

MINISTRY OF HEALTH  
REPUBLIC OF CROATIA



NATIONAL DIABETES PROGRAMME 2015-2020

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## 1. INTRODUCTION

National Diabetes Programme 2015-2020 conforms to the guidelines for the development of national programmes for diabetes of the World Health Organization (WHO)<sup>i</sup>, WHO and International Diabetes Federation (IDF) Diabetes Programmes<sup>ii</sup>, IDF Guide to National Diabetes Programmes<sup>iii</sup>, United Nations (UN) Resolution on Diabetes<sup>iv</sup>, European Union (EU) Vienna Declaration on Diabetes and the UN Declaration on the Prevention and Control of Non-communicable Diseases<sup>v</sup>.

National Diabetes Programme 2015-2020 is in accordance with the National Health Care Strategy of the Republic of Croatia 2012-2020<sup>vi</sup>, Strategic Plan of the Croatian Ministry of Health 2014-2016<sup>vii</sup> and the Strategic Plan for the Development of Public Health 2013-2015<sup>vii</sup> and the Resolution on Diabetes<sup>viii</sup>.

National Diabetes Programme of the Republic of Croatia was first set up in 2007 as the National Programme for the Care of Persons with Diabetes with a Special Aim of Disease Prevention. The programme was initially established for a period of five years, and activities as defined by the programme have been continuously conducted after the defined period expired in 2012.

## 2. EPIDEMIOLOGICAL SITUATION

As estimated by IDF, the 2013 diabetes prevalence in the 20-79-year age group was 8.3% in the world and 8.5% in Europe. Besides the high prevalence of diabetes, there is also a marked trend in the increase in type 2 diabetes that commonly occurs in adults, but is increasingly being diagnosed in children and adolescents. Estimates also point to an increase in diabetes prevalence in Croatia, diabetes prevalence in the 20-79-yr age group amounting to 6.97%.

According to CroDiab registry of persons with diabetes in the Republic of Croatia, 254,296 of Croatian adults had diabetes in 2014<sup>ix</sup>. Additional burden is that almost 50% of patients have not been diagnosed with diabetes<sup>x</sup>, the total number of diseased persons therefore being estimated to be 400,000. Patients diagnosed with the disease usually do not reach treatment goals<sup>xi</sup>, which represents a high risk of further development of chronic complications of diabetes. Diabetes was the 8th leading cause of death in 2013, accounting for 2.47% of total mortality and exhibiting an increasing trend over the last decades, with standardised and cumulative mortality rates for all age groups higher than those in the EU and the European region. Comparative diabetes prevalence rates in European countries are shown in Figure 1.



Figure 1. Comparative diabetes prevalence rates in Europe, SOURCE: Diabetes Atlas Map, <http://www.idf.org/atlasmap/atlasmap>

Complications of diabetes are the main cause of death in patients with the disease. The leading cause of death in persons with diabetes are cardiovascular diseases, the risk of cardiovascular disease being eight times higher in persons with diabetes. Diabetes is also a significant risk factor for cerebrovascular insult, especially in women (5.4 times greater risk). Diabetic retinopathy is a major cause of blindness, nephropathy is the most significant cause of renal failure, and diabetic foot is the leading cause of amputations of lower extremities and the most significant cause of disability in the diseased.

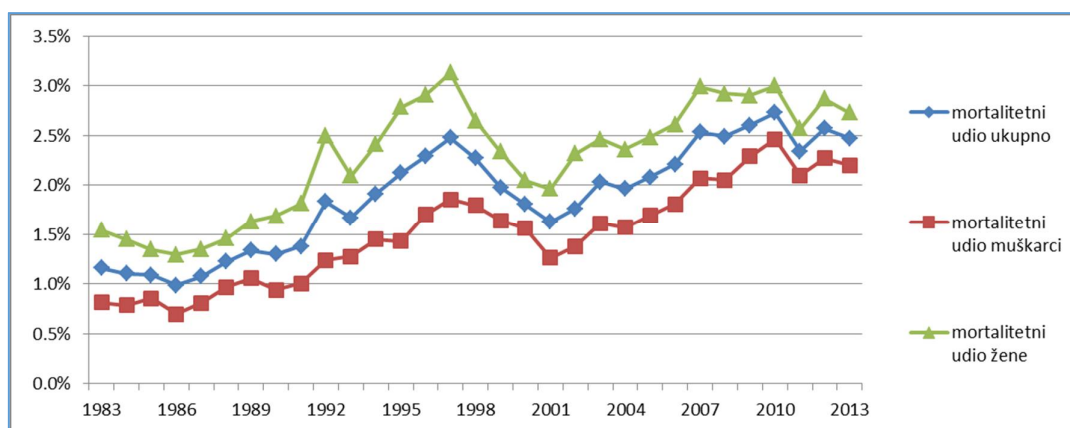


Figure 2. Diabetes mortality in Croatia, 1983-2013

Diabetes is among the ten leading causes of death in Croatia. According to data of the Croatian Institute of Public Health, it was the 8th leading cause of death in 2013, with 2.47% (1,243 of deaths) share in the total number of deaths, although in view of the fact that official statistics register only one underlying cause of death, this number is probably under-estimated (research by the World Health Organization shows that diabetes mortality is two to four times higher than those recorded in the official statistics and that diabetes is the fifth leading cause of death in the world).

Analysis of the achievement of goals set by the National Diabetes Programme from 2007 (increase the number of newly-detected cases of diabetes in the early stage of the disease within the primary health care system, reduce the prevalence of diabetes complications by 20% five years after the beginning of programme implementation [lower extremity amputations, blindness, chronic renal failure and heart and cardiovascular diseases, close the gap between the pregnancy outcomes in women suffering from diabetes and those in healthy women] in the five years following the beginning of programme implementation reveals a satisfactory success of implementation in individual aspects. Comparison between CroDiab Registry data from 2007 and 2012 shows that the prevalence of lower extremity amputations / legs above the ankle was reduced by 20.56% (0.85% vs. 1.07%), blindness by 35.51% (0.69% vs. 1.07%), chronic renal failure 7.55% (0.49% vs. 0.53%), myocardial infarction / angioplasty by 1.21% (6.54% vs. 6.62%), and of cerebrovascular insult by 15.76% (4.81% vs. 5.71%). Even though the goal in the area of chronic renal failure and cardiovascular disease was not achieved, the reduction in the prevalence of angina pain in persons with diabetes of 28.17% (8.67% vs. 12.07%) indicates existence of positive trends in intermediary indicators. The observed effects are the result of improvement in care of patients with diabetes, overall improvement in health care, as well as of a higher proportion of patients with the early stage of the disease, as had been anticipated at setting high goals in 2007.

Analysis of frequency of preventive and systematic examinations in primary care, however, reveals extremely adverse trends. In the period between 2007 and 2012 their number diminished by as much as 64.44% (18,493 vs. 52,002), detection of diabetes in its early stages therefore most probably being a result of targeted early detection actions rather than of systematic increase in the number of preventive examinations. The latter requires amplified attention and implementation of interventions that will result in an increase in the number of preventive examinations in the general population, aimed at early detection of both diabetes and other leading diseases and risks in the Republic of Croatia, enabling early intervention in the related areas.

Convergence of pregnancy outcomes in women with gestational diabetes was a goal that could not have been appropriately evaluated due to inadequately established monitoring system during the previous period.

Economic analyses carried out in the Republic of Croatia show that the cost of diabetes represents a very high proportion of the total expenditure of the Croatian Health Insurance Fund, accounting for 11.49% of the total spending. Regular medical check-ups together with prescribing diabetes medications account for only 14.28% of the total expenditure, whereas treatment of diabetes-related complications accounts for as much as 85.72% of total spending<sup>xii</sup>. In spite of the high present-day cost of care, spending can be expected to increase in the future. This increase can be diminished by a more intensified approach to treatment<sup>xiii</sup>, further monitoring of quality of care indicators included in the CroDiab registry and by using measures of primary prevention.

The overall aim of the National Programme is to improve health by early detection, monitoring, treatment and diabetes complications prevention measures. Implementation of the Programme is expected to further reduce the incidence of diabetes complications and increase the proportion of patients diagnosed in the early stages of diabetes, consequently improving patients' quality

of life and reducing mortality. By conducting additional, synergistic activities in the scope of primary prevention in the future, diabetes incidence should decrease or at least remain within the present level.

The adoption of this National Programme relied on guidelines provided by the results of the National Programme for the Care of Persons with Diabetes in the period from 2007 to 2012 and the results of the SWOT analysis performed (Table 1).

Table 1: SWOT analysis of health care for persons with diabetes in Croatia

<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>○ Long-term investment in diabetes care and related resources</li> <li>○ Diabetes recognized as a public health problem</li> <li>○ National registry of persons with diabetes</li> <li>○ Adopted strategic documents</li> </ul>	<ul style="list-style-type: none"> <li>○ Focus of care on secondary and tertiary levels</li> <li>○ Partly insufficient education of general practitioners / family care physicians</li> <li>○ Unequal access to care</li> <li>○ Insufficient motivation of physicians for monitoring indicators of care</li> <li>○ Patients' reluctance to take responsibility in the treatment process</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>○ Redefinition of roles in treatment according to health care levels</li> <li>○ Complete implementation of indicators of care in routine work</li> <li>○ Improvement in health care system informatization</li> </ul>	<ul style="list-style-type: none"> <li>○ Increase in treatment costs</li> <li>○ Inaccessibility of adequate health care</li> <li>○ Reduced quality of health care</li> </ul>

### **3. MISSION, VISION AND OBJECTIVES**

**MISSION** ó improvement of health in persons with diabetes by implementing efficient measures of early detection, monitoring, treatment and prevention of diabetes complications

**VISION** - enable all persons with diabetes to achieve the highest level of quality of life along with nullifying negative impact of the disease on life expectancy

The aims of the primary, secondary and tertiary prevention programmes are the following: increase awareness about risk behaviours for the development of disease and influence their change, detect as many patients as possible, provide them with appropriate health care and postpone and/or prevent the development of chronic complications of diabetes, and improve the quality of life of persons with diabetes.

## **GENERAL GOALS**

1. Increase the number of newly diagnosed persons with diabetes in the early stages of the disease through screening programmes at the primary health care level by 80% five years after the beginning of programme implementation, with monitoring through preventive panels
2. Reduce the prevalence of chronic complications by 20% five years after the beginning of programme implementation, in particular:
  - ÉLower limb amputation,
  - ÉBlindness,
  - ÉEnd-stage renal disease,
  - ÉCardiovascular diseases -  
Surveillance via CroDiab Registry
3. Achieving outcomes of pregnancies in women with diabetes comparable to those in healthy women, together with establishing a system of adequate monitoring of pregnancy outcomes in women with diabetes - surveillance via CroDiab registry

## **SPECIFIC GOALS**

1. Adoption of the organizational guidelines including algorithms for diabetes care and responsibilities along with encouragement of "diabetes-friendly" family physicians within group practices
2. Improvement in interoperability (acceptance of data from the primary health care panels besides achieving adequate coverage) aimed at improving surveillance system of diabetes health care effectiveness - target coverage is completion of panels for 80% of patients with 80% coverage of the required data within the panel
3. HbA1c monitoring in all persons with diabetes at least once a year, as well as lipid, blood pressure and body weight monitoring; target coverage ó 50% of registered patients with diabetes ó monitoring via CroDiab Registry

## **4. ORGANISATION OF THE PROGRAMME**

The entire organisation of health care of people with diabetes is based on the Croatian Model ó a model of functionally connected organisations that allows optimal implementation of activities of primary, secondary and tertiary prevention. The model consists of primary care teams as the basis, whose work is coordinated by the diabetes centre at the county level, and the entire structure is integrated into the Reference Centre. The model is supplemented by the activities of patient associations that participate in the prevention and patient education, together with professional associations. Every county requires organisation of at least one diabetes centre with a complete team (physician ó a diabetologist/endocrinologist/internist, a diabetes nurse, a dietician and a psychologist). At the regional level, a paediatric diabetes team (a diabetologist/endocrinologist/paediatrician with a master's degree or a 1<sup>st</sup> degree course in diabetology, a diabetes nurse, a dietitian and a psychologist) should also be constituted.

Reference centre coordinates all the centres from a methodological, scientific and professional point of view. In each county at least one centre with an obstetric team will be organized, consisting of a gynaecologist obstetrician with a completed postgraduate study in diabetology, a diabetologist or an internist with a 1<sup>st</sup> degree course, paediatricians, diabetes nurses or midwives and dietitians. Every pregnancy of a woman with diabetes will be supervised in appropriate centres. Reference centre for diabetes in pregnancy with a geneticist is superior to all centres from a methodological, scientific and professional point of view.

Within the primary health care system priority will be given to physicians' and nurses' education on diabetes, encouraging an organisation model in which at least one physician and a nurse within a group practice would be šdiabetes-friendlyš, i.e. have additional education in the field of diabetes, accompanied by additional knowledge and skills.

1. Early detection of diabetes will be carried out in persons older than 50 years of age and in persons younger than 50 with BMI > 25 kg/m<sup>2</sup> and additional risk factors by preventive examinations or at regular medical examinations at family physicians which will include blood glucose determination every two years. Patients with abnormal tests results will be referred to further diagnostic analysis (monitoring through preventive panels).
2. Early detection of diabetes in pregnant women. In pregnant women with an increased risk (positive family history, complications in previous pregnancies like still-born or macrosomic babies, premature birth, miscarriage, gestational diabetes) blood glucose levels will be controlled after pregnancy has been confirmed, and in all other pregnant women, desirably, between the 23rd and the 26th week of pregnancy (monitoring through pathological pregnancy panels).
3. Prevention of the development of chronic complications of diabetes will be carried out annually in all persons with diabetes. The activities include collection of predefined Basic Information Sheet (BIS) parameters.  
Organizational and evaluation tool for secondary and tertiary prevention in patients with diabetes mellitus in Croatia is CroDiab Register, CroDiab NET computer software, CroDiab Web online reporting system, i.e. mandatory annual registration comprising all parameters of secondary prevention, which makes the activities focused on the registration increase a priority, in addition to upgrades through the Croatian Health Insurance Fund panel system focused on the needs of primary healthcare level.
4. Education of the general population and of persons with diabetes will be carried out using a comprehensive approach on the levels as defined by the Plan and programme of healthcare measures, through:
  - Increasing the awareness and health education of the general public,
  - Preparation of written materials and media messages,
  - Therapeutic education of persons with diabetes,
  - Education of educators - primary, secondary and tertiary health care teams, pharmacists, members of the patients association, professionals who encounter diabetes in their work with children and adolescents in educational institutions



## 5. PLAN OF ACTIVITIES

- 5.1. Adoption of the organizational guidelines including algorithms for diabetes health care and responsibilities along with encouragement of "diabetes-friendly" family physicians within group practices; 2015

Implementers: MH Reference centres, CHIF

Collaborators: CMA professional societies

Implementation indicator: adopted guidelines

- 5.2 Adoption/revision of professional guidelines/algorithms for treatment on primary and specialist levels; 2015

Implementers: MH Reference centres

Collaborators: CMA professional societies

Implementation indicator: adopted revised professional guidelines/algorithms for treatment on primary and specialist levels

- 5.3. Improvement of interoperability

5.3.1. Diabetes panel adjustment to legislation on mandatory data registration; 2015

5.3.2. Panel data acquisition from primary health care panels (diabetes, preventive, pathological pregnancy) into CroDiab Registry along with achieving adequate coverage aimed at improved surveillance of diabetes health care effectiveness; 2015

Implementers: CIPH, CHIF, MH Reference centre

Collaborators: CMA professional societies

Implementation indicators: diabetes panels adjusted to legislation on mandatory data registration in addition to secured data acquisition

- 5.4. Education of the general population and persons with diabetes; 2015-2020

Implementers: MH Reference centres, CIPH, IPH

Contributors: CMA professional societies, CADS, associations of persons with diabetes, CPS, pharmacists

Implementation indicator: number of educations provided to general population and persons with diabetes

- 5.5. Human resource management in diabetes care

5.5.1. Analysis of situation and requisites; 2015

Implementers: CIPH, CHIF, MH Reference centres

Collaborators: CMA professional societies

Implementation indicator: completed analysis

- 5.6. Definition of education modules and curricula harmonised with international guidelines; 2015-2016

Implementers: MH Reference centres, MH  
Collaborators: CMA professional societies, CPS, pharmacists  
Implementation indicator: education modules and curricula harmonised with international guidelines

5.6.1. Ensuring organisational / regulatory prerequisites based on expert analyses and secured financial resources; 2015-2020

Implementers: MH, CHIF  
Collaborators: CIPH, MH Reference Centres  
Implementation indicator: defined education stakeholders and resource plan

5.6.2. Development of activity plan for additional professional education; 2015

Implementers: MH Reference Centres, MH  
Collaborators: CMA professional societies, CPS, pharmacists  
Implementation indicator: Plan of additional education

5.6.3. Additional personnel education; 2016-2020

Implementers: MH Reference centres, MH  
Collaborators: CMA professional societies, CPS, pharmacists  
Implementation indicator: number of persons included in education

5.6.4. Estimation of requirements and possibilities of introduction of podiatrists and specialisations of graduate nurses together with estimates of the required resources; 2015 ó 2016

Implementers: MH Reference centres, MH  
Collaborators: CMA professional societies  
Implementation indicator: Analysis of requirements and possibilities

5.7. Early detection of diabetes in general population older than 50 years of age and in those younger than 50 years of age with overweight or obesity and additional risk factors; 2015-2020

Implementers: contractual general/family medicine physicians  
Collaborators: associations of persons with diabetes, CADS, CPS, pharmacists  
Implementation indicator: number of contractual general/family medicine physicians who perform screening and coverage of the general population +50 and <50 yrs at increased risk

5.8. Early detection of diabetes in pregnancy; 2015-2020

Implementers: contractual primary gynaecologists  
Contributors: associations of persons with diabetes, CADS, CPS, pharmacists

Implementation indicator: coverage of pregnant women

5.9. Follow-up of patients with diabetes (quality of care indicators) with patient registration in the CroDiab Registry; 2015-2020

Implementers: contractual family medicine physicians, diabetologists

Implementation indicator: number of patients with available data on disease duration, body mass index, HbA1c, blood pressure and lipid values, and performed eye fundus and foot examinations

## **6. MONITORING AND EVALUATION OF THE PROGRAMME**

Croatian Institute of Public Health will perform monitoring and evaluation on the national level in cooperation with the Ministry of Health reference centres, on which it is liable to submit regular annual written report to the Ministry of Health. Monitoring and evaluation will include the analysis of achievement of individual goals and performance of activities as defined by the plan. At the end of the period covered by the programme evaluation will comprise the analysis of disease incidence and prevalence trends, proportion of patients with chronic complications, mortality and treatment cost analysis.

## **7. FINANCIAL RESOURCES**

Funding will be provided within the regular State budget and Croatian Health Insurance Fund (contracting of primary and secondary health care).

### **Acronyms**

EU - European Union

CPS - Croatian Pharmaceutical Society

CMA - Croatian Medical Association

CADS ó Croatian Association of Diabetes Societies

CIPH - Croatian Institute of Public Health

CHIF - Croatian Health Insurance Fund

IDF - International Diabetes Federation

CND - chronic non-communicable diseases

MH - Ministry of Health

WHO - World Health Organisation

UN - United Nations

IPH ó County Institutes of Public Health

## LITERATURE

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