

Physicians Resources in Lithuania: Change Comes Slowly

Liudvika Lovkyte, Jack Reamy¹, Zilvinas Padaiga

Kaunas University of Medicine, Kaunas, Lithuania, and ¹Xavier University, Cincinnati, Ohio, USA

Aim. To analyze the structure of the physician workforce in Lithuania at the time when the country gained independence, changes it has undergone since 1990, and physician resource planning activities.

Methods. National and international databases were examined to determine the changes in the structure of physician workforce after 1990. Studies and reports, funded by international and national governmental organizations, were reviewed to examine the recommendations for physician resource planning and the rate of their acceptance. Since there was no government plan, a study using Delphi technique was conducted to find consensus among practitioners and policy makers on the physician-to-population ratio needed in Lithuania. Medical residents and physicians in Lithuania were surveyed to assess their emigration intentions.

Results. In comparison with other Baltic countries, the number of physicians in Lithuania has remained high despite dramatic reductions in the number of students enrolled to medical schools. There is still a maldistribution of physician resources geographically and by specialty. The government has accepted few recommendations based on the international studies. None of the internal databases provided all the needed information on the physician workforce and the existing databases could not be linked to gain access to all required information.

Conclusions. The physician-to-population ratio remained high after Lithuania had gained independence. There has been little planning at the government level to determine the number of physicians needed in a reformed health system. Changes in the number of students admitted to medical schools did not follow from a well thought-out long-term plan for physician workforce the country will need in the future. To develop a frequently updated database of physicians is essential for the successful planning of future physician workforce.

Key words: *Baltic States; health care reform; health planning; health resources; Lithuania; physicians*

Lithuania is the largest of the three Eastern Baltic Republics, with a total population of about 3.7 million people, predominantly Lithuanian. There are 8.7% Russians (fewer than in the other Baltic nations) and 7% Polish. Lithuania had been annexed to the Soviet Union in 1940 and remained a part of it until March 1990 (1,2), when it gained its independence. A physician workforce consisting largely of specialists was inherited from the communist regime, and the ratio of physicians to population in the country was higher than in Western European countries.

The health system in Lithuania before its independence followed the centralized Semashko model, prevalent throughout the former Soviet Union (3-6). There was no private health care sector and health services, to which all citizens had access, were provided by government employees. The Soviet system focused more on the quantity than on the quality of hospitals and physicians. Because of strategic Soviet military interests, some segments of the health care system were over-developed in respect of capacity

and workforce, whereas others suffered shortages and chronic neglect.

Like in other Central and Eastern European countries, the health system in Lithuania has undergone substantial reforms since 1990 (3,5). It has evolved from a system funded by general taxation to a system funded by social insurance paid largely through deductions made from the salaries of both employees and employers. The Ministry of Health is responsible for the overall health system, whereas 10 counties and 56 local self-governments have some degree of authority over health facilities within their jurisdictions. Two parallel but specialized health systems are run by the Ministry of Internal Affairs and the Ministry of Defense (1).

Primary health care physicians are paid on a *per capita* basis, whereas physicians in hospitals and polyclinics are employed on a regular salary basis. Physician salary in Lithuania is traditionally low – 80% of the national average (in 1999 national average was approximately US\$253). This fact can be

partly explained by the predominance of women among physicians, who receive 80% of the average male salary, like in other areas of economy. However, in 1996, salaries in health care sector were increasing at faster rate than the national average (1).

The major part of the reform of physician resources in the former communist countries has been the development of primary health care as a centerpiece of the health systems (3-5). The specialist-dominated physician workforce was ill prepared to lead the transition to primary care (7).

Like the other fields of the health sector, medical education in Lithuania has also undergone a substantial change. Since the Soviet medical training system offered no special postgraduate training, a system of physician training in residencies was introduced in 1994 (8). Medical students in Lithuania are trained either at Kaunas University of Medicine or at the Medical Faculty of Vilnius University. After completion of a six-year curriculum, graduates receive a diploma and then undergo one year of obligatory primary residency training. Depending on the specialty chosen, a secondary residency can take from two to four years. After completion of the secondary residency, narrow specialization in a tertiary residency is available; this can take one to three additional years of training, depending on the specialization.

Medical studies in Lithuania were reorganized in the past 10 years according to the European model of the undergraduate and graduate medical training. In 2002, technical assistance information exchange office experts (TAIEX) confirmed that medical studies in Lithuania corresponded to the European Union (EU) medical education requirements (9).

We analyzed the status and structure of the physician workforce at the time of independence and the changes it has undergone since. In addition, we suggest the project for planning the future physician workforce in Lithuania.

Material and Methods

Data Sources

Data on the present physician workforce in Lithuania were obtained from several sources. The Lithuanian Health Information Center (LHIC) database, created in 1993, is updated annually and provides data on physician (physical persons and full-time equivalents) distribution by specialty and region. However, this database does not provide information on physicians by sex and age. The Physician License Registry of the Ministry of Health, established in 1999, is scheduled to be updated every five years. According to the licensing regulations, physicians are entitled to hold more than one license; therefore, data provided reflect the number of licenses as well as physical persons and their distribution by sex, age, and specialty. A new 1999 database of the State Sickness Fund provides data on physicians who hold contracts with the State Sickness Fund. The database is updated on daily basis and provides data on physicians by age, sex, geographic region, type of services performed, start and end (if appropriate) date of services. To check the distribution of physicians by age and sex, we used an old physician registry at the Ministry of Health that functioned from 1992 to 1997.

The World Health Organization (WHO) Health for All Database was used to make international comparisons of physician resources. All internal databases were used to review the structure and changes of the physician workforce since 1990. Studies and reports by international organizations and governmental agencies were reviewed to determine the consistency of their recommendations and the degree to which the government adopted them.

The data on physicians for 1990 were collected according to the list of 96 specialties approved at the time. In 1999, the Ministry of Health of the Republic of Lithuania revised the list and approved 19 specialties and subspecialties. Some specialties do not

Table 1. Nineteen specialties with subspecialties created from the former list of 96 specialties and approved in 1999*

Specialty	Subspecialty
Medical doctor practice	
General practice	
Dietetics	
Anesthesiology-reanimatology	
Obstetrics and gynecology	
Genetics	
Forensic medicine	
Pathology	
Internal medicine	Allergology and clinical immunology, occupational medicine, dermatovenerology, endocrinology, gastroenterology, geriatrics, hematology, infectology, cardiology, nephrology, neurology, pulmonology, rheumatology, clinical toxicology, oncology, oncology chemotherapy, oncology radiotherapy, clinical physiology, intensive therapy, transfusiology, aviation medicine, psychotherapy, homeopathy, interventional cardiology, immunology, and endoscopy
Pediatric diseases	Neonatology, children endocrinology, children gastroenterology, children hematology, children cardiology, children nephrology, children neurology, children pulmonology, children intensive therapy, children allergology, children anesthesiology, children phthysiatry, children rheumatology, children orthopedics-traumatology, and social pediatrics
Surgery	Abdominal surgery, plastic and reconstructive surgery, blood vessel surgery, heart surgery, neurosurgery, children neurosurgery, thoracic surgery, urology, children urology, war medicine, surgical oncology, abdominal oncosurgery, breast oncosurgery, and coloproctology
Orthopedics and traumatology	Children orthopedics-traumatology
Children surgery	Children urology
Ophthalmology	Children ophthalmology
Otorhinolaryngology	Children otorhinolaryngology
Psychiatry	Children and teenager psychiatry, forensic psychiatry, psychotherapy, and psychiatry of dependence diseases
Physical medicine and rehabilitation	Sports medicine, manual therapy, and reflexotherapy
Laboratory medicine	Cytology
Radiology	Interventional radiology, X-ray diagnostics, and echoscopy

*According to refs. 10 and 11.

include any subspecialties, whereas other specialties include one or more subspecialties (Table 1) (10,11).

Delphi Survey

To determine the goals of physician workforce planning that should be reached by 2015, we surveyed the deans of the Faculties of Medicine, members of the National Board of Health, county chief physicians, directors of the Territorial Sickness Funds and the State Sickness Fund, and representatives of the Ministry of Health and the WHO Liaison Office. The survey was conducted in 2000 by use of the Delphi survey technique (12). Out of a total of 34 questionnaires sent out, 23 were completed and returned in the first round. In the second round, the questionnaires were sent only to the 23 respondents of the first round, of whom only 15 responded.

Migration Intention Assessment

From March to June 2002, we also performed a survey to determine the rates of future physician and medical resident migration abroad. The questionnaire used in the survey was developed by the Ministry of Labor and Solidarity of France; the authors of the questionnaire gave us permission to use it for our study purposes (13). The questionnaire was back translated (from French to Lithuanian to French) to assure the originality of the questionnaire. We interviewed a representative sample of 242 medical residents randomly selected from 540 medical residents studying at the Kaunas University of Medicine. If medical resident in the random list could not be interviewed, the next resident in the general list was surveyed. The questionnaires were sent to 800 physicians. The chosen number of physicians was twice the size of the calculated representative sample (387 physicians), because we expected a 50% response rate. The random sample of physicians from all Lithuania was obtained from the State Sickness Fund database. The random sample was generated of last 800 records of physicians entered into the State Sickness Fund database. The survey was performed in two steps: mailing questionnaires with a reminder to non-respondents. After the first round, the response rate was 41% (n = 331), whereas after the reminder it reached 62% (n = 497).

Statistical Analysis

We used Statcalc program of Epi Info statistical package (14) for sample size calculations. Logistic regression was used to estimate the risk factors for intention of physicians and medical residents to go abroad. Sex, age, urban residence, English language skills, marital status/cohabiting, travels abroad for professional reasons, and having friends abroad were used as independent variables. We performed all statistical analyses according to the SPSS 10.0 Guide to Data Analysis (15), using SPSS 10.0 statistical package (SPSS Inc., Chicago, IL, USA).

Results

Although the physician workforce structure in Lithuania has undergone substantial reform since 1990, the real change has been slow. The physician to population ratio in Lithuania has remained high, despite a slight decrease from 401.3 in 1990, the year of independence, to 379.8 in 2000 (Table 2) (16).

A breakdown of physicians by specialty in 2000 revealed that the largest proportion were internists (30%), 14% were pediatricians, 9% were medical residents, 7% were gynecologists, and 6% were surgeons. Physicians of other specialties contributed to less than 5% of the total number (17).

Redistribution of physicians by specialty is slow. Due to the primary health care reform, the number of general practitioners has increased almost nine times since 1993 (Table 3). The number of general practitioners (those who finished the seventh year of training, but did not enter the secondary residency) has also increased more than nine-fold. Between 1993 and 2000, the largest decrease in the number of physicians was noted in specialties like genetics (-64%),

Table 2. Physician to population (per 100,000) ratios in Estonia, Latvia, Lithuania, and European Union in selected years*

Year	Physician-to-population ratio			
	Estonia	Latvia	Lithuania	EU
1989	348.6	415.8	397.7	298.1
1991	352.4	402.8	386.6	314.9
1993	315.9	316.9	393.3	335.0
1995	309.0	294.0	396.7	345.9
1997	298.9	291.7	398.2	353.4
1999	306.9	312.7	394.1	381.6
2000	322.4	320.4	379.8	387.4

*Source: World Health Organization Health for All Database (<http://www.who.dk/hfadb>)

Table 3. Number of physicians per 100,000 population by specialties in Lithuania*

Specialty	Year		
	1993	1996	2000
Medical doctor practice	0.3	2.1	2.9
General practice	2.2	4.9	18.7
Internal diseases	127.5	124.1	105.8
Pediatrics	55.6	53.8	47.2
Dietetics	0.6	0.5	0.8
Surgery	26.3	24.6	22.1
Orthopedic traumatology	7.3	7.9	7.1
Children surgery	2.2	2.3	2.4
Anesthesiology	14.8	14.1	14.8
Obstetrics gynecology	24	23.4	22.6
Ophthalmology	10.1	9.8	9.8
Otorhinolaryngology	8.8	8.5	8.0
Psychiatry	12.6	13.2	14.2
Genetics	0.4	0.2	0.1
Forensic medicine	1.8	1.8	1.4
Physical medicine and rehabilitation	6.2	7.3	10.3
Pathology	1.9	1.9	1.7
Laboratory medicine	5.2	4.1	3.5
Radiology	12.6	12.9	12.6
Residents	33.1	39.5	31.2
Other	3.2	5.4	11.5
Total number of physicians	356.7	362.3	348.7
Chief doctors and deputy doctors	20.4	20.1	19.0
Public health specialists with university education	16.3	15.4	12.4
Total	393.4	397.8	380.1

*Source: Lithuanian Health Information Center, 2000.

laboratory medicine (-32%), and forensic medicine (-26%). However, the number of physicians in these specialties had been small even before. There was also a decrease in the number of pediatricians (-16%) and internists (-18%) (17).

The common features of the physician workforce in Central and Eastern European countries, such as the maldistribution of physicians by sex, regions, and specialties can also be found in Lithuania.

Women make the large portion of physicians in Lithuania, and their share has remained relatively constant since the independence in 1990. In 2000, 69% of physicians were women, e.g., 85% of general practitioners and 92% of pediatricians were women. Women clearly dominate in almost all specialties except surgery (9%), orthopedic traumatology (11%), forensic medicine (18%), and children surgery (34%) (1,7,18).

The age structure of physicians in Lithuania was relatively even in 1990 and did not change substantially over the last 10 years (18,19). Majority of physicians were in the 36-50-year age group; 15% were

older than 60 years. The official retirement age for women is 60 years and for men 62.5 years (18,20).

In 2000, the geographic distribution of physicians in Lithuania was very unequal. Majority were working in urban areas, while in rural settings their numbers were lower. The percentage of physicians in cities has remained constant and about 65% over the last 20 years. The average annual change in the number of physicians in urban areas in the 1989-1999 period was -1.17 (95% confidence interval [CI], -1.83-0.51); in rural areas it was -0.46 (95% CI, -0.98-0.05). With respect to physician distribution by counties in 2000, the largest physician-to-population ratio was in Vilnius and Kaunas counties, the most populated counties (546.5 physicians per 100,000 population on average). Both counties have medical faculties and tertiary care university hospitals. In the 1994-1999 period, the average annual change in the number of physicians in two biggest counties was 0.30 (95% CI, -0.72-1.35) in Vilnius county and 0.03 (95% CI, -0.77-0.83) in Kaunas county. The average number of physicians in the remaining eight counties was 234 physicians per 100,000 population in 2000 (17).

The Universities with Medical Faculties, the Ministry of Health, the Ministry of Education, and the Ministry of Finance decide upon the number of students admitted to medical schools (1). The number of state-financed students enrolled at Kaunas University of Medicine and Vilnius University in 1994 was 150 and 80, respectively. Additional places for students paying the full study cost were also available after the agreement with the Ministry of Health. As a result of pressure from authorities, but with tremendous resistance from the Medical Faculties, enrollment to medical studies was reduced by more than 30% during the 1989-1999 period. However, in 2000, enrollment numbers started to increase again (Table 4). Because of the years-long physician training, the impact of

Table 4. Enrollment (state-funded) to Kaunas University Medical School and Vilnius University*

Year	No. of students enrolled		Total
	Kaunas University of Medicine	Vilnius University	
1989	300	75	375
1991	194	117	311
1993	200	100	300
1995	153	88	241
1997	164	94	257
1999	154	105	259
2001	172	141	313

*Source: Study Departments of Kaunas University of Medicine and Vilnius University, 2002.

Table 5. Number of students who graduated from Medical Faculties of Kaunas University of Medicine and Vilnius University in the 1989-2001 period*

Year	No. of graduates		Total
	Kaunas University of Medicine	Vilnius University	
1989	249	41	290
1991	219	65	284
1993	312	64	376
1995	277	90	367
1997	193	133	326
1999	192	99	291
2001	128	79	207

*Source: Study Departments of Kaunas University of Medicine and Vilnius University, 2002.

those earlier changes has not been felt until recently (Table 5). About 15% of all enrolled students drop out of medical school for various reasons. Women predominate in the current physician workforce and the percentage of female students enrolled in medical schools continues to increase. In 1995, 65% of all medical students enrolled at Kaunas University of Medicine were women. By 2001, women constituted 82% of students. This growth indicates that proportion of women in future physician resources will increase even further.

Development of the private health care sector in Lithuania is slow. In 1999, the number of physicians working in the private sector was 827, or 6% of all physicians in the country. Even fewer physicians (slightly more than 2%) were practicing exclusively in the private sector; in urban areas the number of physicians working in private practice was five times higher than that in rural areas (1,21).

To agree on the official planning target for the number of physicians in Lithuania, a Delphi study was performed. A consensus agreed to aim at 335 physicians per 100,000 population. The respondents also agreed that the number of general practitioners should be 67 per 100,000 population.

Lithuania faces several challenges in planning physician resources in coming years. It is expected that the acceptance into the European Union will increase the mobility of physicians. The survey of physicians and medical residents of Lithuania regarding possible emigration indicated that 61% of medical residents and 26% of physicians intended to leave for EU or other countries. It was a definitive decision of 2.5% of medical residents and 3.8% of physicians. For medical residents a previous visit abroad for professional reasons significantly increased the risk of emigration (odds ratio [OR], 3.29; 95% CI, 1.73-6.27) (Table 6). In the case of physicians, age was the factor that significantly decreased the risk (OR, 0.94; 95% CI, 0.91-0.96). However, having friends abroad increased the risk of leaving the country by more than three times (OR, 3.22; 95% CI, 1.91-5.42) (Table 7).

Table 6. Risk factors for medical residents in Lithuania to leave the country: a logistic regression*

Risk factors	OR	95% CI
Male	1.21	0.68-2.15
Age (each year)	0.97	0.87-1.09
Life in the city	2.04	0.88-4.71
Knowledge of English	1.90	0.83-4.36
Being married / cohabiting	0.59	0.33-1.06
Visit abroad for professional reasons	3.29	1.73-6.27
Having friends abroad	1.34	0.76-2.34

*OR – odds ratio, CI – confidence interval.

Table 7. Risk factors for physicians in Lithuania to leave the country: a logistic regression*

Risk factors	OR	95% CI
Men	1.08	0.58-2.01
Age (each year)	0.94	0.91-0.96
Urban residency	1.05	0.65-1.70
Knowledge of English	1.60	0.96-2.67
Married/cohabiting	1.12	0.58-2.15
Trips abroad for professional reasons	1.18	0.67-2.07
Having friends abroad	3.22	1.91-5.42

*OR – odds ratio, CI – confidence interval.

The first-choice countries were the Nordic countries, United Kingdom, and Germany.

Discussion

Although it is an important part of health care system reform, the planning of physician resources has not been a high priority in Lithuania over the last decade. Several studies have been carried out in the 1994-1996 period both by international organizations (United Nations Development Program, World Bank, and Phare) and by local experts (19,22). However, those recommendations have generally remained a dead letter. Although the studies varied in completeness, they all found an oversupply of physicians, their geographic and specialty maldistribution, and high women-to-men ratio. The studies also emphasized the need to reduce the list of 96 specialties.

The incomplete information and the inability to link physician databases have limited their usefulness. Not a single database or registry of physicians in Lithuania can provide all the information needed in a timely manner. The database maintained by the Lithuanian Health Information Center is the most current but lacks a breakdown by age or sex. The License Registry maintained by the Ministry of Health is updated every five years and will quickly be outdated. The database by the Sickness Fund contains only a record of services provided, and excludes those physicians who do not hold contracts with the State Sickness Fund. Without a more comprehensive registry or means to link the existing registry, complete information on the physician workforce in Lithuania cannot be available.

Until 2000, the physician to population ratio in Lithuania remained substantially above the current averages in the other Baltic countries, reflecting the difficulty of reducing the number of physicians. Interestingly, as ratios in Lithuania have finally begun to decline in 2000, those in Estonia and Latvia have begun to increase.

The current list of 19 specialties seems to be too short and too inclusive compared with the lists of other countries, with some specialties including more than 10 subspecialties (e.g., internal medicine includes 17 subspecialties). Even if the overall number of physicians in the specialty seemed to be sufficient, the internal distribution in subspecialties could not be determined. In a specialty like genetics, only five physicians have been registered (10,11).

The move to a reformed primary health care system in Lithuania has been hindered to some degree by the shortage of general or family practitioners. The focus on specialists in the old centralized health system led to a severe shortage of physicians in general practice. General practitioners constituted only 10% of all physicians in 1993, compared with a European Union average of 30%, which was even showing a downward trend as the percentage in the Baltic countries moved up (Table 8) (16,23). Programs have been established at Kaunas University of Medicine and Vilnius University Faculty of Medicine both to train new general practitioners and retrain specialists into general practitioners. The fact that general practice

Table 8. The percentage of general practitioners (GPs) among physicians in Estonia, Latvia, Lithuania, and European Union (EU) in selected years*

Year	Percentage of GPs in			
	Estonia	Latvia	Lithuania	EU
1993	14.3	0.6	9.9	29.8
1995	14.3	2.5	9.0	28.5
1997	16.8	5.4	15.9	27.3
1998	18.3	6.6	16.0	27.4
1999	17.8	10.5	NA [†]	26.9
2000	18.1	12.7	NA	NA

*Source: World Health Organization Health for All Database (<http://www.who.dk/hfadb>)

[†]NA – not available.

was not considered as prestigious as other specialties proved to be another problem in increasing the number of general practitioners (1,19,24).

Major factors in determining the future number of physicians in the country are the number of physicians that yearly graduate from medical schools and "drop out" from the profession for various reasons (retirement, change of profession, migration, death, or other) (19,22). The high number of women physicians must also be considered when planning and projecting the future physician supply in Lithuania. In general, women physicians practice less than men physicians and drop out from the profession for a year or more during their child-bearing age (5,19).

Due to an unfavorable retirement policy, physicians have been reluctant to retire, which is why retirement cannot be considered as a strong drop out factor in determining changes in physician human resources in Lithuania (20).

Despite the geographic maldistribution of physicians in Lithuania, there has been no implementation of a consistent incentive policy to encourage physicians to move to rural areas.

The yearly number of medical graduates in Lithuania has decreased since 1994. Comparing the yearly number of medical graduates per 100,000 population in Lithuania (6.5 per 100,000 in 2000), it has been lower than the Central Eastern European (8.69 per 100,000 in 2000) and the European Union average (9.94 per 100,000 in 1998) (16).

The years-long training that significantly reduced enrollments to medical schools, high medical student drop-out rate, large percentage of female physicians, and large number of physicians who have reached retirement age lead to the conclusion that the number of physicians in Lithuania will decrease in the next 15 years, going even below the planned target number of physicians. In addition, the survey of medical residents and physicians in Lithuania on their intentions about leaving the country indicates how the accession of Lithuania to the European Union and the introduction of free-movement policy will influence their behavior. The immigration of physicians from other European Union countries is unlikely, but we might expect smaller number of physicians from less developed Eastern European and former Soviet countries, although the numbers and the impact are not clear at this point.

In 2001, the National Board of Health pointed out in its yearly report that, if no appropriate measures were taken, the problems with physician workforce supply would soon increase, since a shortage of physicians was observed not only in rural areas, but also in some remote municipalities, and since 15% of physicians were more than 60 years old (25).

Aiming at the creation of a sustainable and consistent physician human resource planning policy, a project group was formed in 2000 consisting of representatives from the Medical Faculties, the Ministry of Health, the Lithuanian Health Information Center (LHIC), the WHO Liaison office, the National Board of Health, and Xavier University (USA). The project group aimed to prepare physician human resources planning recommendations based on an analysis of existing physician databases in Lithuania. Part of the project included developing a course in health human resource planning for graduates at Kaunas University of Medicine and Vilnius University Faculty of Medicine.

A comprehensive plan for the long-term physician resource needs in Lithuania is essential if adequate resources are to be available in the future. Input from all interested parties, including government, Faculties of Medicine, and physicians themselves, is needed for a plan to be successful. Frequently updated and complete database on physician resources is prerequisite. Current changes in the number of students enrolled in medical schools are based on projections of the future supply of physicians, but with no established goals as to the numbers needed. Due to the long education and training of physicians, the impact of current numbers enrolled will not have been felt for the next 9 or 10 years, which makes managing the overall numbers of physician difficult.

The multitude of factors influencing the physician workforce in Lithuania makes it an absolute necessity to continue research on the topic and indicates an urgent need to develop a comprehensive physician training and planning policy. Failure to develop a long-term plan will result in an inappropriate number of physicians to care for the population (26).

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Correspondence to:

Liudvika Lovkyte

Department of Preventive Medicine

Kaunas University of Medicine

A. Mickeviciaus str.9

3000 Kaunas, Lithuania

infoint@kmu.lt