Efficiency and Sustainability of Using Resources in Estonian Primary Health Care

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Method. Routinely collected data from the Estonian Health Insurance Fund, the Department of Statistics and Analysis of the Ministry of Social Affairs, and Statistical Office of Estonia were used. All together, 22 empirical indicators that cover the most important areas of primary health care provision and utilization for the period 1998-2002 were calculated.

Results. Since 1999, Estonian economic growth has been approximately 7% each year. In 2000-2002 the average growth of consumer prices was approximately 4%. The number of family doctors has increased because the relevant education has been provided on a regular basis. Family doctors are using both group and solo practice. The size of family doctors’ patient lists has stabilized, but can still vary between different counties and between countryside and towns because of variations in the density of population in different areas. The new combined system of financing primary health care provides a financial sustainability in using resources in Estonian primary health care.

Conclusion. Similar sets of indicators may prove useful in other countries of Eastern and Central Europe which are undergoing rapid changes in their health systems, yet do not have the complex health information systems like those in the countries from Organisation for Economic Co-operation and Development (OECD), and enable comparative analyses between them.

Key words: efficiency; health care reform; program evaluation

In the course of the recent transition from centrally managed to market economy, Estonia has simultaneously experienced many economic, social, and political changes. As a result of the big social shifts, the country’s health care system has also undergone both a financial and a management reform including primary health care reform. The main steps were the introduction of family doctors into primary health care, and the new payment system, based mainly on capitation according to age of persons in patient lists (1).

The main source of funding health care in Estonia is the health insurance system that took effect in 1992 (2). This is a solidarity based compulsory health insurance system with contributions paid by the employers as a flat 13% surcharge on salaries paid to employees (3). The health insurance pays for: 1) medical examinations and services; 2) benefits in cases of temporary incapacity to work, resulting from an illness or disability, pregnancy or childbirth, or due to nursing of a family member; and 3) a part of costs for prescribed medicines as provided by law. The part of compulsory health insurance in total health care spending constituted approximately 85% in 2003 (4). Major changes in the remuneration system of primary health care were implemented in 1998. They include introducing capitation payments, combined with other minor payments, introducing a partial gate-keeper and partial fund-holder functions of family doctors, and rendering to family doctors the status of independent contractor (5). It was assumed that the new combined funding system of family doctors would be more efficient than the previous fee-for-service system, as has been demonstrated by the implementation of primary health care reforms in other countries (6,7).

Evaluations of reforms in countries that have been changing their health care systems are still rare. To manage a primary health care reform, policymakers and researchers need several indicators to be used for evaluation. In 1997, the World Health Organization issued a paper that discussed methods for evaluating the effects of health care reforms (8), but these methods have not been systematically applied in any of the Eastern European countries, making it hard to evaluate and compare the success of health care reforms on the international level (9,10). In 2003, a set of indicators was proposed for assessing
the primary health care reform, with empirical values assigned to them to assess the primary health care reform in Estonia during 1997-1999 (11).

The aim of this paper is to evaluate the efficiency and sustainability of using resources in Estonian primary health care in 1998-2002, using three economic criteria – allocative efficiency, technical efficiency, and financial sustainability, through original set of indicators in parallel with the analysis of the Estonian economic development in 1998-2002. The current paper is a continuation of our previous work on the evaluation of primary health care reforms from the point of view of health economics (11).

Methods

To analyze the efficiency and sustainability of using health resources in Estonian primary health care during 1998-2002, we used three economic criteria – allocative and technical efficiency, and financial sustainability, based on the original set of indicators (11,12). Routinely collected data from the Estonian Health Insurance Fund and the Department of Statistics and Analysis of the Ministry of Social Affairs were used. A total of 22 empirical indicators that cover the most important areas of primary health care provision and utilization were calculated for the 1998-2002 period.

The indicators of allocative efficiency encompass necessary provision of family doctors, access to primary health care for all the population registered in patients’ lists, and distribution between group and solo practices. All these indicators show the resources available to primary health care to provide needed amounts of services. Also, there is a dimension of equity as we look at the size of patient list, which influences the accessibility of services.

The indicators of technical efficiency characterize the use of primary health care services, and also family doctor’s gatekeeper role in provision of health care. Also, supplying the family doctors with necessary equipment gives them higher possibility for achieving better output per input. These indicators were chosen as the most relevant ones during a period of rapid changes in provision, as they can be measured using available data.

The indicators of financial sustainability show the financial situation on the macro and micro level: on the national level – the distribution of resources between primary and secondary care, and on the service provision level – in the structure of the budget of family doctor practices. The indicators of the economic development for Estonia were drawn from Statistical Office of Estonia (13) and for other countries from available sources (14).

Results

Economic Development

Gross Domestic Product (GDP) per capita, GDP growth, and change of consumer prices are the macroeconomic indicators describing the development of economy in Estonia (Table 1). GDP per capita in purchasing power parities in Estonia in 2002 was US$11,018 (15).

Estonian economy has been growing approximately at the rate of 5% per year since 1997. The average growth of consumer prices in 2000-2002 was approximately 3%. The average total health spending per capita was only US$590 in 2002, which equals only 5.5 % of the GDP (13). There are no comparable estimates of the share of per capita health spending in GDP of earlier periods, due to changes in calculation methodology.

<table>
<thead>
<tr>
<th>Year</th>
<th>Growth of GDP per capita (%)</th>
<th>Consumer price index</th>
<th>Growth of consumer prices (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>5.2</td>
<td>1.082</td>
<td>8.2</td>
</tr>
<tr>
<td>1999</td>
<td>-0.1</td>
<td>1.033</td>
<td>3.3</td>
</tr>
<tr>
<td>2000</td>
<td>7.8</td>
<td>1.040</td>
<td>4.0</td>
</tr>
<tr>
<td>2001</td>
<td>6.4</td>
<td>1.058</td>
<td>5.8</td>
</tr>
<tr>
<td>2002</td>
<td>7.2</td>
<td>1.036</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Allocative Efficiency

Indicators of allocative efficiency characterize the accessibility of Estonian inhabitants to primary health care. In 2002 the number of certified family doctors was 2.3 times higher than in 1998. The number of family doctors per 100,000 inhabitants was even 4.3 times higher because of a small decrease in the number of inhabitants (Table 2). The number of certified family doctors was equivalent to 83% of what had been planned. The tendency of a steady increase in the number of family doctors from year to year confirms the existence and accessibility to specific training in the educational system for family medicine.

There has been a steady increase in the percentage of group practices: from 15% in 1998 to 28% in 2002. The data on group practices are based on similar practice (personal) identification codes. The biggest percentage of group practices is in capital city Tallinn (79%), the percentage is above the average also in Tartu County (37%), Lääne County (36%), and Rapla County (35%, Table 3). There are no group practices in Jõgeva and Põlva Counties. In 2002, 61% of family doctors worked in group practices and 39% in solo practices. There were 93% of family practitioners in Tallinn and 70% in Tartu who worked in group practices in 2002.

The average size of a family practice patient list is an important indicator of allocative efficiency. Primary health care reform was planned, arising from the fact that the family doctor patient lists should include 1,500 to 2,300 patients. Since 2001, the allowed list size has been decreased to 1,600 ± 400. In 1998-2001, the average number of patients in a practice list was between 1,643 and 1,570 in 2002. The differences in counties were rather large – the patient lists in Hiiu County included 1,198 people on average, 1,279 in Tartu County, and 1,971 in Lääne County.

In 1999-2002, the group practice patient lists included more patients than those of solo practices (Table 3). In 1999, the average size of a group practice patient list exceeded that of a solo practice patient list of family doctors by 222 people. In 2000 this difference was 114, and decreased to 68 in 2002. The almost similar size of patient lists indicates that the work-load of group and solo practices has approximately equaled.

The number of family doctors working in a group practice has remained more or less the same – 4 physicians on average. Group practices are bigger in Ida-Viru County (6.7 family doctors) and Pärnu County (5 family doctors), whereas they are smaller in Saare,
The number of nurses per doctor is below what had been planned (at least one nurse per practice). There was approximately one nurse per two practices in 2000-2002. This marked a significant decline from 0.7 nurses per practice in 1998-1999.

Technical Efficiency

There were 4,122 visits per year in 1999, accounting for 86 visits per week and 17 visits per day (year as accounting period had 48 workweeks, 5 workdays per week). Since 2000, both the average annual number of visits per one family doctor and the number of family doctors have been constantly increasing. Over the last three years the number of visits per one inhabitant increased by 84.7%, but in the same period the average number of visits to family doctors by each registered patient increased only by 11.8% (Table 4).

The presence of necessary equipment in doctors' offices has improved. The analysis of the availability of necessary equipment in family practices of Estonia revealed that most of the necessary things were available in family practices in the year 2000. All physicians had stethoscopes, sphygmomanometers, tongue depressors, thermometers, height measures, baby and adult scales, syringes and needles, bandages, ear washing syringes, letter-charts for checking eyesight, reflex hammers, glucometers, otoscopes, electrocardiographs, and computers. About one third of family practitioners did not have enough gynecological and intensive care equipment (e.g. emergency kit or an aspirator). The comparison of similar studies in 1998 and 2000 (16) revealed that the existence of necessary equipment in family practices had improved a lot concerning each item in the list. The number of physicians who used a computer in their daily work was outstanding already in 2000 (98%).

Financial Sustainability

The precondition for an effective health care reform is the stability of financing, which can be de-
scribed through various indicators. The share of capitation fees within the family doctor’s budget has been rather stable – 73%, according to the data for 1998 to 2002 (Table 5). The proportion of basic practice payment in the family doctor’s budgets has also been rather stable – at 12 % average, as it was in 2002.

The share of expenditures on procedures and analyses separately paid for (not included in capitation) in comparison with total capitation money was 18 per cent in 1998-1999, 17.5% in 2001, and 16.7% and 16.6% in 2000 and 2002, respectively. During the three recent years, all the money spent for procedures and analyses separately paid for has not been used for the purpose in Estonia as a whole.

The share of primary health care expenses within health insurance expenditures for buying health care services varies from 10.1% to 14.9% (Table 5). Since 2000, the share increased by 3.1%, thus reaching 13.2% in 2002.

Data for calculating the share of primary health care expenses within the total health expenditures were available and the indicator can be assessed for the years 1998 to 2000. There is no comparable information for the years 2001 and 2002 since there were no regular calculations of total health care expenditures. In 2000, this share constituted 5.5%.

Financing of the primary health care reform was rather stable. Also, the capitation fee and basic practice allowance sums were adjusted several times during the years 1998 to 2002 (taking into account increase in consumer price indices) in order to ensure the stability.

Discussion

The situation in health care financing by compulsory health insurance is dependent on the development of national economy. Therefore the characteristics of the macro economy form an important background for the economic assessment of health care. By the real growth rate of GDP per capita, Estonia is comparable to the most progressive countries in Europe in 2002 (Ireland 6.9%, Lithuania 6.7%, and Latvia 6.1%). According to the GDP per capita, Estonia belongs to the group of countries with medium development level with US$11,018 purchasing power parities – which places it on the 66th place in the world.

Estonia’s level of GDP per capita in purchasing power parities USD was the highest among the states of the former Soviet Union. In Russia it was US$9,750 – 75th place, in Latvia US$8,936 – 77th place, in Belarus US$8,737 – 80th place, Lithuania US$8,373 – 84th place, Kazakhstan US$7,158 – 93rd place, and Turkmenistan US$6,563 – 99th place. In 2002, the real growth rate of GDP was higher in Turkmenistan (21.1%) and in Kazakhstan (9.5%); lower in Belarus (4.7%) and in Russia (4.3%) (13).

The change in consumer prices in Estonia (3.6% in 2002) was higher than in well developed market economies in Europe (Norway – 1.3%, Finland – 1.9%, Sweden – 2.2%, Denmark – 2.3%), and also higher than it was in the other Baltic states (Latvia – 2.0% and Lithuania – 0.8%). At the same time, inflation in Russia, Kazakhstan, and Turkmenistan was 15%, 6%, and 5%, respectively.

With GDP per capita equivalent to a half or one third of that of economically advanced nations, accompanied by low health spending in GDP, Estonia has been forced to cope with stringent health resources. In this situation, the efficiency and stability of using health resources has become more and more important. We developed a practical set of indicators that could be applied in evaluating primary health care reform in terms of health economics criteria, and the Estonian primary health care reform was evaluated. Excluded from this system were indicators of equity in access and equity in financing. As allocative efficiency is irrevocably connected to equity in access, the access to health care in different regions or for different population groups can decrease or increase, depending on reallocation of resources. At the same time, equity as a concept has frequently received discussion in health economics research. Much work has been done in the field of equity of access and the influences of income, differences in gender and ethnicity, and the socio-economic and demographic situations in a country (8,17,18).

An important task is to assess and define the effects expected from reform of health system objectives, and to select the indicators for evaluating those effects (19). Indicators of the Estonian primary health care reforms reflect quantitatively estimable objectives, such as allocative efficiency, laid down when designing the reform. These indicators enable assessment of the success of primary health care reform in accomplishing the set objectives, and whether or not these objectives can be accomplished before the end of the reform.

Two indicators of technical efficiency still have no empirical values because information systems do not yet use consistent data collection and storage methods. Still it is not possible to estimate the ratio of the number of telephone consultations per total number of visits, also the number of referrals to specialist care per person in a patient list, which could complement the indicators of allocative efficiency. Those indicators are important to show actual changes in everyday family doctors workload structure. Likewise,

Table 5. Indicators of financial sustainability of primary health care in Estonia

<table>
<thead>
<tr>
<th>Indicator</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of capitation within the family doctor’s budget</td>
<td>73</td>
<td>73</td>
<td>71.7</td>
<td>74.2</td>
<td>73.5</td>
</tr>
<tr>
<td>Proportion of basic practice payment in the family doctor’s budget</td>
<td>11</td>
<td>11</td>
<td>13.9</td>
<td>10.5</td>
<td>12.0</td>
</tr>
<tr>
<td>Proportion of expenditures on procedures and analyses separately paid for, and not included in capitation, in comparison with total capitation money</td>
<td>18</td>
<td>18</td>
<td>16.7</td>
<td>17.5</td>
<td>16.6</td>
</tr>
<tr>
<td>Proportion of primary health care expenses within health insurance expenditures for buying health care services</td>
<td>14.9</td>
<td>10.2</td>
<td>10.1</td>
<td>11.9</td>
<td>13.2</td>
</tr>
<tr>
<td>Proportion of primary health care expenses within the total health expenditures</td>
<td>8.2</td>
<td>5.7</td>
<td>5.5</td>
<td>–*</td>
<td>–</td>
</tr>
</tbody>
</table>

* Data not available.
they can be interpreted in connection with changes in the ratio of family doctors home visits over all visits.

Further research in the area of assessment of efficiency and sustainability of using Estonian primary health care resources is needed to supplement the system with qualitative estimates that can be obtained by using specific methods of analysis. The issue of reliability of the data used may be raised when routine health care data are used for analysis, especially data connected with payment to providers. While reliability can be tested through further study, comparing routine data with specifically collected research data, monitoring of the reform process using an easily collected set of indicators has major advantages in terms of cost, simplicity of procedure and possibilities for repeated evaluation at the different points over time, and particularly in relation to timing of different stages of reform.

The indicators of allocative efficiency demonstrated improved accessibility in 1998–2002: there are more family doctors, smaller patient lists, and the share of group practices is increasing. Out of the indicators of technical efficiency the increased number of visits demonstrates improved efficiency as the workload has increased and more patient problems are solved in primary care under the capitation payment. Though the indicators of financial sustainability show quite a stable funding of primary health care, in long-term perspectives the whole health care system in Estonia needs higher level of funding – within the European Union it is not possible to continue with public health care that is funded by about 5% of GDP.

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