

# Evaluation of the impact of EU Structural Assistance 2007–2013 y. on healthcare system

## Summary

“The National General Strategy: the Lithuanian Strategy for the use of European Union Structural Assistance for 2007-2013 for Achieving Convergence” (relevant from the 25th of August, 2012), whose main goal is to reduce the difference in economic development between the European Union (later EU) member states’ average and Lithuania. The objectives of the strategy are achieved through four programs:

- Human resources expansion program;
- Economic growth program;
- Cohesion promotion program;
- Technical support program.

The EU financial assistance for investment in healthcare system was designated in accordance with the measures of 2007–2013 “Promotion of Cohesion” program’s second priority’s “Quality and accessibility of public services: health, education and social infrastructure” first task “Provision of high quality and accessible healthcare services”. This program has 12 objectives, which are outlined by the Ministry of Health of the Republic of Lithuania:

1. VP3-2.1-SAM-01-V: Decrease of morbidity and mortality from heart and vascular diseases.
2. VP3-2.1-SAM-02-V: Renewal of healthcare institution infrastructure, providing emergency treatment facilities in case of injuries or other external cause medical conditions.
3. VP3-2.1-SAM-03-V: Renewal of ambulance infrastructure, first aid and emergency consulting healthcare.
4. VP3-2.1-SAM-04-V: Early detection and adequate treatment of oncological diseases.
5. VP3-2.1-SAM-05-V: Establishment of differentiated complex child and family health centres.
6. VP3-2.1-SAM-06-V: Modernization of psychiatry inpatient departments.
7. VP3-2.1-SAM-07-V: Modernization of infrastructure for mental health patients’ monitoring.
8. VP3-2.1-SAM-08-R: Establishment of mental healthcare day-patient departments.
9. VP3-2.1-SAM-09-R: Establishment of crisis intervention centres.
10. VP3-2.1-SAM-10-V: Development of outpatient, maintenance treatment and nursing care services, and the optimization of inpatient services.
11. VP3-2.1-SAM-11-R: Development of healthcare services for societies in municipalities.
12. VP3-2.1-SAM-12-K: Investments in the renewal of infrastructure of private healthcare institutions providing outpatient and inpatient services.

There were 246 approved applications for financing based on the objectives outlined above. 284 million EUR was assigned by the EU for the implementation of these projects, out of which 85% or 241 million EUR came from the European Union Structural Assistance program. All of the implemented projects encompassed hard investments, meaning that the funds were designated for the renewal of human healthcare facility infrastructure, purchase of medical diagnostic equipment and vehicles, and acquisition of other office equipment.

In accordance with the regulation of the Council of Europe No. 1083/2006, at the end of financing from the Cohesion fund, the European Commission in cooperation with the member state conducts a final *ex-post* evaluation of the European Structural and Investment Funds' (later ESIFs) implementation. During this evaluation the scope of fund utilization, the effectiveness of fund programming and socio-economic impacts are described. ESIFs financial assistance for healthcare system for 2007–2013 was evaluated by Civitta, JSC in accordance with the Service Provision Agreement No. ES-63 with the Ministry of Health of the Republic of Lithuania signed on the 8<sup>th</sup> of April. According to the technical specifications of this agreement, **the aim of the evaluation** is to determine the efficiency, effectiveness, sustainability, continuity and impact to the health of the population of the funding from ESIFs in order to accordingly report about the utilization of 2007–2013 funds and to make investments for 2014–2020 in healthcare system more efficient. To reach this aim, three main goals were determined:

1. To evaluate the impact, efficiency, sustainability and continuity of ESIFs funding for healthcare in the period of 2007–2013.
2. To evaluate the impact of other economic sectors, which implemented measures financed by EU structural funds for 2007–2013, and their contribution to problematic areas of the healthcare system.
3. To determine the examples of best practice in each investment area, draw conclusions and recommendations for objectives and projects, which could ensure efficiency, sustainability and continuity when planning and implementing ESIFs funding for 2014–2020.

The questions provided in the technical specification were examined according to these goals. The evaluators have also created and added sub-questions that specified the evaluation goals and analysis objects; these sub-questions were examined accordingly. A number of different analysis methods were used in order to answer these questions, which were adapted to the specifics of each question (e.g. quantitative and qualitative analysis, statistical analysis, correlation analysis). Moreover, in depth interviews and a survey was performed with the human healthcare facilities' delegates, who received financial support in accordance with the investment regulations.

#### **Data resources and restrictions**

While performing the evaluation, these sources were referred, namely "Promotion of Cohesion" program, national programs ("Reduction of morbidity and mortality from the leading non-infectious diseases program for 2007–2013", "Ambulance, emergency healthcare consulting and first aid ambulatorical support vehicle park renewal 2006–2008" program, and "Healthcare system reform continuity, healthcare infrastructure optimization program"), statistical databases (SFMIS, Eurostat, The Institute of Hygiene, Statistics Lithuania, World Health Organisation, World Bank, Lithuanian compulsory health insurance system SVEIDRA), and also expert insights.

It is important to bring attention to the restriction of this evaluation. Part of data (workdays missed because of heart and vascular diseases<sup>1</sup>, number of patients who got medical care during "Golden Hour" in case of an accident<sup>2</sup>) were not available.

#### **The methodology of the evaluation**

The methodology of evaluation is separated into steps that are closely related to each other:

- The situation before the 2007–2013 financing by ESIFs is overviewed by evaluating the changes in the main statistical indicators of success of the healthcare sector both in Lithuania and between

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<sup>1</sup> SVEIDRA was not able to give such data

<sup>2</sup> According to the law No. 515 of the Minister of Health of the Republic of Lithuania released in 1999, November 29 "For the operational accounting and reporting of healthcare institutions", the form 110/a "Patient record of calling the ambulance" is kept in the institution only for 3 years, so the indicator – number of patients who got medical care during "Golden Hour" in case of an accident could not be calculated

Lithuania and the EU average. Furthermore, national programs, which were performed in the examined period and have contributed to reaching the indicator values, are evaluated.

- The logic of EU intervention is assessed (the analysis of the directions towards which the investments are delegated, what effects and results are expected from them).
- EU intervention target groups and their needs are identified based on the previously determined investment directions and the evaluations of patient satisfaction with the healthcare system.
- The degree of reach of various observation indicators, the determinant positive/negative factors, and the compatibility of the measures with the objectives set by the “Promotion of Cohesion” program is evaluated.
- The national program observation indicators, “Promotion of Cohesion” program objectives and project observation indicator results are evaluated. Moreover, the sustainability of the results and effects is evaluated.
- The influence to the healthcare sector of the projects performed by other economic sectors is evaluated.
- With reference to the analysis performed, good practices are identified.

Before performing the evaluation, the overall condition of Lithuania’s healthcare sector was overviewed. It was identified that the restructuring processes of the healthcare system have started in 2003 - the focus of healthcare policies shifted towards disease prevention, healthy lifestyle and early diagnosis of diseases. In the course of ESIFs assistance program for 2007–2013, the second and third stages of healthcare sector reforms were implemented. During these stages the optimisation of patient network, restructuring of healthcare services and ambulance services was performed. These processes extend to this day - in 2015 the fourth stage of healthcare system restructuring began. This stage aims to consolidate patients and balance the expansion of healthcare system.

Changes in the healthcare sector were pursued not only by implementing healthcare restructuring processes, but also by creating national programs. The three main national programs that are relevant for this evaluation are identified. The targets of these programs supplemented each other, as well as the objectives set by the “Promotion of Cohesion” program:

- 1. “The program of healthcare system reform continuity and optimization of healthcare infrastructure”, which aimed:**
  - To strengthen and improve the healthcare of the society;
  - To improve the quality of healthcare services;
  - To adjust the network structure of healthcare institutions and adapt it to the quality requirements and needs of services, and to ensure even accessibility of services.
- 2. “The program of reducing morbidity and mortality rates of main non-infectious diseases in 2007–2013”, which aimed:**
  - To improve the quality and accessibility of healthcare services;
  - To decrease the morbidity and mortality rates of main non-infectious diseases and also decrease mortality rate from external causes.
- 3. “The program of renewing ambulance vehicles, emergency medical care and primary outpatient services in 2006–2008”, which aimed:**
  - To renew ambulance vehicle park;

- To supply ambulance vehicles with the equipment specified by the Minister of Health of the Republic of Lithuania<sup>3</sup>;
- To supply ambulance vehicles with modern communication systems and GPS, to install technical and software equipment connected to the Emergency Response Centre.

At the beginning of the evaluation, the problematic changes in Lithuania's healthcare sector indicators were analysed in order to overview the situation of indicators before financing (2006) and how this situation has changed after the period of 2012–2014<sup>4</sup>. The following information was determined:

- 5,04% (3,77 years) increase in average life expectancy;
- 9,2% (5,2 years) increase in healthy life duration for women, and a 9,5% (5 years) increase for men;
- 14,48% increase in birth rate per thousand inhabitants;
- 21,29% decrease in standardized death rate according to age;
- 48,8% decrease in infant mortality per thousand inhabitants;
- 5,54% decrease in suicide rate per 100 thousand inhabitants;
- 4,82% patient decrease per 100 thousand inhabitants;
- 18,7% increase in ambulatorical visits per inhabitant.

After the implementation of projects funded by the EU structural funds a number of indicators of Lithuanian healthcare system were lower than those of the EU (the mortality of heart and cardiovascular diseases, number of suicides):

- 9,05% (6,8 years) higher average life expectancy;
- 6,59% (3,8 years) higher average healthy life expectancy for men;
- 34,27% lower standardized death rate according to age per thousand inhabitants.

Nevertheless, some of EU indicators were lower than in Lithuania after the EU restructuring fund financing period:

- 1,34% higher infant mortality per 100 thousand inhabitants (Lithuania - 3,68, EU - 3,73);
- 3,29% lower birth rate per thousand inhabitants (Lithuania - 10,36, EU - 10,02).

The analysis has shown that these results were achieved by national programs:

- The number of palliative care beds per thousand inhabitants has increased by 31%;
- The increase in the number of modernized bureaus for society's health was almost two times larger than planned (27 instead of 15);
- The number of monitoring and evaluating mental healthcare institutions has increased four times;
- The number of cardiologist appointments per 100 inhabitants has increased by 30%;
- The average stay in hospital has decreased by 0,29 days;
- The indicator reflecting the patients to whom the quality and accessibility of healthcare services have improved has increased 1,28 times;

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<sup>3</sup> The order of the Minister of Health of Republic of Lithuania No. V-428 "For the approval of the list of mandatory medical equipment, pharmaceuticals, selfprotection measures, rescue and protection and communications in the transport of the ambulance". State news, 2003-07-18, No. 71-3253.

<sup>4</sup> The specific years were selected based on the newest data available in statistical databases

- 67% of Lithuanians have more accessible and higher quality public healthcare services through municipality healthcare offices.

Having evaluated the general situation of indicators before and after the 2007–2013 financing period, having compared the differences in indicators between Lithuania and the EU, and having compared the indicator levels reached by the national programs, fundamental changes in the healthcare system according to three separate investment areas were overviewed.

### **Investment area I: Decrease of morbidity and mortality from heart and vascular diseases**

In this investment area, funds were invested in projects that promoted the decrease of morbidity and mortality from heart and vascular diseases. Based on this objective, the United Central and Western Lithuanian Hospital project “Decrease of morbidity and mortality from heart and vascular diseases of Central and Western Lithuanian citizens by modernizing and optimizing the infrastructure of healthcare system and facilities” was implemented – 45,32 million EUR was designated for it. During the project the investment was used for the infrastructural improvement of hospitals of universities, general practitioners offices, the hospitals of secondary level facilities – medical equipment was bought, premises were adapted for providing services of heart and vascular diseases.

The following investment target groups were identified: the patients who visit a family doctor, and the patients who use diagnostical and stationary healthcare services for reducing the rate of mortality and morbidity of cardiovascular diseases. The principal needs of these target groups are higher quality<sup>5</sup> healthcare services and shorter queues at the doctor’s office. Having evaluated the effect generated by the EU investments, it was identified that there was an almost 52,000 increase in the number of patients in 2013 compared with 2007, who received cardiologist services, according to SVEIDRA information about healthcare services for patients. Moreover, a part of the facilities<sup>6</sup> have reduced the queues to cardiovascular surgeon’s office by three days on average. However, the queues have increased in some facilities (The Hospital of Lithuanian University of Health Sciences Kauno klinikos, The hospital of Kaunas, The hospital of Marijampolė, The hospital of Vilkaviškis, The hospital of Radviliškis) but this was due to the fact that the number of doctor offices was reduced during renovation and thus the patient lines have lengthened. Nevertheless, after the implementation of these projects, the Human Healthcare Facilities worked at full capacity and had reduced queues in the long run.

During the analysis it was determined that before the EU financial assistance for 2007–2013, Lithuanian death rate from ischemic heart diseases<sup>7</sup> was three times higher than the EU average. When evaluating the changes on the national level, it was identified that cardiovascular diseases are more common among people who are older than 65 years and this figure did not fluctuate significantly during 2006–2014. Nevertheless, the death rate from cardiovascular diseases for people younger than 65 years has dropped by approximately 20% during the examined time period.

In addition to that, a comparative analysis of the mortality rate between the municipalities that received the EU financial support for 2004–2006 and the municipalities that did not receive the EU financial support for 2007–2013 was conducted. The results show that in both groups of municipalities the mortality rate in 2006–2014 increased at a similar pace. The lack of average annual growth rate difference (the observed

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<sup>5</sup>“Social Information Centre” and “European Research”, “The analysis of satisfaction of patients and providers of healthcare services of quality and accesability (I part)”, 2011-02-25. Patients claim that the quality of healthcare services is getting better, the criteria of quality is named by clean and tidy offices, doctor’s approach to the patient, the sufficient amount of information given by the doctor, etc.

<sup>6</sup> The analysis of Kaunas municipality’s Human Healthcare Facilities cases (The hospital of Jonava, The hospital of Kėdainiai, The clinical hospital of Kaunas, The hospital of Šakiai, The hospital of Prienai, The hospital of Kaišiadorys, The Hospital of Lithuanian University of Health Sciences Kauno klinikos, The hospital of Kaunas, The hospital of Marijampolė, The hospital of Vilkaviškis, The hospital of Radviliškis)

<sup>7</sup> This indicator was chosen due to the fact that World Health Organization could not give the summarized mortality rate of heart and vascular diseases, moreover, ischemic heart disease is one of the most common heart disease among Lithuanians.

difference is 0,03%) between the municipalities suggests that a greater impact from interventions will be visible in the long run, especially because during the analysis, one year hadn't passed after implementation of all projects.

Furthermore, the standardized death rate from cardiovascular diseases of people younger than 65 years was rising in the Western region until 2007, when the "Promotion of Cohesion" program and "The decrease of morbidity and mortality from infectious diseases" program have not yet been implemented. The impact created is measured by the impact for the GDP of the country and the number of saved lives<sup>8</sup> Only between 2007–2014 the EU assistance has actually contributed to saving more than 14,000 lives. The positive effect of these programs to the Lithuanian Gross Domestic Product (GDP) was more than 153 million EUR<sup>9</sup>.

Lastly, the good practices in this investment area were identified based on the indicators discussed above. One of the examples is the project that encompassed 34 Human Healthcare Facilities in Western and Central Lithuania. The Hospital of Lithuanian University of Health Sciences Kauno klinikos performed the "Decreasing the Central and Western Lithuania's population's morbidity and mortality rate from cardiovascular diseases by modernizing and optimizing healthcare institutions' infrastructure and provided services" project. It was the second project of this kind in Lithuania, and it continued the morbidity and mortality from cardiovascular diseases reduction project for Eastern and South-Eastern Lithuania that began with ESIFs financing for 2004–2006. The indicators of success for this project are reduced mortality rate from cardiovascular diseases (20,5% decrease for people younger than 65 years, and 3,5% decrease for people 65 years and older) and increased number of cardiologist services during the financing period.

#### **Investment area II: Decrease of mortality and disability from injuries and other external causes**

In this investment area two projects were financed, the first was directed at the renewal of traumatology departments, the second was directed at the renewal of the ambulance vehicle park. Both projects have received a grant of 57,56 million EUR combined.

Two investment target groups were identified: patients who received injuries and patients who required ambulance assistance. The main need of the latter group is fast and qualitative aid during the "Golden Hour". When the effects of EU investments were evaluated, it was observed that according to the predetermined „Promotion of Cohesion" program's index of observation (number of patients who had an improvement of provided services) 1,2 million patients had an improved healthcare services provision. Moreover, it was found that mortality rates were lowered because of the renewal of first aid and emergency room centers, where a delivered patient received more operative and better targeted aid. Furthermore, after performing the case analysis<sup>10</sup> it was determined that queues for a traumatologist doctor appointment were reduced by 2,5 days on average.

It was identified that standardized mortality in 2006 because of injuries and poisoning was almost four times higher in Lithuania than in the EU. After the ESIFs financing, this difference was reduced to about three times higher in Lithuania than in the EU. In general, Lithuania saw a 40% reduction in the mortality rate from external causes for people younger than 65 years and an almost 30% reduction for people 65 years and older.

In addition to that, changes in mortality indicators between the municipalities that receive financial assistance and municipalities that do not receive financial assistance were compared. The results showed

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<sup>8</sup> Only municipalities participated in the project "Decrease of morbidity and mortality from heart and vascular diseases of Central and Western Lithuanian citizens by modernizing and optimizing the infrastructure of healthcare system and facilities" were analysed - Alytus, Anykščiai, Jonava, Joniškis, Jurbarkas, Kaišiadorys, Kaunas, Kelmė, Kėdainiai, Lazdijai, Marijampolė, Mažeikiai, Pakruojis, Panevėžys, Plungė, Prienai, Radviliškis, Raseiniai, Šakiai, Šilalė, Tauragė, Telšiai, Ukmergė, Biržai, Klaipėda, Pasvalys, Šilutė districts, Kaunas, Klaipėda, Vilnius, Panevėžys, Šiauliai cities.

<sup>9</sup> Intervention effect on the GDP is calculated by multiplying the number of lives saved by the average number of GDP per inhabitant

<sup>10</sup> The analysis of Kaunas municipality's Human Healthcare Facilities cases (The Hospital of Lithuanian University of Health Sciences Kauno klinikos, The hospital of Marijampolė)

that in municipalities receiving financial support the mortality rate from injuries and other external causes was decreasing at a greater pace than in the municipalities which have not received the financial support, or more precisely by 5,1% against 3,6%.

Furthermore, the standardized mortality rate from injuries and other external causes for people younger than 65 years was fluctuating until 2007, but it had a decreasing tendency. After 2007, when implementation of the analysed project had started, the standardized mortality rate decreased more rapidly and by 2014 it has decreased by 34%. The ESIFs investments for 2007–2014 have contributed to saving more than 8,000 lives<sup>11</sup> and saved almost 89 million EUR of Gross Domestic Product (GDP) for Lithuania.

Lastly, the good practices in this investment area were identified based on the differences of mortality rates from injuries and other external causes in the municipalities receiving and not receiving financial aid. The greatest reduction in mortality rate is observed in Kaunas district municipality, where on average it was equal to 8,08% during 2009–2015. The most important contributor to the reduction was the project “Hospital of Lithuanian University of Health Sciences Kauno klinikos central clinic third (highest) level injury and emergency room center expansion” executed by the Hospital of Lithuanian University of Health Sciences Kauno klinikos. During this project new building of highest level services for injuries and fast help was built, the services are provided for both children and adults, observation wards for patient are working 24/7, diagnostic and procedures rooms are provided with the most modern equipment.

### **Investment area III: Optimization of infrastructure for mental healthcare services**

This area of investment encompassed five programs:

- Establishment of centers for differentiated complex psychiatric help for children and families;
- Modernization of psychiatric inpatient hospitals;
- Modernization of infrastructure for monitoring mental healthcare services;
- Establishment of psychiatric inpatient hospitals (centers);
- Establishment of crisis intervention centers.

In total, these programs have received 19,5 million EUR combined.

The investment target group that was identified are patients who use mental healthcare services. The main needs of this target group are increased accessibility of healthcare services (the ability to receive access to healthcare services closer to home, shorter queues) and increased quality of healthcare services.

The analysis has revealed that the standardized number of mortalities from suicides in Lithuania in 2006 was almost 3 times higher than the EU average. In 2012 this margin had declined slightly, however, out of all changes that have occurred, the number of mortalities from suicides has decreased the slowest. The highest mortality rates from suicides in Lithuania were observed between people younger than 65 years. The experts identify two periods when the number of suicides increased dramatically. First, during the economic crisis of 2008-2009, which led to increased stress and anxiety levels among people, and second, during 2013 with the occurrence of the so-called Werther effect (people copying a famous person or a relative suicide).

The newly established psychiatric day care centers, differentiated complex psychiatric help for children and families centers and crisis intervention centers are widely spread geographically throughout Lithuania – in 22 municipalities. Patient satisfaction surveys show that psychiatric inpatient day care hospitals are well suited to their requirements for accessibility, professional behaviour and attitude of working physicians. Moreover, new mental healthcare services were created in newly established centers, namely short and

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<sup>11</sup> The theoretical scenario was analyzed, when 2001-2007 trend is not changed. Every year in 2007-2014 the difference between theoretical meaning and real data is calculated. Differences are summed up ending with theoretical number of saved lives.

long-term outpatient psychosocial rehabilitation services, and multi-sensory therapy. When secondary observation indicator levels of achievement were assessed, it was identified that the ratio between psychiatric inpatient and outpatient day hospital services has increased almost two times (from 8,8 in 2006 to 4,5 in 2013). This difference shows that the number of psychiatric day hospital service facilities has increased.

Furthermore, changes in mortality due to suicide in national level were assessed and a significant difference was observed between municipalities that receive and that do not receive financial assistance. The latter had an average of 1,1% increase during 2006–2014, while municipalities that received funding had a slower growth rate of 0,6%.

The numbers of mortalities from suicides changed differently and until 2007 they have declined more rapidly. The unusual growth rate during 2008, 2009 and 2013 has contributed significantly to the overall trend of the indicator. These deviations are associated with the problems mentioned earlier – the economic crisis in the country during 2008-2009 and the Werther effect during 2013.

Lastly, the good practices in this investment area were identified. Most notably, geographically broad and favourable distribution of centers in the country has contributed to the establishment of psychiatric inpatient day centers. More specifically, the best practices that were identified are Mažeikiai Mental Healthcare Center and Šiauliai Center Outpatient Psychiatric Day Hospitals. During the first years of operation an increase in the number psychiatric services and in the number of patients was observed. In Mažeikiai Mental Healthcare Center during the first year 3426 services of adult psychiatrist were provided<sup>12</sup> and in 2013 this number increased to 3650. The number of patients has also increased – from 122 to 133 patients per year<sup>13</sup>.

#### **Investment area IV: Early detection and a full-fledged treatment of cancer**

In this investment area funds were designated to areas that promoted early diagnosis of oncological diseases and a complete treatment of them. 49,39 million EUR was granted for these projects.

The investment target group that was identified are patients who receive cancer diagnostic and treatment services. The main needs of this target group are early diagnosis of the disease, high quality services and accessibility of services. Another important change is the increase in survival rate<sup>14</sup> with diagnosed cancer for both women and men. A greater difference is observed amongst men, namely a 49% increase, while amongst women a 29% increase was visible. Moreover, after performing the case analysis<sup>15</sup>, it was found that queues for oncologist appointment have declined by 0,75 days.

During the analysis it was found that the difference of mortality of malignant tumours between Lithuania and the EU average during both 2006 and 2012 is not as significant as for other disease groups and it remains constant; Lithuania is on average 1,1 times higher than the EU average. Although the mortality rate from malignant tumours in Lithuania is more common between people that are more 65 years old, the mortality trends remain similar for all age groups and the indicator remains constant until 2006 – both 0-64 years group and 65+ years group mortality of malignant tumours has increased 2% since 2006.

Furthermore, changes in morbidity due to malignant tumours have been identified. During 2007–2014 morbidity was growing in Lithuania regardless the municipalities which have received financial assistance. The growth was more intense during 2007–2014 than during 2001–2006. That relates to the fact that only third level hospitals in the biggest cities which takes patients from all over the country have received financial assistance.

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<sup>12</sup> SVEIDRA, healthcare institutions data, 2016, July

<sup>13</sup> SVEIDRA, healthcare institutions data, 2016, July

<sup>14</sup> The analysis was based on the index provided by the Cancer Registry, which is calculated by using the population mortality data in accordance to test group, gender, age, and period.

<sup>15</sup> The analysis of Kaunas municipality's Human Healthcare Facilities cases



The standardized mortality rate from malignant tumours of people younger than 65 years old has increased steadily during 2005-2008, but started to decline once the ESIFs assistance interventions began. The changes in trends coincide with the start of the EU funding period, thus it can be claimed that the changes happened because of funding. The EU financial assistance for 2007-2014 alone has saved over 300 lives<sup>16</sup>, and thus had an positive effect on the Lithuanian Gross Domestic Product (GDP) of 4,5 million EUR during 2007-2014.

Lastly, the good practices in this investment area were identified. The best practice is the National Cancer Institute's project "The improvement of early diagnosis of oncological diseases and assurance of complete treatment in Vilnius Institute of Oncology". This project has contributed to the major improvements in the indicator values at the institutional level. Moreover, it has reduced the carrying time of operations (from 150 minutes to 118 minutes), hospital outpatient rehabilitation time (from 60 visits to 134 visits) and the time needed for diagnosis (2 days longer).

#### **Investment area V: Continuity of healthcare system reform and the optimization of healthcare infrastructure**

This area of investment encompassed three programs:

- The development of outpatient, supportive treatment and care services, and the optimization of inpatient services;
- The development of public healthcare infrastructure in municipalities;
- Investments for infrastructure of public outpatient and inpatient services provided by private healthcare institutions.

In total, these projects have received 108,5 million EUR combined.

The following investment target groups were identified: the part of the population that receives secondary level outpatient services, emergency care services, and nursing services and those interested in the development of society healthcare services in municipalities. The main needs of these target groups are a successful execution of disease prevention implementation, and an increase in the accessibility and quality of healthcare services (the increase of the indicators is evaluated by the wider geographical location of public health offices, the growing number of beds of palliative care, nursing and maintenance treatment). The modernized or re-established municipal public healthcare offices not only improved access to and quality of healthcare for 67% of the population (those living in municipalities that gain financial assistance from EU for public health offices are calculated), but also reached as many as 50% of the municipalities. 33 public health offices were open in Lithuania in 2013, 25 other municipalities had public health services provided by cooperating with municipalities having public health offices. In addition, 164 palliative care beds were installed by 2013 and the number of nursing beds increased to 1,72 beds per thousand inhabitants. Moreover, there was a 25% increase in the maintenance treatment bed-days and a six-fold increase in the number of bed-days in palliative care. Another important change is an almost three-fold increase in the volumes of day surgery services.

A geographically broad network of renewed or newly established municipal public healthcare facilities and cooperation with municipalities that do not have such facilities resulted in improved public healthcare in areas such as primary disease prevention, and the availability of anti-disease risk factors and healthy lifestyle education. Moreover, there was a visibly large increase in visits to outpatient clinics for one inhabitant per year. The EU index grew slower than the Lithuanian one - in 2006 the difference was only 2,49%, while in 2013 the margin has reached 14,18%.

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<sup>16</sup> The theoretical scenario was analyzed, when 2001-2007 trend is not changed. Every year in 2007-2014 the difference between theoretical meaning and real data is calculated. Differences are summed up ending with theoretical number of saved lives.

Lastly, the good practices in this investment area were identified. Two projects were successful and both of them were implemented by Vilnius University Hospital Santariškių Klinikos, the first one is “The expansion of outpatient rehabilitation, maintenance treatment and nursing care, and day-surgery services in Children’s Hospital of Vilnius University Hospital Santariškių Klinikos” and the second one is “The reconstruction of outpatient rehabilitation department and reception of Vilnius University Hospital Santariškių Klinikos”. This facility saw a five-fold increase in day surgery services and a two-fold increase in laparoscopic surgery procedures<sup>17</sup>.

### **Factors having influence to the EU financial intervention impact and effectiveness**

After the evaluation was performed and the findings were summarized, the reasons that have an effect on the impact created by projects and their effectiveness were identified, namely:

- Appropriate direction of financing to the most problematic areas;
- The compatibility of objectives of EU-funded projects and state budget-funded projects;
- The choice of appropriate monitoring and evaluation indicators, the indicators have to be calculated according to unbiased data and show the real impact;
- Parallel projects carried out by other ministries or agencies, or secondary prevention programs (e.g. early diagnosis program), or other actions that complement the implementation and continuity of healthcare sector funded projects;
- Stronger focus on improving access to healthcare services in smaller cities and village areas;
- Socio-economic factors, which are difficult to control, for example, population decline, population ageing and economic recessions;
- Pre-planning of financing of healthcare services significantly contributes to the efficiency of the projects, therefore, targeted execution ensures better performance and continuity.

Furthermore, projects implemented by other economic sectors had a large impact on the changes in the healthcare sector. Four main project groups that have successfully contributed to the improvement of the healthcare sector are identified:

1. **Improvement of human resources.** The best results were shown by the project “Modern primary and specialized cardiologic help system installation and improvement of human resources by newest standards”, which was implemented by the Lithuanian Society of Cardiology. A connection exists between funding and the results. More than 2 million euros were invested and more than 12,000 medical personnel have completed trainings – this figure is much larger than for any other project. Moreover, during this project the expenditure on trainings per specialist was the lowest when compared to other projects that were analysed.
2. **Installation of e-health system.** Although a big amount of financial assistance was given to this sphere, e-health system is still in progress, so there are not enough data for detailed evaluation. However, projects were implemented in some hospitals – the most successful e-health system was implemented by Centro Outpatient Clinic in Vilnius. According to data in June 2016, this clinic writes more than 3,000 e-prescriptions per month; this figure is equal to two thirds of all e-prescriptions in Lithuania.
3. **Renovation of buildings.** An exceptional project was implemented by Hospital of Lithuanian University of Health Sciences Kauno klinikos. During this project eight buildings were renovated and 3,76 GWh of energy was saved. This is the largest amount of energy saved from similar projects.
4. **Improvement of healthcare system management performance.** Funding does not have an impact on the prepared packages of documents (e.g. “The organisational system establishment of emergency medical care for patients of injuries and other external causes in Lithuania” prepared by

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<sup>17</sup> The percentage change during 2006-2013 is calculated and healthcare institutions which data was provided by SVEIDRA is compared.

“International Emergency Healthcare Academy”, 123 protocols of safety and treatment of cardiology, traumatology, children diseases, head, brain, blood vessels diseases and oncology patients prepared by The Ministry of Healthcare, “The study of the current situation of the society’s mental health” conducted by Republican Centre of Mental Health), but lack of connection suggests that the projects might have a different scale, importance and impact. In this case, the project “The installation of injuries and accidents’ monitoring system” by the Institute of Hygiene was chosen. It had an impact on the continuity of healthcare reform. After the system was launched on the 1<sup>st</sup> of September 2015, the data from all sources regarding cases of injuries was collected. It consists of basic information about the accident, its causes and circumstances, clinical indicators, treatment and consequences.

### Evaluation conclusions

The following conclusions are drawn after performing the evaluation:

- Although only a small part of the Lithuanian healthcare sector indicators are above the EU average (standardized mortality by diseases, average life expectancy), it is evident that the indicators of Lithuanian healthcare is still smaller than the EU. Moreover, several indicators surpass the EU average, for example, the birth rate per one thousand inhabitants is above the EU average, and the infant mortality rate is lower than the EU average by one thousand births.
- The implemented projects (in accordance with intervention logic schemes) have created a desired impact on the target groups – an increase in life expectancy, a decrease in mortality from cardiovascular diseases in different age groups and a decrease in suicide rate. Moreover, patients receive higher-quality and more affordable healthcare services.
- A large part of the objectives was reached and in some cases even exceeded – 5,04% (3,77 years) has increased the average life expectancy, 5,54% has decreased the mortality of suicide per 100 000;
- The largest downside of the effectiveness of the projects was the lack of qualified personnel in smaller regions, the lack of newly created legal framework for the services (detailed description of newly created services), and the shortage in assurance of financing sources.
- The projects allowed modernizing healthcare in many institutions because of infrastructure, increased staff qualifications, and funding.
- European Union Structural and Investment Funds’ interventions have contributed to the projects improving the healthcare services.
- Contribution of other economic sectors is important for sustainability and continuity. In parallel for the Ministry of Health of Republic of Lithuania managed measures, meant for the improvement of infrastructure of healthcare sector and increasing the quality and accesability of healthcare services, measures managed by other economic sectors were conducted, meant for trainings for the increasing qualification of staff, installation of information systems, renovation of buildings, etc.

The main lessons learned during EU funding for 2007–2013 will help to plan structural funding for 2014–2020.

### Conclusions and recommendations/strategic proposals

No.	Conclusion	Recommendations / strategic proposals
1.	The EU funding distribution to the most reasonable fields has a huge impact on the positive changes of monitoring strategic indicators of 2007–2013 “Promotion of Cohesion” program and monitoring	<p><b>Strategic proposal:</b></p> <p>The orientation to the most problematic areas of healthcare sector in 2007–2013 EU structural funding period is considered as a good practice, so it is proposed to pay more attention in the upcoming 2014–2020</p>

No.	Conclusion	Recommendations / strategic proposals
	indicators of national programs.	funding period to identification of priority directions and their funding.
2.	The appropriate system of monitoring indicators of funding measures is important for the efficient evaluation of the impact created by the EU structural funding.	<p><b>Strategic proposal:</b></p> <p>It is proposed determine additional monitoring indicators correlating not only with Action programs but also with national strategic documents and their goals and aims. It is noted that the lack of example indicators of the quality and accessibility of healthcare services, standartized organizational and clinical indicators of hospital level. It is also proposed to constantly watch indicators (such as changes in patients' satisfaction, etc.): before the beginning of projects and during the implementation of projects but not only after the implementation.</p>
3.	Complex implementation of projects help to achieve better results by creating the comprehensive impact on the society and ensuring the continuity of results.	<p><b>Strategic proposal:</b></p> <p>It is proposed to combine interinstitutional cooperation or to plan investments in one projects in order to distribute investment to infrastructure, trainings of personnel qualification improvement, the establishment and improvement of services' descriptions, diagnostic and treatment protocols, appropriate legal basis at one funding period (by one or number of projects).</p>
4.	The lack of qualified labor force, healthcare specialists in hospitals in the regions has a negative impact on success and effectiveness of implemented projects.	<p><b>Recommendation:</b></p> <p>Before implementing projects it is recommended to foresee interventions and measures to attract specialists to regions where the lack of them is seen.</p>
5.	The development of new healthcare services in healthcare sector has bigger positive impact on the society than the improvement of already existing services.	<p><b>Recommendation:</b></p> <p>Before the preparation of the list of projects funded by the state and before planning of investments, it is recommended to systematically assess the needs for healthcare services – perform feasibility studies / evaluations to determine the impact of existing services on patients, to identify the demand and need for new healthcare services.</p>
6.	The implemented adequate legal basis and adequate funding is necessary for the full functioning of newly developed healthcare services.	<p><b>Strategic proposal:</b></p> <p>During project planning stage it is proposed to assess the existing legal basis needed for the development of new healthcare services – to determine if existing documents ensure legal conditions and adequate funding appropriate for the conception of new services. It also proposed to pay attention to situations when the quality of improved services rise as well as costs, and to adjust the appropriate funding for such services.</p> <p>It is proposed to form exact descriptions of newly developed / improved healthcare services which provide information about the format, conception, funding conditions and sources of service.</p>
7.	It is more efficient to implement high volume projects by regional level.	<p><b>Strategic proposal:</b></p> <p>In order to reach an efficient implementation of the projects funded by the EU structural funds in different</p>

No.	Conclusion	Recommendations / strategic proposals
		<p>spheres it is proposed to plan and implement regional level projects in further EU funding periods after conducting feasibility studies of measures and projects. The identification of target regions / target groups allows to more efficiently contribute to complex positive impact on healthcare sector in the country and also to encourage the collaboration of hospitals.</p>

