



**PAN AMERICAN
HEALTH
ORGANIZATION**
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DIABETES IN THE AMERICAS

Diabetes (mostly adult onset) emerged in this century as a public health concern of pandemic proportions. Complications, such as blindness, chronic renal failure, lower limb amputations, heart disease, and stroke, are costly for the persons affected and for the health care system. In 1994, 110 million cases were estimated worldwide, 25% of which were in the Americas (15 million in the United States of America and Canada and 13 million in Latin America and the Caribbean). By the year 2010, the caseload in Latin America and the Caribbean will reach 20 million. Many cases can be prevented by healthy diets and exercise. Complications can be reduced by attention to other risk factors (e.g., smoking, high blood pressure, and poor foot care). Improved metabolic control leads to reduced incidence of and mortality from the major complications. Patient and public education are keys to achieving these improvements.

Diabetes has been adopted as a priority for PAHO's Noncommunicable Diseases Program, and the International Diabetes Federation (IDF) was admitted into official working relations with PAHO in June 1996 at the 118th Meeting of the Executive Committee (Resolution CE118.R8). A landmark will be the Declaration of the Americas on Diabetes, to be released following a regional meeting in August 1996 in Puerto Rico. The Declaration aims to promote broad principles and sets the stage for actions to support diabetes prevention and improved quality of care.

In this, the 75th anniversary year of the discovery of insulin, the Directing Council is asked to note (a) the upward trend in the occurrence of diabetes and its complications; (b) that the impact can be lessened through preventive actions among the general population and among persons with diabetes, as well as through improved quality of care; and (c) the new relationship between PAHO and IDF to develop joint technical cooperation. The Directing Council is further asked to recognize diabetes as a public health problem of regional importance and the Declaration of the Americas on Diabetes as a guide for program development.

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EXECUTIVE SUMMARY

Diabetes (mostly adult onset) emerged in this century as a public health concern of pandemic proportions. Of underlying importance is the emergence of widespread overweight and obesity associated with high-fat, low-fiber diets, compounded by sedentary lifestyles. The complications of diabetes, including blindness due to diabetic retinopathy, chronic renal failure, foot ulcers and lower limb amputations due to peripheral vascular disease and peripheral neuropathy, heart disease, and stroke, are adversely affected by other risk factors (e.g., smoking, high blood pressure, and poor foot care).

In 1994, 110 million cases were estimated worldwide, 25% of which were in the Americas (15 million in the United States of America and Canada and 13 million in Latin America and the Caribbean). By the year 2010, the number of cases in Latin America and the Caribbean will reach 20 million. Health care for diabetes already may consume up to 10% of some national health budgets.

Many cases of adult onset diabetes can be prevented through healthy diet and exercise. Complications can be reduced by attention to the other risk factors noted above. Improved metabolic control leads to reduced incidence of and mortality from the major complications. Patient and public education are keys to achieving these improvements.

The Pan American Health Organization adopted diabetes as a priority for the Noncommunicable Diseases Program in 1995, and the International Diabetes Federation (IDF) was admitted into official relations with PAHO in June 1996 at the 118th Meeting of the Executive Committee (Resolution CE118.R8). A landmark will be the Declaration of the Americas on Diabetes, to be released following a regional meeting in August 1996 in Puerto Rico. The Declaration aims to promote broad principles and sets the stage for actions to support diabetes prevention and improved quality of care for persons with diabetes.

In this, the 75th anniversary year of the discovery of insulin, the Directing Council is asked to note:

- The projected upward trend in the occurrence of diabetes and its complications throughout the Region;
- That the impact can be lessened through preventive actions among the general population and among persons with diabetes, as well as improved quality of care among those who already have the disease;

- The new relationship between PAHO and IDF, which will facilitate the development of joint technical cooperation.

The Directing Council is further asked to recognize diabetes as a public health problem of regional importance and the Declaration of the Americas on Diabetes as a guide for program development.

1. Introduction

Diabetes is a chronic disease characterized by a reduced capacity to use glucose, the most important energy source for the body. The body either does not produce enough of the hormone insulin or does not use insulin effectively, compromising its ability to convert glucose to energy. As a result, glucose increases in the blood, a situation which may lead to short- and long-term complications.

There are two major types of diabetes: insulin-dependent diabetes mellitus (IDDM or Type I) and non-insulin-dependent diabetes mellitus (NIDDM or Type II). Type I diabetes always needs insulin for treatment. Types I and II both require attention to diet, exercise, and other preventive measures (e.g., foot care), whether or not insulin is needed.

In both major forms, complications range from acute hypo- and hyperglycemic states, ketoacidosis, and infections to chronic conditions such as atherosclerosis, ischemic heart disease, retinopathy, nephropathy, neuropathy, and foot ulceration and amputation, as well as pregnancy complications and social impacts such as job discrimination in some settings.

The mortality risk among persons with IDDM is still many times higher than that of the general population (e.g., typically from 5 to 10 times higher than the general population in various studies, with wide variations depending on age, gender, and ethnicity). Persons with NIDDM suffer similar life- and health-threatening complications. Most of the difference between mortality and complication rates from IDDM and NIDDM is attributed to the longer duration of IDDM, which usually begins earlier in life.

Literally anyone can develop diabetes given the "correct" circumstances, but not everyone is equally at risk. A family history of the disease may reflect either an underlying genetic susceptibility or common risk factors (e.g., unhealthy diet) or both. Populations experiencing rapid cultural change appear to be especially at risk in all parts of the world. In the Americas, this includes indigenous peoples, Hispanic populations, and people of African, Asian, and Pacific origins. The prevalence increases with age and is slightly higher in women than in men.

In the Americas, diabetes is now an important cause of disability and death in virtually all countries. In Latin America and the Caribbean in 1990, diabetes officially accounted for 85,200 deaths, although the actual number may be much greater, due to underdiagnosis and inaccurate death certification, particularly among deaths classified as heart disease and stroke. In 1994, an estimated 28 million people suffered from this

disease throughout the Region of the Americas (see the section on "The Diabetes Health Situation in the Americas" below).

2. Effectiveness of Prevention and Treatment

Most persons with diabetes have NIDDM, which is largely lifestyle-related and therefore, in principle, preventable through health promotion and lifestyle modification. Important among these are promotion of healthy weights, diets low in fat and high in fiber, smoking prevention and cessation, physical exercise, and control of high blood pressure.

Persons with IDDM also benefit greatly from the above measures. These can contribute to the prevention of secondary complications in a disease process that is under way.

The completion (1993) of the long-awaited Diabetes Control and Complications Trial (DCCT) in the United States and Canada, which was designed to evaluate the efficacy of rigorous treatment of IDDM to achieve improved metabolic control, demonstrated delayed onset and reduced progression of the major clinical complications: retinopathy, nephropathy, and neuropathy. The incidence of these complications was reduced by over 50% after seven years follow-up.

This particular study is considered a landmark in the field. Once the disease is established, the key to effective management is good metabolic control, which requires the active involvement of the patient in his or her own care.

Although no clinical trials have been reported to date similar to those of the DCCT that establish the benefits of near normalization of blood glucose in NIDDM, the American Diabetes Association notes the similarity between the two main forms of the disease and considers it reasonable to pursue the same goals for this condition, pending the outcome of further clinical trials (e.g., the United Kingdom Prospective Diabetes Study).

The efficacy of diet and exercise in reducing the incidence of NIDDM in persons with impaired glucose tolerance (a risk factor for NIDDM) has just been demonstrated in a trial involving 30,000 subjects in Da Qing, China. Reductions in the order of 50% were demonstrated after a period of six years follow-up (Source: U.S. National Institutes of Health, Phoenix; report in press). A similar trial is now under way in the United States.

3. The Diabetes Health Situation in the Americas

Diabetes has increased in incidence and prevalence throughout the twentieth century. The disease is now a major international public health problem with an estimated 110 million cases worldwide in 1994. The incidence and prevalence of the disease are projected to increase over the coming decades. It is justifiable to refer to this situation as a "global pandemic."

In the Americas in 1994 (Table 1), there were estimated to be 28 million cases, 15 million in the United States and Canada and 13 million in Latin America and the Caribbean. The caseload in Latin America and the Caribbean is projected to increase to 20 million by the year 2010, taking into account aging populations, social changes, and associated risk factors. These estimates are conservative (see Figure 1).

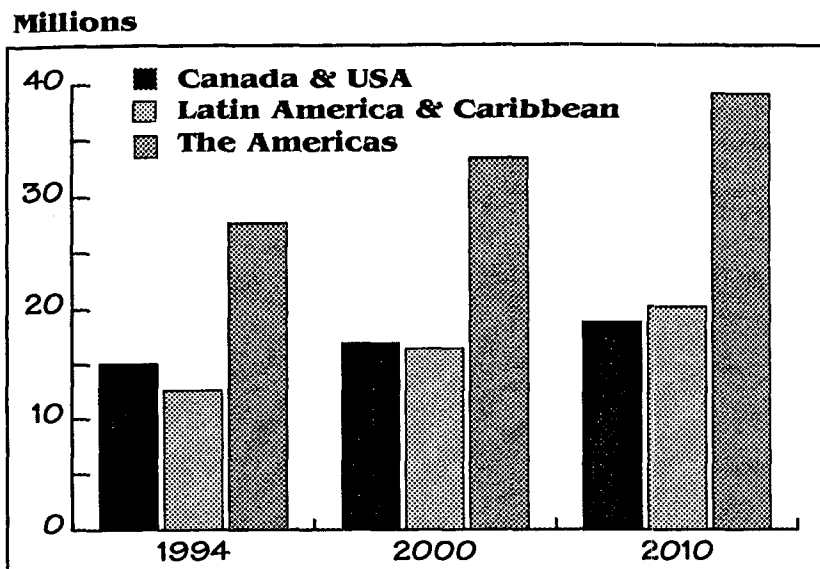
Table 1
Diabetes Projections from 1994 to 2010
(in thousands)

	1994		2000		2010	
	IDDM	NIDDM	IDDM	NIDDM	IDDM	NIDDM
Mesoamerica (including Mexico)	420	3,662	615	5,382	807	7,107
Caribbean Islands	105	913	142	1,257	184	1,597
South America	765	6,740	922	8,151	1,076	9,475
Subtotal	1,290	11,315	1,679	14,790	2,067	18,179
Canada and United States of America	1,683	13,402	1,882	15,094	2,081	16,787
Total	2,973	24,717	3,561	29,884	4,148	34,966

Source: International Diabetes Institute, Melbourne, Australia. WHO Collaborating Center for Diabetes Mellitus.

Figure 1

Diabetes Projections for the Americas: 1994 to 2010



These trends are a result of rapid cultural changes taking place in Latin America and the Caribbean with consequent impact on diet and lifestyle, compounded by aging populations.

Because of the upward trend in caseload and high complication rates in persons whose diabetes is not well controlled, there will be an increasing burden on health services and the families of persons with diabetes. Much of the projected impact is inevitable, but much also can be prevented and better managed than is the case now.

Major potential exists to lessen this impact through both primary prevention to reduce incidence and secondary prevention, that is, improved quality of care to reduce the frequency of complications.

4. Measurement and Standardization

Until recently, lack of standard criteria for the diagnosis of diabetes in its various forms has impeded both clinical and public health understanding of the disease. In the Americas, the estimated annual incidence rates for IDDM vary widely, from 0.7 cases per 100,000 in Peru to 27 among males on Prince Edward Island in Canada. The

prevalence of NIDDM is thought to range from 1.4% among the Mapuche Indians in Chile to 17.9% among adult Jamaicans. The highest prevalence and incidence rates for NIDDM in the world have been documented among the Pima Indians of Arizona, with a majority of adults having the disease. The difference in estimated rates of incidence and prevalence of these conditions among various populations suggests much scope for both epidemiological and health services research in support of the development of intervention programs.

In recent years, the World Health Organization, the International Diabetes Federation, and other learned bodies have moved to standardize the criteria for diagnosis of diabetes. Equally, there has been an effort to formalize the methodology for assessing its prevalence in populations. However, compared with North America, Europe, Southeast Asia, and the Pacific, there have been relatively few well-designed prevalence studies conducted in Latin America and the Caribbean. Such studies are required to define the needs of populations, including baselines for interventions and evaluations of program impact. Given the lifestyle associations with NIDDM, similar information is also required on risk factors among populations for the disease and its complications (e.g., obesity, physical inactivity, hypertension, elevated cholesterol, smoking).

5. The PAHO Response

In view of this emerging impact and the obvious potential to reduce it by both increasing the prevention effort and improving the quality of metabolic control, the Pan American Health Organization in 1995 included diabetes program development support as a priority for its newly formed Noncommunicable Diseases Program (HCN). Advisory support for this process was obtained from the WHO diabetes program. Initial emphasis was placed on consensus development activities, in association with the Latin American Association for Diabetes (ALAD), the Caribbean Diabetes Association (CDA), and the International Diabetes Federation (IDF), which has entered into a formal relationship with PAHO.

Other important initiatives over the first year of the program include development of a diabetes-based approach for integrated management of chronic diseases programs (being piloted in the English-speaking Caribbean); support to a regional epidemiology training course in Colombia; support to an IDF regional course for the leadership of national diabetes associations; design work for a study to demonstrate the clinical and economic impacts of diabetes education quality improvements in one Member State; translation into Spanish of the IDF publication, *Lowering the Price of Ignorance - A World View on Diabetes Education*; and release of a brochure entitled *Diabetes in the Americas: Facts for Health Professionals*.

These activities to date have been highlighted internally by a significant level of interprogrammatic collaboration, notably between the Noncommunicable Diseases Program and the offices of Publications and Editorial Services (DBI), External Relations (DEC), and Public Information (DPI), and the Public Policy and Health Program (HDD).

The increasing impact of diabetes and the availability of effective prevention and treatment justify increasing attention at policy, public health, and clinical levels in all countries.

6. Key Areas for Action

As with other major chronic diseases which have emerged to preoccupy health services in the latter part of the twentieth century, there is much that can be done to better manage the impact of diabetes on individuals and societies. Key areas for action are:

- Promotion of healthy weights and reduction of dietary fat intake which, together with regular physical exercise, could reduce the incidence of diabetes (NIDDM) by as much as 50%;
- Reduction of risk factors such as smoking and high blood pressure which, when combined with improved metabolic control, could reduce complication rates in the order of 50% or more;
- Improved quality of care, with increased emphasis on self care (including patient and family within the health team), which will improve the quality of life for persons with diabetes and also reduce the health care costs per patient (e.g., by reduced complications);
- Support for the development of well-managed diabetes programs at local and national levels, integrated within programs for control of chronic diseases of major public health importance;
- Fostering of national diabetes associations with the potential to assist in the prevention and control of the disease, through activities ranging from patient and public education and support for clinical training to community care and resource mobilization.

7. Partnership with the International Diabetes Federation

The International Diabetes Federation (IDF) was admitted into official working relations with PAHO in June 1996 at the 118th Meeting of the Executive Committee (Resolution CE118.R8).

A six-year joint program recognizes diabetes as a public health priority, notes general agreement regarding the approaches needed to address this priority, and proposes that PAHO and IDF coordinate their activities in the Americas in this area.

Operationally, the activities will involve collaboration of PAHO with the North, South, and Central American Councils of IDF and will be consistent with PAHO's classification of technical cooperation, examples of which are described below:

7.1 *Development of Policies, Plans, and Norms*

The Pan American Health Organization and the International Diabetes Foundation are joint sponsors of the Declaration of the Americas on Diabetes and will provide support for the subsequent development of national implementation plans. The Declaration represents a major achievement for the partners: it will be released following a regional meeting on 2-4 August in Puerto Rico. Participants, in addition to PAHO and IDF, include representatives from health ministries, national diabetes associations, other official agencies, and nongovernmental organizations, as well as from industry. The Declaration outlines broad principles for diabetes program development, with attention to both prevention and improved quality of care, and sets the stage for a process of implementation over the foreseeable future similar to that which followed the Saint Vincent Declaration on Diabetes Care and Research in Europe (1989).

7.2 *Mobilization of Resources*

Four areas of action are specified in the agreement establishing the joint program. These are relatively self-explanatory:

- Development of national diabetes associations;
- Private sector support for public health/population strategies;
- Promotion of self care through emphasis on patient education;
- Joint sponsorship of regional- and national-level forums.

An example of the role of private sector support is the decision by Boehringer-Mannheim to fund the Spanish translation and publication by PAHO of the IDF monograph, *Lowering the Price of Ignorance: A World View on Diabetes Education*. This publication was released in July 1996.

7.3 *Dissemination of Information*

The joint program agreement specifies development and dissemination of reliable information on the impact of diabetes in the Americas, its prevention and control, and cost-effective methods of improving program quality. Both institutions have been developing such information independently until now, and it is expected that a joint effort to pool information and expertise will be more productive and efficient.

7.4 *Training*

The agreement calls for both institutions to combine expertise so as to address training needs in the areas of management and decision-making, program implementation and evaluation, and public education. An example of this is PAHO's promotion of and participation in an IDF leadership course for diabetes associations in Uruguay in August 1996.

7.5 *Research*

Operational research will be conducted to guide and evaluate the above-noted areas of technical cooperation. It is anticipated that this will mostly address the need to cover the implementation, monitoring, and evaluation of the Declaration of the Americas on Diabetes and the more detailed development initiatives to which this joint program will give rise.

7.6 *Direct Technical Cooperation*

The relationship between PAHO and IDF is expected to assist each institution to work more effectively through either ministries of health or national diabetes associations.

8. *Points for Consideration by the Directing Council*

In this, the 75th anniversary year of the discovery of insulin by Banting, Macleod, Best, and Collip in Canada, the Directing Council is asked:

- (a) To note the projected upward trend in the occurrence of diabetes and its complications throughout the Region;

- (b) To note that the impact can be lessened through preventive actions among the general population and among persons with diabetes, and through improved quality of care (with emphasis on metabolic control) among those who already have the disease;
- (c) To note the new relationship between PAHO and IDF to develop joint technical cooperation;
- (d) To recognize diabetes as a public health problem of regional importance and the Declaration of the Americas on Diabetes as a guide for program development.

In order to implement the resolutions of the Directing Council, PAHO would assign resources from the Noncommunicable Disease Program in the Division of Disease Prevention and Control. These resources amount to US\$ 33,000 in operating costs and \$52,000 in personnel support for the biennium 1996-1997. Main activities to be supported with the latter are direct technical cooperation and mobilization of extrabudgetary support. So far a grant of \$160,000 has been secured to conduct an economic evaluation of diabetes management at the country level.

The International Diabetes Federation, North, Central, and South America Regional Councils, was admitted into official relations with the Pan American Health Organization by Resolution CE118.R8 of the 118th Meeting of the Executive Committee (June 1996). In the agreement for the six-year joint program, a commitment was made to mobilization of resources, dissemination of information, training, and research.

It is expected that at the country level there will be capabilities to generate counterpart activities with the common objective of program development through an integrated approach to chronic disease prevention and control.

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DECLARATION OF THE AMERICAS ON DIABETES

The Declaration of the Americas on Diabetes, adopted at the regional meeting held in San Juan, Puerto Rico, on 2-4 August 1996, and referred to in Document CD39/19, is annexed. The meeting was cosponsored by the Pan American Health Organization and the International Diabetes Federation; it had participation from 29 countries and representation from ministries of health, professional associations, diabetes societies, private industry, lay organizations, the media, and other international organizations.

The Declaration highlights the growing importance of diabetes in the burden of disease in the population and effective strategies that should be implemented. At the national policy level, people with diabetes should have equal access to employment. At the health policy level, communities should promote healthy diet and exercise for the prevention of the onset of non-insulin-dependent diabetes. At the health services level, the quality of care, including patient education, should be improved, in order to prevent complications in people with the disease and to ensure availability of insulin.

Diabetes itself is an important cause of morbidity and mortality; it is also an underlying cause of cardiovascular disease. It has an impact on the quality of life of affected people and their families, and on the health care system that bears the costs of complications and disability.

The Declaration outlines principles of diabetes program development in the context of integrated noncommunicable disease prevention and control. It seeks participation of all stakeholders and mobilization of existing resources, in addition to training, research, dissemination of information, and partnerships for technical cooperation within and between the Member States.

DECLARATION OF THE AMERICAS ON DIABETES

Preamble

Diabetes mellitus is a growing pandemic. In 1996, an estimated 30 million people with diabetes live in the Americas, more than a quarter of the world's total case load. By the year 2010 the Americas case load is expected to increase to 45 million, taking into account demographic aging of populations and trends in underlying risk factors which are related to the process of modernization that is taking place in all developing countries. There is also a higher incidence and prevalence of diabetes in certain ethnic groups in the Americas.

Diabetes is a serious and costly public health problem in the Americas. It adversely affects people of all ages and at all socioeconomic levels. Millions of people with diabetes are not diagnosed. Millions of people with diabetes are not properly treated. The impact of diabetes on societies and individuals is underestimated. People with poorly controlled diabetes have a markedly increased risk for and incidence of heart attack, stroke, blindness, kidney failure, leg amputation, and early death. Not only is their productive life span shortened, but the quality of life of people with diabetes and their families is severely impacted. Scientific evidence clearly demonstrates that much of this human suffering can be prevented.

Diabetes, especially when poorly controlled, can be a major economic burden to the individual and society. Most of the direct costs of diabetes are related to its complications, which can often be reduced, delayed in onset, or, in certain cases, prevented. Depending on the country, available estimates indicate that diabetes may account for 5%-14% of health care expenditures.

Poverty adversely affects diabetes care. It influences the likelihood of being correctly diagnosed, the quality of education received, the adequacy of care, the affordability of treatment, and the risk of developing serious complications. There is a need to address these inequities in the development of diabetes prevention and control strategies and programs in all countries.

Unless these trends are addressed through the development of more strategic and integrated multisectoral responses, there will be a commensurate increase in severe, costly complications with associated reduced quality of life as well as premature death from diabetes.

With current knowledge and technology, it is possible to promote health and prevent complications in people with diabetes with good glycemic control and

modification of cardiovascular risk factors. In relation to what is now known about the preventability of this disease and the efficacy of clinical management, current efforts in its management in all countries fall far short of what is possible. Unfortunately, many people with diabetes are not brought to care. Many who are able to access health care are not receiving the quality of care that is possible even under quite modest circumstances. There are opportunities to redirect the resources that are already being applied in response to this increasing problem in ways that will reduce the rate of increase and the frequency of complications and improve the quality of life for all people with diabetes and their families. There are also opportunities to achieve better care at lower cost per patient through attention to the development and more appropriate use of ambulatory and community care. Equally important is the need to enlist the people affected by diabetes in the health care team so as to achieve a greater measure of self-care and quality of life for people with diabetes.

It is in the best health, economic, and social interests of all nations to recognize diabetes as a national health priority and to ensure that the resources applied to this problem achieve all that is possible in terms of effectiveness, efficiency, and quality of life.

To change the way things are to the way things ought to be requires a vision, a plan, and commitment on the part of all nations in the Americas to accept the challenge as we move towards the year 2000 and beyond.

Vision

Better health for people affected by or at risk for diabetes in the Americas by the year 2000 and beyond.

Plan

To realize this vision, all nations should pursue the following general strategic plan:

1. Recognize diabetes as a serious, common, growing, and costly public health problem. Each nation should determine the true epidemiological and economic burden of diabetes as a basis for establishing its priority on the national health agenda.
2. Develop national diabetes strategies, which should include specific and appropriate goals, process indicators, and outcome measures. To the extent possible this should include reference to quantity, quality, and time.

3. Develop and implement a national diabetes program to include delivery of quality care, promotion of healthy lifestyles, and prevention of disease, in order to reduce the morbidity and mortality of all people with diabetes and to improve their quality of life. This national diabetes program can be free-standing or integrated with related noncommunicable disease programs.

4. Allocate adequate, appropriate, and sustainable resources to prevent diabetes where possible, manage the disorder, manage and prevent its debilitating consequences, and provide for important research activities. Management skills should be developed at all levels so as to promote the most effective and efficient use of these resources.

5. Develop and implement an integrated health care model involving people affected by diabetes, health care professionals, and a variety of other individuals within the health system. This model combines care and education, ensures communication of information at all relevant levels, and includes continuous quality improvement. Emphasis should be placed on primary health care to achieve early diagnosis, proper treatment, and follow-up care. Clinical practice guidelines should be introduced so that quality care can be standardized and implemented.

6. Ensure that available and affordable insulin and other medications, as well as supplies needed to properly manage diabetes and prevent its disabling complications, are available and affordable to all people with diabetes.

7. Ensure that people affected by diabetes are able to acquire knowledge and skills to enable and empower them to provide self-care for their chronic disease. Ensure that the health care team has the specific knowledge and skills necessary to care for people with diabetes.

8. Develop national organizations to promote public awareness and the well-being of people affected by diabetes and to provide an avenue for participation in the development of national diabetes programs. Recognizing the problem of discrimination that affects many with diabetes, a key role of associations is to promote a supportive environment for persons affected by diabetes and to advocate social equity. Another key role is to support and promote research which can uncover new knowledge on diabetes. This information can be translated to better health care and ways to prevent diabetes and its complications.

9. Develop and implement a common information system for diabetes in the Americas to document and track the attainment of better health for people with diabetes. The data obtained will provide information for development and improvement of patient care as well as for optimizing systems for care delivery and resources for future programs.

10. Promote partnerships among the major stakeholders involved in achieving better health for people with diabetes. Continuous collaboration between these stakeholders is essential for this mission.

Commitment

All the nations of the Americas will invest in diabetes prevention and control, as a practical application of the strategy for health for all.