

Cabinet of Ministers
Order No. 359
of 5 August 2013

**Cardiovascular Health Improvement Action Plan for 2013-2015
(informative part)**

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Abbreviations used in the document

AKS ASTE	Akūts koronārās sindroms ar ST segmenta elevāciju	STE-ACS	Acute coronary syndrome with ST-segment elevation
CRT	Sirds resinhronizācijas iekārtas implantācija	CRT	Cardiac resynchronization device implantation
CT	Datortomogrāfija	CT	Computer tomography
EHO	Ehokardiogrāfija	ECHO	Echocardiography
EKG	Elektrokardiogramma	ECG	Electrocardiography
EKS	Elektrokardiostimulators	ECS	Electrocardiostimulator
ES	Eiropas Savienība	EU	European Union
ESPAD	Atkarību izraisīto vielu lietošanas paradumi un tendences skolēnu vidū	ESPAD	Patterns and tendencies of addictive substances use among school children
FINBALT	Latvijas iedzīvotāju veselību ietekmējošo paradumu pētījums	FINBALT	Health Behaviour Survey among Latvian Adult Population
GYTS	PVO Starptautiskais jauniešu smēķēšanas pētījums Latvijā	GYTS	WHO Global Youth Tobacco Survey in Latvia
HBSC	Skolas vecuma bērnu veselību ietekmējošo paradumu pētījums Latvijā	HBSC	Health Behaviour Survey in School-aged Children in Latvia
ICD	Implantējams kardioverters defibrillators	ICD	Implantable cardioverter defibrillator
IZM	Izglītības un zinātnes ministrija	MES	Ministry of Education and Science
KG	Koronārā angiogrāfija	CG	Coronary angiography
ĶMI	Ķermeņa masas indekss	BMI	Body mass index
LĀB	Latvijas Ārstu biedrība	LMA	Latvian Medical Association
LBKA	Latvijas Bērnu kardioloģijas asociācija	LACC	Latvian Association of Children Cardiology
LDAA	Latvijas Diētas ārstu asociācija	LDDA	Latvian Diet Doctor Association
LDUSA	Latvijas Diētas un uztura speciālistu Asociācija	DNSAL	Diet and Nutrition Specialists Association of Latvia
LFB	Latvijas Farmaceitu biedrība	PSL	Pharmacists Society of Latvia
LĢĀA	Latvijas Ģimenes ārstu asociācija	LAGP	Latvian Association of General Practitioners
LIB	Latvijas Internistu biedrība	LAI	Latvian Association of Internists
LKB	Latvijas Kardiologu biedrība	LAC	Latvian Association of Cardiologists
LLĢĀA	Latvijas Lauku ģimenes ārstu asociācija	LARGP	Latvian Association of Rural General Practitioners
LM	Labklājības ministrija	MW	Ministry of Welfare
LPS	Latvijas Pašvaldību savienība	LALRG	Latvian Association of Local and Regional Governments
LPUF	Latvijas Pārtikas uzņēmumu federācija	LFEE	Latvian Federation of Food Enterprises
LTLA	Latvijas Testēšanas laboratoriju asociācija	LATL	Latvian Association of Testing Laboratories
LU	Latvijas Universitāte	LU	University of Latvia
MI	Miokarda infarkts	MI	Myocardial infarction
MRI	Magnētiskā rezonanse	MRI	Magnetic resonance
MPV	Mākslīgā plaušu ventilācija	ALV	Artificial lung ventilation
NMPD	Neatliekamās medicīniskās palīdzības dienests	EMAS	Emergency Medical Aid Service
NVD	Nacionālais veselības dienests	NHS	National Health Service
NVO	Nevalstiskās organizācijas	NGO	Non-governmental organizations
Plāns	Sirds un asinsvadu veselības uzlabošanas rīcības plāns 2013.-2015.gadam		Cardiovascular Health Improvement Action Plan for 2013-2015
PCI	Perkutānā koronārā intervention	PCI	Percutaneous coronary intervention
PPCI	Primāra perkutānā koronārā intervention	PPCI	Primary percutaneous coronary intervention
PVA	Primārā veselības aprūpe	PHC	Primary healthcare
PVO	Pasaules Veselības organizācija	WHO	World Health Organization
RTG	Rentģenogrāfija	RTG	Roentgenography
SAS	Sirds un asinsvadu slimības	CVD	Cardiovascular diseases
SPKC	Slimību profilakses un kontroles centrs	CDPC	Centre for Disease Prevention and Control

USG	Ultrasonogrāfija	USG	Ultrasonography
VARAM	Vides aizsardzības un reģionālās attīstības ministrija	MEPRD	Ministry of Environmental Protection and Regional Development
VBTAI	Valsts bērnu tiesību aizsardzības inspekcija	SIPCR	State Inspectorate For Protection Of Children's Rights
VIS	Vadības informācijas sistēma	MIS	Management Information System
VI	Veselības inspekcija	HI	Health Inspectorate
VM	Veselības ministrija	MH	Ministry of Health
VSMC	Valsts sporta medicīnas centrs	SSMC	State Sports Medicine Centre
ZM	Zemkopības ministrija	MA	Ministry of Agriculture

Introduction

On 5 October 2011, with Order No. 504 the Cabinet of Ministers adopted the Public Health Strategy for 2011-2017 (hereinafter referred to as the Strategy) (minutes of the meeting No. 55, § 30). The main goal of the Strategy is to increase number of the years of healthy life for the inhabitants of Latvia and to preserve, improve and restore people's health with the aim to prevent premature death. In order to achieve these goals, a particular sub-goal has been specified in the Strategy — to decrease morbidity and mortality caused by non-communicable diseases, as well as to minimize the negative impact on people's health caused by risk factors. In order to achieve the referred to sub-goal in accordance with the Strategy, the MH has developed a policy planning document entitled "Cardiovascular Health Improvement Action Plan for 2013-2015". The plan is a short-term policy planning document.

The plan is designed to continue implementing the public health policy, which was started in 2001, when the Cabinet of Ministers adopted the Public Health Strategy¹ on 6 March 2001 (minutes of the meeting No. 10, § 43). The 8th aim of the referred to Strategy was to decrease morbidity, disability and premature death caused by the most prevalent non-communicable diseases to the lowest achievable level.

1. Characterisation of the situation

Public health can be defined as a group of activities based on good practice and scientific cooperation with the aim to protect and improve people's health and to extend the length of life by educating the society in relation to the

¹ <http://www.likumi.lv/doc.php?id=6734>

promotion of healthbehaviour and disease prevention, as well as by ensuring surveillance (monitoring) of infectious diseases and environmental risk factors and by organizing healthcare activities for early detection and treatment of diseases.

Public health issues include personal responsibility of each person, as well as general responsibility of the state, because each healthy and able to work person constitutes a part of a healthy society and this is the main pre-condition for successful development of national economy and for positive development of the state.

Health is one of the fundamental human rights. Good health condition is the main resource for social, economical and personal development, and it is also an important aspect of life quality. Various political, economical, social, cultural, environmental, behavioural, and biological factors can ensure good health or cause harm to it².

Cardiovascular diseases are a significant problem for public health in Latvia, as well as in the European Union. It can be evidenced by high mortality, morbidity and hospitalization rates. Cardiovascular diseases are the most common cause of death in Latvia (55% of all death cases)³. The number of death events caused by these diseases reached 15.7 thousand in 2011, while ~17% of deceased persons was at the age below 64 years.

Standardized mortality rates caused by CVD among the inhabitants of Latvia are two times higher than the average rates for the EU countries: In 2010, the total standardized CVD-related mortality rate in Latvia was 478 per 100,000 inhabitants, while in Lithuania it was 495, in Finland — 214, and the average rate for the EU countries was 222. The total CVD-related mortality rate is relatively higher among women (793 per 100,000 inhabitants) than the respective rate among men (756 per 100,000 inhabitants).

Meanwhile premature CVD-caused death rate among men (age group 0-64) is almost three times higher (257 per 100,000 inhabitants) than among women (88 per 100,000 inhabitants)⁴. Difference based on gender has been also observed in the EU countries.

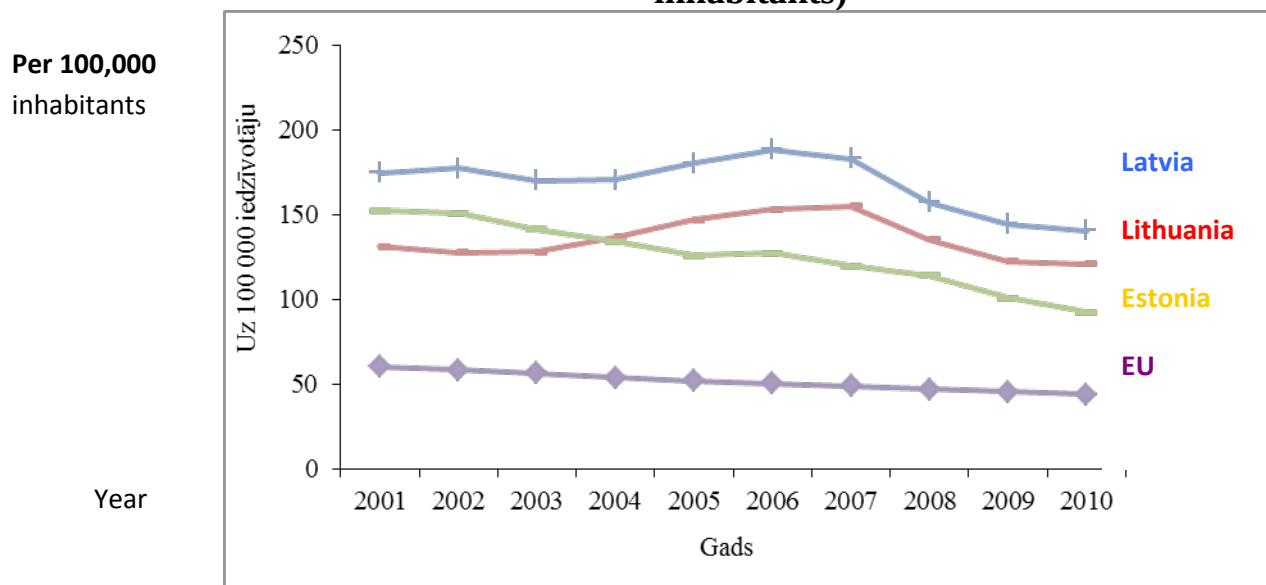
Within the last years, premature death rate (age group below 64) has been decreasing among men, as well as among women. Moreover, standardized CVD-caused mortality rate in Latvia is three times higher than the average EU rate (see Figure 1).

² <http://www.phac-aspc.gc.ca/ph-sp/docs/charter-chartre/pdf/charter.pdf>

³ CDPC, The database of causes of death for the inhabitants of Latvia

⁴ CDPC data

Figure 1. Standardized mortality (in the age group 0-64) caused by cardiovascular diseases in Latvia and EU (per 100,000 inhabitants)

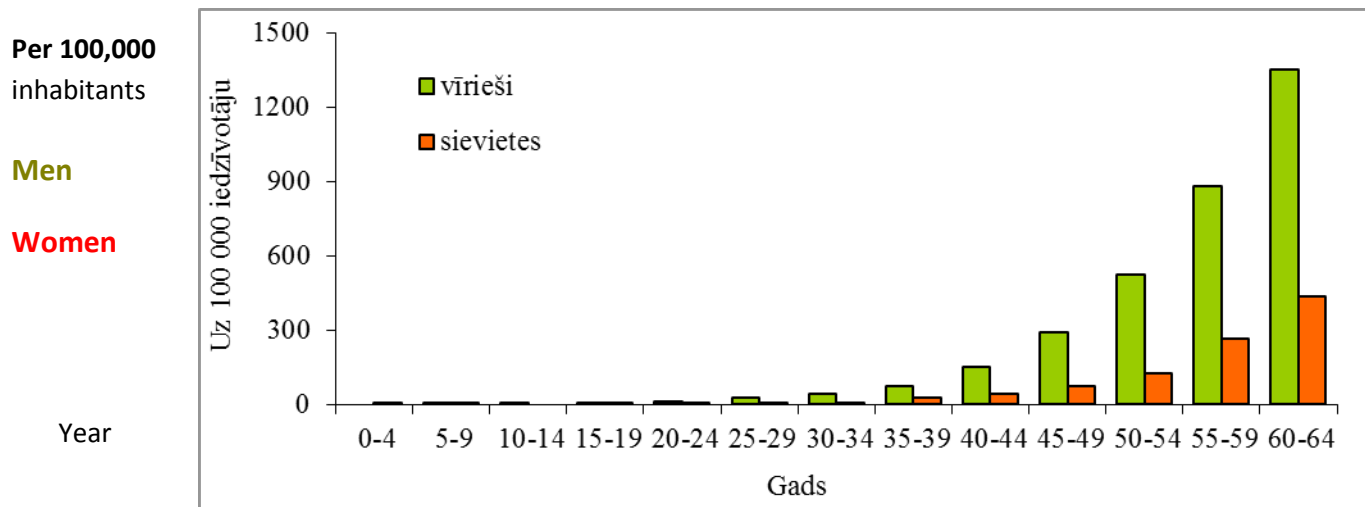


Source: WHO Health for All database

Comparison of standardized CVD-related mortality data by gender and age groups in Latvia, EU and the Baltic States shows that the incidence of premature death among men is approximately three times higher than incidence of premature death among women in Latvia, as well as in other countries. In the age group above 65 years difference in mortality rates between gender groups is decreasing by approximately by 1.5 times.

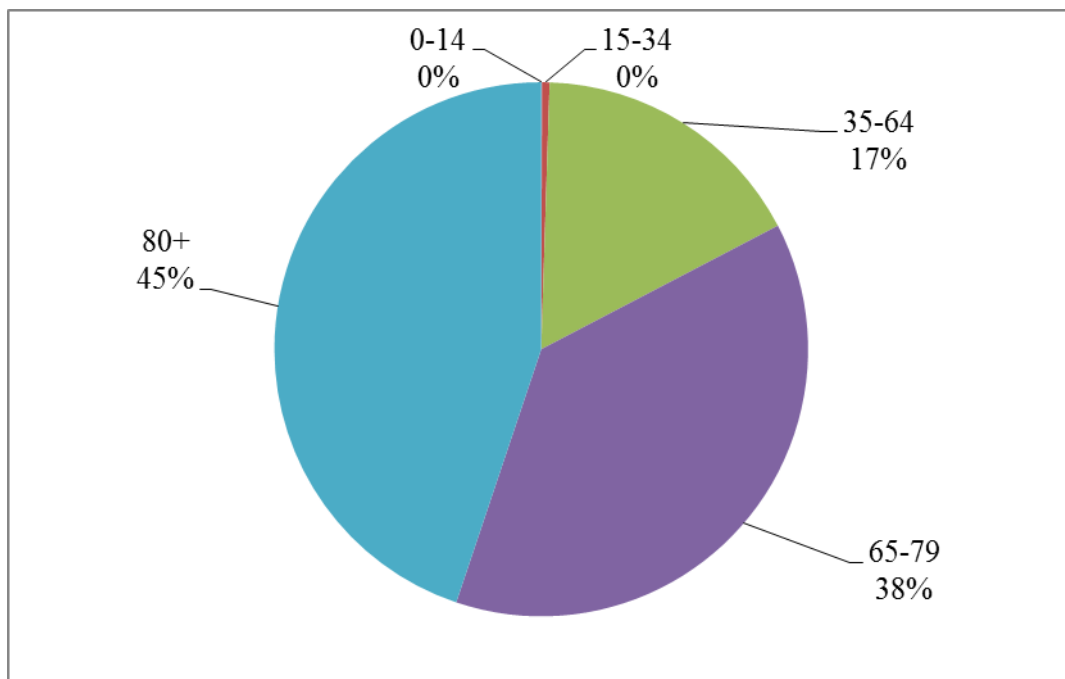
In relation to particular age groups, the CVD-related mortality starts to increase from the age of 35 years (especially among men) (see Figure 2). In 2011, 17% of CVD-related death events have been observed in the age group of 35-64 years, while 38% of such cases have been observed in the age group of 65-79 years, and 45% of such cases have been observed in the age group after the age of 80 (see Figure 3).

Figure 2. Mortality caused by CVD in 2011 in the age group 0-64 (per 100,000 inhabitants)



Source: CDPC database of causes of death for the inhabitants of Latvia

Figure 3. Percentage of persons whose death was caused by CVD divided by age groups for the year 2011



Source: CDPC, Register of Causes of Death

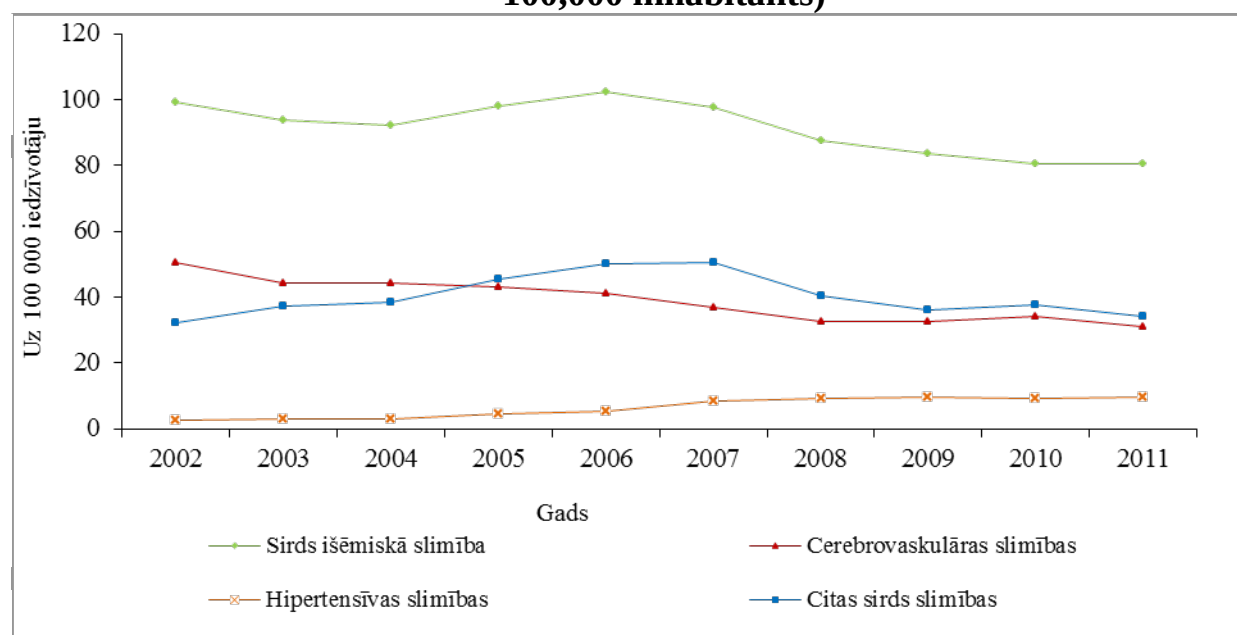
Considering a very high percentage of CVD-related death events for the age group 80+ (45%), it is necessary to perform quality control investigation with regard to medical certification of the cause of death. The aim of the quality control investigation with regard to medical certification of the cause of death is to examine the quality of medical certificates of the cause of death that are filled

in by medical practitioner, i.e. to examine, whether these certificates include all information, which is specified in the Cabinet regulations and instructions⁵, and whether the medical practitioner has considered all available information concerning the deceased person while performing the analysis of the information included in medical certificates of the cause of death in comparison to the information included in medical documentation. Investigation and evaluation of the quality how medical certificates of the cause of death have been filled in have become an everyday practice in many countries of the world, in order to ensure quality of the registers of the causes of death.

Ischemic heart disease is the main cause of death in the CVD group. It is followed by cardiomyopathy, cerebrovascular incidents (stroke) and acute myocardial infarction. Stroke is the main cause of death due to cerebrovascular diseases (see Figure 4).

Coronary artery atherosclerosis⁶ is the most frequent cause of ischemic heart disease.

Figure 4. Mortality from the main cardiovascular diseases (per 100,000 inhabitants)



Source: CDPC, Register of Causes of Death

The trend of premature death rate (age group below 64 years) from ischemic heart disease has not significantly decreased, while increasing of this rate has been observed in 2005-2007 (a similar trend is observed with regard to other CVD, such as cardiomyopathy). Decrease of mortality from

⁵ Appendices No. 40 and 41 to Cabinet Regulation No. 265 of 4 April 2006, "The records management procedure for medical documentation"

⁶ A.Ērglis, A.Kalvelis, J.Jirgensons et al. "Stabila stenokardija" vadlīnijas ("Stable stenocardia" Guidelines). Rīga, 2007, page 96.

cerebrovascular diseases, including stroke, should be assessed positively. This fact can be explained with the improvement of specific healthcare availability.

In accordance with the data provided by EU experts, approximately a half of the mentioned decrease is ensured by prevention programmes (aimed at risk factors), while approximately one third is ensured by the improvement of medical treatment and care. It is expected that survival of patients with ischemic heart diseases (longer life) will be increasing, and, accordingly, increased use of medicinal product should be planned. Moreover, decreasing working capacity of patients should be also considered⁷.

According to the performed analysis of the number of patients divided by treatment profiles, cardiology has been the most common treatment profile, as 12% of all hospitalized patients were treated in this profile (in 2010). In accordance with distribution of patients by particular diagnosis groups, the most part of patients have been treated with regard to CVD (19% of all patients)⁸. In 2011, 77% of all CVD patients, who were treated in hospitals, have been in the age group of 60 years and older⁹.

The average duration of CVD-related treatment in hospitals has been decreasing over time, dropping to 7.1 days in 2011. For patients in the age group of 18-59 years, the duration of treatment is only 6.3 days. It should be considered, that the longest average duration of treatment is observed with regard to cerebrovascular diseases. For the age group of 18-59 years the treatment lasts 10.7 days, while for particular diagnoses the treatment can be even longer, for example, in the case of intracerebral haemorrhage the duration of treatment is 16.1 days.

17% of outpatients have consulted a doctor in relation to CVD, while 92% of those patients have consulted their general practitioner. It means that CVD patients can be successfully treated at the primary healthcare level¹⁰.

The number of primarily registered cardiovascular disease cases has increased during the last under the impact of widespread risk factors (smoking, insufficient physical activity, unbalanced nutrition), as well as due to insufficient availability of preventive treatment and healthcare services. In 2012, the number of primarily registered patients exceeded 56 thousand, and this is a very high rate (54,222 cases in 2011 and 47,006 cases in 2010).

There is also a high percentage of CVD in the structure of causes of outpatients' visits to general practitioners — approximately 20%¹¹. Visits to a cardiologist, in calculation of the average number of treatment episodes per one

⁷ Giampaoli S. Ischaemic heart disease — Summary. In: EUPHIX, EUphact. Bilthoven: RIVM, <<http://www.euphix.org>> EUphact\ Health Status\ Diseases, disorders, injuries\ Cardiovascular diseases\ Ischaemic heart disease, 16 March 2009.

⁸ NHS MIS data

⁹ CDPC data, Report on activities of the hospital

¹⁰ NHS MIS data

¹¹ CDPC data

unique patient during one year, have been observed 1.73 times. 42% of such outpatients are in the age group of 65 years and older¹².

In 2012, more than 300 thousand of CVD patients were registered at PHC specialists for dynamic control (in the age group below 64 years (including) — 128,859 unique patients, while in the age group above 65 years — 175,263 unique patients)¹³. Hypertensive diseases are the most common CVD cases — 55.4% (of controlled patients). Chronic ischemic heart disease is the next most frequent CVD case — 13.1%, it is followed by cerebrovascular diseases — 8.9% and by stenocardia — 6.7%.¹⁴.

Cardiovascular health depends not only on congenital and genetic factors, but mainly on patient's health behaviour and lifestyle. Preventive measures and elimination of risk factors are very important for decreasing the prevalence of cardiovascular diseases.

It is very important to determine particular features, which can indicate that a patient's heart health is in a good condition. It is recommended by cardiologists to pay attention to eight heart health factors in order to exclude incidence of cardiovascular diseases (all eight factors are simultaneously determined for a patient):

- 1) no smoking (during the last year);
- 2) optimal body mass index (BMI = 18.5 – 24.99 kg/m²);
- 3) physical exercises (average intensity load within at least 150 min/week or intensive load within >75 min/week);
- 4) balanced nutrition ¹⁵;
- 5) arterial blood pressure <120/<80 mmHg (without use of drugs);
- 6) total cholesterol level <5 mmol/l;
- 7) diabetes mellitus has not been diagnosed; and
- 8) cardiovascular diseases have not been diagnosed¹⁶.

1.1. Prevention of cardiovascular diseases and minimizing of the impact caused by risk factors

CVD development can be caused by various risk factors. CVD risk factors can be divided in two groups:

- 1) non-affectable CVD risk factors (risk factors, which cannot be affected, or unpreventable risk factors) — person's age, gender and congenital factors (for instance, genetic factors increasing the risk of CVD incidence; for older people there is a greater possibility for heart and blood vessel damage; men are more likely to have CVD at a

¹² NHS MIS data

¹³ NHS data

¹⁴ CDPC data

¹⁵ Balanced nutrition — the sufficient amount of vegetables and whole-grain products, prevalence of poly- and monounsaturated fatty acids over saturated fats, decreased amount of factory-processed products (little amount of fatty acids and salt), eliminated products with a high glycemic index.

¹⁶ 65th World Health Assembly in May 2012

younger age in comparison to women; atherosclerosis more often occurs to women after menopause, etc.);

- 2) affectable or preventable risk factors — high blood cholesterol level ($>5,2$ mmol/l), lack of physical activity, smoking, high blood pressure ($> 140/90$ mmHg), non-balanced nutrition, obesity, extensive use of alcohol, constant stress^{17;18}.

Approximately 75% of cardiovascular diseases are causally related to preventable risk factors¹⁹. A greater number of risk factors can cause higher possibility of CVD incidence. A combination of 2-4 risk factors is more frequently observed in the population (most frequently in the age group of 55 years old and older people)²⁰. Most of cardiovascular diseases can be prevented by changing everyday behaviour, as well as by using appropriate medicinal products²¹ at the early development stage of a disease.

Considering the fact, that cardiovascular health depends on health behaviour and lifestyle, any preventive strategies can be effective only if such prevention is aimed at the main risk factors, such as smoking, consumption of unhealthy food, lack of physical activities, use of alcohol and psychosocial stress²². It has been proven in other countries that combined primary prevention²³ (aimed at decreasing morbidity and mortality) is the most effective with regard to CVD.

It should be also considered that preventive measures, which affect the society's lifestyle and behaviour, can decrease the *burden of disease*²⁴ not only with regard to CVD, but also with regard to other non-communicable diseases (oncological diseases, lung diseases).

The North Karelia Project is one of the most frequently mentioned examples for CVD prevention activities based on scientific evidence. Within the framework of this project, extensive and purposeful public health improvement programmes have been implemented in Finland during 30 years period. As a result of these activities, behaviour of Finnish people in relation to nutrition and physical activities have been significantly changed, while the prevalence of smoking decreased. The cholesterol level and blood pressure rates have been also decreased owing to these facts. This project has provided important results,

¹⁷ Stahl, Wismar, Ollila, Lahtinen & Leppo, Health in All Policies Prospects and potentials, 2006

¹⁸ I. Gigele, J. Skrule, G. Rozentāle, The prevalence of non-infectious diseases. 1. Blood circulatory system diseases. 2007. Public Health Agency

¹⁹ The atlas of heart disease and stroke. Judith Mackay, George A. Mensah, Shanthi Mendis, Kurt Greenlund, World Health Organization

²⁰ I. Gigele, J. Skrule, G. Rozentāle. The prevalence of non-infectious diseases. 1. Blood circulatory system diseases. 2007. Public Health Agency

²¹ Council Conclusions on promoting heart health, COUNCIL OF THE EUROPEAN UNION, Brussels, 9 March 2004

²² ES info, http://ec.europa.eu/health-eu/health_problems/cardiovascular_diseases/index_lv.htm

²³ Giampaoli S. Ischaemic heart disease - Summary. In: EUPHIX, EUphact. Bithoven: RIVM, <<http://www.euphix.org>> EUphact\ Health Status\ Diseases, disorders, injuries\ Cardiovascular diseases\ Ischaemic heart disease, 16 March 2009.

²⁴ Council Conclusions on promoting heart health, COUNCIL OF THE EUROPEAN UNION, Brussels, 9 March 2004

as the percentage of prematurely CVD-caused mortality has decreased by 80%²⁵.

It has been proven that the number of cigarettes smoked on a daily basis is directly related to the risk of acute myocardial infarction, which increases proportionally to the number of smoked cigarettes. The risk of acute myocardial infarction significantly decreases after smoking is quit. High risk of myocardial infarction has been proven also for young smokers²⁶. It has been proven that the CVD-related mortality rate can be decreased by 2.5 times among men and by 2 times among women after smoking is quit. In accordance with the data at of the World Heart Federation, the risk of CVD can be decreased by 50%²⁷ within a year after smoking is quit.

In the world there are 18 patients of each 100 people with blood pressure above 140/90 mm Hg, who are diagnosed with CVD within ten years. 10 patients of each 100 people have acute myocardial infarction, while 11 patients have cerebral haemorrhage or cerebrovascular infarction²⁸.

Cardiovascular health of the inhabitants of Latvia is significantly affected by widespread incidence of high CVD risk factors in the population. In accordance with the cross-sectional research data²⁹ concerning CVD risk factors among Latvian people, the arterial blood pressure above 140/90 mmHg has been observed on average to 45% of the inhabitants (53% of men and 42% of women). Incidence of high blood pressure was observed among 60%-70% in the age group of 55 years old and older people. According to the data obtained in *Eurobarometer* study in 2006, 24% respondents in Latvia mentioned high blood pressure as a cause of long-time treatment³⁰.

Incidence of high total cholesterol level (above 5.0 mmol/l) has been observed in the range of 40%-50% (for the age group of 25-34 years) to 75%-85% (in the age group above 55 years). Impaired fasting glucose above 5.66 mmol/l has been observed approximately to 34% of people, while the critical diagnostic criteria for diabetes mellitus (7.0 mmol/l) are observed to 5.4% of people. High incidence of obesity has been also observed in more than 30% of inhabitants (in the age group of 25-74 years). According to the total risk

²⁵ P.Puska, E.Vartiainen, T. Laatikainen, P.Jousilahti, M.Paavola "The North Karelia Project: from North Karelia to National Action", National Institute for Health and Welfare, Helsinki 2009

²⁶ INTERHEART: A Global Case-Control Study of Risk Factors for Acute Myocardial Infarction Linda Brookes, MSc Posted: 09/21/2004; Updated: 09/24/2004 www.medscape.com

²⁷ A.Ērglis, A.Rozenbergs, V.Dzērve "Epidemiological cross-sectional study concerning risk factors related to cardiovascular and other non-infectious diseases among the inhabitants of Latvia", 1 report, The Scientific Institute of Cardiology of the University of Latvia.

²⁸ A.Ērglis, A.Rozenbergs, V.Dzērve "Epidemiological cross-sectional study concerning risk factors related to cardiovascular and other non-infectious diseases among the inhabitants of Latvia", 1 report, The Scientific Institute of Cardiology of the University of Latvia.

²⁹ "Epidemiological cross-sectional study concerning risk factors related to cardiovascular and other non-infectious diseases among the inhabitants of Latvia" (1 report) Latvijas Ārsts, September 2010.

³⁰ European Commission, Special Eurobarometer Health in the European Union, 2007

factor data, the high level of risk is observed already in the age group of 25-34 years old people, especially among men³¹.

In accordance with the FINBALT study data, extensive body weight or obesity has been observed for almost one half (45%) of inhabitants in the age group of 15-64 years. The incidence of obesity has been increasing over time. Obesity can be directly influenced by nutrition and physical activity behaviour. With physical exercises: generally there are only 40% of respondents (45% of men and 35% of women), who perform exercises for at least 30 minutes 2-3 times a week and more frequently. Answers obtained from respondents with regard to their leisure time behaviour give evidence of sedentary lifestyle. 42% of men and 41% of women spend their leisure time mostly reading or watching TV³². Improvement of nutrition behaviour should be positively assessed: the percentage of people who usually consume full fat milk (with 4% fat content and more) has been decreasing over time, while consumption of fresh vegetables has been increasing (rural people eat fresh vegetables less often in comparison to people in cities, such as Riga). The percentage of full grain bread consumers has increased, while consumption of salt and animal fats has decreased.

As it has been already mentioned, smoking is a significant factor for the development of CVD. Among all respondents, almost a half (47.6%) of men and one fifth of women (20.7%) smoke every day (data for the year 2010)³³. The lowest prevalence of daily smoking and the highest prevalence of non-smoking has been observed in the group of people with higher education level. The prevalence of passive smoking has decreased over time. It can be explained with restriction of smoking in public places.

Cardiovascular health problems have been also observed among children. In 2008, a pilot study³⁴ was conducted in Riga, during which 2200 school children (classes 3-12) were examined. According to the study results, arrhythmia has been diagnosed to 13% of children, while high blood pressure has been diagnosed to almost 5% of children and this fact can give evidence to the possible negative effect caused by unhealthy life habits to cardiovascular health already in childhood (congenital defects are discovered in 1.55% of cases). Data obtained on study conducted in 2010 among the pupils of 1st Form give evidence about unbalanced nutrition — one fifth (22.7%) of 7 years old children already have excessive body mass, including overweight³⁵. Expansion of smoking among school children is an equally alarming problem. According to

³¹ Data of the "Epidemiological cross-sectional study concerning risk factors related to cardiovascular and other non-infectious diseases among the inhabitants of Latvia", provided by the Scientific Institute of Cardiology of the University of Latvia

³² Data of the Health Behaviour Survey among Latvian Adult Population (FINBALT), 2010. The Centre for Disease Prevention and Control

³³ Data of the Health Behaviour Survey among Latvian Adult Population (FINBALT), 2010. Centre for Disease Prevention and Control

³⁴ The pilot research on children heart health, The Scientific Institute of Cardiology of the University of Latvia (2008.)

³⁵ The Study on children anthropometric parameters and school environment in Latvia 2010, Centre for Disease Prevention and Control

the data obtained as a result of ESPAD study for the year 2010, every fourth (33% boys, 23% girls) of 15-16 years old teenagers smokes every day³⁶.

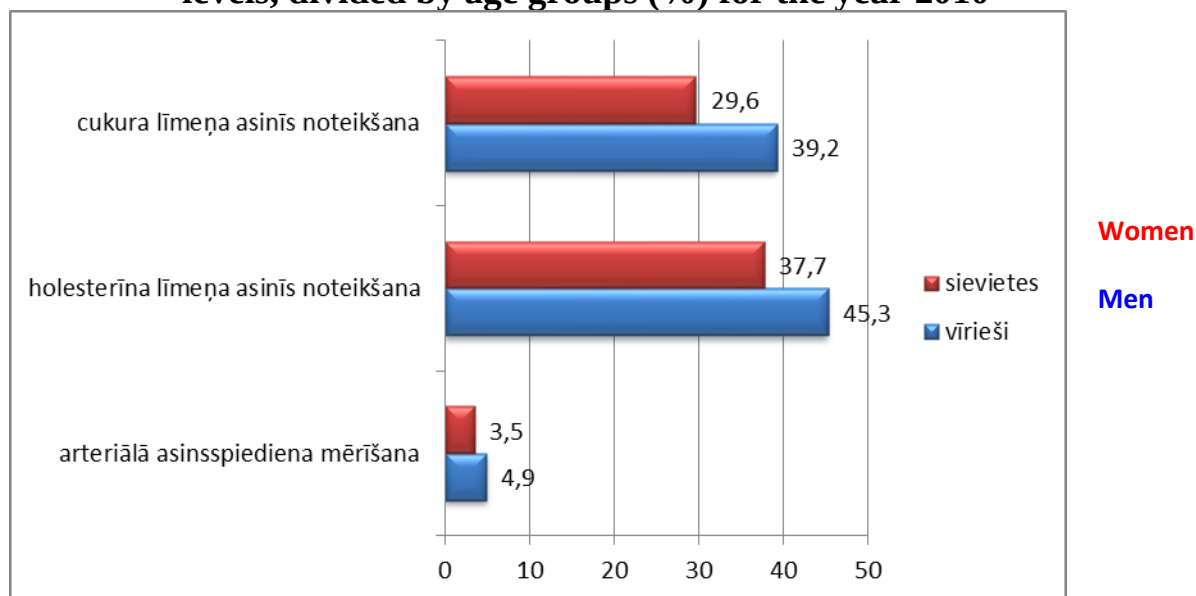
The data concerning common patterns and habits of life should draw people's attention so that their attitude towards personal health would change by explaining the correlation between the presence of risk factors and the possibility to have CVD in the future. It should be also considered that preventive activities must be also planned for the target audience for children.

Preventive activities with regard to CVD apply not only to lifestyle patterns and habits, but also to laboratory tests (blood cholesterol and glucose levels) in order to diagnose any changes on time and to prevent disease progression. In the course of FINBALT study for the year 2010, 4.2% of respondents have reported that they had never measured their blood pressure, while 41.4 % of respondents had never measured blood cholesterol level and 34.3% of respondents had never measured glucose level in blood. Approximately a fifth of respondents (23% of men and 17% of women) in the age group of 55-64 years had never measured blood cholesterol level. Similar results have been obtained with regard to measuring the glucose level in blood, as 21% of men and 14% of women in the age group of 55-64 years³⁷ had never measured it (Figure 5). Inhabitants of Latvia have started to pay more attention to their health and this tendency has been gradually increasing over time, however, it is not enough.

³⁶ Patterns and tendencies of addictive substances use among European school children. ESPAD research 2010, Centre for Disease Prevention and Control

³⁷ Data of the Health Behaviour Survey among Latvian Adult Population (FINBALT), 2010. Centre for Disease Prevention and Control

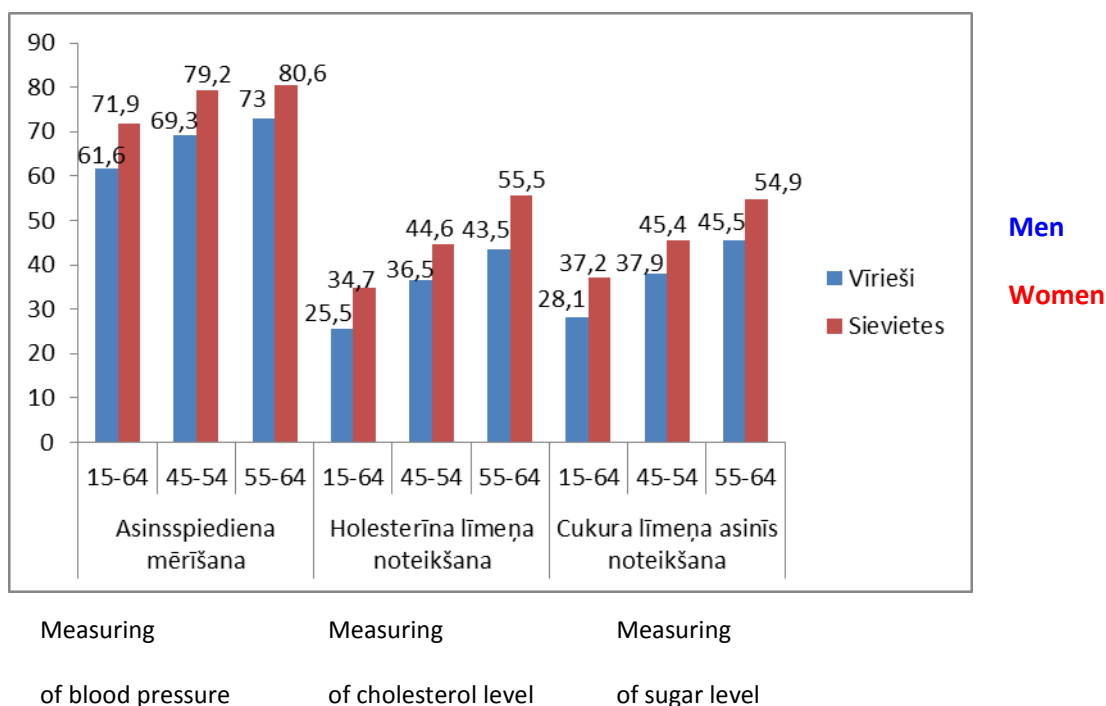
Figure 5. Percentage of respondents, who have never measured their blood pressure and never measured sugar and blood cholesterol levels, divided by age groups (%) for the year 2010



Source: FINBALT data

Preventive activity of inhabitants increases proportionally to the person's age. In accordance with the data, women are more active in this field (Figure 6).

Figure 6. Measuring of blood pressure, sugar and cholesterol levels during the last year, divided by gender and age groups for the year 2010 (%)



Source: FINBALT data

The percentage of respondents, who ensure more active prevention measures for their health, increases together with their level of education³⁸. High blood cholesterol level has been observed for each third person (30.9%) of those who performed such measuring: for men — 42.6% in the age group of 55-64 years, while for women — up to 52.1% in the same age group. It should be mentioned as a positive tendency that the largest part of inhabitants (84.3%) have received nutrition recommendations in the case of high cholesterol level (2008.)³⁹.

In accordance with the international survey on secondary prevention of cardiovascular diseases (2006-2007)⁴⁰, CVD patients in Latvia still continue smoking after myocardial infarction surgery or cardiac surgery (21.6%), have excessive body weight (80.9%), high blood pressure (58.6%), high cholesterol level (64.0%), while 23.8% of patients are diagnosed with diabetes mellitus. In Latvia patients have changed their lifestyle habits after they had been diagnosed with CVD: accordingly 53% of patients have quit smoking, 88% of patients have changed their nutrition habits, 59% of patients have increased their physical activities and 58% of patients have decreased their body weight. In comparison with other countries included in the survey (22 countries in total), the percentage of patients in Latvia who have stopped smoking is still one of the lowest⁴¹. According to these data, incidence and prevention of risk factors are not only a general population problem, but it is also related to people who already have the disease.

Improvement of public awareness, facilitation of personal knowledge in order to change people's lifestyle and habits — these are significant tasks for Latvia, as it is necessary to ensure good cardiovascular health condition with the use of simple and effective activities. Quitting of smoking, as well as regular physical activities, are the most effective CVD prevention methods. It is also important to choose such nutrition products that correspond to the rational or physiological nutrition principles (increased consumption of fruits and vegetables and decreased consumption of salt and saturated fatty acids), as well as to maintain appropriate body weight.

In relation to high risk patient groups, it is most important to decrease high cholesterol level and high blood pressure and, subsequently, to decrease other risk factors. It should be considered before starting elimination/treatment of such risk factors (including use of medicinal products) that patients must be assured to change his/her unhealthy habits.

³⁸ The Health Behaviour Survey among Latvian Adult Population (FINBALT), 2010. Centre for Disease Prevention and Control

³⁹ The Health Behaviour Survey among Latvian Adult Population (FINBALT), 2008. Centre for Disease Prevention and Control

⁴⁰ K.Kotseva, D. Wood, G. De Backer, D. De Bacquer, K. Pyörälä, U. Keil. 2009. EUROASPIRE III: a survey on the lifestyle, risk factors and use of cardioprotective drug therapies in coronary patients from 22 European countries. 16, 2, pp 121-137

⁴¹ Kornelia Kotseva, David Wood, Guy De Backer, Dirk De Bacquer, Kalevi Pyörälä, Ulrich Keil and EUROASPIRE Study; EUROASPIRE III: a survey on the lifestyle, risk factors and use of cardioprotective drug therapies in coronary patients from 22 European countries *Journal of Cardiovascular Risk* 2009 16: 121

1.2. Health care services for patients with cardiovascular diseases

CVD diagnostics and treatment (in accordance with the course of disease) can be ensured at primary, secondary and tertiary healthcare levels.

1.2.1. Primary healthcare is the first stage of a patient's contact with the healthcare system. Primary healthcare is provided by a general practitioner's team (general practitioner, auxiliary doctor (medical assistant), nurse and receptionist). General practitioner ensures general healthcare (treatment of acute and chronic diseases, including cardiovascular diseases) for patients who are registered at his/her practice, as well as ambulatory surgical manipulations, rehabilitation, drug prescription, referring patients to diagnostic examinations and to specialists for receiving secondary healthcare services, as well as performs preventive measures and ensures control of health condition⁴² for patients with chronic diseases (such as patients with cardiovascular diseases).

Once a year every patient, who has been registered at a general practitioner's practice, has a possibility to undergo state-financed preventive examination, during which a patient undergoes the following procedures: consideration of patient's complaints, measuring of body weight and length, examination of skin and mucosal lining condition, examination of mouth cavity, examination and palpation of cervical, auxiliary and inguinal lymph nodes, evaluation of thyroid gland projection, external view and palpation of mammary glands, measuring of arterial blood pressure, pulse, body temperature, auscultation of cardiac and lung function, palpation of abdominal cavity, rectal digital palpation (for patients in the age group older than 50 years), evaluation of eyesight, hearing, psyche, feeling ability, moving ability, neurological disturbances and consequences of traumas⁴³. The field of general practitioner's activities includes cooperation with municipalities and municipal social services in order to ensure multi-sectoral approach to solution of patient's health problems.

It should be mentioned that competency of general practitioners is determined by Cabinet Regulation No. 268 of 24 March 2009, "Regulations for medical staff and students who acquire the first or second level professional higher education concerning the experience in treatment and the scope of their practical and theoretical knowledge".

It is important to ensure that a general practitioner could be a central person who refers CVD patients within the healthcare system and coordinates their treatment process, while contributing more time to patients with regard to

⁴² Order No. 504 by the Cabinet of Ministers "On the Public Health Strategy for 2011-2017" of 5 October 2011, <http://polsis.mk.gov.lv/view.do?id=3768>

⁴³ Appendices No. 2 and No 5 to Cabinet Regulation No. 1046 of 19 December 2006, "The procedure for organization and financing of the health care system"

healthcare and prevention measures. General practitioners should be responsible for effective, timely and reasonable treatment of patients⁴⁴.

In order to ensure a better work of general practitioner's team (and also to improve general practitioners' motivation to provide qualitative healthcare services), as well as to extend cooperation between general practitioners and patients and to facilitate more active involvement of patients in their health maintenance, the quality evaluation system for general practitioners' activities was improved in 2012.

Criteria, which are included in the quality evaluation system for general practitioners' activities with regard to evaluation of CVD patients care, are provided with the aim to facilitate improvement of general practitioners' work and their availability to patients, as well as to improve quality of preventive activities and to decrease incidence of hospitalization cases for patients with chronic diseases⁴⁵.

Medical nurses can perform (and they do perform) examination of patients independently and therefore facilitate general practitioner's work. Some of the main duties of medical nurses and physician assistant, who works within the main territory of general practitioner's practice, are as follows:

1. to educate patients and their relatives on the issues of health promotion and healthcare;
2. to provide information concerning disease risk factors;
3. to control performance of the preventive examinations programme; and
4. to participate in coordination and resolving of patients' healthcare and social care issues, and other questions.

Taking into consideration high morbidity, hospitalization and mortality rates among the inhabitants of Latvia with regard to cardiovascular diseases, it is very important to organize primary healthcare for early diagnostics and treatment of diseases.

Coronary artery disease is the most common cause of death for adults in Latvia and over the world. Incubation and preclinical periods of the disease can occur already in childhood and even intrauterinally⁴⁶. Identification of risk groups already in childhood and adolescence must be the first step for the prevention of coronary heart disease. Primary prevention and examination of risk factors can be most effective in the childhood period. Identification and control of early risk factors could eliminate development of coronary heart disease in the future, while timely treatment could eliminate manifestation of the disease⁴⁷. Considering the fact that arterial hypertension is an important risk factor for coronary heart disease, as well as a significant secondary

⁴⁴ Order No. 504 by the Cabinet of Ministers "On the Public Health Strategy for 2011-2017" of 5 October 2011, <http://polsis.mk.gov.lv/view.do?id=3768>

⁴⁵ Appendix No. 49 to Cabinet Regulation No. 1046 of 19 December 2006, "The procedure for organization and financing of the health care system"

⁴⁶ Raitakan O et al. The Cardiovascular risk in Young Finns study 2004, *Acta Paediatr* 446: 34-42

⁴⁷ Oliveira F L C et al. Atherosclerosis prevention and treatment in children and adolescents. *Expert Rev Ther* 2010; 8(4): 513-528

manifestation in case of congenital renal and cardiac anomalies, which can increase the risk of cardiovascular diseases (if such anomalies are diagnosed and treated at the late stage), it is necessary for general practitioners/pediatricians to perform arterial blood pressure measurements for all children starting with the age of 3⁴⁸.

In order to spare resources required for secondary and tertiary healthcare, as well as to facilitate work of specialists who provide healthcare services in these levels, for the primary healthcare level it is necessary to ensure a possibility for each patient to receive regular consultations with regard to the prevention of cardiovascular diseases, as well as to determine their personal CVD morbidity risk on a regular basis. It is particularly important to provide such possibility for 11 years old children⁴⁹, for men in the age group 45+ and for women in the age group 50+⁵⁰, by performing enhanced preventive examination (screening) of cardiovascular system. It has been scientifically proven that additional enhanced examination of cardiovascular system for these age groups provides a possibility to diagnose the disease in its early stage, to perform successful treatment and to decrease incidence of hospitalization cases and tertiary level treatment for such patient groups.⁵¹

The Plan provides that the screening shall be performed for eight groups of inhabitants: for 11 years old children, for men in the age of 45, 50, 55 and 60 and for women in the age of 50, 55 and 60. CVD screening (for practically healthy people) must be performed once a year: during preventive examination or during a patient's visit to a general practitioner with particular complaints (during any visit to a general practitioner). In order to decrease everyday workload for general practitioners, a medical nurse or a second nurse can perform CVD screening for a patient. For the specific age groups the necessary evaluation and laboratory tests must be performed in accordance with the prescribed algorithm. For example, evaluation of cardiovascular disease risk, including SCORE test, must be performed for adult patients. To perform evaluation of patients with the use of SCORE test, it is necessary to consider patient's gender, age, systolic blood pressure level, total cholesterol level, smoking. The following actions must be performed in accordance with the algorithm prescribed by the Strategy, depending on the evaluation results, as it is prescribed by the New Guidelines for Cholesterol Testing in Children and Young Adults, as well as by the European Heart Health Strategy⁵².

⁴⁸ Park M.K. Pediatric cardiology for practitioners 5th edition 2008; 3-39.

⁴⁹ New Guidelines for Cholesterol Testing in Children and Young Adults, <http://www.aap.org/en-us/about-the-aap/aap-press-room/Pages/Physicians-Recommend-all-Children,-Ages-9-11,-Be-Screened-for-Cholesterol.aspx>

⁵⁰ European Heart Health Strategy 2012, <http://www.escardio.org/Strategy-surveys/esc-Strategy/StrategyDocuments/Strategy-CVD-prevention.pdf>

⁵¹ Package of Essential Noncommunicable (PEN) Disease Interventions for Primary Health Care in Low-Resource Settings, World Health Organization, 2010.

⁵² New Guidelines for Cholesterol Testing in Children and Young Adults, <http://www.aap.org/en-us/about-the-aap/aap-press-room/Pages/Physicians-Recommend-all-Children,-Ages-9-11,-Be-Screened-for-Cholesterol.aspx>

1.2.2. Secondary healthcare provided in outpatient clinics with regard to cardiovascular diseases can be received by the inhabitants of Latvia in outpatient and inpatient healthcare institutions and provided by a directly available specialist, based on general practitioner's referral or without it. Consultations provided by a secondary outpatient healthcare specialist are considered to be paid services in case if a patient has no general practitioner's referral.

It is very important for a general practitioner, who performs functions of a healthcare 'manager', to create feedback communication between secondary healthcare specialists and a general practitioner in order to ensure availability of comprehensive and credible information for the treatment process. Continuity in primary and secondary healthcare can improve the quality of services and facilitate patient's confidence in a medical person. As a result of this, incidence of extensive-stage cardiovascular diseases can be decreased; working capacity of patients will be restored in shorter terms, while the long-term improvement of public health indicators will be achieved⁵³.

1.2.3. Inpatient healthcare services are provided in university hospitals, multi-specialty hospitals, specialized hospitals and care hospitals⁵⁴.

A patient can be referred to a hospital by primary healthcare specialists, secondary healthcare specialists and EMAS. Secondary and tertiary level healthcare services are provided within the framework of inpatient healthcare.

Taking into consideration the time period, during which the financial provision for healthcare system was increased, while healthcare costs for one inhabitant also increased, it should be pointed out, that the mentioned actions were aimed at the implementation of improvement measures to increase efficiency of the healthcare system. It is particularly necessary to continue reasonable concentration of hospital services, as well as decentralization of outpatient services and regional development. Within the range of possibility, it is also necessary to develop and consolidate clinical pharmacology institutions and their involvement in decision-making processes with regard to the selection and use of medicinal products at the stationary stage, as well as to ensure control of medicines therapy and, in case of necessity, to ensure continuity of the use of medicines during the ambulatory stage⁵⁵.

It should be also mentioned that the work performed by cardiologists at the secondary level of outpatient healthcare currently is not methodically controlled. As a result of this, availability of the required treatment is not always

European Heart Health Strategy 2012, <http://www.escardio.org/Strategy-surveys/esc-Strategy/StrategyDocuments/Strategy-CVD-prevention.pdf>

⁵³ Order No. 504 by the Cabinet of Ministers "On the Public Health Strategy for 2011-2017" of 5 October 2011, <http://polsis.mk.gov.lv/view.do?id=3768>

⁵⁴ Cabinet Regulation No. 60 of 20 January 2009, "Regulations concerning compulsory requirements for healthcare institutions and their structural units"

⁵⁵ Order No. 504 by the Cabinet of Ministers "On the Public Health Strategy for 2011-2017" of 5 October 2011, <http://polsis.mk.gov.lv/view.do?id=3768>

ensured for patients and this risk can result in necessity to refer patients to Cardiology Centres⁵⁶. In this case the state must pay double, as it must pay for the treatment of patients in the secondary level at a regional cardiologist, as well as for treatment provided in one of the Cardiology Centres. Development of the flow order for the treatment of cardiovascular patients in order to ensure appropriate methodical control for the treatment programme can decrease queues in Cardiology Centres and ensure availability of the required healthcare at the secondary level.

It should be mentioned that congenital heart disease is the most frequent congenital abnormalities among children, as it is diagnosed for 1 of 100 live births⁵⁷, while in 10% of cases it is the cause of death for infants^{58 59}. Ductus arteriosus-dependent heart diseases are diagnosed in 2-3 of 1000 live births⁶⁰. According to the data provided by the Central Statistical Bureau and by the Register of Heart Diseases of the Clinic for Paediatric Cardiology and Cardiac Surgery, in 2012 there were 19,520 newborns and 152 (0.77%) of them were diagnosed with congenital heart disease. Unfortunately, heart pathology was diagnosed at the late stage to 11.1% of infants, while pathology was diagnosed antenatally to only in 55.5% cases. Considering the above mentioned facts, it is necessary to perform fetal echocardiography in the 14-16 pregnancy week for pregnant women with high risk.

In order to perform timely diagnostics of ductus arteriosus-dependent and critical congenital heart diseases (which are the common cause of sudden death for newborns and infants) at the early stage of newborn period, it is necessary to implement a compulsory non-invasive examination method — pulse oximetry screening in all maternity departments. It is necessary to measure oxygen saturation on the right hand and one foot of a newborn 48 hours after the birth or before discharging from a maternity department.

1.2.4. Tertiary care for cardiovascular diseases

Tertiary healthcare can be provided for Latvian people with cardiovascular diseases in the following five healthcare institutions: at VSIA "P. Stradiņš Clinical University Hospital", at the clinic "Gaīlezers" of SIA "Rīga East Clinical University Hospital", at SIA "Daugavpils Regional Hospital", at SIA "Liepāja Regional Hospital", and at the Riga 1st Hospital.

In order to concentrate available tertiary healthcare resources, as well as to improve the quality of tertiary healthcare services, the Latvian government

⁵⁶ There are four cardiology centres in Latvia: two centres are located in Riga, one — in Daugavpils and another one — in Liepāja.

⁵⁷ Hoffman J, Kaplan S. Prevalence of congenital heart disease *Am Heart J*, 2002;147: 425-439.

⁵⁸ Meberg A, Otterstad JE, Froland G, Lindberg H, Sorland SJ. Outcome of congenital heart defects — a population-based study. *Acta Paediatr* 2000;89: 1344-1351.

⁵⁹ Abu-Harb M, Hey E, Wren C. Death in infancy from unrecognised congenital heart disease. *Arch Dis Child*. 1994 Jul;71(1):3-7.

⁶⁰ Wren C, reinhardt Z, Khawaja K. Twenty –year trends in diagnosis of life-threatening neonatal cardiovascular malformations. *Arch Dis Child fetal Neonatal Ed* 2008; 93: F 33-5.

has planned to ensure provision of tertiary healthcare for patients with cardiovascular diseases (starting with 2014) in four national healthcare centres: VSIA "P. Stradiņš Clinical University Hospital", the clinic "Gaīlezers" of SIA "Rīga East Clinical University Hospital", SIA "Daugavpils Regional Hospital", and SIA "Liepāja Regional Hospital".

As for March 2013, there are 460 patients registered in the queue for planned invasive cardiology services at P. Stradiņš Clinical University Hospital, while the planned time of waiting in the queue is 17 weeks. There are 29 patients registered in the queue for coronary angiography at Daugavpils Regional Hospital, while the planned time of waiting in the queue is nine weeks⁶¹. There are 44 patients registered in the queue for coronary angioplasty at P. Stradiņš Clinical University Hospital and the planned time of waiting in the queue is seven weeks, while there are 56 patients registered in the queue at Daugavpils Regional Hospital and the planned time of waiting in the queue is seven weeks (see Table 2).

Table 1. Report for March 2013 regarding length of the queue for receiving planned inpatient healthcare services

<u>No.</u>	<u>Particular healthcare services</u>	<u>P. Stradiņš Clinical University Hospital</u>		<u>Rīga East Clinical University Hospital, clinic "Gaīlezers"</u>		<u>Daugavpils Regional Hospital</u>		<u>Liepāja Regional Hospital</u>	
		<u>Number of persons in the queue</u>	<u>Planned time of waiting in the queue (weeks)</u>	<u>Number of persons in the queue</u>	<u>Planned time of waiting in the queue (weeks)</u>	<u>Number of persons in the queue</u>	<u>Planned time of waiting in the queue (weeks)</u>	<u>Number of persons in the queue</u>	<u>Planned time of waiting in the queue (weeks)</u>
<u>1.</u>	<u>Planned and urgent invasive cardiology</u>	<u>460</u>	<u>17</u>						

⁶¹ The NHS report concerning length of the queue for receiving of planned hospital services
<http://vmnvd.gov.lv/lv/469-veselibas-aprupes-pakalpojumi/gaidisanas-rindas-planveida-arstniecibai-slimnecas>

1.1	Coronary angiography	<u>x</u> ⁶²	<u>X</u>	<u>0</u> ⁶³	<u>0</u>	<u>29</u>	<u>9</u>	<u>0</u>	<u>0</u>
1.2.	Coronary angioplasty	<u>x</u>	<u>x</u>	<u>44</u>	<u>7</u>	<u>56</u>	<u>7</u>	<u>0</u>	<u>0</u>

Source: NHS data

The number of coronary angiography and coronary angioplasty manipulations, which are performed in hospitals (including day-hospitals) can be viewed at the two tables below (see Table 2 and 3).

Table 2. Number of coronary angiography and coronary angioplasty procedures performed in day-hospitals from 2007 until 2012

Service	Patient's age group	2007 year	2008 year	2009 year	2010 year	2011 year	2012 year
Coronary angiography in day-hospitals	Older than 65	1474	1998	2264	3530	3727	3782
	Younger than 65	1560	2089	2187	3194	3148	2908
Coronary angioplasty in day-hospitals	Older than 65	232	249	415	1333	1353	1575
	Younger than 65	297	246	357	1129	1017	1155

Source: NHS data

Table 3. Number of coronary angiography and coronary angioplasty procedures performed in hospitals for 2011 and 2012

Service	Patient's age group	2011 year	2012 year
Coronary angiography	Older than 65	1782	1654
	Younger than 65	1154	1251
Coronary angioplasty	Older than 65	204	235
	Younger than 65	148	172
Coronary angioplasty with stent placement	Older than 65	1149	1712
	Younger than 65	624	1380
Coronary angioplasty using drug filled stents	Older than 65	1302	213
	Younger than 65	1057	216

⁶² "X" — the specified service is not provided in this healthcare institution

⁶³ "0" — the service is provided and there is no queue for this service, or the queue is less than four weeks

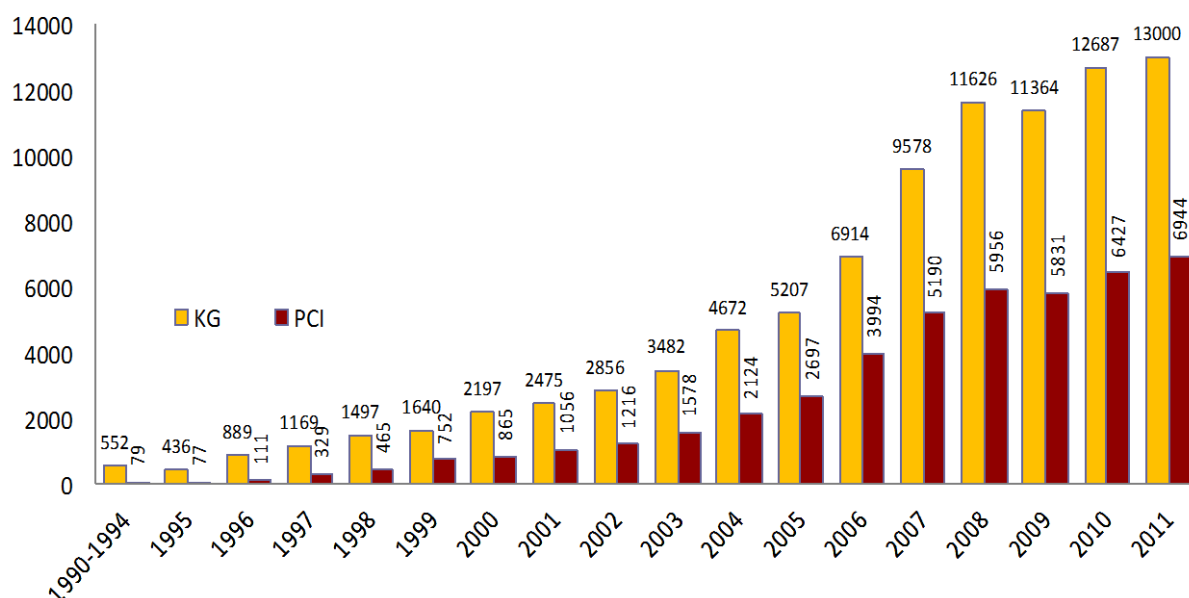
Correction of congenital and acquired heart defects with the use of invasive cardiology methods for adults	Older than 65	50	49
	Younger than 65	33	44

Source: NHS data

Regardless of the fact that invasive cardiology is a relatively new sub-speciality of cardiology, the modern CVD-related healthcare cannot be performed without the use of invasive diagnostics and treatment methods. The use of invasive cardiology methods in Latvia has rapidly increased since the year 2006 and the maximum number of procedures has been achieved in 2011, when 13,000 coronary angiography (CG) and 6944 percutaneous coronary intervention (PCI) manipulations were performed⁶⁴ (see Figure 7).

PCI is one of the main treatment methods applied for patients with coronary heart disease with regard to acute coronary syndrome, as well as to stable stenocardia. Generally, PCI is the widening of a coronary blood vessel stenosis with the use of a simple balloon catheter or a balloon catheter with a stent placed on it⁶⁵.

Figure 7. Coronarography and percutaneous coronary interventions in Latvia



Source: LAC

⁶⁴ LAC data

⁶⁵ NHS data

Coronary angiography is still a "golden standard" for the diagnostics of coronary heart disease, as it is necessary for making and clarifying of a diagnosis, for selection of a treatment strategy and for evaluation of a disease prognosis.

Coronary angiography can determine further treatment of patients with coronary heart disease: it can be treatment involving medicines or treatment with the use of the percutaneous coronary intervention or the coronary bypass surgery. Moreover, it is not always possible to perform complete examination of the atherosclerotic process only with the use of coronary angiography, because coronary angiography actually is a luminogram, while atherosclerosis is a process, which initially (before it has narrowed the arterial lumen) causes changes to the arterial wall. For the investigation of these processes, as well as for the evaluation of immediate and further results of the percutaneous coronary intervention, it is necessary to use additional methods of intravascular image diagnostics. For example, intravascular ultrasonography, optical coherence tomography or virtual histology — the general purpose of these methods is to visualize processes occurring in the arterial wall and in the arterial lumen, as well as to identify the arterial structure, to evaluate its stability and hemodynamic importance.

Percutaneous coronary intervention is quite often (even among medical professionals) erroneously considered as implantation of a stent (coronary metal prosthesis) into the coronary heart arteries. The technologies used in the course of percutaneous coronary intervention procedure can be very different, such as balloon angioplasty, cutting balloon intervention, rotational atherectomy, insertion of a drug-covered stent, implantation of a simple metallic stent and a drug-filled stent, thrombus aspiration and others.

Percutaneous coronary intervention, depending on patient's clinical manifestations, can be divided as follows:

- 1) planned percutaneous coronary intervention; and
- 2) urgent percutaneous coronary intervention.

Materials used in both groups of percutaneous coronary intervention are practically similar; however, it is necessary to realize that the treatment expenses are significantly higher for patients with acute coronary syndrome, especially for patients with ST segment elevation myocardial infarction. The treatment becomes more expensive due to additional examinations (including RTG, CT, MR, USG and others) and interventions (including hepatic and renal replacement therapy), as well as consultations and measures for the prevention of complications.

Revascularization with the use of percutaneous coronary intervention, or primary percutaneous coronary intervention, currently has been admitted as the most effective method for the treatment of myocardial infarction. For this reason a programme called "Stent for life" has been developed in Europe with the main purpose to ensure availability of modern and appropriate treatment — primary

percutaneous coronary intervention (PPCI) for each patient with ST segment elevation myocardial infarction.

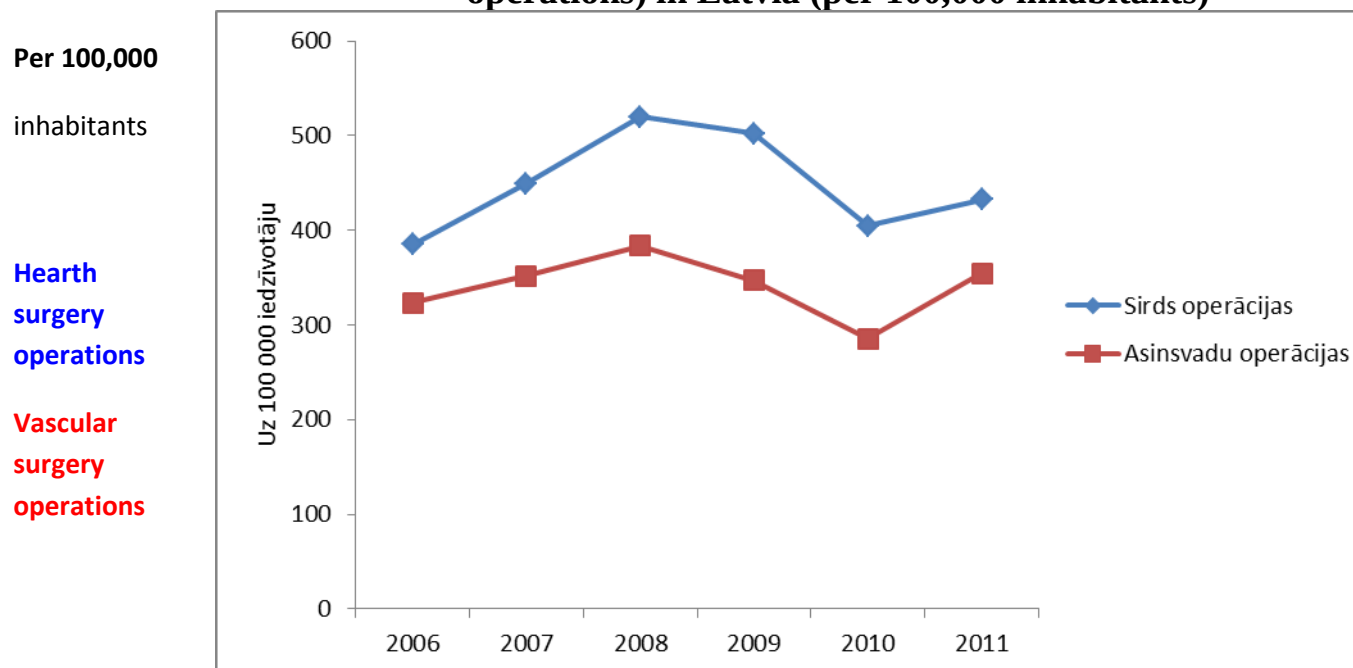
In 2011, 370 PPCI procedures were performed in Latvia per one million inhabitants. Currently PPCI in Latvia is available in 24/7 regime at VSIA "P. Stradiņš Clinical University Hospital", SIA "Rīga East Clinical University Hospital" and during working hours at SIA "Daugavpils Regional Hospital" and SIA "Liepāja Regional Hospital".

In order to ensure availability of PPCI in the entire territory of Latvia, it is necessary to optimize emergency medical aid services and to ensure availability of PPCI in regional hospitals.

Currently invasive cardiology does not mean only performance of coronary artery interventions, but it also includes intervention into other blood vessel areas, as well as various corrections performed in case of structural heart diseases, corrections performed in case of arterial hypertension and regenerative therapy.

Specific cardiologic aid is a very important part of the healthcare system for CVD patients. Practically all performed operations are necessary for the survival of patients, and for this reason waiting in the queue for operations is not acceptable. A patient's death due to long waiting in the queue for help must be considered as an exceptional occasion. For the liquidation of the so-called "queues" it is necessary to increase the number of performed required operations by increasing the capacity of cardiac surgery services. Waiting in a "queue" can be acceptable for patients with cardiac insufficiency, who are waiting for transplantation, taking into consideration their dependency on a heart donor. During the period of waiting in the queue for heart transplantation, there are mechanical heart replacement systems available for the patients for a shorter or longer period of time to prevent cases of death. As for the current stage, heart transplantations are included in the "Orthotopic heart transplantation" state-financed healthcare programme.

Figure 8. Cardiovascular surgery operations (including out-patient operations) in Latvia (per 100,000 inhabitants)



Source: CDPC data

The number of cardiovascular surgery operations⁶⁶ in Latvia (including ambulatory operations) per 100,000 inhabitants increased until 2008. After that, it decreased for some time due to the economic crisis and started to increase again in 2011. In 2011, the survival rate for surgically treated patients was 98.8%, while for particular groups of timely operated patients the risk does not exceed 0.5% (see Figure 8).

In order to improve the health-related quality of life for patients after acute MI and revascularization, it is very important to ensure availability of cardiologic rehabilitation programmes. VSIA "P. Stradiņš Clinical University Hospital" has developed and approved a paid ambulatory cardiologic rehabilitation programme for CVD patients (post-hospital care). Moreover, it is necessary to ensure pre-conditions for the availability of such programme to all patients who really need it.

Cardiologic rehabilitation is a complex of secondary preventive multi-disciplinary rehabilitation services to be provided for CVD patients. These services include structured physical training programmes, education of patients,

⁶⁶ Cardiac surgery operations include all operations that are performed on heart and major blood vessels. Vascular surgery operations include operations related to peripheral blood vessels. Operation is an invasive procedure, which is performed by a surgeon with local or general anaesthesia. (Source: Report on the activities of hospitals).

controlling of risk factors and creating of positive change motivation required for the maintenance of a healthy lifestyle⁶⁷.

Cardiologic rehabilitation:

- decreases incidence of total and CVD-related mortality and reduces the necessity of hospitalization for patients with coronary heart disease⁶⁸;
- decreases not only the CVD-related mortality, but also the mortality caused by other diseases for patients after MI, in comparison with the healthcare system, which does not include cardiologic rehabilitation⁶⁹; and
- significantly decreases the necessity of hospitalization, improves the quality of life and exercise tolerance for patients with chronic heart failure^{70,71}.

1.2.5. Reimbursement of medicines for CVD patients

Expenses for the acquisition of medicinal products are covered in the amount of 100%, 75% and 50%, depending on the diagnosis. Currently expenses for the acquisition of medicines required for treatment of cardiovascular system diseases are reimbursed in the amount of 75% (reimbursement from the state budget resources)⁷².

On 1 January 2012, a new procedure for the prescription of reimbursable medicinal products came into force. The goal is to facilitate prescription of the least expensive reimbursable medicines with the equivalent effect (i.e. a pharmacist shall provide a patient with the least expensive medical preparation of the same generic name)⁷³.

It should be mentioned that expenses only for the least expensive medicinal products with an equivalent effect can be reimbursed from the state budget in the amount of 75% for cardiovascular diseases. If a patient chooses to

⁶⁷ World Health Organisation (1993) Needs and action priorities in cardiac rehabilitation and secondary prevention in patients with CHD. Geneva: World Health Organization. Available from http://whqlibdoc.who.int/euro/-1993/EUR_ICP_CVD_125.pdf

⁶⁸ Heran BS, Chen JM, Ebrahim S et al. (2011) Exercise-based cardiac rehabilitation for coronary heart disease. Cochrane Database of Systematic Reviews Issue 7: CD001800

⁶⁹ National Collaborating Centre for Primary Care (2007) Post myocardial infarction: secondary prevention in primary and secondary care for patients following a myocardial infarction (full guideline). London: Royal College of General Practitioners

⁷⁰ National Clinical Guideline Centre for Acute and Chronic Conditions (2010) Chronic heart failure: national clinical guideline for diagnosis and management in primary and secondary care. London: Royal College of Physicians

⁷¹ Clinical Guidelines on chronic failure (2012). Latvian Association of Cardiologists, Riga (Hroniskas sirds mazspējas klīniskās vadlīnijas (2012). Latvijas kardiologu biedrība, Rīga).

⁷² Paragraph 4 of Appendix No. 1 to Cabinet Regulation No. 899 of 31 October 2006, "Procedures for the Reimbursement of Expenditures for the Acquisition of Medicinal Products and Medicinal Devices Intended for Out-patient Medical Treatment"

⁷³ NHS data

buy more expensive medicinal products, he/she must pay the difference between the least expensive and the more expensive medicines on his/her own account⁷⁴.

With regard to widespread incidence of CVD (chronic ischemic heart disease, brain infarction, atherosclerosis, primary hypertension) with the highest percentage among diagnoses in relation to the amount of treatment-related expenses⁷⁵, it is necessary to point out the importance of prevention measures, as well as importance of effective and timely treatment, for these diseases.

The greatest amount of prescriptions for reimbursable medicines has been observed with regard to CVD patients, as more than three million prescriptions (3,001,582) have been issued in 2010 for the total amount of LVL 14 million (the second most expensive group of diagnoses after endocrinous, nutritional and metabolic diseases) that constitutes 19.5% of the total reimbursable expenses for medicinal products. This amount of expenses is similar to the data recorded in 2009, it has decreased by LVL 4million in comparison to 2008⁷⁶.

On 1 January 2013, the reduction of prices (from 5% up to 35%) for reimbursable medicinal products came into force. Reduction of prices will make certain medicines available for a greater number of patients, as it will allow decreasing the co-payment amount, which is required from patients. Starting with 1 January 2013, the list of reimbursable medicines includes 1492 medicinal products and 150 medical devices⁷⁷.

In the opinion of LAC, it is not acceptable to reduce the amount of financing for reimbursable medicinal products that are required for patients with cardiovascular diseases. In case of reduced financing, the preventive control of cardiovascular diseases will be significantly decreased, while the mortality caused by cardiovascular diseases will significantly increase and this situation will incur substantial losses to the state budget.

In 2009, LAC signed the Scientific Regulation "Provision of medicinal products for patients with cardiovascular diseases within the framework of state reimbursement system" in cooperation with specialists from other industries. In this Regulation the current situation with regard to reimbursable medicines was explained and the situation, which might occur in case of decreased financing and increased co-payments, was also forecasted. Specialists have explained in the document that any reductions of financing for reimbursable medicinal products related to the treatment of cardiovascular diseases are not acceptable, because the changes performed in March 2009 had significantly worsened the control of cardiovascular diseases, while the catastrophically high CVD-related mortality had increased even more. Such a tragic situation could incur significant losses to the state budget⁷⁸.

⁷⁴ NHS data

⁷⁵ The State Agency for Compulsory Health Insurance, Vēstis No. 19, 2010

⁷⁶ NHS data

⁷⁷ NHS data, <http://medicine.lv/raksti/no-janvara-600-kompensejamam-zalem-samazinas-cenas>

⁷⁸ The following representatives of the Latvian Association of Cardiologists have participated in the preparation of the Scientific Regulation that took place at the Pauls Stradiņš Clinical University Hospital on 25 August 2009: Asoc. Prof. Andrejs Ērglis, Prof. Andrejs Kalvelis, Dr. med. Vilnis Dzērve, Doc. Gustavs Latkovskis, Dr. Iveta

Due to the reduction of financing for reimbursable medicinal products, cardiovascular patients will use these medicines less or will not use them at all. As a result of this, the possibility of hospitalization due to infarctions or cerebral accidents will be increased for these patients. In this case, the state will not only suffer additional losses due to payments required for the treatment of infarctions, cerebral accidents and for hospitalization of patients. There will be also losses with regard to sickness certificates, as well as losses due to non-payment of taxes, which could be paid by healthy people⁷⁹.

1.3. Improvements with regard to availability of healthcare system resources for cardiovascular diseases

By 2012, the heart health maintenance and prevention measures have been ensured by Heart Health Offices. In total, 18 Heart Health Offices with qualified personnel were operating in 2011. Heart Health Offices were maintained by medical nurses with the aim to perform preventive examination of patients, as well as to educate them with regard to importance of heart health and disease prevention. Heart health offices also informed the society with regard to healthcare activities and to the promotion of heart health.

In order to ensure effective implementation of resources in the fields of health promotion and disease prevention, as well as to emphasise the importance of medical nurses' work for disease prevention activities at the primary healthcare level, a working group (including evaluation of work efficiency for Heart Health Offices) was created in accordance with Order No.165 of 1 August 2011, "Concerning creation of a work group with regard to improvement of effective use of the resources involved in disease prevention and health promotion activities" issued by the Ministry of Health.

After evaluating the work of the Heart Health Offices, it was concluded that the largest part of patients who had visited Heart Health Offices does not correspond to the targeted population of diagnostics for early risk of heart diseases (inhabitants at the age up to 45-50). It was also considered that the

Mintāle, Dr. Ilja Zakke; Prof. Aivars Lejnieks, the Chairman of the Latvian Association of Internists and the Chairman of Latvian Hypertension Association; Representatives of the Association of Innovative Pharmaceutical Manufacturers: Jānis Leja, Laima Rutka, Anda Blumberga and Jānis Dobelis. <http://www.medicine.lv/raksti/finansejuma-samazinasana-valsts-kompensetajiem-medikamentiem--nav-pielaujama>

⁷⁹ The following representatives of the Latvian Association of Cardiologists have participated in preparation of the Scientific Regulation that took place at the Pauls Stradiņš Clinical University Hospital on 25 August 2009: Asoc. Prof. Andrejs Ērglis, Prof. Andrejs Kalvelis, Dr. med. Vilnis Dzērve, Doc. Gustavs Latkovskis, Dr. Iveta Mintāle, Dr. Ilja Zakke; Prof. Aivars Lejnieks, the Chairman of the Latvian Association of Internists and the Chairman of Latvian Hypertension Association; Representatives of the Association of Innovative Pharmaceutical Manufacturers: Jānis Leja, Laima Rutka, Anda Blumberga and Jānis Dobelis. <http://www.medicine.lv/raksti/finansejuma-samazinasana-valsts-kompensetajiem-medikamentiem--nav-pielaujama>

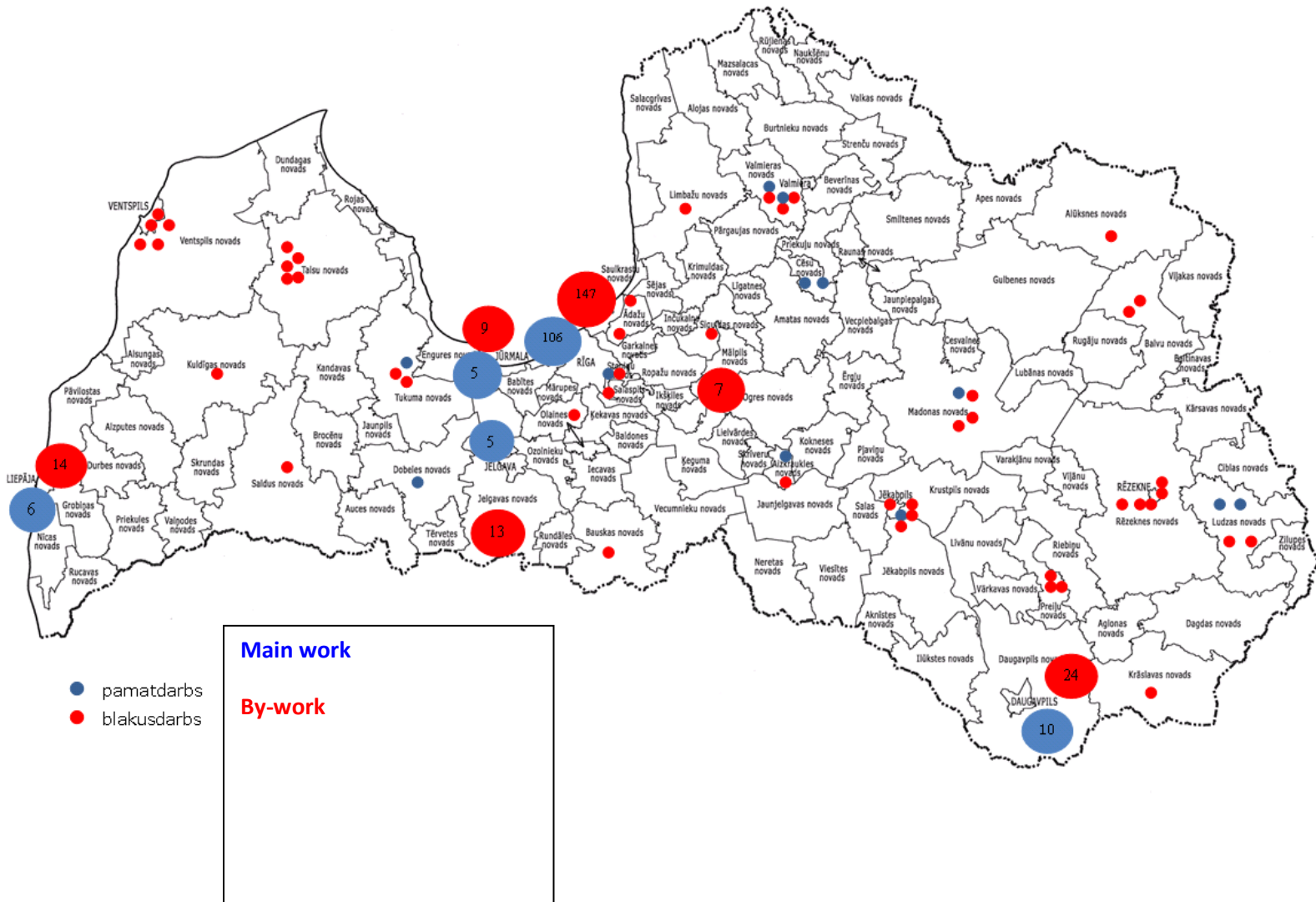
duties performed by medical nurses at Heart Health Offices overlapped with the duties performed by a second nurse at general practitioner's offices. Considering the above mentioned facts, in order to prevent overlapping of work functions, the activities of Heart Health Offices have been terminated since 1 January 2012, while medical nurses, who were working at these offices, have been integrated into general practitioners' practices exactly for performing preventive works with the aim to decrease the everyday workload of general practitioners.

Considering that the main functions of Heart Health Offices included preventive examination of patients, their education concerning heart health promotion and disease prevention, as well as providing of information on Heart Health Office activities and heart health promotion, while these functions did not ensure diagnostics of cardiovascular diseases, advanced examination of patients with cardiovascular diseases, as well as timely treatment involving medicinal products, it is planned to ensure the second level diagnostics for cardiovascular diseases, as well as enhanced examination and consultation of patients within the scope of the Plan.

In accordance with the data provided by the Ministry of Health with regard to the actual allocation of cardiologists by hospital territories (as it can be viewed in the map below), currently cardiologist services are not equivalently available for the inhabitants of various regions of Latvia. In order to decrease inequality of cardiologist services provided in various regions of Latvia, as well as to decrease patients' queues for cardiology specialists in regional and university hospitals, it is necessary to ensure availability of Cardiology Patients Care Offices in the entire territory of Latvia. In accordance with the Plan, starting with 2015, it is planned to create Cardiology Patients Care Offices, where cardiologists and medical nurses will work. Activities of Cardiology Patients Care Offices are based on the secondary level diagnostics for cardiovascular diseases, extended examination and consultation of patients, provision of recommendations for general practitioners with regard to further treatment of patients (to ensure the feedback link), referring of patients back to general practitioners, as well as follow-up control in case of necessity. Patients are referred to Cardiology Patients Care Offices based on a general practitioner's referral. Cardiology Patients Care Offices will be created within the existing infrastructure of healthcare institutions, in regional healthcare centres, polyclinics and hospitals.

Creation of Cardiology Patients Care Offices will give a possibility to perform enhanced examination of patients with cardiovascular diseases in a more cost-effective way in comparison to the necessity of late-stage treatment in hospitals and at the tertiary healthcare level with the use of invasive methods and expensive technologies. As a result of this, the workload for stationary and tertiary healthcare systems will be decreased, while the costs required for the provision of stationary and tertiary healthcare will be decreased on a long-term basis.

Location of cardiologists by hospital territories for the year 2011



Cardiologist's duties to be performed at Cardiology Patients Care Offices:

- 1) enhanced examination of patients;
- 2) administration of therapy involving medication;
- 3) consultative, technical and other cooperation with general practitioners, LAC, cardiology specialists from regional and university hospitals and others;
- 4) complete solving of a particular patient's situation (with the help of a medical nurse) in order to decrease patients' flow;
- 5) referral of patients to diagnostic examinations and evaluation of the obtained data, performing of several functional diagnostic examinations;
- 6) treatment;
- 7) referring of patients to other specialists, including tertiary healthcare;
- 8) referring of patients to hospitals; and
- 9) continuous improvement of knowledge by participating in various courses and workshops.

1.4. Monitoring of cardiovascular diseases

1.4.1. Databases

Currently the applicable legislation does not provide maintenance of a particular registers of CVD patients. Due to this situation, the data concerning CVD-related morbidity (incidence, prevalence) are not available.

As it is prescribed by Cabinet Regulation No. 241 of 3 April 2012, "Regulations on the Centre for Disease Prevention and Control", the CDPC creates, administrates and updates national information systems and databases, including the register of patients with certain diseases; however, this register does not contain the data on CVD patients.

The NHS, for the purpose of settling accounts with healthcare institutions that are involved in contractual relationships with NHS, maintains the MIS database with regard to diagnoses of treated patients, as well as to particular kinds of services and to the number of treatment episodes.

Upon a request of the MH, the NHS can provide the data concerning CVD patients who have received healthcare services (financed from the state budget).

Mortality data are obtained from the CDPC database on the causes of death among the inhabitants of Latvia. The stationary healthcare services related data, which are provided in national statistical reports that are received from healthcare institutions and summarized once a year, are also available. The national statistical report, based on the information registered in the NHS MIS, provides information concerning those patients, who had been primarily referred to a NHS specialist due to CVD, as well as concerning the number of controlled patients. However, this information cannot be used for determination of morbidity, as the data are received in a summarized way (patients are considered unique only within a healthcare institution), and it is not possible to identify the number of those patients, who have visited a doctor in various institutions. This information contains only data on those patients, who received

healthcare services financed from the state budget, while not all specified diagnoses have been approved, etc.

The data concerning treated patients with cardiovascular diseases are summarized in the "Register of acute coronary and cerebrovascular syndromes", which is maintained by the Cardiology Centre of VSIA "Pauls Stradiņš Clinical University Hospital". Date of the referred to register are available only with regard to patients of Pauls Stradiņš Clinical University Hospital, where the data are analysed by cardiologists themselves, so availability of these data is limited. In order to ensure a possibility to obtain the data of the register and to analyse them with maximum efficiency, it is planned to improve the e-health system in Latvia and to ensure availability of the register data to the CDPC within the scope of the Plan.

In accordance with the Strategy "E-health in Latvia"⁸⁰, the data concerning medical records of patients will be collected in the course of the e-health system development in Latvia in order to use them for the purpose of diagnostics and further prevention of diseases. Healthcare specialists will have a possibility to exchange the relevant information with regard to patient's medical data in order to provide help to patients as promptly as possible. After significant improvement of the effectiveness of the healthcare and prevention system (in consideration of the increased and satisfied demand for healthcare services) providers of healthcare services will have a possibility to collect data on unique patients with approved diagnoses in order to estimate incidence and prevalence rates.

Within the scope of the Plan, it is planned to evaluate the possibility to perform monitoring of cardiac surgical patients and to develop a computer-based recording system, which will ensure effective and qualitative exchange of information between supporting institutions, medical persons and patients. It is also planned to find solutions and possibilities for performing enhanced analysis of the MIS system data with regard to CVD-related morbidity and to involve qualified specialists and scientists from universities and research institutes in this work. Such approach will give a possibility to evaluate causes of wrong diagnoses and cases, when a different disease is an actual cause of patient's complaints evaluated as CVD symptoms.

1.4.2. Research studies

The data concerning prevalence of risk factors are obtained from cross-sectional research studies: The Health Behaviour Survey among Latvian Adult Population for the age group 15-64 (FINBALT health monitoring), the Health Behaviour Survey in School-aged Children in Latvia (HBSC monitoring supported by WHO), the WHO Global Youth Tobacco Survey in Latvia (GYTS), the WHO Study on Children Anthropometric Parameters and School Environment, the Research on prevalence of addictive substances use in the population, the Survey for European schools on patterns and tendencies of addictive substances use among school children (ESPAD) and others. These monitoring-based research studies should certainly be continued, as

⁸⁰ Approved by Cabinet Order No. 560 of 17 august 2005, "On basic Strategy for e-Health system in Latvia", No. 46, §24), <http://polsis.mk.gov.lv/view.do?id=1829>

the obtained data give a possibility to analyze indicators over time. It is necessary to enhance the diapason of the investigated population and problems, to improve research methods and instruments (such as methods related to anthropometric measurements and longitudinal researches) in order to identify certain problems and risk factors for the corresponding risk groups, as well as to ensure planning of the required health promotion and prevention activities and to evaluate effectiveness of these actions.

The research data can provide a possibility to obtain characterizing rates for morbidity, such as the number of respondents, who were treated within the last year due to hypertension, etc. For the interpretation of data it must be considered that these research studies are based on subjective responses given by respondents.

Objective measurements for the evaluation of particular risk factors have been performed in the course of separate studies, for example, a study "Cardiovascular health condition of the inhabitants of Latvia", performed in 2009 by the Scientific Institute of Cardiology of the University of Latvia.

The research data with regard to people's health behaviour are available according to particular age groups (15-64, 15-74, school children of different age, for example — 11, 13, 15 years). There is not enough information with regard to health behaviour of old people, as well as to prevalence of risk factors, because research studies are not performed for this group of people. The information concerning health-affecting factors among children of pre-school and primary school age is also not available. In the future, it will be necessary to perform research studies for these groups of the population.

2. The main problems identified

1. High distribution of affectable or preventable risk factors risk factors in public.
2. Premature death rate caused by cardiovascular diseases is still high, especially, among men (in the age group of 0-64).
3. Cardiovascular disease prevention and treatment possibilities at primary, secondary and tertiary level in the country are limited, whereas proportion of people which need help is high.
4. Accessibility and quality of resources of cardiovascular healthcare system has decreased.
5. Improper and insufficient monitoring of cardiovascular diseases in the country.
6. Flow of patients suffering from cardiovascular diseases in the healthcare system is not managed systematically (feedback between general practitioner and cardiologist is not ensured).
7. The knowledge of primary healthcare services providers is insufficient to ensure early assessment of CVD risk.
8. Screening of particular target groups is not carried out in order to make early diagnosis of CVD and provide timely medical attention.

3. Hierarchy of goals, results and their resultative indicators

The main goal of this Plan is to decrease death rate caused by cardiovascular diseases through limiting negative influence of risk factors on health.

This goal can be achieved by implementing four directions of action:

1. Promoting prophylaxis of cardiovascular diseases and limiting influence of their risk factors.
2. Improvement in the quality of healthcare services for cardiovascular diseases.
3. Improvement in accessibility of cardiovascular diseases prevention and healthcare system resources.
4. Improvement (action assessment) of monitoring of cardiovascular diseases.

Policy results	Resultative indicators	Reference level		2013.	2014.	2015.
		Indication	Year			
Premature death rate caused by cardiovascular diseases has decreased (age group under 64 years) ⁸¹	Death rate caused by cardiovascular diseases per 100,000 inhabitants among men	242.9	2011	235	230	225
	Death rate caused by cardiovascular diseases per 100,000 inhabitants among women	85.1	2011	77.1	70.1	65.7
	Potential years of life lost due to CVD per 100,000 by gender					
	men	2392	2011	2200	2020	1930
	women	736	2011	700	650	600
Decreased/stabilized proportion of smokers	Proportion of daily smokers among adults (age group of 15-64)					
	men	47.4%	2010		45%	

¹ Data by CDPC

	women	20.7%	2010		19%	
	Proportion of regular (at least once a week) smokers at the age of 15, by gender ⁸²					
	boys	32%	2010		30%	
	girls	22.1%	2010		20%	
Decreased/stabilized prevalence of obesity	Prevalence of obesity (BMI above 30) among adults (age group of 15-64, self reported) ⁸³					
	men	13%	2010		12%	
	women	17.9%	2010		16,5%	
	Proportion of overweight and obese children at the age of 7 ⁸⁴					
	boys	24.2%	2010	24%		23%
	girls	21.3%	2010	21%		20%
Proportion of people with sufficient (advisable) amount of physical activity has increased	Proportion of adults (age group of 15-64) which do physical exercises at least 30 minutes a day ⁸⁵					
	men	14.1%	2010		16%	
	women	10.4%	2010		13%	
	Proportion of school children at the age of 15, which do physical activities at least for an hour a day ⁸⁶					
	boys	22.2%	2010		23%	
	girls	12.6%	2010		13%	

⁸² Health Behaviour Survey in School-aged Children in Latvia (HBSC), CDPC (n=4500)

⁸³ Health Behaviour Survey among Latvian Adult Population (FINBALT), CDPC (n=3000)

⁸⁴ Study on Children Anthropometric Parameters and School Environment CDPC (n=3500)

⁸⁵ Health Behaviour Survey among Latvian Adult Population (FINBALT), CDPC (n=3000)

⁸⁶ Health Behaviour Survey in School-aged Children in Latvia (HBSC), CDPC (n=4500)

Preventive activity of people has increased ⁸⁷	Proportion of adults (age group of 15-64) which have measured their blood pressure in the last year					
	men	61.6%	2010		65%	
	women	71.9%	2010		75%	
	Proportion of adults (age group of 15-64) having blood cholesterol measured within the last year					
	men	25.5%	2010		29%	
	women	34.7%	2010		39%	
	Proportion of adults (age group of 15-64) having blood sugar measured within the last year					
	men	28.1%	2010		32%	
	women	37.2%	2010		41%	
Eating habits have become healthier ⁸⁸	Proportion of adults (age group of 15-64) which eat fresh vegetables 6-7 days a week					
	men	29.3%	2010		33%	
	women	41.1%	2010		45%	
	Proportion of adults (age group of 15-64) which never add salt to their meal during the mealtime		2010			
	men	33.1%	2010		35%	
	women	49.8%	2010		52%	

⁸⁷ Health Behaviour Survey among Latvian Adult Population (FINBALT), CDPC (n=3000)

⁸⁸ Health Behaviour Survey among Latvian Adult Population (FINBALT), CDPC (n=3000)

Length of stay in hospital due to CVD has reduced ⁸⁹	Average length of stay in hospitals due to CVD (days)	7.1	2011	6,9	6,7	6,5
	Average length of stay in hospitals due to CVD (age group of 18-59) (days)	6.3	2011	6,2	6,0	5,8
Case fatality rate of in-patients from CVD has decreased ⁹⁰	Case fatality rate of in-patients from CVD (proportion of deaths among discharged (incl. died) patients,	7.9%	2011	7,5%	7,1%	6,5%

4. Linking of the Plan with other development planning documents and international legislative acts binding to Latvia

This Plan is prepared, in compliance with the following documents:

1. *Public Health Strategy for 2011-2017*, sub-goal — to decrease sickness rate and death rate caused by non-communicable diseases, limiting influence of risk factors on health⁹¹.
2. *Latvian National Development Plan for 2007-2013*⁹², which determines formation of balanced responsibility of the state and individuals for health maintenance and improvement, creating public understanding on healthy lifestyle and food, and involve the public in fighting addictive diseases.
3. *Latvian National Development Plan for 2014-2020*⁹³, where one of the goals is to promote healthy lifestyle through improving planning and coordination measures within the healthcare system, as well as improving the quality and accessibility of ambulatory healthcare, limiting the prevalence of chronic diseases risk factors and external death causes in the public, thereby promoting maintenance and improvement of public health, which is the basic element of long and efficient working life.
4. *Plan for Strategic Development of Latvia for 2010-2013*⁹⁴, which stipulates that healthy people in a sustainable society are a precondition of safe and persistent development.

⁸⁹ Data by CDPC

⁹⁰ Data by CDPC

⁹¹ Order No. 504 by the Cabinet of Ministers "On the Public Health Strategy for 2011-2017" of 5 October 2011, <http://polsis.mk.gov.lv/view.do?id=3768>

⁹² Cabinet Regulation No. 564 of 4 July 2006, "Latvian National Development Plan for 2007-2013"

⁹³ Approved by 20 December 2012 Decision of the Parliament of Latvia

⁹⁴ Cabinet Order No. 203 of 9 April 2010, "Plan for Strategic Development of Latvia for 2010-2013"

5. *Strategy "Latvia 2030"*⁹⁵ for Sustainable Development of Latvia. Direction of long-term action is determined in Section 2 of "Long-term investments in a human capital" — quality and accessibility of health and social services.
6. Health promotion guidelines for local authorities⁹⁶.

EU documents:

1. EC White Paper *"A Strategy on Nutrition, Overweight, and Obesity-related Health Issues"*. Its goal is to determine an integrated EU approach to decrease health drawbacks related to unhealthy food, overweight and obesity (COM (2007) 279)⁹⁷.
2. EC White Paper *"Together for Health. A Strategic Approach for the EU 2008-2013"*⁹⁸.
3. Council suggestions (30 December 2009) regarding *environment without tobacco smoke* (2009/C 296/02)⁹⁹.

WHO documents:

1. *Global Strategy in the Field of Health, Food and Physical Activities*. The main goals determined therein: risk factors of non-communicable diseases related to unhealthy food and insufficient physical activities; to improve the understanding about the positive influence of healthy food and physical activities on health; to promote development and implementation of national pLDDA in order to improve eating habits and increase physical activities (May 2004, World Health Assembly).
2. European Charter *"Fight against Obesity"*, where ministers have affirmed their commitment to strengthen measures to prevent spread of obesity (November 2006, Istanbul, Conference of WHO European ministers on preventing obesity).
3. *The European Strategy for the Prevention and Control of Non-communicable Diseases* (World Health Organization, 2006)¹⁰⁰.

5. Additional financing necessary for the implementation of the Plan

An additional financing of **LVL 82,872** is necessary for the prevention of cardiovascular diseases and limiting the influence of risk factors. It is planned to organize several campaigns of informing the public, including information on the risk factors of cardiovascular diseases, that can be prevented by eating healthy food, on the necessary amount, intensity and types of physical activities for different groups of age, on symptoms of myocardial infarction/stenocardia ("heart attack"), campaigns to limit

⁹⁵ Approved at the meeting of the Parliament of Latvia (10 June 2010) (Latvijas Vēstnesis No. 101, 29.06.2010).

⁹⁶ [http://phoebe.vm.gov.lv/misc_db/web.nsf/626e6035eadbb4cd85256499006b15a6/b963bb9cdd4d04c2c2257976002cc914/\\$FILE/vadlinijas_pasvald-veseslibas-veicinasana_2011.pdf](http://phoebe.vm.gov.lv/misc_db/web.nsf/626e6035eadbb4cd85256499006b15a6/b963bb9cdd4d04c2c2257976002cc914/$FILE/vadlinijas_pasvald-veseslibas-veicinasana_2011.pdf)

⁹⁷ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52007DC0279:LV:NOT>

⁹⁸ http://ec.europa.eu/health/archive/ph_overview/documents/strategy_wp_lv.pdf

⁹⁹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2009:296:0004:0014:EN:PDF>

¹⁰⁰ http://www.euro.who.int/_data/assets/pdf_file/0008/76526/E89306.pdf

tobacco use among children and young people, and to limit the subjection of children to passive smoking. It is also planned to develop methodological materials for general practitioners on "prescription of physical activity", including training of practitioners on the use of methodological materials, as well as develop informative materials on the necessity of physical activities for patients.

Additional financing in the amount of **LVL 316,911** is necessary to ensure the monitoring (assessment of action) of cardiovascular diseases while conducting a research on the quality control for medical certificates of cause of death, as well as other studies on the habits of people (age group of 15-64) that influence health, health influencing habits among children in Latvian schools, youth smoking, anthropometric parameters and school environment, factors that influence health and functional ability of people after the working age in Latvia, and research on epidemiological profile of cardiovascular risk factors among adult people (age group of 25-74) in Latvia.

As a result, **the total** additional financing in the amount of **LVL 399,783** is planned for the prevention of cardiovascular diseases, monitoring and limiting the influence of risk factors: LVL 259,783 in 2014 and LVL 140,000 in 2015.

For limiting risks of cardiovascular diseases, and for treatment of these diseases at the primary level, additional financing in the amount of **LVL 1,929,023** is necessary, including LVL 3000 for preparing methodological materials for general practitioners on: action during the annual preventive examination in order to determine additional indicators of cardiovascular diseases at annual prophylactic medical examinations, and calculate cardiovascular risks; identification of individuals at high risk; algorithm of procedure for general practitioners in case when CVD pathology is diagnosed during the preventive examination; algorithm of preventive measures; defining goals for various groups of patients; instructing patients on performing regular self-monitoring; algorithm for patients suffering from resistant hypertension (identifying and criteria for referring to a specialist), as well as **LVL 497,454** for general practitioners to perform CVD screening to 11 years old children, to women at the age of 50, 55, 60, and to men at the age of 45, 50, 55, 60; **LVL 1,420,661** for providing reimbursed medicinal products for new CVD patients identified during the screening process; LVL 7908 for providing echocardiography to high-risk pregnant women on the 14-16 week of pregnancy

Additional **LVL 1,053,459** is necessary for CVD treatment at the secondary level (regional cardiologists and consultation centres in hospitals) to provide cardiologists with option to perform deep examination of CVD, functional examination among screening groups and the pulse oximetry to newborns.

Additional **LVL 1,232,695** is necessary for improving CVD treatment and preventive measures at the tertiary level. This sum includes increasing extent of emergency cardiological support, implementing orthotopic heart transplantation (five surgeries a year) and providing reimbursed medicines after heart transplantation.

LVL 129,229 is necessary for the improvement of accessibility of CVD health care system resources. It is planned to strengthen the capacity of NHS and CDPC by

creating one additional position at NHS for registering medical technologies, and another additional position at CDPC for health promotion and ensuring preventive measures in the field of cardiovascular diseases. Furthermore, it is planned to create cabinets of medical care for patients with cardiological diseases, where a cardiologist and nurse could perform a quick examination.

To implement the previously mentioned measures for the prevention and treatment of CVD, which requires additional preventive, medical, support and assessment measures, **the total amount of the required additional financing constitutes LVL 4,744,189**: LVL 559,346 in 2014 and LVL 4,184,843 in 2015 (and henceforward each year).

Separate measures will be implemented using state budget resources allocated to institutions involved, by implementing measures (tasks) in the competence of each particular institution, and within the financing of EU funds.

6. Institutions responsible for the implementation of measures

The Ministry of Health is responsible for monitoring the results of the implementation of the Plan. The implementation of the Plan is performed by 11 state institutions, Latvian Society of Cardiology, Latvian Association of Paediatric Cardiologists, Latvian Medical Association, Latvian Association of General Practitioners, Association of Rural General Practitioners, Latvian Neurologists Association, Latvian Association of Neurosonology, Latvian Society of Neuroradiology, Latvian Diet Doctor Association, Diet and Nutrition Specialists Association of Latvia, Latvian Federation of Food Enterprises, Latvian Association of Local and Regional Governments, Pharmacists Society of Latvia, Latvian Association of Testing Laboratories, Institute of Cardiology of the University of Latvia, general practitioners and medical institutions. Institutions that are responsible for the implementation of measures have been specified in the Plan.

7. Assessment and reporting procedure of the Plan

An informative report on the implementation of the Plan during the period of its operation is prepared by the Ministry of Health and it is submitted by the Minister for Health to the Cabinet of Ministers not later than on 1 December 2016.

8. Measures provided for in the Plan

Link to objectives of the policy, directions of measures or tasks established in the strategy (if the plan has been elaborated for the introduction of the strategy)	The main goal of the Public Health Strategy for 2011-2017 — to extend the healthy life period to the population of Latvia and to prevent premature death, maintaining, improving and restoring health.				
Objective identified in the Plan	Objective of the plan — to minimize mortality due to cardiovascular diseases, reducing negative effect of risk factors to health.				
Measures to attain the objective	1. Measures — improvements in prevention of cardiovascular diseases and limiting negative influence of risk factors on health				
Task to attain the objective	1.1. Improvement of healthy habits at population level				
Measures to attain the identified objective	Term for completion	Institution in charge	Institutions involved	Direct operation results	Designed funds and sources thereof
1.1.1. To develop recommendations to population for prevention of cardiovascular diseases.	30 December 2013	MH	CDPC DNSAL LDDA	Recommendations developed and approved by decree of the Minister of Health, and published on MH site (www.vm.gov.lv), CDPC site (www.spkc.gov.lv), and delivered to LAGP and LARGP.	In 2013, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2013.
1.1.2. To inform producers of food on necessity to reduce content of salt, fat, sugar in food.	2013 – 30 December 2015	MH	MA LFFE Food producers	<u>Round table discussions arranged for representatives of food producers on the necessity to reduce the content of salt, fat, sugar in food, as well as periodical review of these issues at the Food Board meetings.</u>	In 2013-2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for the respective year.
1.1.3. <u>To make amendments to</u>	31 March 2014	MH	MA	Amendments to laws and	In 2014, this measure will be

<u>the Law on the Supervision of Handling of Food, providing for delegation of the Cabinet of Ministers on limitation of the content of trans fatty acids in food</u>			LFFE Food producers	regulations developed and submitted to the Cabinet of Ministers.	ensured within the framework of funds provided for in the Law on State Budget for 2014.
1.1.4. To develop a law on <u>limitation of the content of trans-fatty acids in food</u>	2014 – 30 December 2015	MH	MA LFFE Food producers	Law developed and submitted to the Cabinet of Ministers.	In 2014-2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for the respective year.
1.1.5. To carry out public information campaigns to inform population on cardiovascular disease risk factors, which may be prevented, using adequate food (incl. reduction of saturated fats, reduction of consumption of salt to maximum of 6g a day, increase in consumption of vegetables and fruits).	2013 – 30 December 2015	CDPC	MH	Each year population is being informed about the food which can reduce possibility of cardiovascular diseases. <u>During the campaign, size of the potentially achievable target audience — at least 1,600,000 people.</u>	In 2013, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2013. In 2014, additional financing is required from the state budget, in total LVL 20,000: Costs for one campaign approximately LVL 10,000 by items (considering costs incurred for previous campaigns): • Strategic support, development of creative concept — LVL 700 • Creating of videos — video advices (idea, scenario, shooting, montage, project management) — LVL 3800 • Creating of audio-clips (idea, scenario, two voiceovers, recording) — LVL 600 • Placing of social advertising

					campaign on TV, radio, Internet — LVL 700 • Series of educational publications on sites — LVL 350 • Creating and placing of outdoor advertisements — LVL 700 • Development, design, layout design, printing of printed materials (posters, leaflets, brochures) — LVL 800 • Development of information banners and placement thereof in social networks — LVL 400 • Mass media relations (incl. organization of press conference) — 20 hours x LVL 40 per hour — LVL 800 • Activities in social media — 10 hours x LVL 40 per hour — LVL 400 • Cooperation with local newspapers — LVL 300 • Post-campaign poll (covering at least 1000 respondents) and compilation of results — LVL 450 In 2015, this measure will be ensured within the framework of funds provided for in the Law on
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					State Budget and <u>indicative</u> EU funds (one campaign, LVL 10,000). ¹⁰¹ .
1.1.6. To implement public information campaign to minimize use of tobacco among children and youth.	30 December 2014	CDPC	MH NGO	<u>Children and youth informed on hazardous effect caused by smoking.</u> <u>During the campaign, size of the potentially achievable target audience — at least 1,000,000 people.</u>	In 2014, additional financing is required from the state budget, approximately <u>LVL 10,000 by items (considering costs of former campaigns):</u> • Strategic support, development of creative concept — LVL 700 • Creating of videos — video advices (idea, scenario, shooting, montage, project management) — LVL 3800 • Creating of audio-clips (idea, scenario, two voiceovers, recording) — LVL 600 • Placing of social advertising campaign on TV, radio, Internet — LVL 700 • Series of educational publications on sites LVL 350 • Creating and placing of outdoor advertisements — LVL 700 • Development, design, layout design, printing of printed materials (posters, leaflets, brochures) — LVL 800

¹⁰¹ Source and scope of funding is indicative and specified in accordance with the National Development Plan of Latvia for 2014-2020.

					• Development of informative banners and placement thereof in social networks — LVL 400 • Mass media relations (incl. organization of press conference) — 20 hours x LVL 40 per hour — LVL 800 • Activities in social media — 10 hours x LVL 40 per hour — LVL 400 • Cooperation with local newspapers — LVL 300 • Post-campaign poll (covering at least 1000 respondents) and compilation of results — LVL 450
1.1.7. To implement public information campaign to minimize subjection of children to passive smoking	2014 – 30 December 2015	CDPC	MH NGO	Parents, grandparents and minders of children informed on hazardous effect caused by passive smoking. <u>During the campaign, size of the potentially achievable target audience — at least 1,000,000 people.</u>	In 2014, additional financing is required from the state budget, approximately LVL 10,000 by items (considering costs of former campaigns): • Strategic support, development of creative concept — LVL 700 • Creating of videos — video advices (idea, scenario, shooting, montage, project management) — LVL 3800 • Creating of audio-clips (idea, scenario, two voiceovers, recording) — LVL 600

					• Placing of social advertising campaign on TV, radio, Internet — LVL 700 • Series of educational publications on sites — LVL 350 • Creating and placing of outdoor advertisements — LVL 700 • Development, design, layout design, printing of printed materials (posters, leaflets, brochures) — LVL 800 • Development of informative banners and placement thereof in social networks — LVL 400 • Mass media relations (incl. organization of press conference) — 20 hours x LVL 40 per hour — LVL 800 • Activities in social media — 10 hours x LVL 40 per hour — LVL 400 • Cooperation with local newspapers — LVL 300 • Post-campaign poll (covering at least 1000 respondents) and compilation of results — LVL 450 In 2015, this measure will be
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					ensured within the framework of funds provided for in the Law on State Budget and indicative EU funds (one campaign, LVL 10,000). ¹⁰² .
1.1.8. To prepare and distribute informative material to population on frequency, intensity, types of the required physical activities in various age groups.	30 December 2014	SSMC	MH LAGP LARGP CDPC	Population informed on frequency, intensity, types of the required physical activities (information placed on the site, handout materials placed in family doctors' practices, educational and healthcare institutions). <u>Size of the potentially achievable target audience — at least 500,000 people.</u>	In 2014, additional financing is required from the state budget, approximately LVL 5000 by items (considering costs of former campaigns): • Development, design, layout design, printing of printed materials (posters, leaflets, brochures) — LVL 1000 • Preparation of an e-book (a book in electronic format for placement on different sites) — LVL 300 • Series of educational publications on sites — LVL 500 • Development of information banners and placement thereof in social networks — LVL 350 • Placing of social advertisements on the Internet — LVL 550 • Cooperation with local newspapers — LVL 300 • Creating and placing of

¹⁰² Source and scope of funding is indicative and specified in accordance with the National Development Plan of Latvia for 2014-2020.

					outdoor advertisements — LVL 2000
1.1.9. <u>To elaborate a guidance manual for family doctors on the "prescription of physical activities", including to train family doctors about the use of guidance manuals, as well as to develop information materials for patients on the necessity of physical activities.</u>	30 December 2014	SSMC	MH CDPC LAGP LARGP	<u>Guidance manual on the "prescription of physical activities" developed and distributed among family doctor practices. Family doctors trained in use of guidance manuals. Information material for patient on the necessity of physical activities developed.</u>	In 2014, additional financing is required from the state budget, in total LVL 7872, including: Development of the material "Prescription of physical activities" — LVL 1637 (1400 copies A5, ~216 pgs, including printing — LVL 1320; editing — LVL 273; layout design and design — LVL 44); Development of informative material for patients — LVL 3535 (20,000 copies, A4 folded, colour, incl. printing — LVL 3400; preparing, editing — LVL 135); Organization of courses for family doctors — LVL 2700 (training course consisting of six academic hours, costs per course — LVL 90 (one academic hour — LVL 15 * six hours = LVL 90). For training of 600 doctors, 30 courses provided, 20 participants per each course (LVL 90 * 30 courses = LVL 2700)
1.1.10. To implement public information campaigns on types of physical activities for various age groups (both seniors (for instance, Nordic	2014 – 30 December 2015	CDPC	MH NGO	Annual information campaign on the necessity of physical activities and the most suitable types of physical activities at any age.	In 2014, additional financing is required from the state budget, in total LVL 20,000: Costs for one campaign — approximately LVL 10,000 by

walking, exercise bikes for home, etc.), and children (sports games for home and school yards)).				<u>During the campaign, size of the potentially achievable target audience — at least 1,000,000 people.</u>	items (considering costs incurred for previous campaigns): • Strategic support, development of creative concept — LVL 700 • Creating of videos — video advices (idea, scenario, shooting, montage, project management) — LVL 3800 • Creating of audio-clips (idea, scenario, two voiceovers, recording) — LVL 600 • Placing of social advertising campaign on TV, radio, Internet — LVL 700 • Series of educational publications on sites — LVL 350 • Creating and placing of outdoor advertisements — LVL 700 • Development, design, layout design, printing of printed materials (posters, leaflets, brochures) — LVL 800 • Development of informative banners and placement thereof in social networks — LVL 400 • Mass media relations (incl. organization of press conference) — 20 hours x LVL 40 per hour —
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					LVL 800 • Activities in social media — 10 hours x LVL 40 per hour — LVL 400 • Cooperation with local newspapers — LVL 300 • Post-campaign poll (covering at least 1000 respondents) and compilation of results — LVL 450 In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget and indicative EU funds (one campaign, LVL 10,000).¹⁰³.
1.1.11. To develop health promotion infrastructure in local governments (creating of physical activity/sport facilities, infrastructure for street (outdoor) gymnastics, street basketball, football, volleyball, etc.)	30 December 2015	Local government	MH LALRG NGO	<u>In 10% of local governments,</u> have developed/improved health improvement infrastructure objects.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget and indicative EU funds. ¹⁰⁴ .
1.1.12. Within the territory of local government, to provide to population information on available sport facilities and other activity sites (swimming	2013 – 30 December 2015	CDPC Local government	MEPRD MH	<u>Local government contacts in health promotion on a regular basis provide information to local citizens on sports and physical activities and sports</u>	In 2013-2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for the respective year.

¹⁰³ Source and scope of funding is indicative and specified in accordance with the National Development Plan of Latvia for 2014-2020.

¹⁰⁴ Source and scope of funding is indicative and specified in accordance with the National Development Plan of Latvia for 2014-2020.

pools, sport centres, sport halls, cycle tracks, skiing routes, etc.)				<u>facilities where one may involve into physical activities (sports).</u>	
1.1.13. To carry out amendments to laws and regulations, prohibiting sale of electronic cigarettes to under-age individuals	30 December 2015	MH	MW SIPCR	Draft amendments to laws and regulations developed and submitted to the Cabinet of Ministers.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015.
1.1.14. To implement public information campaign "Be aware of your risk", encouraging population <u>to follow healthy lifestyle</u> , as well as to identify and determine cardiovascular disease risk (at the age of 30–35)	30 December 2013	CDPC	MH	Information campaign on cardiovascular disease risk for population at the age of 30-35 implemented.	In 2013, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2013.
1.1.15. To implement public information campaign <u>on early signs and recognition of miocardial infarction/stenocardia</u> ("heart attacks") and <u>stroke</u> to enhance timely referring to medical personnel.	30 December 2014	CDPC	MH EMAS	Information campaign on recognition of miocardial infarction/stenocardia ("heart attacks") and further behaviour implemented. <u>During the campaign, size of the potentially achievable target audience — at least 1,000,000 people.</u>	In 2014, additional financing is required from the state budget, approximately LVL 10,000 <u>by items (considering costs of former campaigns):</u> • Strategic support, development of creative concept — LVL 700 • Creating of videos — video advices (idea, scenario, shooting, montage, project management) — LVL 3800 • Creating of audio-clips (idea, scenario, two voiceovers, recording) — LVL 600 • Placing of social advertising campaign on TV, radio, Internet — LVL 700

					• Series of educational publications on sites — LVL 350 • Creating and placing of outdoor advertisements — LVL 700 • Development, design, layout design, printing of printed materials (posters, leaflets, brochures) — LVL 800 • Development of informative banners and placement thereof in social networks — LVL 400 • Mass media relations (incl. organization of press conference) — 20 hours x LVL 40 per hour — LVL 800 • Activities in social media — 10 hours x LVL 40 per hour — LVL 400 • Cooperation with local newspapers — LVL 300 • Post-campaign poll (covering at least 1000 respondents) and compilation of results — LVL 450
<u>1.1.16. To assess the necessity of amendments to laws and regulations providing optimum excise duty rate, commensurate with the state fiscal and</u>	<u>30 December 2014</u>	<u>MF</u>	<u>MH</u> <u>CDPC</u> <u>ODCC</u> <u>SRS</u>	<u>Interinstitutional work group formed, which has developed and submitted to the Cabinet of Ministers informative report.</u>	<u>In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.</u>

healthcare goals					
Task to attain the objective	1.2. Early diagnostics of cardiovascular diseases				
Measures to attain the identified objective	Term for completion	Institution in charge	Institutions involved	Direct operation results	Designed funds and sources thereof
1.2.1. To develop <u>methodological recommendations on the necessary examinations and behaviour during annual preventive examinations, carrying out screening of children at the age of 11</u>	30 December 2014	CDPC LACC LAC	NHS LAGP LARGP	<u>Methodological materials developed and published on CDPC site (www.spkc.gov.lv), NHS site (www.vmnvd.gov.lv), LAC site (www.kardiologija.lv), LACC site (www.bernukardiologija.lv), and delivered to LAGP and LARGP.</u>	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.
1.2.2. To elaborate methodological recommendations on the necessary examinations and behaviour during annual preventive examinations, carrying out screening of women at the age of 50, 55, 60 and men at the age of 45, 50, 55, 60	30 December 2014	CDPC LAC	NHS LAGP LARGP	<u>Methodological materials developed and published on CDPC site (www.spkc.gov.lv), NHS site (www.vmnvd.gov.lv), LAC site (www.kardiologija.lv), LACC site (www.bernukardiologija.lv), and delivered to LAGP and LARGP.</u>	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.
1.2.3. To make amendments to laws and regulations, establishing mandatory examination of cardiovascular disease risk for children at the age of 11, women at the age of 50, 55, 60 and men at the age	30 December 2014	MH NHS	LAC LACC LAGP LARGP	Draft amendments to laws and regulations, as well as calculation of the required funding prepared for review during the process of preparing the Law on State Budget for 2015.	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.

of 45, 50, 55, 60					
1.2.4. To prepare informative material for educational institutions on the opportunity to examine the risk of cardiovascular diseases during preventive examinations of children at the age of 11	30 December 2014	CDPC	MH	An informative material has been prepared and distributed to educational institutions.	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.
1.2.5. To prepare an informative material for adults on the opportunity to examine the risk of cardiovascular diseases during preventive examinations	30 December 2014	CDPC	MH NHS LAGP LARGP	An informative material has been prepared and distributed to family doctor practices, and published on MH site (www.vm.gov.lv), CDPC site (www.spkc.gov.lv) and NHS site (www.vmnvd.gov.lv).	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.
1.2.6. <u>To assess the opportunity to include additional measurements for the assessment of cardiovascular disease risk in the process of annual preventive examinations at family doctors, including measuring of arterial blood pressure in children from the age of 3</u>	30 December 2014	MH LAGP LARGP	CDPC NHS LAC LACC	<u>Formation of an interinstitutional work group and, within the work group, if required, provision of recommendations for amendments to laws and regulations on early diagnosis of cardiovascular diseases submitted to the Cabinet of Ministers.</u>	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.
1.2.7. To assess the possibility to invent a new diagnose code "high cardiovascular risk"	30 December 2014	MH LAC	NHS CDPC LARGP LAGP	<u>Information on the possibility to invent a new diagnose code has been summarized. If required, recommendations on the elaboration of a new diagnose code have been prepared and Latvia submits</u>	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.

				the offer to WHO SSK-11 Revision Committee for approving the new code.	
Task to attain the objective	1.3. Involvement of pharmacy-shops in the primary prevention of cardiovascular diseases				
1.3.1. To assess the possibility to make amendments to laws and regulations, specifying diagnostic manipulations (<u>such as measuring blood pressure, determining body mass index, express analysis of overall cholesterol and/or triglyceride level</u>) permitted to be carried out by pharmacies.	30 December 2014	MH	PSL NHS HI LAGP LARGP	Information on the required amendments, and, if required, recommendations for amendments to laws and regulations prepared and submitted to the Cabinet of Ministers.	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.
1.3.2. To involve pharmacies in the process of the distribution of informative materials on the prevention of cardiovascular diseases to patients	2013 – 30 December 2015	CDPC LAC	MH NHS PSL	Informative materials on the prevention of cardiovascular diseases are available to patients at pharmacies.	In 2013-2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for the respective year and within the framework of budget of PSL.
Task to attain the objective	1.4. Involvement of laboratories in the primary prevention of cardiovascular diseases				
1.4.1. To review norms of parameters identified in test reviews carried out by laboratories (upper and lower limits)	30 December 2015	MH LAC	LATL	Recommendations for laboratory testing reviews developed, specifying upper and lower limits.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015.
1.4.2. To involve laboratories in the distribution of informative materials on prevention of cardiovascular diseases to patients	2013 – 30 December 2015	CDPC LAC	MH NHS LATL	Laboratories have access to informative materials for patients on prevention of cardiovascular diseases.	In 2013-2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for the respective year and within the framework of budget of LATL.

Measures to attain the objective	2. Measure — Improvement of service quality in medical care of cardiovascular diseases				
Task to attain the objective	2.1. Minimization of the risk of cardiovascular diseases, and treatment on the primary level				
2.1.1. To elaborate methodological materials for family doctor practices on: 1. Actions to measure additional CVD health parameters during annual preventive examinations <u>(including measuring of arterial blood pressure from the age of 3), and to estimate the cardiovascular risk;</u> 2. Identification of individuals with high risk; 3. Action algorithm for family doctors, if, during preventive examination, CVD pathology has been identified <u>(including CVD pathology for children);</u> 4. Algorithm of preventive measures; 5. Defining of objectives to be attained in various groups of patients; 6. Training of patients for	30 December 2014	CDPC LAC <u>LACC</u>	MH NHS LAGP LARGP	Methodological materials developed and published on MH site (www.vm.gov.lv), CDPC site (www.spkc.gov.lv), NHS site (www.vmnvd.gov.lv), LAC site (www.kardiologija.lv), and delivered to LAGP and LARGP.	In 2014, additional financing is required from the state budget, in total LVL 3000: • Development, design, layout design, printing of printed materials (posters, leaflets, brochures) — LVL 1000 • Preparing of an e-book (a book in electronic format for placement on different sites) — LVL 300 • Series of educational publications on sites — LVL 500 • Development of informative banners and placement thereof in social networks — LVL 350 • Placing of social advertisements on the Internet — LVL 550 • Cooperation with local newspapers — LVL 300

the performance of self-control on a regular basis; 7. Behavioural algorithm for patients with resistant hypertension (identification and criteria for referral to the respective specialist).					
2.1.2. Performance of screening for children at the age of 11, women at the age of 50, 55, 60 and men at the age of 45, 50, 55, 60 at family doctor practices	30 December 2014	NHS LAGP LARGP	MH LAC LACC	Performance of CVD screening for children at the age of 11 and for adults at family doctor practices.	In 2015 (and each subsequent year), additional financing is required from the state budget, in total LVL 497,454: LVL 17,824 — for laboratory examinations for children (the expected number of examinations reaches $3572 = \text{total number of children } 17,859 * 0.95 * 0.2$, assuming that 95% of the total number of children will visit their family doctor for preventive examination, and risk factors will be identified in 20% of children. Examinations planned: Cholesterol (number of planned examinations — $3572 * \text{LVL } 0.56 = \text{LVL } 2000.32$) LDL cholesterol (number of examinations $3572 * \text{LVL } 1.68 = \text{LVL } 6000.96$) HDL cholesterol (number of examinations — $3572 *$

					LVL 1.24 = LVL 4429.28) Glucose content in blood (number of examinations — 3572 * LVL 0.56 = LVL 2000.32) Triglycerides (number of examinations — 3572 * LVL 0.95 = LVL 3393.40) LVL 299,702 for laboratory examinations for adults (at the age group 45-60) (number of planned examinations — 53,233 that will cover ~65-70% of individuals at the respective age, in whom no CVD has been diagnosed up to now. Examinations planned: Cholesterol (number of examinations — 53,233 * LVL 0.56 = LVL 29,811) LDL cholesterol (number of examinations — 53,233 * LVL 1.68 = LVL 89,431.44) HDL cholesterol (number of examinations — 53,233 * LVL 1.24 = LVL 66,008.92) Glucose content in blood (number of examinations — 53,233 * LVL 0.56 = LVL 29,810.48) Triglycerides (number of examinations — 53,233 * LVL 0.95 = LVL 50,571.35) Creatinine (number of
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					examinations — 53,233 * LVL 0.64 = LVL 34,069.12s) LVL 179,928 for examinations at family doctors for adults (at the age group 45-60) (number of planned examinations — 53,233 that will cover ~65-70% of individuals at the respective age, in whom no CVD has been diagnosed up to now. Number of preventive examinations — 53,233 * LVL (2.38+1.00) = LVL 179,928).
2.1.3. To ensure reimbursable medicinal products to new patients diagnosed with CVD during screening	30 December 2015	NHS MH	LAC LARGP LAGP	Reimbursable medicinal products to new patients diagnosed with CVD during screening are ensured	In 2015 (and each subsequent year), additional financing is required from the state budget, in total LVL 1,420,661 (24,079 individuals * LVL 59). As a result of screening, new patients will be diagnosed to whom treatment will be ensured. It is assumed that there will be 65% of those referred to cardiologist (37,044 new visits * 0.65 = 24,079. According to data of NHS, average amount for diagnoses I10-I50 per patient a year is LVL 59.
2.1.4. To review the amount of reimbursable medicinal products for blood circulation system	2014 – 30 December 2015	MH NHS	LAC LARGP LAGP LAN	<u>In 2014, an interinstitutional work group has been formed, which provides assessment on reimbursability for cardiovascular disease</u>	In 2014-2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for the respective year.

				<u>medicinal products in the amount of 50%, 75% and/or 100%. The prepared report is published on MH site (www.vm.gov.lv) and NHS site (www.vmnvd.gov.lv).</u> <u>In 2015, if necessary, draft amendments to laws and regulations developed and submitted to the Cabinet of Ministers.</u>	
<u>2.1.5. To make amendments to laws and regulations, establishing mandatory fetal echocardiography in the 14-16 pregnancy week for pregnant women with high risk</u>	<u>30 December 2014</u>	<u>MH NHS</u>	<u>LAGP LARGP LAC Latvian Association of Gynaecologists and Obstetricians</u>	<u>Draft amendments to laws and regulations developed and submitted to the Cabinet of Ministers.</u>	<u>Additional funds from the state budget are required, in total LVL 7908:</u> <u>In 2014 — LVL 3954;</u> <u>In 2015 (and every subsequent year) — LVL 3954.</u> <u>Expected number of pregnant women per year — 20,000, of which approximately 20% or 4000 pregnant women are in the risk group. Meanwhile the number of pregnant women in the high risk group reaches approximately 5% or 200 pregnant women, requiring fetal echocardiography in the 14-16 pregnancy week.</u> <u>Echocardiography, number of examinations * LVL (16.77 + 3.00) = LVL 3954</u>
<u>2.1.6. To define <i>lipid targets</i> in cardiovascular disease</u>	<u>30 December 2014</u>	<u>MH LAC</u>	<u>NHS LARGP</u>	<u>Lipid targets have been defined in cardiovascular</u>	<u>In 2014, this measure will be ensured within the framework of</u>

prevention guidelines ¹⁰⁵			LAGP	disease prevention guidelines.	funds provided for in the Law on State Budget for 2014.
2.1.7. Informative workshops for physicians (family doctors and cardiologists) on attaining the defined <i>lipid targets</i> in high and very high risk patients	30 December 2015	CDPC LAC	NHS LARGP LAGP MH	Physicians (family doctors and cardiologists) informed on attaining the defined <i>lipid targets</i> in high and very high risk patients	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015.
2.1.8. To develop recommendations for the assessment of cardiac health in children with high physical load	2014 – 30 December 2015	SSMC LACC	LAGP LARGP LAC	A work group has been set up and, within the framework of the work group, recommendations for the assessment of cardiac health in children with high physical load are developed	In 2014-2015, this measure will be ensured within the frame of funds provided for in the Law on State Budget for the respective year and indicative EU funds ¹⁰⁶ .
Task to attain the objective	2.2. Treatment of cardiovascular diseases at secondary level				
2.2.1. To improve the availability of primary percutaneous coronary and cerebrovascular intervention across the entire territory of Latvia	2013 – 30 December 2015	Four cardiology centres	MH NHS LAC	All patients with myocardial infarction with ST segment elevation (STEMI) or acute cerebrovascular diagnosis are hospitalized to one of the four cardiology and/or invasive radiology centres according to the developed criteria.	In 2013-2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for the respective year.
2.2.2. To ensure consultation of a cardiologist for in-depth examination of patients selected as a result of screening	30 December 2015	NHS LAC LACC	MH LAGP LARGP	Provision of cardiologist consultations and performance of appropriate examinations.	In 2015 (and every subsequent year), additional financing is required from the state budget, in total LVL 191,236, including: LVL 28,076 for children at the age of 11 (3572 patients *

¹⁰⁵ Lipid targets in Latvia: 1) total cholesterol less than 4.5 mmol/l; 2) triglycerides less than 1.7 mmol/l; 3) high density lipoprotein cholesterol more than 1.2 mmol/l in women and more than 1.0 mmol/l in men; 4) low density lipoprotein cholesterol depending on the risk less than 1.8-3.0 mmol/l. http://www.kardiologija.lv/files/prof_erglis_072011_1.pdf

¹⁰⁶ Source and scope of funding is indicative and specified in accordance with the National Development Plan of Latvia for 2014-2020.

					$\text{LVL } (4.86+3.00) = \text{LVL } 28,076)$ $\text{LVL } 163,160 \text{ for adults at the age group } 45-60, (33,572 \text{ patients} * \text{LVL } 4.86 = \text{LVL } 163,160).$
2.2.3. To ensure functional diagnostic examination of patients selected as a result of screening	30 December 2015	NHS LAC	MH LAGP LARGP	Appropriate examinations carried out at functional diagnostic centres.	In 2015 (and each subsequent year), additional financing is required from the state budget, in total LVL 541,423: LVL 13,623 for children at the age of 11. It is expected that functional examinations will be required for ~179 children or ~5% of those examined at the laboratory ($3572 * 0.05 = 179$), incl. the following examinations: ECG — 179 examinations* $\text{LVL } (0.91+1.66+1.00) = \text{LVL } 639.03$ Echocardiography with doplerography 179*0.5 examinations* $\text{LVL } (16.77+3.00) = \text{LVL } 1769.42$ Veloergometry 179*0.3 examinations* $\text{LVL } (8.41+3.00) = \text{LVL } 612.72$ Holter monitor 179*0.25 examinations* $\text{LVL } (10.43+3.00) = \text{LVL } 600.99$ Other examinations — $\text{LVL } 10,000, \text{ depending on}$

					anamnesis and other risk factors for each individual patient. LVL 527,800 for adults at the age group 45-60, including the following examinations: ECG — 33,572 examinations* LVL (0.91+1.66) = LVL 86,280.04 Echocardiography — 20,849 examinations * LVL 16.77 = LVL 349,637.73 Veloergometry — 20,849*0.4 examinations * LVL 8.41 = LVL 70,136.04 Holter monitor — 20,849*0.1 examinations * LVL 10.43 = LVL 21,745.51.
<u>2.2.4. To develop tariffs for the implementation of medical technology “Oxygen saturation measurement (pulse oximetry)” and make appropriate amendments to laws and regulations</u>	<u>30 December 2013</u>	<u>NHS MH</u>	<u>LACC</u>	<u>Tariffs for implementation of medical technology “Oxygen saturation measurement (pulse oximetry)” developed and appropriate amendments to legal enactments made</u>	<u>In 2013, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2013.</u>
<u>2.2.5. To carry out mandatory oxygen saturation measurement (pulse oximetry) in newborns at obstetrical institutions</u>	<u>2014 – 30 December 2015</u>	<u>NHS Medical institutions</u>	<u>LACC MH Latvian Association of Gynaecologists and Obstetric</u>	<u>In 2014–2015, oxygen saturation (pulse oximetry) has been measured to every newborn.</u>	<u>Additional financing required from state budget, in total LVL 7320,800:</u> <u>In 2014 — LVL 160,400;</u> <u>In 2015 (and every subsequent year) — LVL 3954.</u> <u>The expected number of newborns per year — 20,000.</u>

			<u>iats</u>		<u>Oxygen saturation measured in every newborn.</u> <u>20,000 * LVL 8.02 =</u> <u>LVL 160,400</u>
Task to attain the objective	2.3. Improving of logistics				
To achieve that the time from the first medical contact to reperfusion is less than two hours (or up to 90 min. within first 90 min.), or fibrinolytic therapy is to be ensured within 30 min. for patients with STE-ACS.	2013 – 30 December 2015	EMAS		Time from the first medical contact to reperfusion is less than two hours (or up to 90 min. within first 90 min.) for patients with STE-ACS.	In 2013-2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for the respective year.
Task to attain the objective	2.4. Treatment of cardiovascular diseases at tertiary level, and tertiary prevention				
2.4.1. To develop a programme that would ensure that the waiting period for the percutaneous coronary intervention (PCI), heart failure surgery and treatment of arrhythmia (ECS, CRT, ICD, RFKA), as well as other heart surgeries would not exceed one month.	30 December 2015	NHS LAC	MH	Programme that would ensure the reduction of the waiting time, which shall not exceed one month (reduction of patient queues).	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015 and within the framework of budget of LAC.
2.4.2. To ensure periodic (at least once every three years) calculation of the required supplementary funds for the planned cardiovascular surgeries and other manipulations at university hospitals.	30 December 2015	NHS Medical institutions	MH LAC	Calculations of the required supplementary funds prepared for submission to NHS.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015.

2.4.3. To elaborate recommendations for the improvement of health of the cerebral blood vessels	30 December 2014	CDPC	NHS MH LAGP LARGP Latvian Neurologists Association, Latvian Association of Neurosurgery, Latvian Association of Neuroradiology	<u>A work group has been set up, which has developed and submitted recommendations to the Ministry of Health. The work group has carried out:</u> 1) <u>Analysis of availability/accessibility of stroke units;</u> 2) <u>Audit of fulfilment of stroke unit quality requirements to ensure operation thereof and quality of the specific therapy provided;</u> 3) <u>Analysis of the required medical technologies;</u> 4) <u>Development of healthcare programmes and standards for stroke patients;</u> 5) <u>Preparing actions for invasive treatment of cerebral blood vessel diseases.</u>	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.
2.4.4. To submit the necessary documents for the assessment and approval by NHS of medical technology — resistant primary arterial hypertension correction.	30 December 2014	NHS LAC	MH	Submission of the documents required for approval of the medical technology. Medical technology assessed and approved.	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.
2.4.5. To develop tariffs for implementation of medical technology — resistant primary arterial hypertension correction, and make appropriate amendments to	30 December 2015	MH NHS	LAC	Tariffs for the implementation of medical technology — resistant primary arterial hypertension correction developed and appropriate amendments to legal	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015.

laws and regulations.				enactments made.	
2.4.6. To approve NHS medical technologies: 1) Correction of hypertrophy of ventricular septum, carrying out alcohol septal ablation; 2) Closing of left atrial appendage.	30 December 2014	NHS LAC	MH	NHS assesses and approves medical technologies: 1) Correction of hypertrophy of ventricular septum, carrying out alcohol septal ablation; 2) Closing of left atrial appendage.	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.
2.4.7. To develop tariffs for implementation of medical technologies: 1) Correction of hypertrophy of ventricular septum, carrying out alcohol septal ablation; 2) Closing of left atrial appendage, and make appropriate amendments to laws and regulations.	30 December 2015	MH NHS	LAC	Tariffs for medical technologies: 1) Correction of hypertrophy of ventricular septum, carrying out alcohol septal ablation; 2) Tariffs for closing of left atrial appendage and appropriate draft amendments to laws and regulations are prepared.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015.
2.4.8. To submit the documents necessary for the assessment and approval of medical technology — percutaneous correction of left atrial post-infarction aneurysm — by NHS.	30 December 2014	NHS LAC	MH	Submission of the documents required for approval of the medical technology. Medical technology assessed and approved.	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.
2.4.9. To develop tariffs for the implementation of medical technology — percutaneous correction of left atrial post-infarction aneurysm, and make appropriate amendments to laws and regulations	30 December 2015	MH NHS	LAC	Tariffs for implementation of medical technology — percutaneous correction of left atrial post-infarction aneurysm developed and appropriate amendments to legal enactments made.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015.

2.4.10. To approve NHS medical technology — transcatheter aortic valve implantation	30 December 2014	NHS LAC	MH	NHS assesses and approves medical technology	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.
2.4.11. To develop tariffs for the implementation of medical technology — transcatheter aortic valve implantation, and make appropriate amendments to laws and regulations.	30 December 2015	MH NHS	LAC	Tariffs for implementation of medical technology transcatheter aortic valve implantation developed and appropriate amendments to legal enactments made	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015.
2.4.12. To submit the documents necessary for the assessment and approval of medical technology — aortic valve balloon valvuloplasty — by NHS.	30 December 2014	NHS LAC	MH	Submission of the documents required for the approval of the medical technology. NHS assesses and approves medical technology.	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.
2.4.13. To develop tariffs for the implementation of medical technology — aortic valve balloon valvuloplasty, and make appropriate amendments to laws and regulations.	30 December 2015	MH	NHS	Tariffs for the implementation of medical technology — aortic valve balloon valvuloplasty are developed and appropriate amendments to legal enactments are made.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015.
2.4.14. To submit the documents necessary for the assessment and approval of medical technology — mitral valve insufficiency correction — by NHS.	30 December 2014	NHS LAC	MH	Submission of the required documents for approval of the medical technology. NHS assesses and approves medical technology.	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.
2.4.15. To develop tariffs for the implementation of medical technology — mitral valve insufficiency correction, and make appropriate amendments to laws and regulations.	30 December 2015	MH NHS	LAC	Tariffs for the implementation of medical technology — mitral valve insufficiency correction are developed and appropriate amendments to legal enactments are made.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015.

2.4.16. To submit the documents necessary for the assessment and approval of medical technology — intracoronary stem cell transplantation — by NHS.	30 December 2014	NHS LAC	MH	Submission of the required documents for approval of the medical technology. NHS assesses and approves medical technology.	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.
2.4.17. To develop tariffs for the implementation of medical technology — intracoronary stem cell transplantation, and make appropriate amendments to legal enactments	30 December 2015	MH NHS	LAC	Tariffs for the implementation of medical technology — intracoronary stem cell transplantation are developed and appropriate amendments to legal enactments are made.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015.
2.4.18. To submit the documents necessary for the assessment and approval of medical technology — intramyocardial stem cell transplantation — by NHS.	30 December 2014	NHS LAC	MH	Submission of the required documents for approval of the medical technology. NHS assesses and approves medical technology.	In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.
2.4.19. To develop tariffs for the implementation of medical technology — intramyocardial stem cell transplantation, and make appropriate amendments to legal enactments	30 December 2015	MH NHS	LAC	Tariffs for the implementation of medical technology — intramyocardial stem cell transplantation, using NOGA system, are developed and appropriate amendments to legal enactments are made.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015.
2.4.20. To increase the number of recipients of tertiary healthcare level services	30 December 2015	NHS LAC	MH	Tertiary level healthcare services provided to 1044 patients in addition.	In 2015 (and each subsequent year), additional financing is required from the state budget, in total LVL 993,802, including for the increase of the number of the following services: LVL 61,751 — Coronary angiography (increase in the number of services 139 *

					LVL 444.25 = LVL 61,751); LVL 125,686 — Coronary angiography at day-hospital (increase in the number of services 365 * LVL 344,345 = LVL 125,686); LVL 31,695 — Coronary angioplasty (increase in the number of services 21 * LVL 1509.29 = LVL 31,695); LVL 429,445 — Coronary angioplasty, using stent (increase in the number of services 176 * LVL 2440.03 = LVL 429,445); LVL 65,189 — Coronary angioplasty, using stent with medication (increase in the number of services 20 * LVL 3259.45 = LVL 65,189); LVL 255,936 — Coronary angioplasty at day-hospital (increase in the number of services 303 * LVL 844.67 = LVL 255,936); LVL 17,650 — Correction of congenital and acquired heart defects with invasive cardiology method in adults (increase in the number of services 5 * LVL 3530 = LVL 17,650); LVL 6452 — Coronary angiography in the Hospital No. 1 (increase in the number of
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					services 16 * LVL 403.25 = LVL 6452).
2.4.21. To develop tariffs for implementation of the service programme "Orthotopic heart transplantation", and make appropriate amendments to legal enactments	30 December 2013	NHS MH	LAC	Tariffs for the implementation of the service programme "Orthotopic heart transplantation" are developed and appropriate draft amendments to legal enactments are prepared and submitted to the Cabinet of Ministers.	In 2013, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2013.
2.4.22. Implementation of the service programme "Orthotopic heart transplantation"	2014 – 30 December 2015	NHS VSIA "Pauls Stradiņš Clinical University Hospital"	MH	In 2014, five orthotopic heart transplantations performed. In 2015, five orthotopic heart transplantations performed.	Additional financing is required from the state budget, in total LVL 206,022: In 2014 — LVL 103,011 (five transplantations * LVL 20,602.20); In 2015 (and every subsequent year) — LVL 103,011 (five transplantations * LVL 20,602.20). Average treatment tariff per one patient in the service programme "Orthotopic heart transplantation" LVL 20,602.20 (NHS data).
2.4.23. To ensure covering of the expenses of medicinal products in case of diagnosis Z94.1 — transplanted heart	2014 – 30 December 2015	NHS VSIA "Pauls Stradiņš Clinical University Hospital"	MH	In 2014, medicinal products for five patients with orthotopic heart transplantations reimbursed. In 2015, medicinal products for 10 patients with orthotopic heart transplantations	Additional financing is required from the state budget, in total LVL 32,870.70: In 2014 — LVL 10,956.90 (five transplantation patients * LVL 2191.38); In 2015 (and every subsequent

				reimbursed.	year) — LVL 21,913.80 ((5+5) transplantation patients * LVL 2191.38). Costs of medicinal products for one patient after heart transplantation are planned in accordance with the actual situation in 2008-2011. In 2008-2011, on average LVL 2191.38 was used per one patient (NHS data).
2.4.24. To elaborate an offer for establishing cardiology out-patient rehabilitation programme for patients with CVD after discharge from hospital	30 December 2015	MH VSIA "Pauls Stradiņš Clinical University Hospital"	NHS, LAC	Offers for establishing cardiology out-patient rehabilitation programme for patients with CVD after discharge from hospital developed	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015.
Measures to attain the objective	3. Measure – Improvement of availability of resources in prevention and care of cardiovascular diseases				
3.1. <u>To develop proposals for the establishment of the number of cardiologists (including children cardiologists), providing long-term planning principles (location, duties, level of competence).</u>	30 December 2013	CDPC NHS LAC LACC	<u>MH</u> <u>LAGP</u> <u>LARGP</u>	A work group has been set up and, within the scope of the work group, offers for the establishment of the number of cardiologists are developed and submitted to the MH.	In 2013, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2013.
3.2. To elaborate recommendations on the demand of required diagnostic and treatment methods (medical technologies) in the country	30 December 2015	NHS LAC		Recommendations on the assessment of new medical technologies are developed for approval by NHS.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015 and within the framework of budget of LAC.

3.3. To ensure adequate resources for NHS for the assessment and approval of medical technologies.	2014 – 30 December 2015	NHS	MH	One staff unit in NHS for assessment and approval of medical technologies created.	Additional financing is required from the state budget, in total LVL 19,566: In 2014 — LVL 9783; In 2015 (and every subsequent year) — LVL 9783. The planned financing for one senior expert staff unit per year — LVL 9783, including: remuneration in the amount of LVL 8607 (LVL 578 (planned remuneration per month (in accordance with Cabinet Regulation No.1075 "List of Positions in State and Local Government Institutions" (30.11.2010): Group 35, level III; in accordance with Cabinet Regulation No. 1651 "Regulation Regarding Work Remuneration, Qualification Levels of Officials and Employees of the State and Local Government Authorities, and Procedures for Determination Thereof" (22.12.2009): Monthly salary group 10, qualification level 4; monthly salary — LVL 578)) * 12 months = LVL 6936 Mandatory State Social Insurance Contributions — 6936 * 0.2409 = LVL 1671)
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					Goods and services — LVL 98 (average institution maintenance costs per one staff member per month (incl. training, work and business trips, postal, phone and other communication services, electricity costs, IT services, office supplies)* 12 months = LVL 1176.
3.4. To ensure adequate resources to CDPC for health promotion and provision of preventive measures in the area of cardiovascular diseases	2014 – 30 December 2015	CDPC	MH	One staff unit created in CDPC for health promotion and provision of preventive measures in the area of cardiovascular diseases	Additional financing is required from the state budget, in total: LVL 16,916, including: In 2014 — LVL 8458; In 2015 (and every subsequent year) — LVL 8458. Remuneration — LVL 7282 (Group 35, level II; in accordance with Cabinet Regulation No. 1651 "Regulation Regarding Work Remuneration, Qualification Levels of Officials and Employees of the State and Local Government Authorities, and Procedures for Determination Thereof" (22.12.2009): Monthly salary group 9, qualification level 4; monthly salary — LVL 489 * 12 months = LVL 5868; Mandatory State Social Insurance Contributions = 5868 * 0.2409 = LVL 1414); Goods and services — LVL 98

					(average institution maintenance costs per one staff member per month (incl. training, work and business trips, postal, phone and other communication services, electricity costs, IT services, office supplies)* 12 months = LVL 1176.
3.5. To ensure operation of cardiology patient treatment centres where a cardiologist and a nurse works	30 December 2015	NHS <u>Medical institution</u> s	MH	<u>In 2015, agreements with healthcare institutions are concluded on formation of 30 cardiology centres and treatment of cardiology patients.</u>	In 2015 (and every subsequent year), additional financing from the state budget is the required, in total LVL 92,747 (30 centres * LVL 14,424 = LVL 432,720, though, considering that, within the current budget, LVL 339,973 has been planned for the service programme "Cardiology ", the required additional financing for cardiology patient treatment centres, if optimizing the existing system, shall be LVL 432,720 — LVL 339,973 = LVL 92,747). The financing required for one centre per one full-time load a year is LVL 14,424, including LVL 7803 for the cardiologist salary (including remuneration LVL 524 (in accordance with Cabinet Regulation No. 1046 (19.12.2006) "Procedure of Arrangement and Funding of Healthcare", Sub-section

					180.1)*12 = LVL 6288 Mandatory State Social Insurance Contributions = 6288*0,2409 = LVL 1515), LVL 4676 remuneration for the nurse (salary LVL 314 (in accordance with Cabinet Regulation No. 1046 "Procedure of Arrangement and Funding of Healthcare", Sub-section 180.2)*12 months = LVL 3768; Mandatory State Social Insurance Contributions 3768*0,2409 = LVL 908), LVL 1945 for maintenance of the centre, including LVL 289 — Medicinal products (medical remedies), LVL 1116 — Overheads and indirect production costs (costs in relation to maintenance of patients for acquisition of services, materials, power resources, water and inventories) LVL 348 — depreciation; LVL 192 — administrative costs.
3.6. To develop recommendations establishing the procedure of the flow of patients with CVD	30 December 2015	CDPC	MH NHS NGO	Recommendations developed.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015 and

					within the framework of budget of LAC ¹⁰⁷ .
<u>3.7. Recommendations on location, necessary equipment of cardiology treatment centres are developed, considering opportunities offered by the existing functional diagnostics centres.</u>	<u>30 December 2014</u>	<u>MH</u> <u>NHS</u>	<u>LAC</u> <u>LACC</u>	A work group has been set up and, within the scope of the work group, a report is developed and published on MH site (www.vm.gov.lv).	<u>In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.</u>
3.8. Formation of cardiology patient care facilities at health care establishments, providing them with the required equipment	30 December 2015	MH	LAC	In 2015, 30 cardiology care facilities are created and equipped at medical treatment institutions.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015 and within the framework of budget of LAC ¹⁰⁸ .
3.9. To provide equipment for functional diagnostics facilities.	30 December 2015	MH	LAC	Adequate equipment provided for functional diagnostics examination centres.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015 and within the framework of budget of LAC ¹⁰⁹ .
<u>3.10. To prepare a training programme for cardiologists and cardiology nurses</u>	<u>30 December 2014</u>	<u>MH</u> <u>LAC</u>	<u>LACC</u>	<u>Preparation of a training programme for cardiologists and cardiology nurses, including guideline materials.</u>	<u>In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.</u>
3.11. Training of cardiologists on cardiology patient treatment in cardiology treatment centres, incl.,	30 December 2015	MH	LAC	30 cardiologists trained for work at cardiology patient treatment centres.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015 and

¹⁰⁷ Source and scope of funding is indicative and specified in accordance with the National Development Plan of Latvia for 2014-2020.

¹⁰⁸ Source and scope of funding is indicative and specified in accordance with the National Development Plan of Latvia for 2014-2020.

¹⁰⁹ Source and scope of funding is indicative and specified in accordance with the National Development Plan of Latvia for 2014-2020.

• Arrangement of cardiology patient treatment at primary, secondary and tertiary level; • Latest technologies and methods in cardiology patient treatment level; • Accounting, registration and traceability of cardiology patients in Latvia; • Treatment by secondary level specialists, cooperation with family doctor team, distribution of competences.					within the framework of budget of LAC ¹¹⁰ .
3.12. Training of cardiology nurses on cardiology patient treatment when working at cardiology treatment centres	30 December 2015	MH	LAC	30 nurses trained for work at cardiology patient treatment centres.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015 and within the framework of budget of LAC ¹¹¹ .
Measures to attain the objective	4. Measure — Improvement of cardiovascular disease monitoring (assessment of activity)				
Task to attain the objective	4.1. Improvement of register and database, carrying out of study				
4.1.1. To assess the Register of acute coronary and	30 December 2014	CDPC LAC	MH NHS	<u>Assessment on the necessity to improve the Register of</u>	In 2014, this measure will be ensured within the framework of

¹¹⁰ Source and scope of funding is indicative and specified in accordance with the National Development Plan of Latvia for 2014-2020.

¹¹¹ Source and scope of funding is indicative and specified in accordance with the National Development Plan of Latvia for 2014-2020.

cerebrovascular syndromes and to prepare recommendations for improvement thereof <u>to acquire and analyze data in the shortest possible time.</u>				<u>acute coronary and cerebrovascular syndromes and, if required, preparation of recommendations for improvement of the register.</u>	funds provided for in the Law on State Budget for 2014 and within the framework of budget of LAC.
4.1.2. Within the framework of e-health, to improve the system allowing family doctors and cardiologists to exchange with the patient's medical data within the shortest possible time (to see patient flow at healthcare specialists)	30 December 2015	MH	CDPC NHS <u>LAGP</u> <u>LARGP</u> LAC	The system is improved within the framework of e-health, allowing family doctors and cardiologists to exchange with the patient's medical data within the shortest possible time to ensure operative aid to the patient.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015 and within the framework of budget of LAC ¹¹² .
4.1.3. To make amendments to laws and regulations, establishing the required changes for registers in the amount of data to be submitted by medical personnel and medical treatment institutions.	30 December 2015	MH	CDPC <u>LAGP</u> <u>LARGP</u>	Draft amendments to laws and regulations developed and submitted to the Cabinet of Ministers.	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015.
4.1.4. To assess the necessity of studies to acquire additional information on the situation in cardiovascular diseases and risk factors thereof.	30 December 2015	CDPC <u>NHS</u>	MH <u>LAGP</u> <u>LARGP</u> LAC <u>Highly qualified specialists, researchers from higher educational</u>	<u>Necessity assessed and, if necessary, recommendations for new studies in the area of CVD are prepared.</u>	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015.

¹¹² Source and scope of funding is indicative and specified in accordance with the National Development Plan of Latvia for 2014-2020.

			<u>institutions or scientific institutes</u>		
4.1.5. To conduct a study on Health Behaviour among Latvian adult population (at the age from 15 to 64) in Latvia.	30 December 2014	CDPC	MH	Acquisition of data on habits having effect on the health of population (at the age from 15 to 64) in Latvia. Monitoring-type study conducted every two years.	In 2014, additional financing is required from the state budget for the implementation of the current poll, in total LVL 40,000 (n=3000). Implementation of the study: <u>Stage 1</u> — LVL 3000.00 (development of the poll tool — questionnaire — validation of newly included questions and piloting of questionnaires; development and piloting of methodology; preparation of documents for the Central Medical Ethics Committee; arrangement of workshops for interviewers; and preparation and copying of materials; formation of selection); <u>Stage 2</u> — LVL 30,000.00 (collection of poll data using direct computerized interviews at homes of respondents; quality check); <u>Stage 3</u> — LVL 7000.00 (data entering into statistics programme; weighing of data; data verification and clearing; creating of database for the poll in 2014 and creating of a new database merging with the

					former ones; preparing of technical report; preparing of tables and diagrams).
4.1.6. To conduct an epidemiologic study of cardiovascular risk factors in adults (at the age 25-74)	30 December 2014	CDPC LAC	Cardiology Science Institute of LU MH	Comparative data (with study in 2009) acquired on RF dynamics for the population of Latvia, international comparison, opportunity for strategic and tactic prevention plan correction.	<u>In 2014, additional financing is required from the state budget, in total LVL 74,000 (total number of respondents 6000, planned response from 60% or 3600 respondents)</u> <u>Implementation of the study No. 1 — LVL 61,760 incl.:</u> <u>Laboratory tests — LVL 21,960 (LVL 6.1 * 3600 respondents);</u> <u>Blood samples — LVL 2160 (LVL 0.6 * 3600 respondents);</u> <u>Glic. tol. test — LVL 540 (LVL 0.3 * 3600 respondents);</u> <u>Logistics and anthropometry LVL 4320 (LVL 1.2 * 3600 respondents);</u> <u>Interview — LVL 28,800 (LVL 8 * 3600 respondents);</u> <u>Office stationeries — LVL 2400 (stamps, envelopes, paper, etc. LVL 0.4 * 6000 respondents);</u> <u>Equipment (tonometers, glycometers, strips etc.) — LVL 1040.</u> <u>2. Data input into statistics program, data verification, creation of database, preparation of reports and publications — LVL 12,240 (LVL 3.4 * 3600 questionnaires =</u>

					<u>LVL 12,240).</u>
4.1.7. To conduct a study of Health Behaviour in School-aged Children in Latvia.	2013 – 30 December 2014	CDPC	MH	Acquisition of data on habits having effect on health of school children (at the age of 11, 13 and 15) in Latvia. Data acquired during the study are internationally comparative. Monitoring-type study conducted every four years.	In 2014, additional financing is required from the state budget for implementation of the current poll (in the academic year of 2013/2014) — LVL 50,000 (n=4500). Implementation of the study: <u>Stage 1</u> — LVL 5000.00 (tools of the poll — preparation of a questionnaire and methodology; validation of the new questions and piloting of the questionnaire; preparation of documents for the Central Medical Ethics Committee; preparation and multiplication of support letters and informative materials; arrangement of seminars for interviewers (by involving a certified anthropologist) and preparation of materials; formation of selection); <u>Stage 2</u> — LVL 35,000.00 (collection of poll data (including anthropometric measurements); quality check); <u>Stage 3</u> — LVL 10,000.00 (data input into statistics program; weighing of data; data verification and clearing; creation of database and merging with the former ones;

					preparation of technical report; preparation of Latvian database for integration into the international database).
4.1.8. To conduct an Global Youth Tobacco Survey in Latvia.	2014 – 30 December 2015	CDPC	MH	Acquisition of data on smoking habits, availability of tobacco, knowledge and attitude of school-age children (at the age of 13-15 years). Monitoring-type study conducted every four years.	In 2015 (and subsequent years), additional financing is required from the state budget for the implementation of the current poll (in the academic year of 2014/2015) LVL 30,000 (n=5500). Implementation of the study: <u>Stage 1</u> — LVL 2000.00 (tools of the poll — preparation of a questionnaire and methodology; validation of the new questions and piloting of the questionnaire; preparation of documents for the Central Medical Ethics Committee; preparation and multiplication of support letters and informative materials; purchase of equipment required for rural work; arrangement of seminars for interviewers and preparation of materials; formation of selection); <u>Stage 2</u> — LVL 25,000.00 (collection of poll data; quality check); <u>Stage 3</u> — LVL 3000.00 (data input into statistics program; weighing of data; creation of

					database; preparation of tables).
4.1.9. To conduct a study on children anthropometric parameters and school environment.	30 December 2015	CDPC	MH	Acquisition of data on anthropometric parameters of Grade 1 school children (7 years) and Grade 3 (9 years) in Latvia (weight, height, waist and hip girth). Monitoring-type study conducted every three years.	In 2015 (and subsequent years), additional financing is required from the state budget for implementation of the current poll (in the academic year of 2015/2016) — LVL 50,000 (n=3500). Implementation of the study: <u>Stage 1</u> — LVL 5000.00 (tools of the poll — preparation of a questionnaire (school environment questionnaire, anthropometric measurements registration questionnaire and parents questionnaire) and methodology; validation of the new questions and piloting of the questionnaire; preparation of documents for the Central Medical Ethics Committee; preparation and multiplication of support letters and informative materials; arrangement of seminars for interviewers and preparation of materials, under practical training of interviewers the leadership of a certified anthropologist; formation of selection); <u>Stage 2</u> — LVL 35,000.00 (collection of poll data; quality check); <u>Stage 3</u> — LVL 10,000.00 (data

					input into statistics program; weighing of data; creation of database and merging with the former ones; preparation of technical report; preparation of tables and diagrams).
4.1.10. To conduct a Survey on health behaviour and functional capability of the population of Latvia at post-working age	30 December 2015	CDPC	MH	Acquisition of data on habits having effect on health of the population (at the age from 65 to 85) in Latvia.	In 2015 (and each subsequent year), additional financing is required from the state budget, in total LVL 60,000 (n=3000). Implementation of the study: <u>Stage 1</u> — LVL 10,000.00 (tools of the poll — preparation of a questionnaire and methodology; validation of the new questions and piloting of the questionnaire; preparation of documents for the Central Medical Ethics Committee; preparation of informative materials in two languages and multiplication thereof; arrangement of seminars for interviewers and preparation of materials; formation of selection); <u>Stage 2</u> — LVL 40,000.00 (collection of poll data; quality check); <u>Stage 3</u> — LVL 10,000.00 (data input into statistics program; opening of data; creation of a database, preparation of a technical report; preparation of

					tables and schemes).
Task to attain the objective	4.2. Review of events and diagnoses				
4.2.1. The state principal audit expert group performs an analysis of cases that clearly do not comply with the guidelines.	2014 – 30 December 2015	CDPC HI LAC LMA	MH	The state principal audit expert group formed, which performs an analysis of cases that clearly do not comply with the guidelines. Recommendations for the improvement of the care system.	In 2014-2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for the respective year and within the framework of budget of LAC and LMA.
4.2.2. <u>Study on the quality control of medical certificates on the cause of death</u>	30 December 2014	CDPC LAC	LARGP LAGP LAI	<u>Study on the quality control of 1000 randomly selected medical certificates on the cause of death during a period of time from 1 January until 30 June 2012.</u>	In 2014, additional financing is required from the state budget, in total LVL 12,911. Financing planned for three contract experts — LVL 12,911, including: remuneration in the amount of LVL 12,911. Three contractual experts * LVL 578 (planned remuneration per month is equal to <u>remuneration of a medical expert</u> (in accordance with Cabinet Regulation No. 1075 "List of Positions in State and Local Government Institutions" (30.11.2010): Group 5.1, level III; in accordance with Cabinet Regulation No. 1651 "Regulation Regarding Work Remuneration, Qualification Levels of Officials and Employees of the State and

					Local Government Authorities, and Procedures for Determination Thereof" (22.12.2009): Monthly salary group 10, monthly salary — LVL 578)) * 6 months = LVL 10,404. Mandatory State Social Insurance Contributions — LVL 10,404 * LVL 0.2409 = LVL 2507)
4.2.3. Training for family doctors on coding of disease diagnoses using SSK-10, and on filling in medical certificates on the cause of death	<u>30 December 2014</u>	CDPC	LARGP LAGP LAC	In Riga and regions, ~1000 family doctors trained; provided with guideline materials (SSK-10 updated version).	<u>In 2014, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2014.</u>
4.2.4. Analysis of results and possible discrepancies, recommendations for defining correct (specified) cause of death	30 December 2015	HI	MH CDPC LAC	Recommendations for development of guidelines	In 2015, this measure will be ensured within the framework of funds provided for in the Law on State Budget for 2015.

Minister for Health

Ingrīda Circene