financial barriers (24.8%). Lack of financial resources is an obstacle to avail of dental care.

By private health service somewhat more inhabitants of Serbia (64.6%) are satisfied, compared to those satisfied by the national service (53.7%). Citizens belonging to the lowest education stratum are more likely to identify themselves as satisfied with the national service (61.5%) compared with mid-educated (51.4%) and highly educated residents (47.4%).

The current economic health model of Serbia

The total share of health care costs in Serbia's GDP is 10.6% and in terms of this indicator Serbia excels compared to the world average, as well as the neighboring countries, such as Bosnia and Herzegovina, Slovenia, Italy and Croatian (see Figure 2).

However, only 60% of total healthcare costs are related to public sources, which means that 40% of the costs (treatment, drugs) are covered by private sources of money (private insurance plus out-of-pocket payments), which is significantly more than in all neighboring countries (see Figure 3). 80% of private funds are being spent in private institutions and 20% in public institutions (various forms of citizen participation). When it comes to public funds, over 90% are directed to public institutions, and less than 10% at private institutions (covered by the NHIF of costs for services from the list of the Ministry of Health: dialysis, hyperbaric chamber and artificial insemination).

Figure 2: The share of total health care costs in the GDP of the selected sample of countries
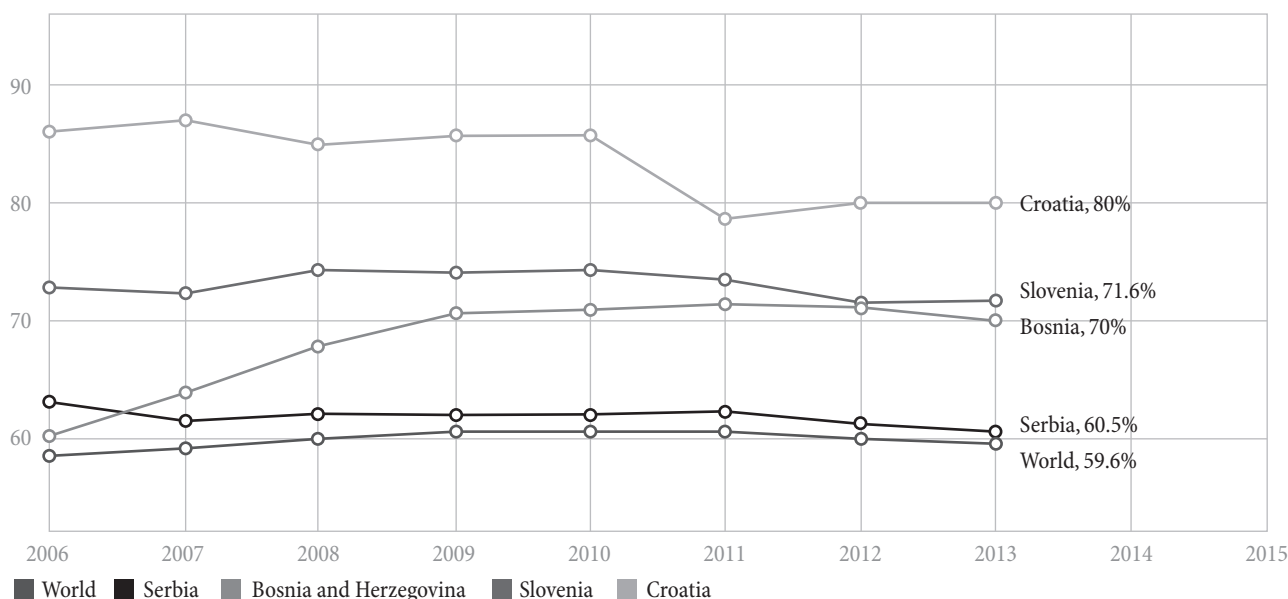

Source: [18]

There is no clear insight into the structure of spending private money. On the basis of a bottom-up budget it will be difficult to reach the amount of money presented by the National Health Account (40% of total costs means EUR 1.4 billion). However, we should not overlook the fact that a significant proportion of private health care (institutions, clinics, pharmacies) operates as gray and black economy. There are estimates that say that 60% of dental offices in Serbia operate illegally. What we do know

is that a total of 30,000 Serbian citizens bought a policy of voluntary health insurance, which leads to the conclusion that most of the spending of private money (over 90%) is in the form of out-of-pocket spending. This money is mainly spent on OTC drugs and private health services (about 30% of people either temporarily or permanently use the services of private medical practice). The issue of private voluntary health insurance is yet another issue. In short, the number of the insured is not great, due to

Figure 3: The share of public spending in total health care costs

Source: [18]

the low purchasing power of the population, but also due to wrong perception that only the richest can afford it. Although the share of voluntary health insurance in Serbian market is still low in comparison with developed European countries, it has recorded stable growth over several years as a result of increasing awareness of this product with the insured on the Serbian market, more favorable tax treatment of these services, but also better offers by insurance companies.

If we now focus on the 60% of public funds, we come to the key institution that deals with the allocation of public resources in health, the Health Insurance Fund. Responsibilities of the NHIF are quite clear and prescribed by the Law on Health Insurance. The Ministry of Health is the one to set the policy in the field of health systems, and all the other participants in the health system implement policies of the Ministry. The NHIF is a social insurance organization vested with funds of compulsory health insurance in order to grant the right to health care to insured persons in the scope and content prescribed by the established regulations. To this end, the NHIF passes certain bylaws.

The vast majority (95%) of the Serbian population has public health insurance, which is funded from compulsory health insurance. HIF is responsible for financial management in the health system. Military insured have a separate treatment, which is funded by the Ministry of

Defense, and considering the cost of EUR 520 pc can be considered privileged. The total absolute amount of the budget of the NHIF is shown in Figure 4.

There is an evident decline in the budget in 2015 compared to 2014, due to a reduction in the mandatory health insurance from 12.3 to 10.3%. This reduction lowered the financial potential of NHIF by as much as RSD 15 billion, which were essentially diverted into the pension fund. We should not lose sight of the fact that the average salary in Serbia is low (low base for application of the rate), as well as the fact that a large number of employers register their workers applying the minimum wage in order to minimize the payment of contributions. The NHIF financial plan for 2016 predicts a similar budget as in 2015, at the level of close to RSD 220 billion [13]. It should also be emphasized that changing the Regulations on the prices of medicines [9] made significant savings in the budget of the NHIF, but unfortunately they were not diverted into the expansion of the list of innovative medicines and therapies, but through certain financial gymnastics by the Ministry of Finance the money was diverted to other holes in the state budget, under the pretext that the HIF had not sufficiently fought to keep the savings for themselves.
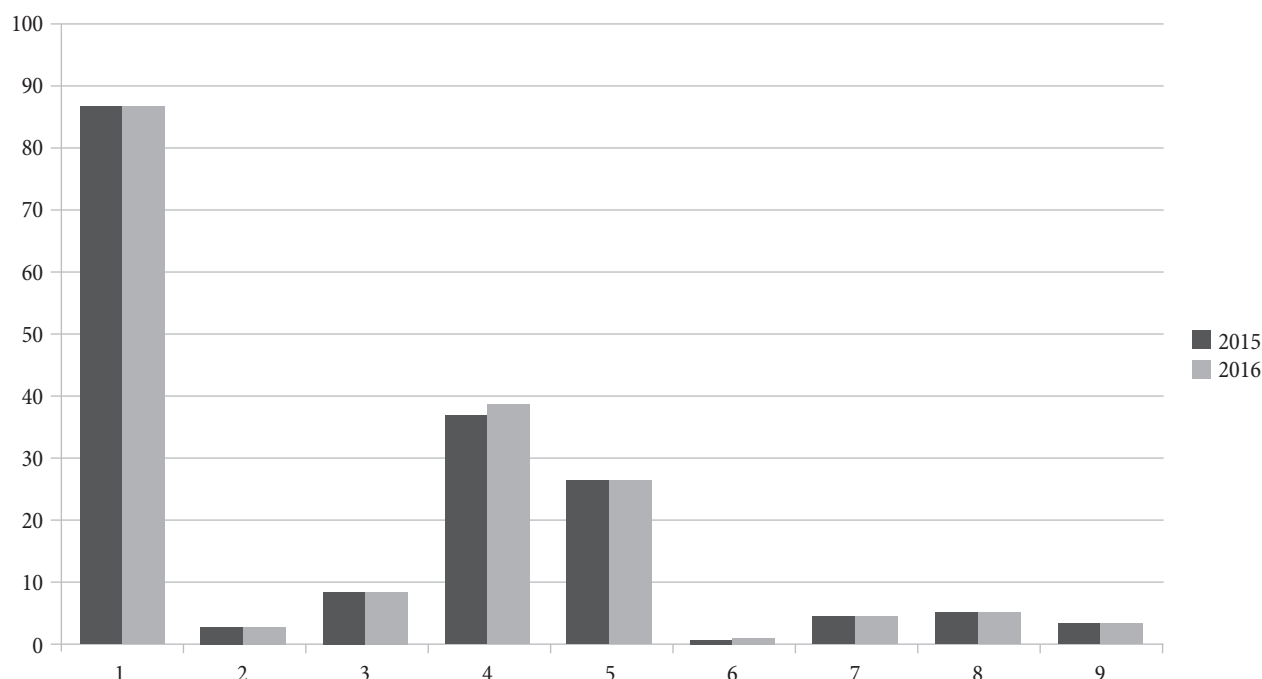
When study in detail the structure of the budget of the NHIF (see Figure 5) we come to the following conclusions. By far the largest part of the budget of the NHIF refers to

Figure 4: The budget of the National Health Insurance Fund
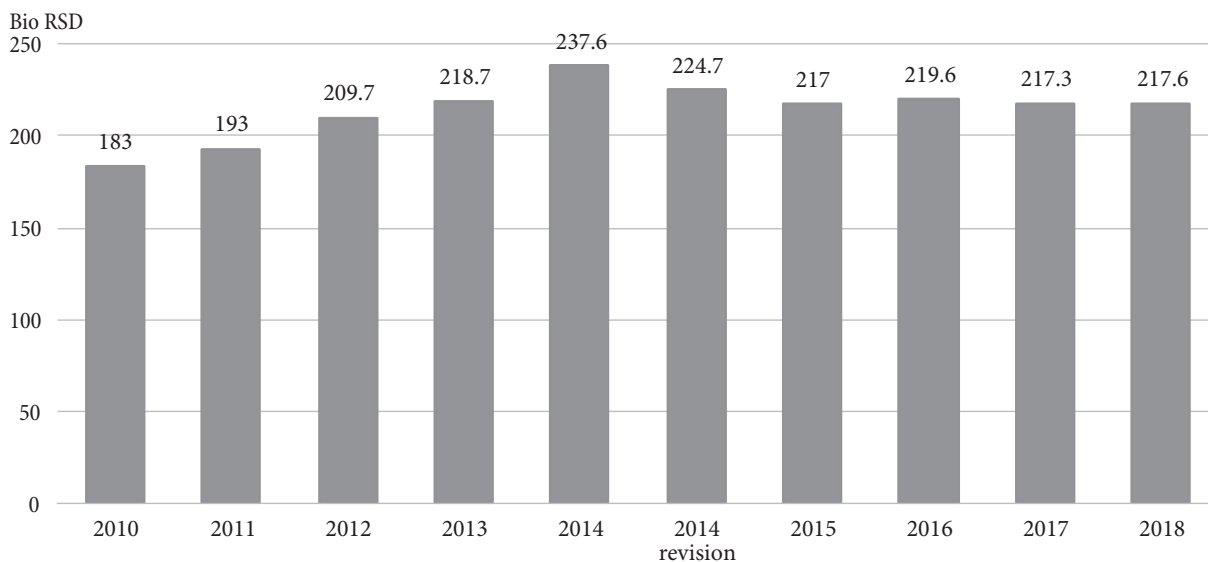
Source: Ministry of Health of the Republic of Serbia

Figure 5: The structure of the budget of the National Health Insurance Fund

Source: [13]

wages and salaries of employees in the health sector (RSD 87 billion or over 45% of the total budget). Medicines and medical devices for healthcare facilities amount to RSD 38 billion (17%) and prescription medications amount to RSD 26 billion (12%). The rest of the budget is directed to items with a much smaller participation, namely: energy for healthcare facilities, medicines for the treatment of rare diseases, material for dialysis, dental services and medical supplies.

When it comes to public health spending for prescription drugs (Rx) it is estimated that EUR 60 pc (out of EUR 250 pc that are spent on health care from public sources) is spent on prescription drugs (Rx) in pharmacies and health institutions, which is significantly less than in other countries in Europe and in terms of this indicator

Serbia is last in Europe. This means that 1.6% of GDP is spent on prescription drugs.

It might be interesting, for example, to compare some indicators for Serbia and Bulgaria, countries of similar size and financial strength (see Table 4).

What is evident is that Serbia, regardless of the smaller GDP, invests EUR 200 million more in public health care. On the other hand, investing in medicines is by EUR 110 million less than in Bulgaria. If further we look at the number of innovative drugs, which are shouldered by the state, and those that have been registered since 2007, we come to the conclusion that Bulgaria has registered seven times more innovative medicines than Serbia.

The conclusions on the introduction of new drugs in Serbia are even more devastating, if we look at the

Table 4: Economic health indicators, Serbia vs Bulgaria

	Bulgaria	Serbia
Population (million)	7.3	7.2
GDP 2013 (billion EUR, World Bank)	39.9	33.5
HC Budget (billion EUR, IMS)	1.7	1.9
Drug Budget (million EUR, IMS)	440	330
Drug Budget as % of HC Budget (IMS)	26	17
Reimbursed new innovative drugs (registered after 2007; IMS)	83	12

Source: [5]

benchmark with comparator countries: Italy, Slovenia and Croatian (see Figure 6).

Possible trajectory of improving economic health model in Serbia

All the above illustrations open a very important issue of the efficiency of the NHIF budget. It is obvious that Serbia is not falling behind in absolute and relative investment in health care, but the question remains as to how the mass of available money is spent. It is evident that over 45% of this money goes to salaries, with as many as 25% of the total number of employed being non-medical staff. We have also seen that 40% of health care is covered independently from private individuals, mostly out-of-pocket, which causes serious discontent with the insured and raises direct or indirect abstinence in regard to the payment of mandatory health insurance.

Further, it has been observed that an inadequate share of the budget is spent on innovative therapies and drugs, which directly affects the life expectancy of the citizens of Serbia. There are numerous relevant studies that prove a correlation between the number of available innovative medicines and life expectancy of the population of the state [8].

A good indicator of neglect of the importance of innovative medicines is the fact that millions of savings in spending money on generic drugs (as a result of the introduction of the new Regulations on drug prices by the NHIF) have not in any way spilled over into the realm of the introduction of innovative drugs and reduction of the participation of the insured for the purchase of medicines. Not only had the savings on generic drugs not been diverted into the segment of innovative medicines and reduction of participation, but the total budget for drugs in 2015 was decreased by RSD 4 billion compared to 2014. Another indicator of neglect of this area is the fact that the NHIF does not allow the possibility of transferring savings from one list of medicines onto another. In the last five years no innovative medicine has made it to the primary list.

It is necessary that we also point out the fact that the alleged bad decisions have often been beyond the scope of the NHIF and the Ministry of Health. For example, we should praise the good decisions by the NHIF in the area of generic drugs' price reductions and in implementing centralized public procurement for B and C list (drugs used in medical centers, hospitals, clinical centers, and in all health facilities except pharmacy)

A source of better use of money might very well prove to be a partial correction of the Bismarckian model

Figure 6: Activism in the field of introducing innovative medicines
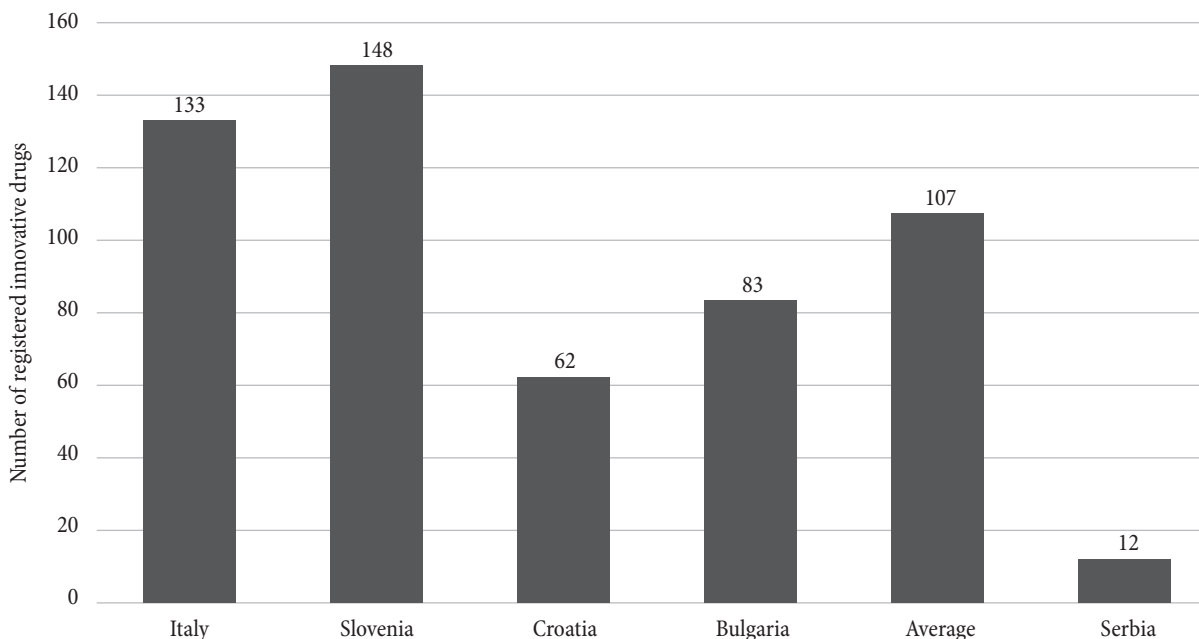
Source: [5]

of health insurance. It is a model of health insurance that is based on the principle of non-profit and solidarity between all insured persons. Serbian model is based on the idea that the state, through the NHIF, provides complete health care of insured persons in the basic package. In a growing number of other countries the state actively promotes the development of voluntary health insurance, where the basic package is covered by the Fund and for any additional services it is necessary to either activate the insurance policy or pay out of pocket. All over the world it is very rare to have a possibility that a patient has full health care within the basic package that amounts to no more than 10.3% of his earnings that are low in the first place and unrealistically expressed by most employers. This is a significant reserve for increasing the absolute amount of the contribution and at the same time better use of the available money for the services that are really needed by most policyholders. Perhaps here lies the possibility of introducing beneficial changes in the Health Insurance Act, and this is currently being worked on.

Regarding the participation, a patient in Serbia does not pay for, at least he is not supposed to pay, anything while under treatment in any state medical institution, which means that all health care costs, according to regulations, must be covered by the health institution. The patient only participates in drugs with RSD 50 per pack for A List medicinal products (the poor and especially vulnerable groups are exempt from this payment), and he pays a certain amount as percentage participation for A1 List drugs. This participation of the patient for medication (co-payment) has been for years around 20% compared to the total expenditures for prescription drugs. For medical-technical aids the NHIF provides certain amount of money for each standard accessory that is the right of the insured, and if the patient wants to have something more expensive than the standard he must cover the difference. Further, the NHIF compensates sick leaves longer than one month, spa treatments, rehabilitation and many other services, all within the package of compulsory health insurance [11]. It would be useful indeed to reconsider, once again, the services that are included in the basic package of health insurance, because there lies the opportunity for rational spending of limited sums of money.

Considerable scope for more effective management of public funds in healthcare lies in changing the model of managing health care institutions. The people who run health institutions usually lack the adequate level of knowledge in the field of health management. Essentially, most of the NHIF money is at the disposal of directors of healthcare institutions, who – following the logic of "parochial mentality" – only want more money for their institutions, thus overlooking the possibilities for optimization of spending within their institutions. Perhaps it does make sense for NHIF to frequently use its legal possibility to control spending purposes of individual medical institutions. It should be noted that the NHIF now regularly pays all obligations towards the institutions and the payment period is reduced to 60 days (once we used to have a 6 months delay).

The issue of rationalization of non-medical staff has been hotly debated the last 10 years, but not much has been done in the field. It is estimated that 25% of the total number of employees in the health sector are non-medical staff, which is two and a half times higher than the ratio defined by standards. This year the plan is to accurately determine redundant workers in the non-medical area. For instance, outsourcing of non-core activities, such as cleaning and security, can prove to be the right way, because in a number of health centers this system gave excellent results in both financial terms and in terms of raising the quality of services.

Better control of public procurement is a huge source of savings. Here we do not promote further pressure on prices, but better control of the process (the transparency of the process). The law on public procurement favors price as parameter, which overall might not be a better option, because this way we favor ineffective cheap medicines and poor medical devices (for example, the case of MOZEC company that sold inferior cardiac medical devices).

A reserve also lies in the improvement of IT systems and planning, reporting and control of cash flows, primarily in the health care institutions. It is hard to believe that even after nine years from the start of the computerization of the health system and EUR 20 million spent, the project is still not completed. This means that there is no single database at one place, health facilities are not yet networked,

there are no electronic medical records yet and we cannot issue electronic prescriptions. To illustrate, in 2015 alone Macedonia saved as much as EUR 7 million due to the introduction of electronic prescriptions.

Possibilities for saving, and not at the expense of the quality of service, lie in aggressive investing in prevention and primary health care (for example, by bringing back obligatory annual medical examinations, which would be covered by the state). This would significantly reduce expensive treatments. Perhaps osteoporosis is a good example. Through prevention and education we could significantly reduce the costs of subsequent treatment (e.g. installation of artificial hips).

Most definitely certain reserve can be found in the restructuring of the list of prescription drugs, with the idea of reallocating limited sums of money onto effective therapy. Also, in this context, one should not forget the possibility that the NHIF signs an agreement with pharmaceutical companies to divide the risk (there are four forms of contract provided for in the Regulations [9]: risk sharing, cost sharing, value and volume cap). This way the cost of medicines would be under stricter control.

Broadly speaking, the reserves in the public sector lie in the restructuring of Galenika that makes an interesting strategic partner for several multinational pharmaceutical companies. This would strengthen the pharmaceutical private sector, provide a chance for Galenika to perform business restructuring and at the same time help increase employment and value of the company as a key objective for the country.

The integration of public and private sectors would enable rationalization of the number of facilities and staff (especially non-medical) and raise the efficacy of treatment. The current model is such that private practice is not integrated into the health insurance system. The patient pays all out of pocket at very high prices. Only dialysis and hyperbaric chamber are included in the health insurance system.

There are several arguments in favor of the integration of private and public sector. First, life expectancy is getting longer, the number of patients suffering from chronic non-infectious and malignant disease has increased causing frequent visits to doctors, and the medical staff capacity in state health care is scarce. Second, for doctors work in the private and public sectors would get separated providing better control of working hours and the effect, by setting the standards. Abuse of position is widespread, where doctors are doing a sloppy job in the public sector and use their position to develop private businesses. This is bad because this doctors' work still has to be done, and it decrease the quality of services for patients in the public sector. Third, this would increase the availability of modern equipment to the general patient population, given that currently half the MRIs and a third of all scanners are in private practices. Fourth, it would increase the capacity of the health system to deal with prevention, through systematic check-ups, which would educate patients and raise the level of early detection of disease, and thus the level of healing. All this would, overall, reduce the costs of the system. The very fact that private treatment is most developed in pediatrics, gynecology and general medicine clearly shows us the areas with most problems in the public sector. Fifth, the private sector could in a part significantly relieve the public sector and reduce waiting lists. Sixth, this would enable easier employment of a large number of doctors and medical staff, and would reduce the economic tensions between top doctors, because private sector would be in a position to engage them. Seventh, the functioning of integration on the example of the three above-mentioned services is a good example of how the private sector can support the public sector. The state has felt the need to provide quality additional service, it determined a fair price and the private sector provides quality service there. Finally, certain analyzes suggest that the cost of standardized services as per ABC logic (Activity Based Costing) would be lower in private in relation to the national health institutions. This statement is yet to be verified through application of a quality economic model.

Essentially, the private sector should be integrated into the system of the NHIF, in order to meet the logical principle that "money follows the patient". This, with 10% of the salaries going for health services, and still very often patients are forced to pay for treatment and medication from their own pockets, more and more insured raise the issue whether it makes sense to pay at all.

The basis for integration should be accurate scanning of the private sector, i.e. keeping precise records of all health services, the number and type of staff, number and structure of the services they provide, premises and equipment at their disposal. This would be the basis for the creation of a network of private healthcare providers. Further, an important step for integration would be a modification of discriminatory regulations that impede the work of the private health sector.

There are two possible models of integration. The first model means breaking the monopoly of the NHIF. The citizens would have the ability to choose which health insurance they want (both service package and insurance company). The state could determine the proportion that goes to the NHIF for the basic package of services, and over the remaining percentage health care companies should compete on the basis of the best offer and best price. The Bismarck model is based on the full solidarity of citizens and is not sustainable in a country where the number of pensioners and employees is about equal, and previously it was 4 to 1 in favor of employees. The second model means that all contributions continue to be directed only to the NHIF, and the state should determine more precisely in which segments it require assistance by the private sector. Cost of services (for each DRG) should be determined and the private sector be given the opportunity to provide a broad package of services and be paid for that by the NHIF. Of course, it would be useful that prior to this the government makes a precise epidemiological map of Serbia, compare this map with capacities in the public sector, and define gaps between the needs of the insured and the capacity of the public health system. This way we would precisely identify the segments of services where the private sector can help. Whichever model the government chooses, it is necessary to make a budget impact analysis of this model of integration.

Conclusion

This paper deals with the health system of Serbia, i.e. with indicators of its development from the perspective of the state of health of the Serbian population and from the perspective of the effectiveness of spending money. The aim of the study is to propose possible improvements of the health system, especially in the segment of effectiveness of managing limited financial resources.

The first part of this paper analyzes indicators of population health as a basic starting point of any health system. The analysis is complemented by specific parameters of development of the Serbian health system and from the perspective of the relevant researchers and evaluators, such as EHCI, GCI, Bloomberg, IMS and Ipsos. For instance, by EHCI, Serbia occupies 33rd place in Europe out of 36 countries, according to the degree of development of the health system. EHCI points to several negative phenomena in the Serbian health care system, such as: lack of awareness of patients, poor access to the system of treatment, adverse outcomes of treatment, mortality in infants, overemphasis of hospital care, long waiting lists, low level of development of the IT system, non-integrated state and private sectors, etc. Certain improvements have been noted in the area of access to doctors in primary health care, in the presentation of data on the effectiveness of therapy, as well as with the fight against corruption. Essentially, EHCI and other relevant sources indicate specific areas of improving the health care system and, unfortunately, there are many such areas.

As for the parameters of population health, the indicators are even more devastating. The IMS report and Globocan report show that Serbia is second in Europe in terms of cancer mortality and first in mortality from cardiovascular diseases. This disappointing result is not only an outcome of inadequate treatment system, but also of the absence of health culture of Serbian population and poor preventive care.

The total share of health care costs in Serbia's GDP is 10.6% and in terms of this indicator Serbia excels compared to the world average, as well as in comparison with the neighboring countries, such as Bosnia and Herzegovina, Slovenia, Italy and Croatia. However, only 60% of total health care costs are related to public sources, while 40% of the cost of treatment and medicine are covered by private sources of money, which is significantly more than in all neighboring countries. The vast majority of the population of Serbia has a public health insurance funded from compulsory health insurance. There is an evident

decline in the budget in 2015, compared to 2014, due to a reduction in the mandatory health insurance from 12.3% to 10.3%. This reduction lowered the financial potential of the NHIF by as much as RSD 15 billion.

When we look in detail at the structure of the budget of the NHIF, we first note that the largest part of the budget of the NHIF refers to wages and salaries of employees in the health sector. Insufficient percentage of the NHIF budget is focused on drugs, of which negligibly small part to innovative medicines. In Serbia in the last five years none of the innovative drugs has made it to the list of the NHIF.

The author entertains the issue of whether the same amount of money in health care can be better managed. This paper provides several arguments in favor of a positive answer to this question.

It is obvious that Serbia is not falling behind in absolute and relative investment in health, but the problem lies in the fact that the structure of spending is inadequate. For instance, budget spending on innovative therapies and medicines is insufficient. A good indicator of neglect of the importance of innovative medicines is the fact that millions of savings in spending money on generic drugs (as a result of the introduction of the new Regulations on drug prices by the NHIF) have not in any way spilled over into the realm of the introduction of innovative drugs and reduced participation of the insured for the purchase of medicines. Not only savings on generic drugs have not been diverted into the segment of innovative medicines and reduced participation, but the total budget for drugs in 2015 was reduced by RSD 4 billion compared to 2014. Therefore, it is recommended that savings on generics spill over into the introduction of more new innovative drugs to the list of medicines. Improvements can be achieved only by introducing the possibility for savings from one list to translate onto another.

Another source of better use of money is a partial correction of the Bismarckian model of health insurance. Numerous other countries are actively working on the development of voluntary health insurance, where the basic package is cover by the fund, and for any additional services it is necessary either to activate the insurance policy or pay out of pocket. It is recommended to consider the list of services in the basic package and to identify opportunities for rationalization.

A considerable scope for more effective management of public funds in health care lies in changing the model of managing health care institutions for a better control of spending money and of the implementation of public procurement and rationalization of non-medical staff. It is recommended that people who run medical institutions master basic knowledge of health management.

Poor IT system makes it difficult to control the flow of money and prevents making significant savings on the introduction of electronic documents. It is recommended that the Ministry of Health accelerate the realization of the project of introduction of integrated IT systems in the health sector in Serbia.

The scope for savings lies in a stronger focus on prevention of aggressive investment in primary health care, through focusing on mandatory annual medical examinations, which would be covered by the state.

The reserves can certainly be found in the restructuring list of prescription drugs, with the idea of reallocation of limited sums of money to more effective therapies. There is a possibility, which has so far not been used, that the NHIF signs agreements with pharmaceutical companies to divide risk and cost, and to define the maximum value or quantity of drugs. This would put the cost of drugs under stronger control of the NHIF.

Within the pharmaceutical public sector significant room for savings lies in Galenika, which makes an interesting strategic target for some form of PPP. Quality strategic partnership would enable the modernization of the company and its financial stability, and it would enhance the company's value in the market.

The emphasis was placed on reserve in the system that can be activated through the integration of private and public sectors. The integration of public and private sectors would enable the rationalization of the number of facilities and staff and raise the efficacy of treatment. This paper presents the specific arguments in favor of this.

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