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The impact of diagnosis subject to reimbursement on life expectancy, the ability to work, and the quality of life: The experts' assessment

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Abstract. The *ex-post* retrospective analysis of the health care reform in Latvia has been performed by several authors; therefore in writing this paper, the author also considered it essential to try and predict its future prospects, specifically, to carry out an *ex-ante* analysis of reimbursement arrangements for medicines and medical devices in outpatient treatment (“reimbursement arrangements”). An *ex-ante* policy impact analysis takes place at the beginning of the policy development process when policy planners and experts try to project, by means of various quantitative and qualitative methods, the various kinds of consequences that the society will face as a result of implementation of the policy. Taking into account the circumstances of limited state budget resources for the medicines reimbursement arrangements in Latvia, the aim of this research is to evaluate by the experts' method the impact of the reimbursed diseases on the life expectancy, the ability to work, and the quality of life, to identify the priorities. According to the experts' judgments the group of diagnoses “Neoplasms” gives the greatest common impact on the life expectancy, the ability to work, and quality of life, followed by the “Diseases of the circulatory system” and “Diseases of the blood and blood forming organs and certain disorders involving the immune mechanisms”.

Introduction

The reimbursement arrangements are a set of measures, which provides a patient with an opportunity to acquire medicinal products and medical devices, the expenditures for the acquisition of which are completely or partially covered by the state budget funds in accordance with the Regulations No. 899 of the Cabinet of Ministers of the Republic of Latvia “Procedures for the Reimbursement of Expenditures for the Acquisition of Medicinal Products and Medicinal Devices Intended for Out-patient Medical Treatment” (hereinafter – Regulations No. 899). Expenditures for the acquisition of medicinal products and medical devices for nineteen groups of diagnoses (classified by the ICD-10) are reimbursed, applying the following reimbursement categories [1]:

- Category I – reimbursement in the amount of 100%, if it has been determined that a patient has a chronic, life-threatening disease or a disease, which causes serious irreversible disability and the medical treatment of which requires the use of the respective medicinal products in order to maintain the patient's vital functions;

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Table 1. Deaths by cause per 100 000 population in Estonia, Latvia and Lithuania, in the three major groups of causes, in 2011.

Causes of death	Estonia	Latvia	Lithuania
I	2	3	4
Diseases of the circulatory system	609.4	761.5	715.5
Neoplasms	274.8	289.8	255.8
Injury, poisoning and certain other consequences of external causes	84.2	89.4	115.4

- Category II – reimbursement in the amount of 75%, if it has been determined that a patient has a chronic disease, in the medical treatment of which the maintenance of the patient’s vital functions is made difficult or which causes serious disability without the use of the respective medicinal products; and
- Category III – reimbursement in the amount of 50%, if it has been determined that a patient has a chronic or acute disease, in the medical treatment of which the use of the respective medicinal products is necessary in order to maintain or improve the patient’s state of health or in case where vaccines are paid for from the funds granted for reimbursement.

Approximately 60% of the total state budget funds allocated for the reimbursement system are spent for the Category I diseases treatment, 32% – for the Category II diseases and 8% – for the reimbursement Category III. The largest part of the health care budget recourses for reimbursement system is allocated for group of diagnoses “Diseases of the circulatory system” (21.96% of total expenditures in 2011), “Endocrine, nutritional und metabolic diseases” (20.27% of total expenditures in 2011) and “Neoplasms” (14.35% of total expenditures in 2011) [2].

In accordance with the 20th edition of the “Health in the Baltic countries, 2011”, Latvia leads at the deaths by cause in positions “Diseases of the circulatory system” and “Neoplasms” (see Table 1) [3].

At the same time the state budget allocation for reimbursement system of medicines and medical devices in Estonia has covered 73 EUR per inhabitant, in Lithuania – 58 EUR per inhabitant, but in Latvia – only 43 EUR per inhabitant in 2011 [4].

Taking into consideration the previous mentioned data and the circumstances of limited state budget resources for the medicines and medical devices reimbursement arrangements in Latvia, the aim of this research is to evaluate by the experts’ method the impact of the reimbursed diseases on the life expectancy, the ability to work, and the quality of life, to identify the priorities.

Materials and methods

The author used the complex method of projection (forecasting), with the inclusion of the expert method and statistical methods. The modified Delphi method was used as the expert method, inviting experts of the medical branch and representatives of patients’ organisations. An expert survey questionnaire was developed to use the potential of the experts as efficiently as possible by providing versions of projections, determining the principal goals, finding the best ways to achieve them and the possible terms of achieving them, identifying the most important factors affecting the development of reimbursement arrangements and expressing their thoughts on the choice of projection criteria. The questionnaire contained 10 questions, each of which provided initial information and versions of criteria for projections, and also provided each expert with an opportunity to make his/her additions and commentary.

The assessment took place in July and August 2012, and 21 experts were invited to take part in it. Nine experts agreed to participate: the chief experts of the Ministry of Health in surgery, paediatrics, oncology, neurology, infectious diseases, cardiology, also acting as representatives of the relevant professional organisations of medical doctors, and two leading officials of the Ministry of Health, and a representative of a public organisation in the field of pharmaceuticals. Several of the experts invited,

Table 2. Experts' assessments of the impact of diseases on life expectancy in 13 major groups of reimbursed diagnoses (author's survey data).

Item No.	Diagnosis-related Groups	Expert assessments of the impact of diseases on life expectancy (expert assessment: Modal (Mo), Median (Me), arithmetic mean (X), standard deviation (S), and variation range (Rv))				
		Mo	Me	X	S	Rv
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
1	Diseases of the eye and adnexa	1	1	0.7	0.52	1
2	Diseases of the blood and blood forming organs and certain disorders involving the immune mechanisms	2; 3	2.5	2.5	0.55	1
3	Diseases of the circulatory system	3	3	3.0	0.00	0
4	Neoplasms	3	3	2.9	0.38	1
5	Diseases of the skin and subcutaneous tissue	2	1	1.1	0.90	2
6	Diseases of the respiratory system	3	2.5	2.2	0.98	2
7	Endocrine, nutritional and metabolic diseases	2	2	2.3	0.52	1
8	Diseases of the digestive system	1; 2	1.5	1.5	0.55	1
9	Infections and parasitic diseases	0; 1; 2	1	1.3	1.11	3
10	Diseases of the musculoskeletal system and connective tissue	1; 2	1.5	1.5	0.55	1
11	Diseases of the nervous system	1	1	1.2	0.41	1
12	Mental and behavioural disorders	1	1	1.0	0.63	2
13	Diseases of the genitourinary system	1	1	1.0	0.82	2

including the chief representatives of patients' organisations, refused to provide their expert opinion claiming a lack of competence.

A summary of the individual assessments by the experts was drawn up using methods of statistics and providing an expert assessment and developing projections on this basis.

Results

In this research paper data of the three questions of the questionnaire are investigated.

The experts were asked to provide an expert assessment of the impact of diseases on life expectancy, the ability to work, and the quality of life on the scale of 0: no impact; 1: minimum impact; 2: average impact; 3: substantial impact. To facilitate the experts' task, the assessment was divided into the categories of life expectancy, the ability to work, and the quality of life as these dimensions are difficult to assess in a single rating. A summary of indicators of the experts' assessments is provided in Tables 2, 3 and 4. Table 2 contains experts' assessments of the impact of diseases on life expectancy in 13 major diagnosis-related groups.

Table 3. Experts' assessments of the impact of diseases on the ability to work in 13 major groups of reimbursed diagnoses (author's survey data).

Item No.	Diagnosis-related Groups	Expert assessments of the impact of diseases on life expectancy (expert assessment: Modal (Mo), Median (Me), arithmetic mean (X), standard deviation (S), and variation range (Rv))				
		Mo	Me	X	S	Rv
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
1	Diseases of the eye and adnexa	3	3	2.7	0.52	1
2	Diseases of the blood and blood forming organs and certain disorders involving the immune mechanisms	2; 3	2.5	2.5	0.55	1
3	Diseases of the circulatory system	3	2.5	2.3	0.82	2
4	Neoplasms	3	3	2.6	0.79	2
5	Diseases of the skin and subcutaneous tissue	2	2	1.4	0.79	2
6	Diseases of the respiratory system	1; 2; 3	2	2.0	0.89	2
7	Endocrine, nutritional and metabolic diseases	2	2	2.0	0.63	2
8	Diseases of the digestive system	1	1	1.2	0.41	1
9	Infections and parasitic diseases	1; 2; 3	2	1.7	1.11	3
10	Diseases of the musculoskeletal system and connective tissue	2; 3	2.5	2.5	0.55	1
11	Diseases of the nervous system	2	2	2.2	0.41	1
12	Mental and behavioural disorders	2; 3	2.5	2.5	0.55	1
13	Diseases of the genitourinary system	1	1	1.4	0.79	2

A summary of the data of experts' assessments as to the impact of diseases on the ability to work in the major 13 diagnosis-related groups is provided in Table 3.

Table 4 contains the results of experts' assessments as to the impact of diseases on the quality of life in the major 13 diagnosis-related groups.

A summary of the experts' assessments as to the impact of diseases on life expectancy, the ability to work, and the quality of life, using the arithmetic mean of expert assessments, is provided in graphic form in Figure 1.

A comparison of the current and expert-proposed categories and relevant amounts of reimbursement (an approximation of the expert data was made) is provided in Table 5.

Discussion

As to the impact on life expectancy, the experts unanimously awarded the highest score to the diagnose-related group of "Diseases of the circulatory system". This assessment also confirms a lower life expectancy for the population of Latvia if compared to other European countries, given that diseases

Table 4. Experts' assessments of the impact of diseases on the quality of life in 13 major groups of reimbursed diagnoses (author's survey data).

Item No.	Diagnosis-related Groups	Expert assessments of the impact of diseases on life expectancy (expert assessment: Modal (Mo), Median (Me), arithmetic mean (X), standard deviation (S), and variation range (Rv))				
		Mo	Me	X	S	Rv
		Mo	Me	X	S	Rv
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
1	Diseases of the eye and adnexa	3	2.5	2.3	0.82	2
2	Diseases of the blood and blood forming organs and certain disorders involving the immune mechanisms	2	2	2.3	0.52	1
3	Diseases of the circulatory system	2; 3	2.5	2.5	0.55	1
4	Neoplasms	3	3	2.9	0.38	1
5	Diseases of the skin and subcutaneous tissue	2; 3	2	2.1	1.07	3
6	Diseases of the respiratory system	3	2.5	2.3	0.82	2
7	Endocrine, nutritional and metabolic diseases	2	2	2.3	0.52	1
8	Diseases of the digestive system	1	1.5	1.7	0.82	2
9	Infections and parasitic diseases	3	2	1.9	1.21	3
10	Diseases of the musculoskeletal system and connective tissue	2; 3	2.5	2.5	0.55	1
11	Diseases of the nervous system	2; 3	2.5	2.5	0.55	1
12	Mental and behavioural disorders	2	2	2.2	0.75	2
13	Diseases of the genitourinary system	2	2	2.1	0.69	2

of the circulatory system are the main cause of death in Latvia. In terms of the impact of diseases on life expectancy, the expert assessments ranked the diagnose-related group of "Neoplasms", the second most common cause of death in Latvia, in the second place. The greatest variation range – and, accordingly, the biggest standard deviation – in the expert assessment as to the impact of diseases on life expectancy is found in the diagnose-related group of "Infectious and parasitic diseases". This is the diagnosis-related group in which expert assessments as to its impact on life expectancy varied the most.

In experts' opinion, the diagnose-related group of the "Diseases of the eye and adnexa" was assessed as having the largest impact on the ability to work, while the diagnose-related group of "Neoplasms" ranked in the second place in terms of its impact on the ability to work. Like in the assessment of the impact of diseases on life expectancy, the greatest variation range and the biggest standard deviation is observed in the diagnose-related group of "Infectious and parasitic diseases" in which expert assessments as to its impact on the ability to work varied the most.

According to the experts the diagnose-related group of "Neoplasms" had the most significant impact in terms of the impact of diseases on the quality of life, while three diagnosis-related

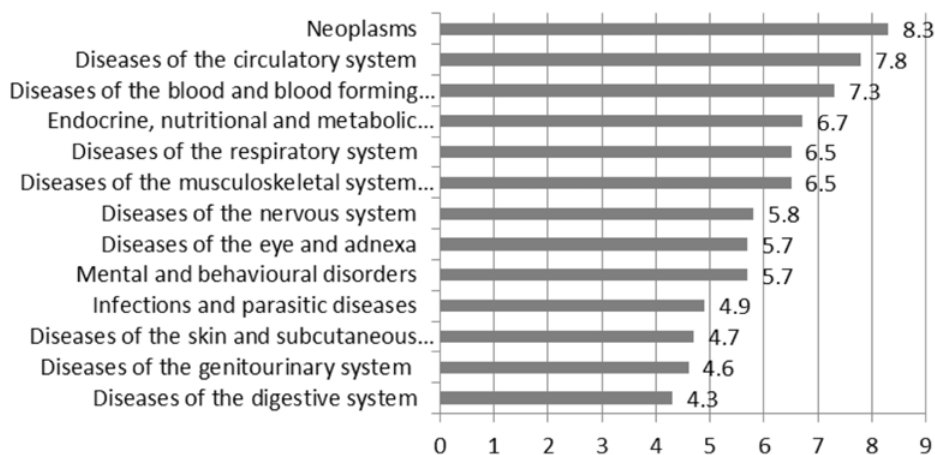


Figure 1. Experts' assessments of the impact of diseases on life expectancy, the ability to work, and the quality of life in the major 13 diagnose-related groups, the arithmetic mean of expert assessments, ratings (author's survey data).

Table 5. Comparison of the regulatory and expert-proposed categories and amounts of reimbursement (author's survey data).

Item No.	Criteria for determining a reimbursement category	Reimbursement amount expressed as percentage of the medicine's price	
		Prescribed by the Regulations No. 899	Desired amount according to expert assessments (the arithmetic mean of expert assessments)
1	2	3	4
1.	Use of the drug is required to ensure patient's life functions	100	100 per cent compensation or co-financing, not exceeding LVL 42.00 for an employed person and LVL 17.50 for an unemployed person a month
2.	Ensuring patient's life functions is compromised unless the relevant drug is used	75	95
3.	The patient's disease may cause a severe disability unless the relevant drug is used	75	85
4.	Use of the relevant drug is necessary to maintain or improve the patient's health condition	50	75
5.	Patients of the risk group concerned may avoid a serious illness by using the relevant drug	50 (flu vaccines for the specified categories of afflicted persons)	60

groups – “Diseases of the circulatory system”, “Diseases of the musculoskeletal system and connective tissue”, and “Diseases of the nervous system” – all received similar expert assessment and ranked in the second place according to their importance. Similar to the assessment of the impact of diseases on life expectancy and the ability to work, the greatest variations in the experts' opinion are seen in the

diagnose-related group of “Infectious and parasitic diseases”, as witnessed by indicators of the variation range and standard deviation.

Conclusions

According to the experts' assessments, diseases of the diagnose-related group of “Neoplasms” have the largest impact on life expectancy, the ability to work, and the quality of life, followed by the diagnose-related groups of “Diseases of the circulatory system”, and “Diseases of the blood and blood-forming organs and disorders involving the immune mechanism”. The diagnose-related groups of “Neoplasms” and “Diseases of the blood and blood-forming organs and disorders involving the immune mechanism” are already in the category of 100% reimbursement, while the diagnose-related group of “Diseases of the circulatory system” is in the category of 75% reimbursement. It must be noted, however, that of these three categories, the diagnose-related group of “Diseases of the circulatory system” has the lowest treatment costs (in 2011, the average cost per prescription was LVL 4.79 [2]), therefore the co-financing of 25% causes no material financial problems to patients (by comparison, in 2011, the average cost per prescription in the diagnose-related group of “Neoplasms” was LVL 102.16 and as much as LVL 2,167.56 in the diagnose-related group of “Diseases of the blood and blood-forming organs and disorders involving the immune mechanism” [2]).

In the meantime, the experts' assessment data show that certain diagnose-related groups, such as “Diseases of the muscular-skeletal system and connective tissue”, and “Diseases of the eye and adnexa”, which currently qualify for a 100% reimbursement, are not regarded by experts as decisive in terms of contribution to life expectancy, the ability to work, and the quality of life.

However, determining a reimbursement category has a substantial impact on the co-financing to be paid by the patient; therefore the experts were additionally asked to provide an expert assessment of the criteria used to determine the amount of co-financing by patients and to determine the relevant amount of co-financing. According to the mean indicator of the experts' assessments, a patient's co-financing for an employed person should not exceed LVL 42.00 a month (standard deviation: 35.11), and LVL 17.50 for an unemployed person a month (standard deviation: 13.46).

Thus the data obtained is very valuable for the revision and optimisation of reimbursement categories.

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