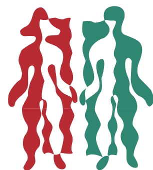
NATIONAL PROGRAMME FOR THE PREVENTION AND CONTROL OF DIABETES

DIRECTORATE-GENERAL OF HEALTH



National Programme for the Prevention and Control of Diabetes

LISBON
2008

PORTUGAL. Ministry of Health. Directorate-General of Health. Directorate of Health Care Services, National Programme for the Prevention and Control of Diabetes. - Lisbon: DGS, 2008. - XXIV pág.

ISBN: 978-972-675-190-8

Diabetes mellitus - prevention and control / Diabetes mellitus - therapy / Diabetes mellitus - complications / Health economy / Insulin-dependent diabetes mellitus / Non-insulin-dependent diabetes mellitus / Risk Groups / Surveys / Health programs and plan / Portugal.

Prepared under supervision of the Directorate-General of Health, by:

Anabela Coelho Candeias
José Manuel Boavida
Luís Gardete Correia
Mário Pereira
Manuela Almeida
Rui Duarte

Scientific Coordination
Manuela Carvalheiro

Executive Coordination
Alexandre Diniz

Print run
500 copies

Printed and bound by
Gráfica Maiadouro, S.A.

Legal Deposit
276 401/08

I - INTRODUCTION 5

II – POPULATION WITH DIABETES 6

III – GOALS 7

IV – MAJOR DIABETIC COMPLICATIONS 8

V – TIME SPAN 8

VI – TARGET POPULATION 8

VII – INCREASED RISK FOR DEVELOPING DIABETES 9

VIII – STRATEGIES 9

IX – CHRONOGRAM 17

X – EVALUATION 18

BIBLIOGRAPHY 19

APPENDICES 21

I – INTRODUCTION

The National Programme for Diabetes Control has been in existence, in Portugal, since the seventies. It is, therefore, one of the oldest national plans of public health. It was updated in 1992 by the former General-Directorate for Primary Healthcare and in 1995, when the Regional Health Administration was reorganised, with the aim of better integration between primary health care and hospital care.

In 1989 Portugal signed the *St. Vincent* Declaration, undertaking to reach its objectives, by reducing the major complications of diabetes: blindness, lower-limb amputations, terminal renal insufficiency and coronary disease.

In 1997 the *Fourth Meeting for the Implementation of the St. Vincent Declaration Diabetes Care and Research in Europe - Improvement of Diabetes Care*, took place in Lisbon. It was co-organized by the World Health Organization (WHO), the International Diabetes Federation (IDF) and the General-Directorate of Health (GDH). Representatives from about sixty countries took part, and once again stressed the need for greater engagement from the countries subscribing the Declaration, to fight diabetes and its complications, since eight years had elapsed and the goals had not yet been achieved.

In 1998 the need for revision of the National Programme for Diabetes Control became evident. The revision which was then implemented is still in force, in an attempt to reach an integrated management model of diabetes and to establish partnerships with all intervening parties in the disease surveillance circuit, a fact that received praise from the WHO.

Thus, two protocols of collaboration were successively established, in the diabetes context, involving the Ministry of Health, patients with diabetes, the scientific community, the pharmaceutical industry, distributors of pharmaceutical products and the pharmacies, focusing on joint efforts to improve the accessibility of patients with diabetes to essential devices for their self-control.

The follow up comission of the National Programme for Diabetes Control also created the Diabetics Guide, as a fundamental tool to obtain the therapeutic objectives of the person with diabetes, as well as several standards of good professional practice in addressing this disease, namely concerning early diagnosis and treatment of its main complications, such as blindness caused by retinopathy, renal insufficiency, vasculopathy and peripheral neuropathy and cardiovascular disease.

The General Assembly of the United Nations agreed that strengthening public health systems and healthcare systems was vital to achieve the Millennium Development Goals. It also recognized that diabetes is a chronic, debilitating and expensive disease associated with serious complications, which represents great risk for families, for Member States and for the whole world.

In addition, the urgent need of undertaking multilateral efforts to promote and to improve human health and to provide access to treatment and education on healthcare, was acknowledged. As a result, it was decided, in the 14 December 2006 Resolution, to encourage the Member States to develop national policies on

the prevention, treatment and control of diabetes. This should be done in harmony with sustainable development of the respective health systems and taking into account the development objectives, internationally delineated.

Considering the need to alter the tendency to an increase in the incidence of diabetes and its complications in Portugal and to improve the health benefits obtained, the GDH revised the national strategies with the collaboration of the Portuguese Society of Diabetology (SPD) and of the Diabetics' Associations. A new version of the National Programme for Diabetes Prevention and Control was established.

Its strategies are based on the primary prevention of diabetes, through the reduction of known risk factors, on the secondary prevention, through early diagnosis and adequate treatment and on the tertiary prevention, through the quality of care provided to the person with diabetes and through rehabilitation and social reinsertion.

The revised strategies of the current Programme for Diabetes Prevention and Control will only be successful if developed in a solid public health infrastructure. Organisational capability, health professionals with the necessary training, information technologies that simplify access to databases are essencial.

The National Programme for Diabetes Prevention and Control must be implemented in a perspective of complementarity with the National Programme of Integrated Intervention on the Health Determinants Connected with Lifestyle, the National Programme for Cardiovascular Disease Prevention and Control, the National Plan to Fight Obesity and the National Platform Against Obesity, aiming to prevent excessive weight and obesity in all population age groups.

The new National Programme for Diabetes Prevention and Control, approved by the Health Ministry, is part of the National Health Plan and it is meant to be applied by health professionals in family health units, health centres, hospitals, continuing care units and contractualised services.

II – POPULATION WITH DIABETES

Diabetes shows variations of incidence and prevalence worldwide, but a global progressive growth. Its highest prevalence is in the age group above 45 years.

Incidence of type 1 and type 2 diabetes in Portugal has increased in the last two decades due to environmental factors, like obesity and sedentary habits.

Results from the DIAMOND (WHO) and EURODIAB studies show that, in the nineties, the incidence of type 1 diabetes in Portugal was between 5 to 9.9 cases for every 100,000 inhabitants/year.

Until recently diabetes prevalence studies in Portugal were not based on significant samples. Data from the National Health Inquiry (NHI) reveals a self-reported prevalence of 4.7% in 1999 and 6.7% in 2006. There seems to be a growing tendency with estimations by the IDF of 8.2% in 2007 and about 9.8% by 2025.

The IDF estimated a 10.1% prevalence of impaired glucose tolerance (IGT) in 2007, in Portugal, and, if nothing were done to stop progression, an increase to 10.8% in 2025.

The total number of admitions for ketoacidosis without coma was lower than should be anticipated during the 5 yr period from 2000-2004. This effective health gain corresponded to a decrease, in relation to what was expected, of 3,059 patients admitted and a cost reduction in terms of hospital expenses of about one million Euros.

These results suggest a positive impact of the strategy of improving accessibility of people with diabetes to medical devices of self-control and to the improvement of general care for the population with diabetes.

III - GOALS

The National Programme for Diabetes Prevention and Control aims to achieve the following goals:

General

1- Integrate management of diabetes.

2- Reduce diabetes prevalence.

3- Delay the beginning of diabetes related complications and reduce their incidence.

4- Reduce diabetes morbidity and mortality.

Specific

1- Ascertain diabetes prevalence and prevalence of its complications.

2- Reduce the incidence of type 2 diabetes in risk groups according to the age group.

3- Diagnose people with diabetes at an early stage.

4- Reduce the number of hospital admitions for diabetic ketoacidosis (DKA), severe hypoglycaemia and hyperosmolarity.

5- Reduce the number of hospital admitions with diabetes–related complications.

6- Reduce the number of days of temporary incapacity for work resulting from major diabetic complications.

7- Standardize professional practices to achieve effective clinical and organisational quality and diabetic patient’s satisfaction.

8- Improve health care access to people with diabetes.

IV – MAJOR DIABETIC COMPLICATIONS

In the National Programme for Diabetes Prevention and Control, the following major diabetic complications are considered:

1. Cardiovascular disease (CVD).
2. Nephropathy.
3. Neuropathy.
4. Amputation.
5. Retinopathy.

V – TIME SPAN

The National Programme for Diabetes Prevention and Control is intended to last for ten years, after its approval, with eventual strategic corrections after the evaluation of the current National Health Plan in 2010.

VI – TARGET POPULATION

The National Programme for Diabetes Prevention and Control is intended for the population in general, although its preferential target populations are:

1. People with diabetes with or without related complications.
2. Pregnant women.
3. Population with increased risk of developing diabetes.

VII – INCREASED RISK OF DEVELOPING DIABETES

People with the following factors are considered to be at a higher risk of developing diabetes:

1. Overweight (BMI ≥ 25) and Obesity (BMI ≥ 30).
2. Central or visceral obesity, M ≥ 94 cm and W ≥ 80 cm.
3. Age ≥ 45 years if European and ≥ 35 years if from others parts of the world.
4. Sedentary life.
5. First degree family history of diabetes.
6. Previous gestational diabetes.

7. Cardiovascular disease history:

   a) Ischemic heart disease (IHD), cerebrovascular disease (CVD) and peripheral artery disease (PAD).

8. Arterial hypertension.

9. Dyslipidemia.

10. Impaired fasting glucose (IFG) and Impaired glucose tolerance (IGT), pre--diabetes.

11. Use of medicines that predispose to diabetes.

VIII - STRATEGIES

Epidemiological knowledge about diabetes and its distribution in the Portuguese population are essencial in order to reinforce the organisational ability of the healthcare services, to improve good practice models for disease management and to reduce diabetes incidence and related complications. The National Programme for Diabetes Prevention and Control must be developed through the implementation, at national, regional and local level, of intervention strategies for staff training and for collecting and analysing information.

Intervention Strategies

The intervention strategies aim to reinforce the organisational capacity, the introduction of good practices models for diabetes management and the reduction of diabetes incidence and its complications. These strategies were outlined in accordance with the following principles:

1) Primary prevention, through the control of known risk factors, focusing, especially, in the avoidable risk factors of diabetes etiology.

2) Secondary prevention, through early diagnosis and appropriate treatment, in accordance with the equity principle.

3) Tertiary prevention, through the rehabilitation and social reinsertion of people with diabetes.

4) Improvement of quality in health care services provided to the person with diabetes.

5) Identification of obstacles to Programme implementation, through a follow-up committee that will identify management barriers, namely in terms of health care access for people with diabetes, in accordance with the disease natural history.

The intervention strategies to be developed have to rely on a solid health care substructure, that guarantees:

1) Health professionals with the necessary training to respond to the quality demands.

2) Availability of information technologies, which allow prompt access to Programme management essential information.

3) Organisational response from the leaders of health care services.

The National Programme for Diabetes Prevention and Control is developed in accordance with the following intervention strategies:

E1.

Community intervention programmes, for primary prevention of diabetes in the general population.

E2.

Information on diabetes and its risk factors to the general population.

E3.

Identification of groups with increased risk of developing diabetes, through the application of surveys by health professionals.

E4.

Identification of people with diabetes among groups of increased risk of developing the disease.

E5.

Preparation and distribution among primary health care professionals of a manual of good practices in diabetes surveillance. It will include technical guidelines on:

a) Promotion of healthy lifestyles.

b) Screening for diabetes among groups at increased risk of disease development.

c) Follow-up of diagnosed people with diabetes, intermediate hyperglycaemia (IHG) or belonging to groups of increased risk of diabetes development.

d) Pregnancy counselling and planning for women with pre-diabetes.

e) Early detection of gestational diabetes.

f) Postpartum follow-up of diabetic women and women who developed gestational diabetes.

g) Early prevention and detection of eye, renal, neuropathic and diabetic foot disease.

h) Treatment for diabetic foot ulcers.

i) Diabetes prevention in obese and pre-obese people.

j) Monitoring risk factors, namely cardiovascular.

k) Therapeutic education for people with diabetes.

l) Diabetes self-vigilance teaching.

m) Organising an integrated clinical care system, preferably through multidisciplinary permanent teams, that provide support, vigilance and control of glycaemia, blood pressure and other risk factors responsible for the development of diabetes related complications, as well as an individual registration system of patients.

n) Referral to hospital care and to the continuing care network.

E6.

Preparation and distribution among hospital care professionals of a manual of good practices in diabetes surveillance. It will include technical guidelines on:

a) Organising integrated care services.

b) Organising diabetic foot and high obstetric risk consultations.

c) Organising day care hospitals.

d) Emergency treatment.

e) Follow-up of people with type 1 diabetes.

f) Organised multidisciplinary diagnosis and treatment of early and late diabetes complications, namely with the contribution of ophthalmology, neurology, cardiology, nephrology and obstetrics.

g) Therapeutic education for people with diabetes.

h) Referral to primary health care services and to the continuing and integrated care network.

E7.

Preparation and distribution among continuing and integrated care units professionals, of a manual of good practices in diabetes surveillance. It will include technical guidelines on:

a) Promotion of healthy lifestyles.

b) Nutritional vigilance.

c) Diabetes self-vigilance teaching.

d) Glycaemic control of insulin dependent patients.

e) Treating insulin dependent patients with non-competent families.

f) Monitoring people with diabetes in the first twelve hours after emergent situations.

g) Preventing and screening for diabetic foot.

h) Treatment of diabetic foot ulcers.

i) Periodic evaluation of diabetes evolution.

E8.

Promotion of quality evaluation of clinical care provided to patients with diabetes in primary health care services›, namely in terms of clinical data recordings and therapeutic prescription.

E9.

Promotion of quality evaluation of clinical care provided to patients with diabetes in hospital services.

E10.

Promotion of quality evaluation of clinical care provided to patients with diabetes in continuing and integrated care services.

E11.

Promotion of random organisational quality audits, to primary health care and hospital services for diabetic patients.

E12.

Monitoring of periodic and random evaluation of clinical data registration and use of the Diabetic Patient´s Guide.

E13.

Monitoring of the contractualisation and the regional and national implementation of the screening and treatment of diabetic retinopathy, nephropathy, diabetic foot and cardiovascular disease.

E14.

Provision, through competent institutions, of periodic information to people with diabetes, about diabetes hospital consultations and their waiting times, as well as diabetic foot, high obstetric risk and ophthalmology consultations. Information on waiting times for a retinography, cataract surgery, vitrectomy, coronary by-pass and to start dialysis will also be provided.

E15.

Investigation of the usefulness of attributing incentives to people with diabetes, who endeavour to reduce the risk of early and late disease complications.

E16.

Guarantee the integrated management of diabetes.

E17.

Creation of a National Programme coordination committee, and annual publication of a progress report.

Training Strategies

The training strategies apply to health professionals and people with diabetes.

The training strategies for health professionals should be based on the following principles:

1. Continuous training.
2. Individual motivation.
3. Problem solving learning.
4. Information relevance and opportunity.
5. Evaluation of teaching and learning.

Promotion of diabetic patient education is a fundamental premise in diabetes therapy, focusing on autonomy, ability to manage the disease on a day to day basis and understanding of the causes and problems of diabetes.

Consequently, there is a necessity for developing structured educational programmes that cover the national territory, engaging patients associations and the scientific and academic societies, and using professionals with experience in diabetes therapeutic education.

The training strategies for diabetes patients should be based on the following principles:

1. Focus educational intervention on the optimization of metabolic control, through self-vigilance devices, to prevent acute and chronic complications and improve the patient's quality of life.
2. Plan the educational process, including individual and group approaches.
3. Perform a preliminary evaluation of knowledge and of patient's daily practices.
4. Base the educational interventions on the preliminary evaluation.
5. Encourage discussion and the participation of people with diabetes in the educational process.
6. Introduce the concepts in accordance with the patient's learning rhythm.
7. Adapt the educational process to the patient's age group and cultural level, taking into account the characteristics of potentially vulnerable groups, for example, people in social exclusion situations, people with language and comprehension problems or people with psychiatric pathologies.
8. Evaluate the learning level and the changes in the patient´s daily practices, happening during the educational process.

The National Programme for Diabetes Prevention and Control is developed according to the following training strategies:

E18.

Prepare and disseminate the minimum training programme curriculum in a global approach to diabetes for health professionals, including:

a) Diabetes epidemiology.
b) Strategies for diabetes screening, treatment and patients' follow-up.
c) Communication techniques.

E19.

Propose the increase of pre- and postgraduate training hours on diabetes prevention, treatment and vigilance.

E20.

Prepare and distribute a manual for health professionals on therapeutic education of people with diabetes.

E21.

Prepare and distribute information materials intended for diabetes patients and their families, on:

a) Diabetes incidence and prevalence.

b) Diabetes risk factors.

c) Diabetes signs and symptoms.

d) Lifestyle intensive adjustment to diabetes.

E22.

Promote, in the diabetes associations, the responsible use of the Diabetics Guide.

E23.

Create, in collaboration with the diabetes associations, national standards for diabetes support groups, namely in terms of:

a) Blood glucose control.

b) Nutrition and weight control.

c) Physical activity.

d) Screening for diabetes major complications.

e) Well-being and quality of life.

Strategies for collecting and analyzing information

The strategies for collecting and analyzing information aim at improving epidemiological knowledge of diabetes and its distribution in the population, to allow:

1. The integrated management of diabetes.
2. Programme monitoring.
3. The systematic collection of epidemiological data resulting from the preventive and therapeutic interventions in the diabetes context.
4. The interpretation of diabetes incidence and prevalence tendencies and of its major complications.
5. The quantification of the national geographical offer in terms of diabetes care services.
6. The quality measurement of diabetes care services.

7. The measurement of immediate results and of medium and long term health gains.

The National Programme for Diabetes Prevention and Control is developed according to the following strategies for collecting and analyzing information:

E24.

Create a national information system that allows to:

a) Identify diabetes differentiated care services.

b) Identify public and private centres with high differentiation in the diabetology context.

c) Quantify diabetes risk population groups, characterised by risk type, gender and age group.

d) Manage screening of risk groups.

e) Ensure the epidemiological vigilance of diabetes major complications.

f) Identify the adjustment of diabetes care services to the different levels of differentiation of the Health System.

g) Measure the quality of access of people with diabetes, through clinical reference, to diabetes care services of different levels of differentiation.

h) Evaluate the standardization of diabetes care services.

i) Measure the quality of care provided to diabetic patients.

j) Evaluate the progress of short term results and of medium and long term health gains, resulting from the Programme implementation.

k) Quantify the financial burden resulting from diabetes management.

l) Measure the degree of satisfaction of people with diabetes, regarding diabetes care services.

E25.

Carry out a diabetes epidemiological study with national and regional significance.

E26.

Publish an annual report on the evolution of the integrated management of diabetes.

E27.

Create a national diabetes observation centre.

IX - CHRONOGRAM

The National Programme for Diabetes Prevention and Control will be developed in accordance with the following schedule:

	2008				2009				2010			
	Trimesters				Trimesters				Trimesters			
Strategies	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
E1.	■	■	■	■	■	■	■	■	■	■	■	■
E2.	■	■	■	■	■	■	■	■	■	■	■	■
E3.	■	■	■	■								
E4.					■	■	■	■	■	■	■	■
E5.		■	■	■	■	■	■	■				
E6.		■	■	■	■	■	■	■				
E7.			■	■	■	■	■	■				
E8.					■	■	■	■	■	■	■	■
E9.					■	■	■	■	■	■	■	■
E10.					■	■	■	■	■	■	■	■
E11.					■	■	■	■	■	■	■	■
E12.	■											
E13.	■											
E14.	■	■	■	■	■	■	■	■	■	■	■	■
E15.					■	■	■	■				
E16.	■	■	■	■	■	■	■	■	■	■	■	■
E17.	■	■	■									
E18.	■	■	■	■								
E19.	■	■	■	■								
E20.	■	■	■	■								
E21.	■	■	■	■								
E22.	■	■	■	■	■	■						
E23.		■	■	■								
E24.	■	■	■	■	■							
E25.				■	■	■	■	■	■			
E26.				■				■				■
E27.	■	■	■	■								

X - EVALUATION

The execution of the National Programme for Diabetes Prevention and Control will be assessed through the following indicators of procedure and results, regarding the national universe of identified diabetic patients:

1. Prevalence rate of people with diabetes.
2. Incidence rate of type 2 diabetes.
3. Incidence rate of type 1 diabetes.
4. Nº of admitions due to diabetic acute complications (ketoacidosis, hypoglycaemia, hyperglycaemia with hyperosmolarity).
5. Total days of temporary incapacity for work.
6. Nº of diabetes related lower limb amputations.
7. Nº of diabetes related dialysis patients.

8. Nº of diabetes related blind and amblyopic people.
9. Nº of diabetic patients with cerebrovascular accidents (CVA).
10. Nº of diabetic patients with acute myocardial infarction (AMI).
11. Diabetes mortality.
12. HbA1c determinations (annual average in the previous year).
13. LDL cholesterol determinations (annual average in the previous year).
14. Screening for nephropathy – previous year.
15. Ophthalmological screening – previous year.
16. Glycaemic control (HbA1c) - % of diabetic patients with HbA1C ≤ 6.5%.
17. LDL cholesterol control (direct measurement) - % of diabetic patients with LDL cholesterol ≤ 70 mg/dl (1.8 mmol/l).
18. Percentage of diabetic patients with microalbuminuria (previous year).
19. Percentage of diabetic patients with retinopathy (previous year).

BIBLIOGRAPHY

1. American Diabetes Association. Diagnosis and Classification of Diabetes Mellitus. Diabetes Care 29: S43-S48, 2006.
2. American Diabetes Association. Screening for Diabetes. Diabetes Care 25: S21-S24, 2002.
3. American Diabetes Association. Standards of Medical Care in Diabetes - 2006. Diabetes Care 29.S4-S42, 2006.
4. Anand, S.S., Razak, F., Vuksan V. et al. Diagnostic Strategies to Detect Glucose Intolerance in a Multiethnic Population. Diabetes Care 26: 290-296, 2003.
5. Chauhn, U. Routine Risk Assessment in Primary Care. National Primary Care Research and Development Centre 2005.
6. Conselho Nacional de Alimentação e Nutrição (CNAM) – Comissão de Educação Alimentar. Recomendações para a Educação alimentar da População Portuguesa. Lisboa: 1997.
7. Declaração de Lisboa sobre Promoção da Saúde no Local de Trabalho. www.dgs.pt
8. DEKHO- Development Program for the Prevention and Care of Diabetes in Finland 2000 - 2010. Program for the Prevention of Type 2 Diabetes in Finland 2003-2010.
9. Department of Health. National Service Framework for Diabetes: Delivery Strategy. London: Department of Health 2001.
10. Department of Health. Diabetes. National service framework for diabetes standards. London: Diabetes NSF Team 2002.
11. DHS - Oregon Department of Human Services. Diabetes Mellitus- Measuring Quality of Care in Health Systems. Oregon: February 2002. www.healthoregon.org/diabetes/gdlnes/home.htm
12. Diabetes Guidelines Health-care Europe Type 1. A desktop Guide to Type 1 (Insulin-dependent) Diabetes. IDF (Europe) 1998. www.staff.ncl.ac.uk/philip.home/tldgch1b.htm
13. Diabetes UK. Recommendations for the provision of services in primary care of people with diabetes. Diabetes.org.uk
14. Diabetes UK. Consultation Response. Tackling health inequalities. www.diabetes.org.uk
15. Diabetes UK. Additional information to support provision of structured education to meet the needs of people with diabetes. www.diabetes.org.uk
16. Diabetes UK. Suggested content for structured education for people with diabetes. www.diabetes.org.uk
17. Ealovega, M.W., Tabaei, B.P., Brandle, M. et al. Opportunistic Screening for Diabetes in Routine Clinical Practice. Diabetes Care 27: 9-12, 2004.
18. Engelgau, M.M., Narayan, K.M.V., Viniccor, F. Identifying the Target Population for Primary Prevention. Diabetes Care 25: 2098-2099, 2002.
19. Fell, G., Cameron, I. Physical Activity, Nutrition and Obesity Strategy. Leeds North West (NHS) Primary Care Trust: July 2005.
20. Foroubi, N.G., Balkan, B., Borch-Johnsen, K., Dekker, J. et al. The threshold for diagnosing impaired fasting glucose: a position statement by the European Diabetes Epidemiology Group. Diabetologia 49: 822- 827, 2006.
21. Greenfield, S., Nicolcci, A., Mattle, S. Selecting Indicators for the Quality of Diabetes Care at the Health Systems Level in OECD Countries. OECD Health Technical Papers Nº 15. Paris Organisation for Economic Co-operation and Development 2004.
22. Home P., Coles J., Goldacre M., Mason A., Wilkinson E. Health Outcomes Indicators: Diabetes. Report of a working group to the Department of Health. Oxford: National Centre for Health Outcomes Development, 1999.

23. Home, P., Colagiuri, S. A global guideline for type 2 diabetes: using new levels of care approach. Diabetes Voice, 50: 22-55, 2005.

24. IDF. Clinical Guidelines Task Force. Global Guideline for Type 2 Diabetes. Brussels: International Diabetes Federation, 2005. www.idf.org

25. Lyon, A.W., Larsen, E.T., Edwards, A. L. The impact of new guidelines for glucose tolerance testing on clinical practice and laboratory services. CMAJ 26, 171(9). doi: 10.1503/cmaj.1040138, 2004.

26. Martins e Silva, J. A Informação em Formação Médica Contínua. Boletim da Sociedade Portuguesa de Educação Médica. II Série, Vol. 6, n.º 1, 1996.

27. Ministério da Saúde. Circular Normativa N.º 8/DGCG de 4/11/98: Diabetes e Gravidez. Lisboa: Direcção-Geral da Saúde 1998.

28. Ministério da Saúde. Diagnóstico, Tratamento e Controlo da Hipertensão Arterial. Lisboa: Direcção--Geral da Saúde 2004. www.dgsaude.pt

29. Ministério da Saúde. Programa Nacional de Prevenção e Controlo das Doenças Cardiovasculares. Lisboa: Direcção-Geral da Saúde 2003. www.dgsaude.pt

30. Ministério da Saúde. Programa Nacional de Intervenção Integrada sobre Determinantes da Saúde Relacionados com os Estilos de Vida. Lisboa: Direcção-Geral da Saúde 2004. www.dgsaude.pt

31. Ministério da Saúde: Educação Terapêutica na Diabetes Mellitus. Circular Normativa N.º 14/DGCG de 12/12/00. Lisboa: Direcção-Geral da Saúde, 2000.

32. Ministério da Saúde. Diagnóstico Sistemático da Nefropatia Diabética. Circular Normativa N.º 13/DGCG de 7/9/01. Lisboa: Direcção-Geral da Saúde, 2001.

33. National Guideline Clearing House. Clinical guidelines for type 2 diabetes. Preventing and management of foot problems. www.guideline.gov

34. Portal do Governo. Rede Nacional das Escolas Promotoras de Saúde. www.portugal.gov.pt/Portal/PT/Governos/Governos Constitucionais/GC17/Minist

35. Reiber, G.E., King, H. Guidelines for the Development of a National Program for Diabetes Mellitus. Geneva: WHO 1991.

36. Screening for Type 2 Diabetes. Report of a World Heath Organization and International Diabetes Federation meeting. Geneva: World Health Organization 2003.

37. The Diabetes Prevention Program Research Group. Strategies to Identify Adults at High Risk for Type 2 Diabetes. Diabetes Care 28: 138-144, 2005.

38. U.S. Department of Health and Human Services. Strategies for Reducing Morbidity and Mortality from Diabetes Through Health-Care System Interventions and Diabetes Self- Management Education in Community Settings. CDC, MMWR, 28, Vol. 50 n.º RR-16, 2001.

APPENDICES

APPENDIX I: TYPE 2 DIABETES RISK TEST

Circle one answer for each question and add up your points:

1. Age

0 points	Under 45 years
2 points	45 – 54 years
3 points	55 – 64 years
4 points	Over 64 years

2. Body Mass Index (see next appendix)

0 points	Lower than 25 kg/m^2
2 points	25 – 30 kg/m^2
3 points	Higher than 30 kg/m^2

3. Waist measurement taken bellow the ribs (usually at the level of the navel)

MEN

0 points	Less than 94 cm
3 points	94 – 102 cm
4 points	More than 102 cm

WOMEN

0 points	Less than 80 cm
3 points	80 – 88 cm
4 points	More than 88 cm

4. On average, would you say you did at least 30 minutes of physical activity per day, either at work, at home or during leisure time?

0 points	Yes
2 points	No

5. How often do you eat vegetables and/or fruit?

0 points	Every day
1 points	Not every day

6. Have you ever taken medication for high blood pressure on a regular basis?

0 points	No
2 points	Yes

7. Have you ever been found to have high blood glucose (e.g. in a health examination, during an illness, during pregnancy)?

0 points	No
5 points	Yes

8. Have any of the members of your immediate family or other relatives been diagnosed with diabetes (type 1 or type 2)?

0 points	No
3 points	Yes: grandparent, aunt, uncle, or first cousin
5 points	Yes: parent, brother, sister or own child

Total Risk Score

Your risk of developing type 2 diabetes within ten years is:

Less than 7	Low risk: Approximately one in every 100 will develop disease
7 - 14	Intermediate risk: For scores of 7-11 approximately one person in every 25 develops disease and for scores of 12-14 approximately one person in every six develops disease.
15 or more	High risk: For scores of 15-20 approximately one person in every three develops disease and for scores of more than 20 approximately one person in every two develops disease.

APPENDIX II:

WEIGHT	lbs	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215
	kgs	45.4	47.6	49.9	52.2	54.4	56.7	59.0	61.2	63.5	65.8	68.0	70.3	72.6	74.8	77.1	79.4	81.6	83.9	86.2	88.5	90.7	93.0	95.3	97.5
HEIGHT																									
ft/in	cm																								
5'0"	152.4	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
5'1"	154.9	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	36	37	38	39	40
5'2"	157.5	18	19	20	21	22	22	23	24	25	26	27	28	29	30	31	32	33	33	34	35	36	37	38	39
5'3"	160.0	17	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	32	32	33	34	35	36	37	38
5'4"	162.6	17	18	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	31	32	33	34	35	36	37
5'5"	165.1	16	17	18	19	20	20	21	22	23	24	25	25	26	27	28	29	30	30	31	32	33	34	35	35
5'6"	167.6	16	17	17	18	19	20	21	21	22	23	24	25	25	26	27	28	29	29	30	31	32	33	34	34
5'7"	170.2	15	16	17	18	18	19	20	21	22	22	23	24	25	25	26	27	28	29	29	30	31	32	33	33
5'8"	172.7	15	16	16	17	18	19	19	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	32	32
5'9"	175.3	14	15	16	17	17	18	19	20	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	31
5'10"	177.8	14	15	15	16	17	18	18	19	20	20	21	22	23	23	24	25	25	26	27	28	28	29	30	30
5'11"	180.3	14	14	15	16	16	17	18	18	19	20	21	21	22	23	23	24	25	25	26	27	28	28	29	30
6'0"	182.9	13	14	14	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	29
6'1"	185.4	13	13	14	15	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28
6'2"	188.0	12	13	14	14	15	16	16	17	18	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27
6'3"	190.5	12	13	13	14	15	15	16	16	17	18	18	19	20	20	21	21	22	23	23	24	25	25	26	26
6'4"	193.0	12	12	13	14	14	15	15	16	17	17	18	18	19	20	20	21	22	22	23	23	24	25	25	26

Underweight Ideal Overweight Obese Extremely obese

Direcção-Geral da Saúde
www.dgs.pt

Ministério da Saúde

Saúde XXI

Programa Operacional da Saúde

UE - Fundos Estruturais