

## Physician Labor Market in Croatia

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**Aim** To analyze the physician labor market in Croatia with respect to the internship and employment opportunities, Croatian needs for physicians and specialists, and trends in physician labor market in the European Union (EU) in the context of EU enlargement.

**Methods** Data were collected from the Ministry of Health and Social Welfare, the Croatian Employment Service, and the Croatian Institute for Public Health. We compared the number of physicians waiting for internship before and 14 months after the implementation of the State Program for Intern Employment Stimulation. Also, the number of employed specialists in internal medicine, general surgery, gynecology and obstetrics, and pediatrics was compared with estimated number of specialists that will have been needed by the end of 2007. Average age of hospital physicians in the four specialties was determined and the number of Croatian physicians compared with the number of physicians in EU countries.

**Results** The number of unemployed physicians waiting for internship decreased from 335 in 2003 to 82 in 2004, while a total number of unemployed physicians decreased from 436 to 379 ( $\chi^2 = 338, P < 0.001$ ). In October 2004, 79.3% of unemployed physicians waited for internship <6 months; of them, 89.2% waited for internship <3 months. In February 2005, 365 unemployed physicians were registered at the Croatian Employment Service and that number has been decreasing in the last couple of years. The number of employed specialists was lower than the estimated number of specialists needed in the analyzed specialists, as defined by the prescribed standards. A shortage of 328 internists, 319 surgeons, 209 gynecologists, and 69 pediatricians in Croatian hospitals is expected in 2007.

**Conclusion** The lack of employment incentive seems to be the main reason for the large number of unemployed physicians waiting for internship before the implementation of the Employment Stimulation Program. According to the number of physicians per 100 000 population, Croatia is below the EU average. Croatian labor market will not be able to meet the needs of the health system for physicians by the end of 2007.

Physicians (medical doctors, MDs), as defined by law, are university-qualified health professionals with the medical school degree. After they graduate from medical school, physicians are registered in the Registry of Health Professionals of the Croatian Institute for Public Health and in the Croatian Medical Chamber (1,2). However, to become independent physicians with a license to practice, medical graduates first have to complete their internship, which they can do either in health care institutions or in private practice (1-4), and then pass the Medical Licensure Exam (MLE) (1,2). Health care institutions and health professionals in private practice are expected to determine the minimum number of intern positions they can provide and thus allow young physicians to complete the internship according to the specified program, as defined by the Rules and Regulations on Internship of Health Care Providers (1-4). After completing the internship and passing the MLE, physicians are granted a license to practice medicine by the Croatian Medical Chamber, which also keeps records of all issued medical licenses (2,5,6). Licensed physicians then enter the Croatian labor market and seek employment. They can either practice medicine in primary health care as general practitioners or continue their education through a specialist (or subspecialist) training. The availability of specializations is determined according to the National Plan for Specializations and Subspecializations issued annually by the Minister of Health on the basis of estimated needs of health care institutions, Croatian Institute for Public Health, and Croatian Medical Chamber.

Before 2003, medical graduates had waited for intern position for several months on average, and the percentage of unemployed physicians who had not completed the internship had been 73.1% (5,7-10), although the minimum number of intern positions for physicians that health care institutions had to provide, as defined by the Rules and Regulations on Internship Criteria for Health Care Providers (Regulations on Criteria),

had already exceeded the Croatian annual needs only in university and general hospitals (5,7-10).

In September 2003, the State Program for Intern Employment Stimulation (Program) was introduced to stimulate financially health care institutions to employ interns and thus decrease the share of unemployed physicians who had not completed internship in the total number of unemployed physicians (11-13).

The number of physicians per 100 000 population in the European transition and European Union (EU) countries varies from over 500 in Italy, to 400 in Byelorussia, Norway, Spain, and Georgia, to over 300 in Belgium, Czech Republic, Hungary, Slovakia, and Lithuania (14,15). Several extremely wealthy countries, such as the Netherlands and the USA, have <300 physicians per 100 000 population, whereas UK and Japan have <200 physicians per 100 000 population. In Croatia, there were 227 physicians per 100 000 population in 2002, which is below the EU average (14,15).

For the UK to reach the German standard with respect to the number of health care professionals, another 100 000 physicians should be employed. In other words, the UK's National Health Care System is worried by the lack of health professionals, which bears a negative impact on the accessibility and quality of health care (16-18). France, which had 334 physicians per 100 000 population in 2002 (a total of 200 800 physician), notes a 15-year-long decreasing trend in the number of physicians and such a trend is expected to continue. For that reason, the French Government decided to take an active role in managing the number of physicians on the labor market by implementing a series of short-term and long-term measures, one of them being the "import" of foreign-trained physicians (19). Also, physicians from "new" EU-member countries are interested in moving to "old" EU countries. For example, of 408 immigrant physicians interviewed for over 500 physician job openings in Norway, 20% came from Eastern

Europe (20). A 2002 survey among Lithuanian physicians showed that 60.7% of MD interns wanted to emigrate to EU or other foreign countries; the reasons were better salary, professional opportunities, and quality of life (21).

Besides the shortage in numbers of physicians, the age structure of health care professionals is another problem. Average age of physicians in New Zealand is 44 years, 43 for nurses and over 40 for support workers (22). In 1985, 55% of French physicians were aged <40 years, while by 2000, the number of physicians in this age group had decreased to only 23%. UK Census data for 2001 showed that only 19% of specialists were under the age of 40, whereas around 40% of those aged over 50 were likely to retire during the following 10-15 years (22,23).

The present study had several aims. The first aim was to determine how long it takes for physicians to complete their internship after graduating from medical school and establish the effects of the Employment Stimulation Program until October 2004. The second aim was to compare the number of Croatian physicians with their numbers in EU countries, trends in supply and demand for physicians in EU countries, and possible impact of the EU expansion on physician labor market in new EU-member countries and Croatia. The third aim was to assess the needs for specialists in university and general hospitals and the potential of Croatian labor market to satisfy the needs of Croatian health care system for physicians from the pool of domestic-trained physicians and with respect to the expected number of medical graduates from four medical schools in Croatia by 2007 (8,14,15).

## Material and methods

### *Croatian legislative*

National standards (4) define the minimal number of intern positions for each medical institution as one intern per 15 patient beds in universi-

ty hospitals and one intern per 25 beds in general hospitals (4).

The Employment Stimulation Program introduced in cooperation with the Ministry of Health, Croatian Employment Service, and Development and Employment Fund in September 2003, and with the Croatian Institute for Health Insurance (CIHI) from January 2004, aimed to stimulate health care institutions to employ interns. The Program ensured 380 intern positions and the resources for annual salary for 380 intern physicians (7,11-13). This Program was introduced in accordance with the Croatian Government resolution.

When the Act on Employment Mediation and Unemployment Rights came into force in 2002, regulations of the Labor Act became invalid. According to the Labor Act, the employers were obligated to inform the Central Croatian Employment Service of their needs for workers. To make the information on job openings in health care system available to all health professionals, the Ministry of Health obligated health care institutions to advertise job opening on the Ministry's webpage. This provision came into force in May 2003, and in the first 3 months more than 700 job ads were posted (11).

The number of specialists in some specialty in individual institutions is determined by the Book of Rules on Minimum Requirements Regarding Premises, Medical-technical Equipment and Staff for Performance of Healthcare Activity (1,2,24,25). According to the Book of Rules (24,25), the necessary number of specialists depends on the number of patients in the department or the number of outpatient clinics and is defined as the minimum requirement for inpatient capacity (departments) and outpatient clinic.

The minimum requirement for internal medicine is one specialist in internal medicine per 6 inpatients per 8-hour shift, with at least 30% of the regular shift staff on duty. The minimum requirement for an internal medicine outpatient

clinic is one specialist in internal medicine per 8-hour shift (25).

In general surgery practice, the minimum requirement is one specialist in general surgery per 5.5 inpatients per 8-hour shift, with at least 30% of the regular shift staff on duty. For outpatient clinics, there should be one specialist in general surgery per 8-hour shift (25).

In gynecology and obstetrics practice, the minimum requirement is one specialist in gynecology and obstetrics per 6 inpatients per 8-hour shift, with at least 30% of the regular shift staff on duty. Furthermore, on maternity department in 24-hour service, there should be one specialist in gynecology and obstetrics in the delivery room of maternity hospitals with up to 500 births yearly. The minimum requirement on the number of needed specialists increases with the annual number of births. For outpatient clinics, the minimum requirement is one specialist in gynecology and obstetrics per 8-hour shift (25).

For pediatrics inpatient capacity, the minimum requirement is one pediatrician per 6 patients per 8-hour shift, with at least 30% of the regular shift staff on duty. For outpatient pediatric clinics, the minimum requirement is one pediatrician per 8-hour shift (25).

Occupancy of hospital beds is shown as 93.0% of contracted beds for the four analyzed specialties; this was the average occupancy of Croatian clinical and general hospitals in 2002 (26,27). The total required number of specialists to work in internal medicine, general surgery, gynecology and obstetrics, and pediatric practices in Croatian university and general hospitals is obtained by adding the number of specialists needed on the departments according to the standards defined by the Book of Rules on Minimum Requirements, the number of physicians needed in specialist outpatient and specialist diagnostics outpatient clinics, and the number of physicians entitled to the day off after being on duty.

#### **Data sources**

Data were collected from the databases of the Ministry of Health and Social Welfare, which receives monthly reports on the number of unemployed physicians registered at the Croatian Employment Service and its regional offices (28), the Department of Hospital Health Care, the Department of Planning and Analysis, and the Health Reform Project's archives for the period 2002-2005 (7,11,29,30). The Croatian Institute for Public Health data from the Register of Health Professionals for 2002 and 2003 were also included in the analysis (5,31). The data from the World Health Organization's Health for All database were used to compare Croatian number of physicians with international data (14).

#### **Methods**

The number of physicians waiting for internship before the implementation of the Employment Stimulation Program was compared with their number 14 months after the Program had begun. Furthermore, the number of employed specialists in four specialties was compared with the expected need for specialists by the end of 2007. The possibility of increase in the number of specialists in university and general hospitals was compared with the present number of physicians on the Croatian labor market. Average age of hospital physicians in four specialties was also compared.

The estimate of the necessary number of specialists in hospitals was based on the information on the occupancy of beds contracted by Croatian Institute for Health Insurance (CIHI) or on the number of contracted outpatient clinics (specialist or specialist diagnostics) between April 1 and December 31, 2004.

#### **Statistical analysis**

Distribution frequencies were compared by  $\chi^2$  test, and age of specialists in four different specialist groups by ANOVA.  $P < 0.05$  was consid-

ered statistically significant. Data were analyzed with Statistical Package for Social Sciences 10.0 for Windows (SPSS Inc., Chicago, IL, USA).

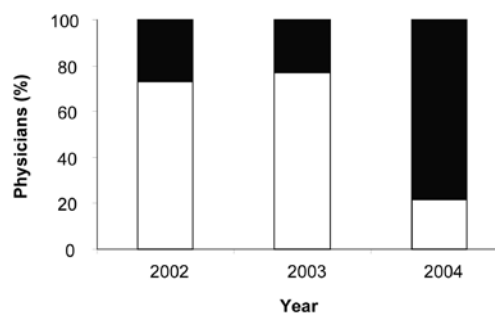
## Results

In October 2002, there were a total of 15380 contracted beds in university and general hospitals and a minimum of 840 intern positions (32). At the same time, according to the data of the Ministry of Health, there were 226 physicians employed as interns in these institutions. Utilization of intern positions in university and general hospitals amounted to 26.9% (11).

On October 31, 2002, there were 530 physicians who had not yet completed internship and 195 licensed general practitioners registered at the Central Employment Service (11,28). Fourteen months after the Program came into force, 336 of 380 intern positions provided for by the Employment Stimulation Program were filled up. At that time, 82 unemployed physicians without finished internship were registered at the Croatian Central Employment Service. Of them, 48 had been registered at the Croatian Employment Service for <3 months and 17 for

3-6 months. Only 17 physicians had been waiting for internship for >6 months, 16 of them in Zagreb, Split, Rijeka, and Osijek. In these large cities, all intern positions provided for by the Program were filled (Table 1) (28). Thus, the share of physicians who had not yet completed their internship in the total number of physicians registered at the Croatian Central Employment Service decreased from 73.1% in October 2002 and 76.8% (n=335) in October 2003 to 21.6% (n=82) in October 2004 ( $\chi^2_2=338$ ,  $P<0.001$ ) (Figure 1) (28).

From April 1 to December 31, 2004, there was a total of 9964 contracted beds in 36 Croa-



**Figure 1.** The share of physicians without completed internship (open bars) in the total number of unemployed physicians (closed bars) in October 2002 (n=725), 2003 (n=436), and 2004 (n=380).

**Table 1.** Intern positions provided for by the State Program for Intern Employment Stimulation and the number of unemployed physicians without completed internship in Croatian counties on October 31, 2004

Counties	Intern positions			No. of unemployed physicians without completed internship		
	total	occupied	unoccupied	total	unemployed for 0-3 mo	unemployed $\geq$ 3 mo
Bjelovar-Bilogora	11	6	5	0		
Brod-Posavina	15	15	0	0		
Dubrovnik-Neretva	11	10	1	0		
Zagreb	92	92	0	22	17	5
Istra	18	18	0	2	1	1
Karlovac	12	12	0	2	2	
Koprivnica-Križevci	11	1	10	0		
Krapina-Zagorje	12	8	4	0		
Lika-Senj	4	4	0	0		
Međimurje	10	10	0	2	2	
Osijek-Baranja	30	30	0	8	3	5
Požega-Slavonija	7	5	2	0	0	
Primorje-Gorski kotar	27	27	0	22	7	15
Sisak-Moslavina	14	13	1	0		
Split-Dalmatia	39	39	0	17	11	6
Šibenik-Knin	10	9	1	1	0	1
Varaždin	16	8	8	2	2	
Virovitica-Podravina	8	2	6	0		
Vukovar-Srijem	19	13	6	0		
Zadar	14	14	0	4	3	1
Total	380	336	44	82	48	34

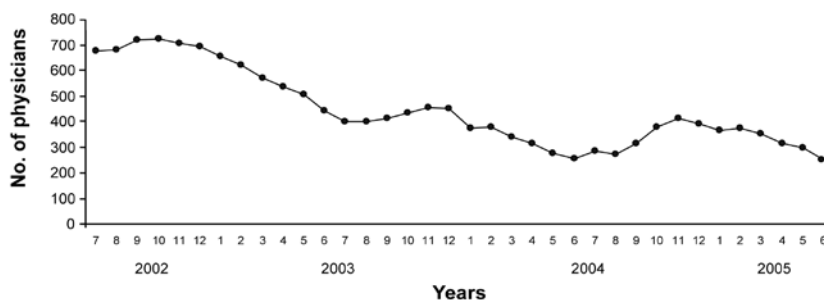


Figure 2. Number of unemployed physicians in Croatia registered at the Central Employment Service from 2002 to 2005.

Table 2. Estimated number of specialists needed in Croatian university and general hospitals by 2007

Specialization	No. of specialists		
	February 2005	estimates for 2007	difference
Internal medicine	838	1166	328
General surgery	491	810	319
Gynecology and obstetrics	300	509	209
Pediatrics	277	346	69
Total	1906	2831	925

tian hospitals (2 university hospital centers, 5 university hospitals, 7 clinics, and 22 general hospitals): 3783 internal medicine beds, 3180 general surgery beds, 1975 gynecology and obstetrics beds, and 1026 pediatrics beds. This represented 64.2% of the total number of contracted beds in university and general hospitals. In the same period, there were 471.1 full-time specialist outpatient clinics and 295.9 specialist diagnostic outpatient clinics in the four analyzed specialties (27,33). According to the Book of Rules on Minimum Requirements (25), at least 2831 specialists in internal medicine, general surgery, gynecology and obstetrics, and pediatrics were needed.

According to the data of the Ministry of Health and Social Welfare for February 2005, there were 838 internal medicine specialists working in Croatian university and general hospitals with contracted internal medicine practice. Furthermore, there were 491 general surgery specialists, 300 gynecology and obstetrics specialists, and 277 pediatrics specialists (29).

Comparing the number of specialists in university and general hospitals in February 2005

with the minimum required number of specialists as defined by the Book of Rules on Minimum Requirements, there was a shortage of 925 specialists in the four specialties in Croatian university and general hospitals. The deadline to make up for this shortage is July 2007 (Table 2).

The number of physicians registered at the Employment Service dropped from 675 in July 2002 to 250 in June 2005. The number of unemployed physicians gradually decreased from the beginning of the calendar year, reaching its lowest annual point in summer months, and then increased again toward the end of the calendar year (Figure 2).

According to the data of the Ministry of Health and Social Welfare for February 2005, the average age of specialists in internal medicine was  $49.5 \pm 8.4$  years, general surgery specialists  $49.6 \pm 8.7$  years, gynecology and obstetrics specialists  $48.7 \pm 9.1$  years, and pediatricians  $49.6 \pm 9.0$  years. Age of physicians in different specialties did not significantly differ ( $F_{1902,3} = 0.717, P = 0.542$ ).

### Discussion

The minimum number of 840 intern positions in Croatian university and general hospitals exceeds Croatian annual needs (4). In October 2002, 530 physicians registered at the Croatian Central Employment Service waited for internship, while there were 614 vacant intern positions in hospitals (28). Over 14 months of the Employ-



ment Stimulations Program, the number of unemployed physicians waiting for intern position decreased by 75.5%. This finding indicates that the lack of employment initiative could be the main reason for the large number of unemployed physicians waiting for internship. As interns do not participate in the work process, health care institutions cannot issue an invoice for their work to the CIHI but pay their salaries from the hospital budget, which is defined in advance and does not change if the hospital employs interns (32). In Zagreb, Split, Rijeka, and Osijek, a total of 188 internships provided for by the Program were used. In counties with unfilled positions provided for by the Program, there were no unemployed physicians without completed internship, except for one county (28).

Although the minimum number of intern positions for each health care institution is stipulated by the national standards (4), the control and sanction mechanisms for institutions that did not adhere to the standards were not defined. Since health care institutions were not financially stimulated to employ interns and no effective control mechanism existed, hospitals did not adhere to the Rules. Hospitals employed as many interns as they needed, without being financially compromised.

Forty-four intern positions provided for by the Program remained vacant, probably because they were provided in hospitals outside large urban centers where most unemployed physicians were registered. Lower mobility of the unemployed and the lack of will to move because of a job provide additional explanation for the intern position vacancies. Nevertheless, physicians can start their internship within 3 months after graduation if they are ready to change their place of residence for a job (34-38).

It is expected that around 800 medical students will have graduated from four Croatian medical Faculties by 2007. Beside 925 specialists in hospitals, it is necessary to ensure an additional number of physicians as replacements for phy-

sicians that will have stopped working by 2007 because of illness, retirement, or other reasons. Furthermore, it is necessary to meet the minimal conditions for the number of specialists in specialties other than the four we analyzed, and also to fill up the positions in the primary health care segment (29,39-41). In January 2005, there was a shortage of 171 general practice teams on the primary health care level (42,43).

The lowest number of unemployed physicians registered in summer months could be explained by seasonal employments of physicians, while the increase in the number of unemployed physicians from September to the end of the year is the result of the decreased need for physicians after summer and newly-registered graduates at the Central Employment Service (28).

According to the number of physicians per 100 000 population, Croatia is below the average for Central and Eastern Europe countries, Nordic countries, EU countries, and ex Soviet Union countries (14,15). Given that specialist training lasts at least four years, it will not be possible to ensure the sufficient number of specialists in 3-year time to satisfy the minimal conditions required by the Book of Rules on Minimum Requirements (24,25). A few strategies that may lead to a solution are employing foreign-trained physicians, attracting ex-practitioners back into the health care sector, reducing turnover, and improving productivity (making better use of support staff and resources). Long-term strategies could be training more staff, changing rules and regulations, increasing resources, and undertaking a more extensive redesign of job descriptions (22).

Recruitment policies can only be effective when there is a pool of appropriately qualified workers to recruit from. For that reason international recruitment has become a solution to health professional shortages in some countries. International migration and recruitment assist source countries that have an oversupply of staff and enable individual health care workers

to improve their skills and living standard albeit outside of their home country. However, these trends can exacerbate problems in countries that are already understaffed and can negatively impact the effectiveness of their health care systems (23). Poland and Lithuania, for example, report that significant numbers of their health professionals consider moving to other EU countries after accession (23). The UK reports a significant inflow of physicians, mainly from non-EU countries, and Norway actively recruits immigrant physicians. However, migration has a negligible impact in France. Malta, Poland, and Lithuania – new EU members – expect an increase in the outflow of physicians due to accession (23).

A 2002 survey of physicians in the Czech Republic, Hungary, Lithuania, and Poland showed that 25-50% of the respondents were thinking about migrating to other EU countries, while 4-10% were determined to move, primarily to the Nordic countries, UK, and Germany (14). The new EU Member States tend to report significantly lower earnings and career opportunities for health care workers. The EU enlargement may thus trigger otherwise latent push factors, which may be stimulated further if western European countries exert a pull through active recruitment of doctors and other health workers (23).

In Croatia, laws, regulations, and general acts of health care institutions regulate the labor market and employment of Croatian physicians. There are enough job opportunities, as evidenced by the possible number of intern positions in hospitals, unfilled net of primary health care, and required number of specialists in hospitals. Only in July 2005, there were 114 vacant positions as posted on four Croatian web pages (*www.moj-posao.hr*, *www.posao.hr*, *www.hzzo.hr*, and *www.mzss.hr*), which together with 171 vacancies in the primary health care exceed the number of unemployed physicians registered at the Croatian Central Employment Service (28,44-47).

In the last couple of years, the number of unemployed physicians registered at the Croatian

Employment Service constantly decreases, while the number of vacant positions in the health system shows remains the same. Although a very low emigration rate of Croatian physicians has been recorded over the past few years, the possibility that emigration may increase after Croatia joins the EU is alarming (48-50).

#### Acknowledgment

The opinions set forth are opinions of authors, not the official attitudes of their affiliations.

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