

A Comprehensive Diabetes Strategy for New Brunswickers 2011-15

Department of Health
June 2011



Our Health, Our Future

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Message from the minister

Health care is consistently identified as one of the most important issues of concern for New Brunswickers. We need to ensure that our health-care system respects the principles of timely, universal access throughout the province.

A recent report, *Diabetes in New Brunswick 1998-2007*, finds that one in 13 New Brunswickers lives with diabetes, and it predicts the rate of prevalence will increase to one in 10 by 2012-13.

This has serious implications in terms of quality of life as well as costs in the health-care system. About 5,000 persons are diagnosed with diabetes each year. We have the responsibility to provide the education and support they need. Individuals with diabetes use more health-care resources than those who do not have the disease. From 2003-04 to 2007-08, persons with diabetes accounted for about 27 per cent of total hospital days, and they made almost twice the number of visits to their family doctor compared to those who do not have diabetes.

The complications of diabetes account for most of the health-care costs associated with the disease and greatly diminish the quality of life for the person living with this disease and his or her family. Traditionally health-care services have focused on persons after they have developed diabetes and the serious complications requiring expensive hospital services. More emphasis is needed in the areas of health promotion and disease prevention to reduce the burden of diabetes on society and the health-care system. There is clear evidence that more attention to prevention as well as to improved support and care offered to persons earlier in the management of diabetes will significantly lessen the burden of disease. This includes improved detection, patient education, access to affordable medications, supplies and devices, and ongoing monitoring for the management of diabetes.

This document, *A Comprehensive Diabetes Strategy for New Brunswickers, 2011-15*, has considered the recommendations of stakeholders such as the New Brunswick Diabetes Task Group. We have reviewed the research as well as best practices across Canada, the United States and the United Kingdom. The many discussions and letters from New Brunswickers living with diabetes helped to ensure that we understood their real-life problems.

On behalf of the provincial government, I am proud to present *A Comprehensive Diabetes Strategy for New Brunswickers 2011-15*. New Brunswick's first comprehensive diabetes strategy, this document outlines a clear, deliberate roadmap to address the growing challenge of diabetes.

A handwritten signature in black ink that reads "Madeleine Dubé". The signature is fluid and cursive.

Madeleine Dubé,
Minister of Health
Government of New Brunswick

Glossary of acronyms

A1C: Glycosylated hemoglobin

CADTH: Canadian Agency for Drugs and Technology in Health

CCHS: Canadian Community Health Survey

CDA: Canadian Diabetes Association

CDPMAC: Chronic Disease Prevention and Management Advisory Committee

CSII: Continuous subcutaneous insulin infusions

DTG: (New Brunswick) Diabetes Task Group

ECCM: Expanded Chronic Care Model

GDM: Gestational diabetes mellitus

MDI: Multiple daily injections

NBHC: New Brunswick Health Council

NIHB: National Indian Health Board

PHAC: Public Health Agency of Canada

QALY: Quality Adjusted Life Year

SMBG: Self-monitoring of blood glucose

UKPDS: United Kingdom Prospective Diabetes Study

USPTF: United States Preventive Task Force

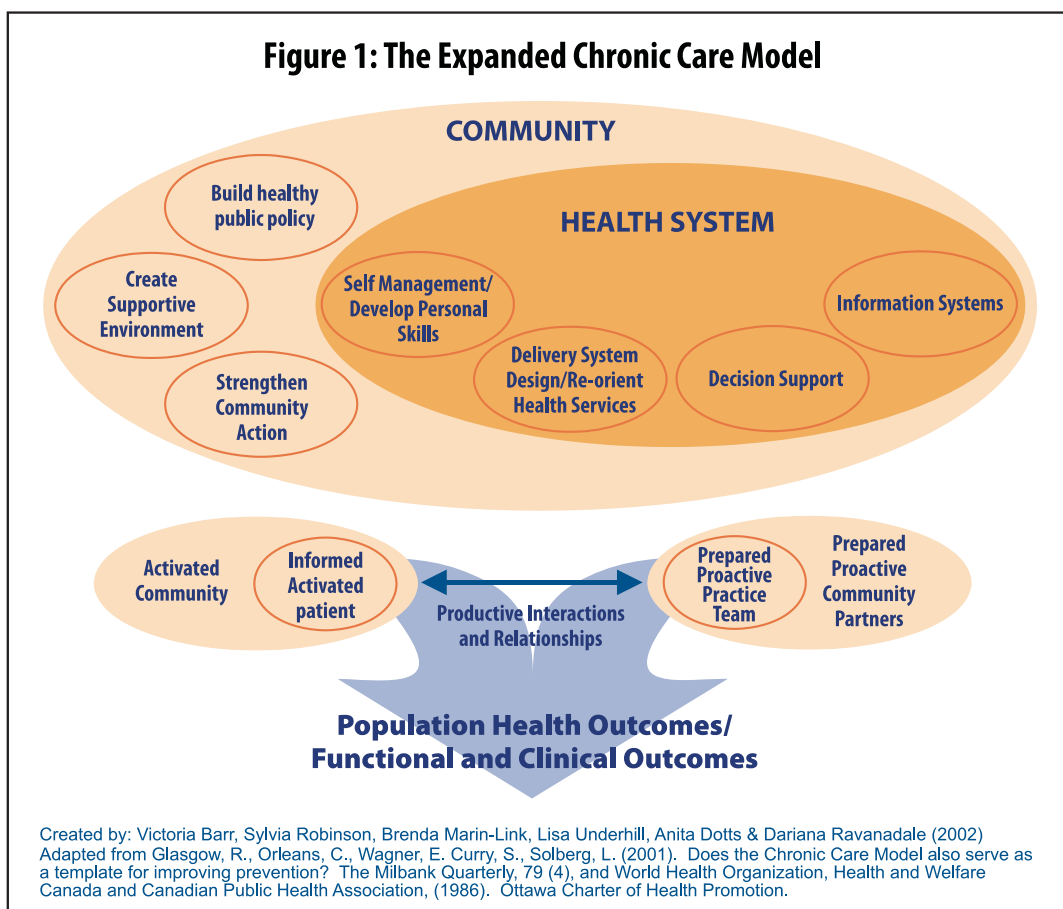
WB: World Bank

WHO: World Health Organization

Prologue - A comprehensive diabetes strategy

In the last decade, the prevention and management of chronic diseases have been recognized as the primary challenge facing New Brunswick's health-care system. We are not alone in this challenge. The Health Council of Canada continues to publish widely¹ on the effects of chronic disease in Canada. The primary goal of the Public Health Agency of Canada (PHAC) is to "strengthen Canada's capacity to protect and improve the health of Canadians and to help reduce pressures on the health-care system," including the prevention and control of chronic diseases and injuries.² The World Health Organization (WHO) and the World Bank (WB) have identified that, "diabetes and its complications have a significant economic impact on individuals, families, health-care systems and countries," and they urge prevention as well as improved management of diabetes.^{3,4}

In May 2010, New Brunswick published *A Chronic Disease Prevention and Management Framework*⁵ based on the Expanded Chronic Care Model (ECCM). This guides the development of co-ordinated, integrated strategies to support New Brunswickers living with chronic diseases as much as possible. The community – through public policy, the supportive environment and public engagement – enables how health-care services are understood and managed. Key elements of the health-care system include the delivery system design, the information system, patient self-management and decision support. The ECCM is a blueprint for reorganizing primary health care in New Brunswick.



¹ http://healthcouncilcanada.ca/en/index.php?option=com_virtuemart&page=shop.browse&category_id=16&Itemid=170

² http://www.phac-aspc.gc.ca/about_apropos/index-eng.php

³ <http://www.who.int/mediacentre/factsheets/fs312/en/index.html>

⁴ Narayan, K.M.V. Zhang, P. Kanaya, A. Williams, D. Engelgau, M. Imperatore, G. et al. Diabetes: the pandemic and the potential solutions. In Jamison, J.T. Breman, J.G. Measham, A.R. Alleyne, G. Cleason, M. Evans, D.B. Prabhath, J. Mills, A. and Musgrove, P. editors. *Disease Control Priorities in Developing Countries*. Washington DC: Oxford University Press, World Bank; 2006. p591-604. http://www-wds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187283&theSitePK=523679&entityID=000310607_20071116162611&searchMenuPK=64187283&theSitePK=523679

⁵ www.gnb.ca/0051/pub/pdf/2010/6960e-final.pdf

Planning and decision-making must involve four key questions:

- are they focused on the needs of all New Brunswickers?
- do they lead to optimal health outcomes for all New Brunswickers?
- will they improve the quality and timeliness of the delivery of service to New Brunswickers?
and
- are they being done in the most efficient and affordable manner?

Answering the first question ensures we consider the effects of our decisions because the health-care system is meant to serve all New Brunswickers. Answering the second one ensures that our decisions lead to services that promote optimal health outcomes for individuals and the general population. Answering the third ensures our decisions improve the quality and timeliness of services to New Brunswickers because the health-care system must foster an efficient and effective service delivery approach. Answering the fourth ensures we do things in the most efficient and affordable manner because the health-care system must balance quality of services with affordability. These were key considerations in the development of *A Comprehensive Diabetes Strategy for New Brunswickers 2011-15*.

This strategy is based on lessons learned from local practices and strategies from other jurisdictions as well as published, researched interventions and systematic reviews. Given the increasing prevalence and the associated cost burden, it is important that the best use is made of available resources. Cost-effectiveness studies provide information to inform policy development, decision-making and allocation of resources. Some interventions may improve health outcomes and reduce costs. Others may improve health outcomes for a few but consume disproportionate resources.

This is the first strategy developed under the Chronic Disease Prevention and Management Framework. The provincial government recognizes the urgency for a comprehensive diabetes strategy. A recent report, *Diabetes in New Brunswick 1998-2007*,⁶ profiles the significant escalating effects of this disease on the population as well as on health-service utilization.

⁶ http://www.gnb.ca/0051/pub/pdf/2010/diabetes_report_1998-2007-e.pdf

Executive summary

*Diabetes in New Brunswick 1998-2007*⁷ profiles the significant escalating effects of diabetes on the population as well as health service utilization.

Conservative estimates using Canadian Community Health Survey (CCHS) data indicate that, incrementally, physician visits and hospital utilization by persons with diabetes are responsible for about \$283 million in costs annually.⁸ Diabetes creates a significant economic burden on the health-care system, the economy, individuals and families. The predicted increase in the number of young people with diabetes will result in even greater costs.

Diabetes affects all systems within the body, predisposing to complications as well as inhibiting healing generally. Persons with diabetes often have a co-morbidity of depression, further complicating their ability to manage this complex disease effectively and optimally. Research has clearly established that improved prevention, selective screening of high-risk populations and improved monitoring/management of risk factors and complications of diabetes may significantly reduce the burden of the disease for the family, the economy and the health-care system.

A Comprehensive Diabetes Strategy for New Brunswickers 2011-15 outlines a clear roadmap based on research as well as the experiences of expert clinicians in our province.

1. Capacity building

- 1.1 Establish a New Brunswick chronic disease prevention and management unit with the initial primary focus on diabetes.

2. Prevention

- 2.1 Support action across government on the determinants of health.
- 2.2 Develop strategies for at-risk individuals.

3. Detection

- 3.1 Implement screening programs that target those at risk.

4. Management

- 4.1 Improve primary care provision of comprehensive risk factor control and early detection of complications.
- 4.2 Improve secondary and tertiary care services to support persons with diabetes.
- 4.3 Improve access to tools that enable self-management.
- 4.4 Improve access to necessary and affordable medications.
- 4.5 Improve affordable access to necessary supplies.
- 4.6 Improve affordable access to necessary devices.

⁷ http://www.gnb.ca/0051/pub/pdf/2010/diabetes_report_1998-2007-e.pdf

⁸ Internal studies, -personal communication J Boyne and S Halpine. January 2011

Introduction

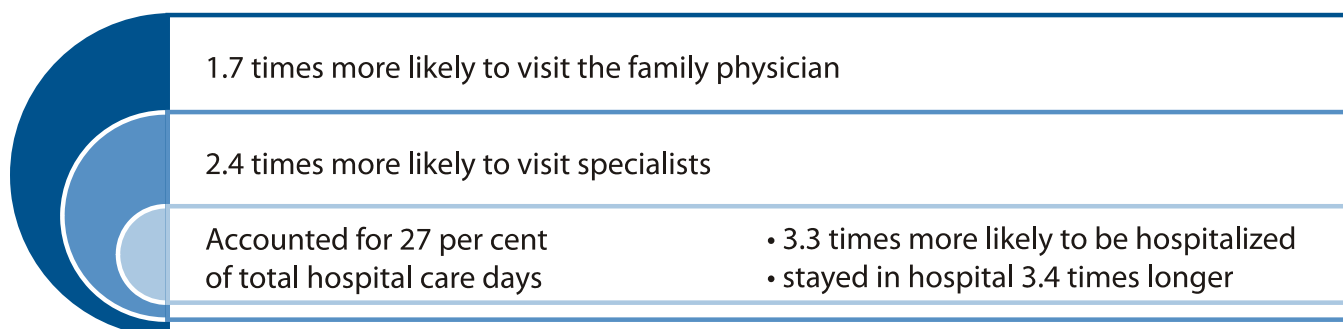
What is diabetes?

Diabetes mellitus is a chronic condition that results from the body's inability to produce and/or use insulin sufficiently. The body needs sugar as an energy source. Insulin moves the sugar from our blood stream into our cells, where it is used for energy.

Why is there so much concern about diabetes?

A 2006 report from the WB discusses the global challenges of managing diabetes in developed and developing countries.⁹ In 2003, the prevalence of diabetes was estimated at 7.8 per cent in developed countries in persons 20 to 79. It is expected to rise to 9.2 per cent by 2025. Diabetes is responsible for significant economic burden on health-care systems, national economies, individuals and families. It is worrisome that the predicted increase in the number of young people with diabetes will create even greater costs in the system because this age group is traditionally the most economically productive. Lost productivity due to morbidity, disability and mortality will have even more impact. Research discussed in works such as the WB's underscores the importance of investing wisely in primary and secondary prevention of diabetes.

Figure 2: Health-care utilization - Diabetes in New Brunswick 1998-2007



In 2007-08, one in 13 New Brunswickers, one year of age and older, was living with diagnosed diabetes (7.8 per cent or 29,047 males and 7.2 per cent or 27,396 females). It is predicted that almost 73,000 New Brunswickers, or one in 10, will have diabetes by 2013.¹⁰ The same report finds that persons with diabetes are about three times more likely to be hospitalized with cardiovascular disease; seven times more likely to be hospitalized with chronic kidney disease; and 15 times more likely to be hospitalized with lower-limb amputations.¹¹ Figure 2 profiles utilization within the health-care system. Preliminary internal estimates suggest incremental health-service use associated with diabetes annually costs \$283 million, primarily related to hospitalization. If one also considers that the estimated prevalence of undiagnosed diabetes is between one-third to one-half of the number of persons with diabetes,^{12,13,14} it is clearly evident that we must invest in improved resources to manage better the present and growing burden of care caused by diabetes.

⁹ Narayan, K.M.V. Zhang, P. Kanaya, A. Williams, D. Engelgau, M. Imperatore, G. et al. Diabetes: the pandemic and the potential solutions. In Jamison, J.T. Breman, J.G. Measham, A.R. Alleyne, G. Cleason, M. Evans, D.B. Prabhath, J. Mills, A. and Musgrove, P. editors. *Disease Control Priorities in Developing Countries*. Washington DC: Oxford University Press, World Bank; 2006. p591-604. http://www-wds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187283&theSitePK=523679&entityID=000310607_20071116162611&searchMenuPK=64187283&theSitePK=523679

¹⁰ Diabetes in New Brunswick 1998-2007 p. 16

¹¹ Ibid p 37.

¹² Kaczorowski, J., and Robinson, C. (2009) Development of the CANRISK questionnaire to screen for prediabetes and undiagnosed type 2 diabetes. *Canadian Journal of Diabetes* 33(4): 381-383.

¹³ <http://www.phac-aspc.gc.ca/publicat/dic-dac99/d04-eng.php>

¹⁴ Cowie, C., Rust, K., Byrd-Holt, D., Eberhardt, M., Flegal, K., Engelgau, M., Saydah, S., Williams, S., Geiss, L., Gregg, E., (2006) Prevalence of diabetes and impaired fasting glucose in adults in the US population *Diabetes Care*. 29(6) 1263-1268.

Diabetes affects all systems within the body, predisposing to complications as well as inhibiting healing generally. Persons with diabetes often have a co-morbidity of depression, further complicating their ability to manage this complex disease effectively and optimally. Some basic understandings of diabetes are central to development of a comprehensive approach.

Types of diabetes

Type 1 diabetes

Type 1 diabetes occurs in about 10 per cent of the population. It is an auto-immune disorder in which the pancreas suddenly stops producing insulin. It will often develop in childhood. It is not preventable. There are no modifiable risk factors with this type of diabetes.

Treatment for type 1 diabetes requires insulin given through daily injections. There are many kinds of insulin available that are used to control blood sugar. People with type 1 diabetes will always require insulin. While insulin is most commonly given by multiple daily injections (MDI), some persons are beginning to use insulin pumps. Some insulin pumps can be further synchronized with continuous glucose monitors. Research is ongoing and hopes of someday being able to administer insulin in other ways such as aerosol nasal pump or even regenerating the pancreas.

To adjust insulin doses appropriately, the person typically tests blood sugar using blood glucose test strips and a monitoring device. This involves a small drop of blood (usually from a finger prick) tested for sugar levels. This process is called self-monitoring of blood glucose (SMBG). Some persons are very stable, while others are much less stable and require more monitoring. Sometimes finding the right adjustment of insulin can be very difficult, resulting in repeated hospitalizations.

Individuals with type 1 diabetes require careful monitoring of high and low blood sugar levels. Sometimes a person can be given too much insulin, or conversely, they do not have enough sugar in the blood stream to handle the amount of insulin given. This results in low blood sugar or hypoglycemia. This is a serious health risk because the brain must always have a minimum level of sugar in the blood stream. When hypoglycemia occurs, the person needs to be given sugar. Families and individuals need to be alert to the possibility of hypoglycemia because this may result in death.

Alternatively, if persons have a great deal of sugar in the blood, they may need more insulin. When the sugar level is high, it is called hyperglycemia, which is one of the main causes of complications. High blood sugar damages blood vessels.

Over time, persons with type 1 diabetes have a high risk of developing complications, partly because of the duration of the disease. These may include blindness, kidney disease, heart disease and circulatory problems.

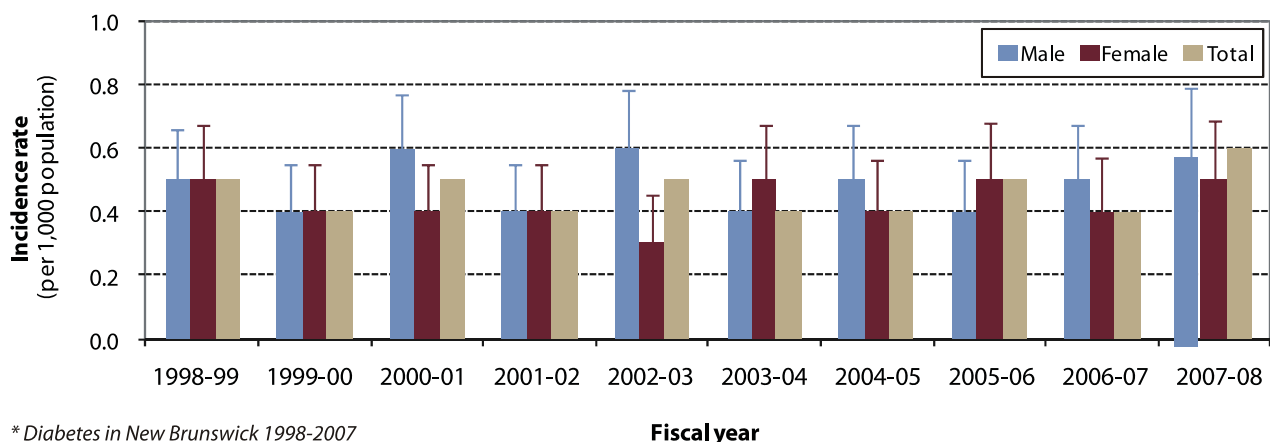
One of the challenges with the provincial data sources for surveillance of diabetes is the inability to identify whether persons have type 1 or type 2 diabetes. It is reasonable to assume, however, that the vast majority of children are diagnosed with type 1 diabetes. In 2007-08, about 620 children between the ages of one and 19 were living with diabetes; averages of about 78 new cases were diagnosed annually in this age group between 1998 and 2008.¹⁵

¹⁵ http://www.gnb.ca/0051/pub/pdf/2010/diabetes_report_1998-2007-e.pdf p 66



Left to right - Catrina Dunham and Beth Cole (Registered Nurse)

Figure 3: Incidence rates (per 1,000 population) in diagnosed diabetes in individuals 1-19 years old, by sex and fiscal year, New Brunswick, 1998-99 to 2007-08*



Type 2 diabetes

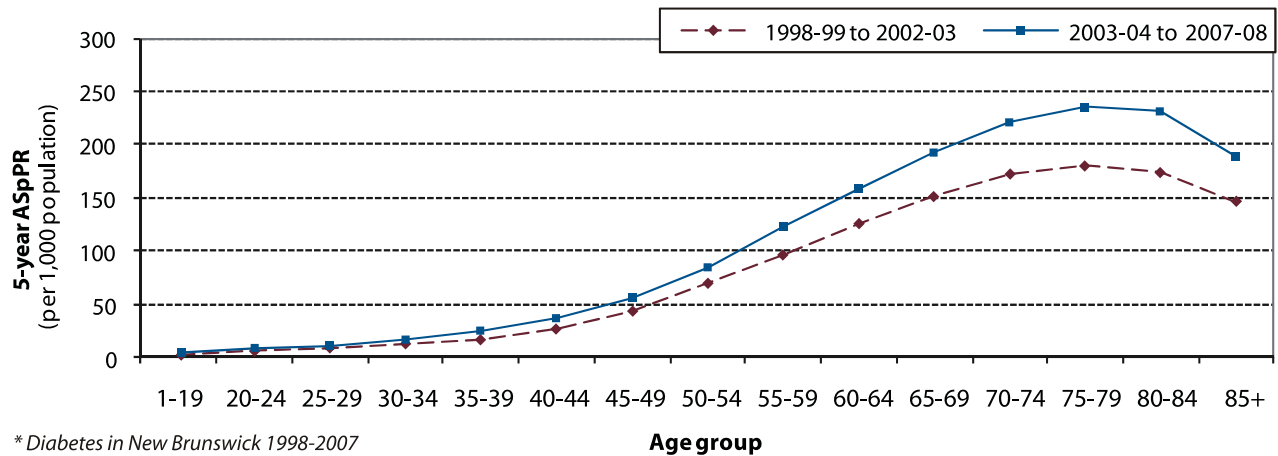
Type 2 diabetes is the most common form of diabetes and accounts for about **85 to 90 per cent** of cases. With type 2 diabetes, the body does not produce enough insulin or the insulin does not effectively transport sugar into the cells. Type 2 diabetes has been closely linked to food selection and sedentary lifestyles. Simply stated, persons are more likely to develop type 2 diabetes if they follow a diet high in fats and carbohydrates, coupled with low levels of physical activity. Over time, this predisposes people to developing *metabolic syndrome* characterized by being overweight and having central obesity, high blood pressure and high cholesterol levels, often progressing to diabetes. There are other risk factors that may increase a person's chance of developing type 2 diabetes:

- background risk factors - level of education and poverty
- biological risk factors - age, sex and genetic composition;
- behavioural risk factors - smoking, unhealthy diet and physical inactivity.

Treatment always involves balancing diet, exercise and stress. Many persons need to use medications to control their sugar, blood pressure and cholesterol. Often persons will start out without needing to use any pills to control their sugar. Gradually this shifts because it becomes more difficult to maintain a normal sugar level with only diet and exercise. The medications to manage sugar may range from oral pills to insulin injections, as the body responds less and less to oral medications.

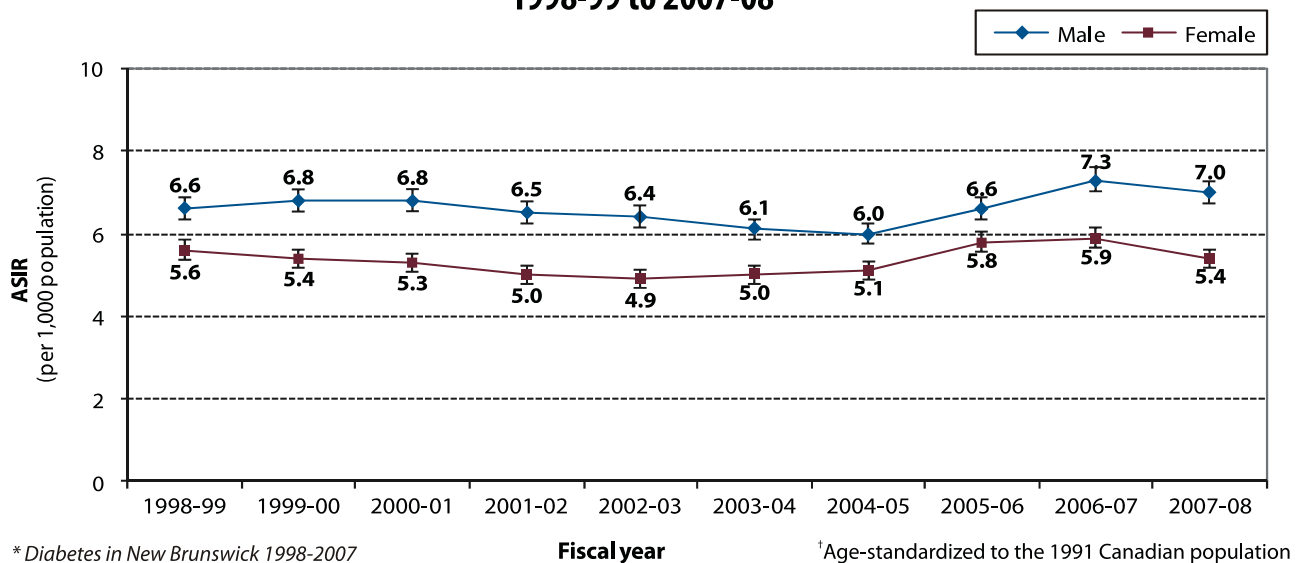
The chances of developing type 2 diabetes increase dramatically with age. As well, persons with diabetes are living longer. An aging population, sedentary lifestyle, a high fat/high carbohydrate diet and more people living longer are responsible for the significant jump in prevalence.

Figure 4: Comparison of 5-year age-specific prevalence rates (per 1,000 population) of diagnosed diabetes, New Brunswick, 1998-99 to 2002-03 and 2003-04 to 2007-08*



While type 2 diabetes mostly affects older people, it is **no longer** a disease only seen in adults. Today children are also being diagnosed with type 2 diabetes, which was unheard of 30 years ago. This is directly related to poor diets and low levels of activity. Type 2 diabetes is responsible for the diabetes epidemic. About 5,000 cases are diagnosed in New Brunswick each year.

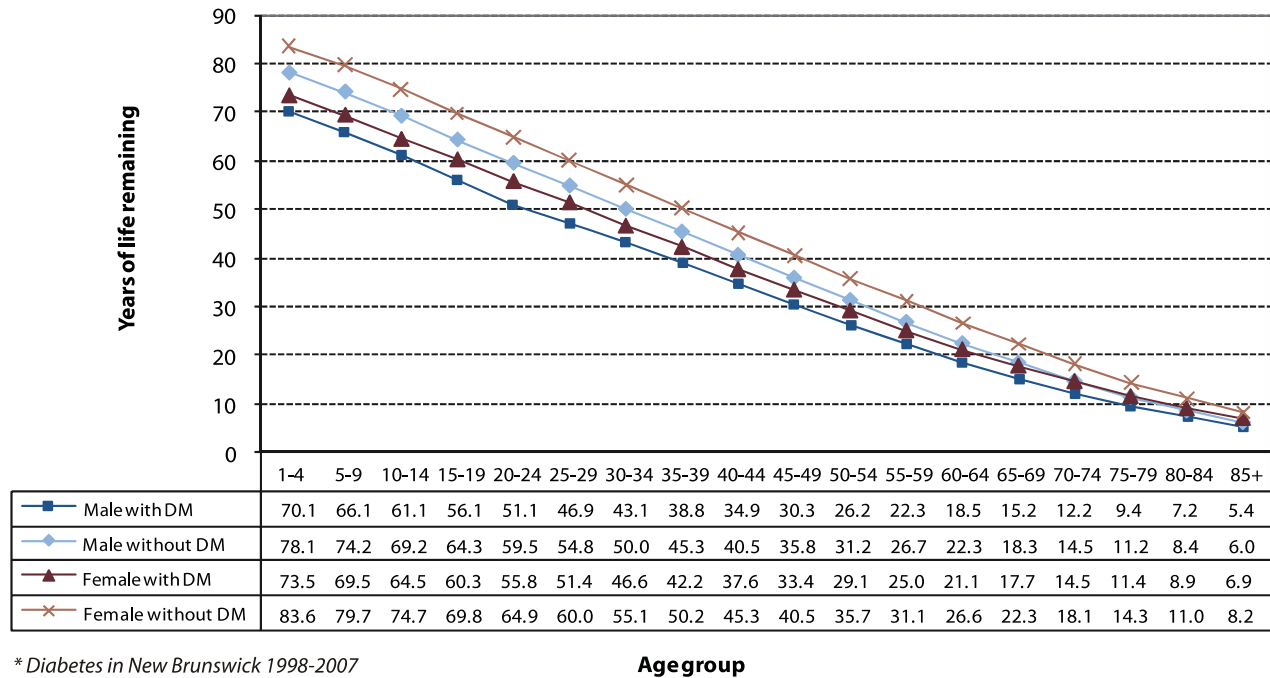
Figure 5: Age-standardized incidence rates[†] (per 1,000 population) of diagnosed diabetes in individuals ≥ 1 year old, by sex and fiscal year, New Brunswick, 1998-99 to 2007-08*



Sometimes persons may feel that type 2 diabetes is not serious because there are few symptoms. Unfortunately, this is not the case. Complications develop slowly and quietly, but they are very serious. The most common complications are related to *sustained* levels of high blood sugar, high blood pressure and elevated blood cholesterol levels. These levels lead to microvascular and macrovascular complications resulting in eye disease, kidney disease, nerve damage, heart disease, and stroke and lower-limb amputations.

Figure 6 profiles life expectancy of individuals with diabetes. For example, children diagnosed between the ages of one and 14 are expected to live on average eight to 10 years less than those without the disease.

Figure 6: Life expectancy for individuals ≥ 1 year old, by diabetes status, age group and sex, New Brunswick, 2003-04 to 2007-08*



* Diabetes in New Brunswick 1998-2007

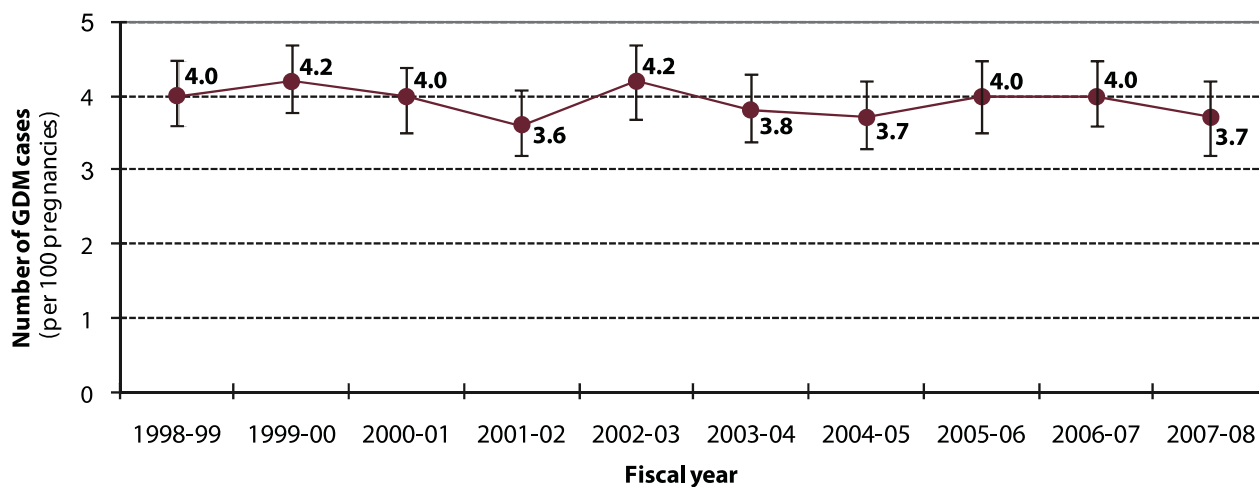
Gestational diabetes

Gestational diabetes mellitus (GDM) is the most common medical complication and metabolic disorder of pregnancy.¹⁶ It is a condition in which women without previously diagnosed diabetes exhibit high blood sugar levels during pregnancy. In Canada, 3.5 per cent to 3.8 per cent of pregnancies with birth outcomes are complicated by GDM, which generally resolves once the baby is born. Women with GDM are at increased risk, however, of developing type 2 diabetes after pregnancy, and their children are prone to childhood obesity and type 2 diabetes later in life.

Treatment for GDM ranges from diet to insulin. It is considered a high-risk pregnancy, so the pregnancy must be closely monitored, including blood sugars to determine the clinical treatment. Figure 7 profiles GDM rates between 1998 and 2007.

¹⁶ Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Canadian Diabetes Association 2003 clinical practice guidelines for the prevention and management of diabetes in Canada. *Can J Diabetes* 2003;27 (suppl 2):S1-152.

Figure 7: Gestational diabetes rates per 100 pregnancies, by fiscal year, New Brunswick, 1998-99 to 2007-08*



* Diabetes in New Brunswick 1998-2007

Note: Calculation of pregnancies involved the compilation of registered live births and stillbirths (with at least 20 weeks gestation) that occurred inside the province among NB female residents.

New Brunswick – an urgent need for action

Diabetes is often described as a silent epidemic. *Diabetes in New Brunswick 1998-2007* highlights the significant increase in diabetes prevalence in recent years. It is alarming to consider that 10 per cent of New Brunswickers are expected to be living with diagnosed diabetes by 2013. As mentioned earlier, about 5,000 New Brunswickers are diagnosed with diabetes each year. The PHAC estimates, based on American data that between one-third and one-half of people with diabetes may not be diagnosed.^{17, 18, 19}

One would expect some increase in the number of person with diabetes, given that New Brunswick has an aging population and that we are living longer with diabetes. Lifestyle choices including poor diets and low levels of activity, however, are resulting in a greater incidence of diabetes in younger age groups. According to the *New Brunswick Health Snapshot (Fall 2010)*, published by the New Brunswick Health Council (NBHC), 28.5 per cent of New Brunswickers older than 12 are obese, 11 percentage points higher than the national average.²⁰

There is even greater concern for New Brunswick’s aboriginal populations. Current data are unable to distinguish the relative risk related to ethnicity in developing diabetes; it is well known, however, that diabetes is considered a pandemic in aboriginal communities, where the prevalence is three to five times higher than the national average.²¹

*Diabetes in New Brunswick 1998-2007*²² profiles the significant escalating impact of this disease on the population as well as health-service utilization – 27 per cent of hospital care days are attributable to persons diagnosed with diabetes. Indirect costs, including lost productivity and personal challenges experienced by individuals and families living with diabetes, paints a compelling picture, underlying the far-reaching effects of diabetes and its complications in the quality of family life and work life. Periodically the Canadian Diabetes Association (CDA) compares the personal out-of-pocket cost-burden of diabetes using a composite case and applying it in jurisdictions across Canada. In 2009,

¹⁷ Kaczorowski, J, and Robinson, C. (2009) Development of the CANRISK questionnaire to screen for prediabetes and undiagnosed type 2 diabetes. *Canadian Journal of Diabetes* 33(4): 381-383.

¹⁸ <http://www.phac-aspc.gc.ca/publicat/dic-dac99/d04-eng.php>

¹⁹ Cowie, C., Rust, K., Byrd-Holt, D., Eberhardt, M., Flegal, K., Engelgau, M., Saydah, S., William, S., Geiss, L., Gregg, E., (2006) Prevalence of diabetes and impaired fasting glucose in adults in the US population *Diabetes Care*. 29(6) 1263-1268

²⁰ http://www.nbhcc.ca/docs/2010_Population_Health_Snapshot_Technical_Document_Fall_2010.pdf p55

²¹ <http://www.phac-aspc.gc.ca/publicat/dic-dac99/d04-eng.php>

²² http://www.gnb.ca/0051/pub/pdf/2010/diabetes_report_1998-2007-e.pdf

the out-of-pocket costs for a person living in New Brunswick with type 2 diabetes with no third-party insurance was about \$3,400 per year, the highest among Canadian jurisdictions. If the Northwest Territories, Nunuvut and the National Indian Health Board (NIHB) are removed, (each with no costs), the average out-of-pocket costs across jurisdictions would be \$2,287 annually.²³ This underlies the common challenge faced by the working poor and those who do not qualify for publicly supported third-party insurance as determined by the *New Brunswick Family Income and Security Act*). In the case described above, there is no assistance available, although the out-of-pocket costs comprise almost 11.4 per cent of the hypothetical personal income (6.2 per cent of the family income).

The Vision

A Comprehensive Diabetes Strategy for New Brunswickers 2011-15 focuses on priority areas, identified by stakeholders, including staff from the regional health authorities (RHAs), health-care providers, the New Brunswick Diabetes Task Group (DTG) and residents. Further, these areas are actionable, measurable, affordable and compatible with the strategic vision of the Department of Health. The feasibility of the proposed initiatives is based on the following considerations:

- capacity to deliver the initiatives to the target group;
- technical complexity or expertise needed to implement the initiatives;
- capital investment needed to support initiatives;
- readiness in terms of socio-cultural norms in terms of providers and patients; and
- availability of existing assets/capacity/investments.

The strategy incorporates organizational capacity to ensure ongoing health quality improvement.

The vision

New Brunswick will have one of the lowest incidences of diabetes in Canada. New Brunswickers with diabetes will express confidence with their ability to manage diabetes; feel they have a good quality of life; and feel they are well supported by the health-care system

Achieving the vision

New Brunswick will have one of the lowest incidences of diabetes in Canada. This will be achieved through effective population health initiatives, resulting in increased levels of physical activity, overall adoption of healthy eating habits, tobacco-free living and promotion of mental fitness/resiliencies.

New Brunswickers living with diabetes will feel confident in their ability to manage their health. Education and other forms of self-care support will be available, accessible, affordable and appropriate for a variety of literacy and learning preferences.

New Brunswickers will have affordable access to healthy foods as well as medications, supplies and devices.

Health-care teams will have access to technology-enabled reminders for appropriate monitoring. These teams will also have access to decision-support tools to support clinical practice based on evidence and best practices.

Citizens, health-care providers and health-system planners will have access to appropriate information to support personal, patient and population health.

²³ Canadian Diabetes Association and Diabète Québec. *Diabetes: Canada at the Tipping Point - Charting a New Path*, Spring 2011 (forthcoming)

These measures will minimize the incidence of complications secondary to poorly controlled diabetes, helping to optimize the quality of life for New Brunswickers living with diabetes.

Learning from the evidence: New Brunswick Diabetes Task Group recommendations

The DTG was organized in 2008 under the Chronic Disease Prevention and Management Advisory Committee (CDPMAC) to provide expert advice to the Department of Health on the best methods to reduce the burden of diabetes in the province. The DTG focused on providing recommendations that targeted three objectives in relation to diabetes:

- improvement of overall population health;
- improvement of patient level health status; and
- establishment of cost containment initiatives.

The DTG's top six recommendations and key actions are listed in Appendix A. These recommendations had strong support including real-life clinical practice experience from across the Maritimes and solid, research-based evidence. The DTG's recommendations have played a central role in the design of this strategy.



Diabetes Task Group: (left to right - back row): Francoise Duguay, Rob Roscoe, Dr. Angela McGibbon (Co-Chair). (left to right - front row): Sara Trevors, Marlene Robichaud. Absent: Dr. Mary Catherine MacSween (Co-Chair), Dr. Bill Mutrie, Jake Reid, Denis Rodrigue, Bonnie McGraw, Dr. Gary Costain, Dr. Nicole Matthews, Dr. Elaine Landry, Chantal Michaud, Kim Colpitts, Dr. Marie-Andrée Arsenault.

Learning from the evidence: research

A literature review was conducted for key interventions that should be included in the development of a comprehensive diabetes strategy. While diabetes is a complex disease, facets of which are still not well understood, there is consensus within the medical and academic communities about which issues to target.

The Diabetes Control and Complications Trial^{24,25} was a landmark medical study conducted by the United States National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). It has significantly changed the management principles of diabetes since the 1990s. The study shows that keeping blood glucose levels as close to normal as possible slows the onset and progression of eye, kidney and nerve damage caused by type 1 diabetes. The 1998 United Kingdom Prospective Diabetes Study (UKPDS) finds similar evidence for those with type 2 diabetes.^{26,27,28,29} Since then, numerous studies have provided further evidence about key metabolic markers and the effectiveness of related interventions. A number of excellent systematic analyses have been conducted about the cost

²⁴ <http://diabetes.niddk.nih.gov/dm/pubs/control/>

²⁵ DCCT Research Group (1993). The effect of intensive treatment of diabetes in the development and progression of long term complications in insulin dependent diabetes mellitus. *New England Journal of Medicine*. 329: 977-986.

²⁶ The United Kingdom Prospective Diabetes Study Group, (1998) *Lancet* 352:837-365

²⁷ Stratton, I., Adler, A., Neil, A., Mathews, D., Manley, S., Cull, C., Hadden, D., Turner, R., Holman, R. (UKPDS Study Group) (2000). Association of glycaemia with macrovascular and microvascular complications of type 2 diabetes (UKPDS 35): prospective observational study. *British Medical Journal*. 321: 405-412.

²⁸ Holman, R., Sanjoy, KP., Bethel, MA., Mathews, D., Neil, HA. (2008) 10 year follow up of intensive glucose control in type 2 diabetes. *New England Journal of Medicine*. 359: 1577-1589.

²⁹ Gaede, P., Lund-Anderen, H., Parving, H., Pedersen, O. (2008). Effect of a multifactorial intervention on mortality in type 2 diabetes. *New England Journal of Medicine*. 358:580-591.

effectiveness of interventions to control diabetes.^{30, 31, 32, 33}

Figure 8 profiles the most frequently recommended interventions, organized according to evidence that either achieve cost savings or are cost-effective. These recommendations are further discussed under the following headings of prevention, detection and management.

Figure 8: Highly recommended interventions						
	Target intervention	Applicable population	Actions	Cost-saving	Cost-effective	Impact
Prevention³⁴	Lifestyle intervention	High-risk individuals	Education, lifestyle		✓	Reduction in incidence of type 2 diabetes
Detection	Screening for undiagnosed diabetes	High risk populations- by ethnicity, age, pre-existing risk factors	Education, lifestyle, lab tests		✓	Reduction in microvascular complications of diabetes
Management	Glycemic control in people with poor control	People with A1C of nine per cent	Education, reminders, drugs, lifestyle	✓		Reduced microvascular disease
	Blood pressure control	People with BP > 160/95	Education, reminders, drugs, lifestyle	✓		Reduced macrovascular, microvascular and mortality
	Foot care	People with feet at high risk of foot ulcer	Education, reminders, lifestyle, monitoring	✓		Reduction of 50 per cent to 60 per cent in serious foot diseases and amputation
	Lipid control	People with poorly controlled lipids	Education, reminders, drugs, lifestyle		✓	Reduction in cardiovascular disease and mortality

³⁰ Narayan, K.M.V., Zhang, P., Kanaya, A., Williams, D., Engelgau, M., Imperatore, G. I., Ramachandran, A. (2006) Diabetes: the pandemic and the potential solutions. In Jamison, J.T. Breman, J.G. Measham, A.R. Alleyne, G. Cleason, M. Evans, D.B. Prabhath, J. Mills, A. and Musgrove, P. editors. *Disease Control Priorities in Developing Countries*. Washington DC: Oxford University Press, World Bank; 2006. p591-604 <http://www.ncbi.nlm.nih.gov/pubmed>

³¹ Li, R., Zhang, P., Barker, L., Chowdhury, F., Zhang, X. (2010) Cost effectiveness of interventions to prevent and control diabetes mellitus: a systematic review. *Diabetes Care*. 33(8) 1872-1894. Accessed 22/12/2010 <http://care.diabetesjournal.org/contents/33/8/1872.full>

³² Pimougeuet, C., LeGoff, M., Thiebaut, R., Daretgues, J., Helmer, C. (2011). Effectiveness of disease management programs for improving diabetes care: a meta analysis. *Canadian Medical Journal*. 183(2) 190-199.

³³ Beaulieu, N., Cutler, D.I., Ho, K., Isham, G., Lindquist, T., Nelson, A., O'Connor, P. (2006). The business case for diabetes disease management for managed care organizations. *Forum for health economics and policy*. 9(1) 1-36.

³⁴ This refers to secondary prevention, focused on persons who have a greater risk of developing the disease. Primary prevention activity is focused at a population level and does not target specific risk groups.

Prevention

There are no evidence-based recommendations to prevent the development of type 1 diabetes. Primary prevention of type 2 diabetes focuses on reducing lifestyle risks related to diet and physical activity.

The wellness of New Brunswickers is affected by interactions among social and economic factors, the physical environment and individual behaviours. Collectively, these are known as the determinants of health. Some of the government strategies that target these determinants are the Public Health Baby Friendly Initiative, Early Childhood and Healthy Learners' initiatives, the *New Brunswick Wellness Strategy* and, most recently, *Overcoming Poverty Together: The New Brunswick Economic and Social Inclusion Plan*. These share multidimensional approaches that address the root causes of health disparity. Special needs and vulnerabilities of sub-populations are considered and addressed. Partnership, co-operation and community engagement with a wide variety of sectors are valued and leveraged.

The public school system continues to be an important setting and opportunity to nurture lifelong skills for healthy living. For example, schools ensure that students learn in clean air through tobacco-free policies. A variety of course work helps students acquire positive interpersonal skills, coping mechanisms and mental resiliency. Healthy eating habits are fostered through access to breakfast programs often spearheaded by volunteers and the local community. Menus in school cafeterias are being revamped to support access to and to reflect an appreciation for healthy food choices. Physical activity is being reintegrated into schools to help children become more active and recognize the wide range of activities that support participation across a lifetime. In short, the school system is teaching students to avoid behaviours that are significant precursors to the development of diabetes.

Research clearly establishes that obesity is a major risk factor for diabetes. Even a modest weight loss of five per cent to 10 per cent – or about 4.5 kilograms to nine kilograms (10 to 20 pounds) for a 90-kilogram (200-pound) person – has been shown to reduce the risk of diabetes significantly.³⁵ In the major Diabetes Prevention Program Outcome Study 10-year follow up, participants had partly regained weight but there was still an overall reduction of diabetes incidence by 34 per cent.³⁶ Recent systematic analysis confirms the validity of intensive lifestyle intervention, particularly in those persons with impaired glucose tolerance, as a very effective intervention.^{37,38}

Smoking has been identified as a modifiable risk factor for type 2 diabetes. Several studies demonstrate that cigarette smoking increases the risk of developing type 2 diabetes two- to three-fold³⁹ as well as seriously contributing to the development of related complications such as cardiovascular disease. Ongoing efforts to prevent and stop tobacco use are always important.

³⁵ <http://www.phac-aspc.gc.ca/cd-mc/diabetes-diabete/risk-risques-eng.php>

³⁶ Diabetes Prevention Program Research Group. (2009) 10 year follow up of diabetes incidence and weight loss in the Diabetes Prevention Program Outcomes Study. *Lancet* 14(374(9702): 1677-86 Accessed January 11 2011 <http://www.ncbi.nlm.nih.gov/pubmed>

³⁷ Li et al 2010

³⁸ Narayan, et al 2006

³⁹ http://www.diabetes.ca/documents/for-professionals/CD--Summer_2010--B.Patasi_.pdf

Detection

While there is agreement that early case finding benefits the person with diabetes, at a system level, the cost effectiveness of prescreening is strongly associated with targeted programs for high risk population groups of undiagnosed diabetes.^{40,41,42} Several interventions recommend selective screening processes that focus on high-risk populations, including selected ethnic backgrounds, hyperlipidemia and hypertension.^{43,44,45} Canadian guidelines are being reviewed, but the United States Preventive Task Force (USPTF) recommends screening for type 2 diabetes in asymptomatic adults with sustained blood pressure greater than 135/80 mm Hg.⁴⁶ A recent systematic review of literature on the cost-effectiveness of diabetes interventions recommended by the American Diabetes Association supports targeted screening for at-risk populations only.⁴⁷

Preliminary discussions with the PHAC support targeted prediabetes screening.⁴⁸ Considerable work has been completed to develop and test a CANRISK tool to identify persons who may have undiagnosed diabetes or prediabetes using a self-completed risk score. While the tool is undergoing refinement and development, including ease of use by the public, it does enable identification of at-risk populations that should have access to further diagnostic testing and counselling.⁴⁹

Although it is typically suggested that the population is under-screened for diabetes, a recent population-based cohort study in Ontario has found that the rate of screening was quite high. In fact, 80 per cent of women and 66 per cent of men had a blood glucose test done within the past five years. The efficiency of screening, however, varied considerably and, consistent with other findings, the high-risk groups may have been under-screened compared to those at lower risk.⁵⁰

Management

Research strongly supports the value of a comprehensive approach that targets appropriate monitoring and treatment of diabetes as well as the early detection of complications associated with diabetes. Many actions cross over in terms of addressing multiple risk factors with a single intervention. As an example, supporting tobacco cessation prevents or delays the onset of complications for people with diabetes.

The three key targets for monitoring are: improved management of hypertension, glycemia (blood sugar) and cholesterolemia (blood lipids). The value of monitoring of the diabetic foot was also highly rated. These are each discussed in brief.

Improve hypertension control:

Strategies to control blood pressure have the greatest and earliest cost savings in diabetes management. This underscores the critical interplay between cardiovascular disorders, end-stage renal disease and diabetes. The United States Centre for Disease Control cost-effectiveness group has found that intensified hypertension control would save almost \$2,000 per quality adjusted life year (QALY) with diabetes. These savings are directly related to the prevention of expensive treatments associated with end-stage renal disease and cardiovascular diseases.^{51,52,53} Lowering blood

⁴⁰ <http://care.diabetesjournals.org/content/33/8/1872.full>

⁴¹ Narayan et al. 2006 p6.

⁴² <http://www.uspreventiveservicestaskforce.org/uspstf/uspstabrecs.htm>

⁴³ Narayan et al, 2006

⁴⁴ Li et al 2010

⁴⁵ Cosgrove, P, Engelgau, M. & Islam, I (2002) Diabetes Voice 47(4) p13-16.

⁴⁶ <http://www.uspreventiveservicestaskforce.org/uspstf/uspstabrecs.htm>. Accessed January 4, 2011

⁴⁷ Li et al 2010

⁴⁸ Kaczorowski, J., Robinson, C., Nerenberg, K. (2009). Development of the CANRISK questionnaire to screen for prediabetes and undiagnosed type 2 diabetes. Canadian Journal of Diabetes. 33(4) 381-385.

⁴⁹ McGibbon, A., Tuttle, J., Amirault, D., Leuschen, L., Robinson, C., Ur, E. (2009). A pilot study using the CANRISK survey to identify prediabetes and diabetes in Canada. Poster Presentation Third International Congress on Prediabetes and the Metabolic Syndrome. Nice, France April 1-4.

⁵⁰ Wilson, S., Rosella, L., Lipscombe, L., Manuel, D. (2010) The effectiveness and efficiency of diabetes screening in Ontario, Canada: a population-based cohort study. BioMed Central Public Health. 10:506; <http://www.biomedcentral.com/1471-2458/10/506>

⁵¹ Narayan et al 2006

⁵² CDC cost effectiveness group. (2002)

⁵³ Li et al 2010

pressure in persons whose pressure is higher than 160/95 is estimated to result in a 35-per-cent risk reduction in macrovascular and microvascular disease for every 10 mmHg drop in blood pressure.⁵⁴ The importance of blood pressure control is also highlighted in a USPTF report, which gives blood pressure screening a rating of A in importance.⁵⁵

Improve glycemic control:

Hyperglycemia has been strongly tied to the development of diabetes related complications, particularly microvascular complications such as blindness and kidney disease. There has been a definite shift to relying on a blood test known as A1C or glycosylated hemoglobin as a measure of glycemic control. The A1C test provides a profile of the average sugar in the blood stream over three months. This is important because sustained high blood sugar (hyperglycemia) is strongly associated with the development of diabetes related complications. The CDA recommends an A1C of .07 or seven per cent.

The UKPDS study establishes that a one-per-cent decrease in A1Cs results in a 12-per-cent lower risk of any diabetes related complication and a 10-per-cent lower risk of diabetes-related death. There is a 30-per-cent reduction in microvascular disease for every one-per-cent decrease in A1C. This continues to be widely supported.^{56,57,58,59}

It is generally acknowledged that reducing A1Cs results in cost savings in respect to severely uncontrolled hyperglycemia, where A1C levels are greater than nine per cent. In individuals with A1C levels between seven per cent and nine per cent, there may be an incremental cost but it is still considered to be very cost-effective.⁶⁰

Improve lipid control:

Control of blood cholesterol has been highly linked with cost-effective, improved health outcomes. Studies show that reducing blood cholesterol may result in a decrease of 25 per cent to 55 per cent in coronary heart disease and a decrease of 43 per cent in the death rate. The cost and impact of blood lipid control is found to be closely related to the age of the patient.^{61,62,63} The control of blood lipid is highlighted by the USPTF where lipid related screening received a rating of A in importance with recommendations to screen men older than 35 and women older than 45.⁶⁴

Improve foot care for persons with diabetes who are at high risk of foot ulcers

The importance of access to foot care in persons with high risk of foot ulcers is identified in two recent systematic reviews.^{65,66} Basic foot care would include the screening of all persons with diabetes plus further support targeted to persons who are at a high risk of foot ulcers. A detailed analysis provides strong evidence that a strategy of patient education, foot care and footwear is cost-saving in high-risk patients and cost-effective in all other patients with diabetes, excluding those without any risk factors.⁶⁷

⁵⁴ Narayan et al. 2006 P 7

⁵⁵ <http://www.uspreventiveservicestaskforce.org/uspstf/uspsabrecs.htm>

⁵⁶ Narayan et al

⁵⁷ Li et al

⁵⁸ CDC cost effectiveness group. (2002).

⁵⁹ Valentine, w, Palmer, A, Nicklasson, L, Cobden, D, & Roze, S. (2006) Improving life expectancy and decreasing incidence of complications associated with type 2 diabetes: a modeling study of HbA1C targets. *Int J Clin Pract* 60(9) 1138-1145.

⁶⁰ Narayan et al 2006 p7

⁶¹ Li et al 2010

⁶² Narayan et al, 2006

⁶³ CDC et al 2002

⁶⁴ <http://www.uspreventiveservicestaskforce.org/uspstf/uspsabrecs.htm>

⁶⁵ Narayan et al

⁶⁶ Li et al.

⁶⁷ Tenvall, G. r., and Apelqvist, J. (2001). Prevention of diabetes-related foot ulcers and amputations: a cost utility analysis based on Markov model simulations. *Diabetologia* 44:2077-2087

Summary of Recommended Priorities

New Brunswick has identified the need for a comprehensive diabetes strategy focused on three components: prevention, detection and management. The recommendations of the DTG as well as research justify the investment in improved support to persons with diabetes. The high-level modeling analysis by the WB suggests that large gains for the economy as well as individuals would result if its recommendations were followed.⁶⁸

Research strongly supports the development of integrated strategies that will target optimal management of blood pressure, blood sugar, blood lipids and early management of foot-related problems. Initiatives that target appropriate risk factor monitoring and management as well as those that improve patient self-management, including affordable access to medications, supplies and devices such as test strips and insulin pumps, are a priority. These interventions should complement each other in a comprehensive patient-focused approach. The goal is to minimize development of the microvascular and macrovascular complications associated with diabetes.

⁶⁸ Narayan et al.

Comprehensive diabetes strategy

Strategic area #1: CAPACITY BUILDING

Establish a New Brunswick chronic disease prevention and management unit

Conservative estimates using CCHS data indicate that, incrementally, physician visits and hospital utilization by persons with diabetes are responsible for about \$283 million annually in costs annually.⁶⁹ It is equally important to remember, however, that diabetes shares common risk factors with many other chronic illnesses. The activities related to prevention and management are similar for many of these illnesses, and it is the associated co-morbidities of diabetes that are often directly related to the growing burden for families and the health-care system. Creating a chronic disease prevention and management unit will establish the capacity to provide the necessary leadership and support across the health-care system to enable significant sustained improvement that will lessen the burden associated with chronic diseases, including diabetes.

Improved access to information and data is central to reorganizing the management of chronic care conditions such as diabetes. The value and importance of clinical information systems are described in the *Chronic Disease Prevention and Management Framework for New Brunswick*.⁷⁰ A chronic disease prevention and management unit will use existing data collections to enable the development of local physician practice registries of their patients with diabetes. These, in turn, will enable the provision of timely reminders, individual care planning and ongoing awareness of key indicators related to excellence in primary-care practices. At a regional and provincial level, de-identified information can help to support health-care planning, resource allocation and benchmarking to performance quality indicators. The unit will play a key role in developing and disseminating standardized tools and resources that will provide up-to-date information supporting patient self-management, clinical training and clinical practice.

Key deliverables:

1.1 Establish a New Brunswick chronic disease prevention and management unit with an initial primary focus on diabetes. This unit will provide leadership, support research, champion innovation, leverage successes, facilitate co-ordination and monitor outcomes in diabetes prevention, detection and management.

1.1.1 Make funds available to the RHAs, non-government organizations and health-care providers to provide seed money to support practical, quality improvement projects that directly improve the management of persons with diabetes or at risk of developing the disease.

1.1.2 The use of existing databases will continue to be the main source of information until this information is available through the one patient, one record strategy. This will support the development of a virtual registry, enabling more detailed analysis, providing practice information to health-care providers as well as population-level information to decision-makers and planners.

⁶⁹ Internal studies, -personal communication J Boyne and S Halpine. January 2011

⁷⁰ <http://www.gnb.ca/0051/pub/pdf/2010/6960e-final.pdf>

Strategic area #2: PREVENTION

Support action across government on the social determinants of health

Prevention encompasses a wide range of measures:

- reducing the occurrence of disease;
- slowing the progression of disease; and
- minimizing the consequences of disease once established.

Prevention takes place along a continuum, beginning with actions and measures to improve the overall health of the population. This means preventing diseases by confronting root causes such as poverty, low literacy and unemployment. *Overcoming Poverty Together: The New Brunswick Economic and Social Inclusion Plan* demonstrates a strong commitment to ensure that all New Brunswickers have the necessary resources to meet their basic needs and to live with dignity, security and good health.

The next area of prevention aims to reduce the incidence of disease either by personal or collective efforts prior to the onset of disease. Sometimes these actions occur very far upstream in a person's life. For example, breastfeeding plays an important role in preventing obesity and chronic diseases such as diabetes. Breastfeeding has highly protective benefits for both the mother and the child, reducing the incidence of type 1 for the child and type 2 for both the child and mother later in life.⁷¹ Other examples include the personal decision to lead an active lifestyle or the decision not to smoke. Smoking is a key factor in increasing the risk of diabetes complications.

Health promotion strategies combine a range of methods, including communication, education, legislation, fiscal measures, organizational change and community development. It is critical to strengthen further and build on the foundation of primary prevention to realize fully the greatest benefit in the reduction of the burden created by chronic diseases. Addressing risks that contribute to diabetes, including unhealthy diet, smoking and physical inactivity, is a complex task requiring collaboration and co-ordination of policies, programs and services provided by several government departments and community stakeholders. These areas of prevention work in combination with health promotion.⁷² At the community level, the practice of providing only healthy food options in a school or workplace cafeteria represents a prevention strategy. Within the school system, we have the opportunity to develop an environment that encourages healthy food choices and physical activity. We can use resources associated with schools such as the Healthy Learners program as well as core curriculum subjects. These can provide a strong foundation to help children learn healthy habits that will protect them in later life from diabetes.

Further along the prevention continuum, measures such as screening programs for early detection aim to reduce disease prevalence through prompt intervention. The final step on the prevention continuum aims to treat and/or manage disease with the goal of reducing the long-term impacts and complications, minimizing disability and suffering as well as maximizing potential years of useful life.

Diabetes prevention encompasses actions along the continuum and is ultimately fostered by developing partnerships that build capacity within governments, industry, schools, communities and individuals to promote healthy lifestyles and develop healthy public policies. This includes integrating broad strategies that address the determinants of health.

⁷¹ Statistics Canada (2005). Breastfeeding practices. Health Reports, 6(2), 23-31. Retrieved May 18, 2007 from <http://www.statcan.ca/english/freepu/82-003-XIE/0020482-003-XIE.pdf>

⁷² World Health Organization. (1986). Ottawa Charter for Health Promotion. Geneva: WHO

A number of strategies within government contribute to health promotion and disease prevention. Examples include the Provincial Wellness Strategy,⁷³ *Overcoming Poverty: The New Brunswick Economic and Social Inclusion Plan*⁷⁴ and Public Health actions such as the Early Childhood Initiatives,⁷⁵ Healthy Learners in School Program⁷⁶ and the Baby Friendly Initiative.⁷⁷ Through these endeavours:

- schools, communities, families and workplaces are engaged and mobilized to set priorities, make decisions and plan and implement strategies to promote health and wellness;
- knowledge, tools and resources on healthy behaviours are made available to the public and stakeholders;
- legislation and policies that enable healthier physical, economic and psychosocial environments are created; and
- infrastructure and leadership are positioned to support the co-ordination and alignment of initiatives across sectors.

Key deliverables:

2.1 Support action across government on the determinants of health.

2.1.1 Government commitment on a comprehensive primary prevention action plan for all New Brunswickers to reduce the burden of chronic diseases, including diabetes.

2.1.1.1 Conduct an environmental scan of public policy to serve as a foundation and to support further the development of the primary prevention action plan.

2.1.2 Develop and implement a public health nutrition strategy that will provide a co-ordinated and comprehensive approach to priority nutrition areas across the Public Health system.

⁷³ <http://www.gnb.ca/0131/wellness-e.asp>

<http://www.gnb.ca/legis/business/committees/pdf/strategy.pdf>

⁷⁴ <http://www2.gnb.ca/content/dam/gnb/Departments/esic/pdf/Plan-e.pdf>

⁷⁵ http://www2.gnb.ca/content/gnb/en/departments/social_development/early_childhood_development.html

⁷⁶ <http://www.gnb.ca/0053/programs/healthylearners-e.asp>

⁷⁷ <http://www.gnb.ca/0053/bfi/index-e.asp>

Develop strategies for at-risk individuals

Prevention is the ideal – and this should start at an early age. As the literature shows, parents and guardians should teach their children to eat healthy diets and to be physically active.^{78,79} Programs should help parents and guardians recognize when their children are developing unhealthy eating habits or are becoming overweight.

Intensive lifestyle modification programs are effective for persons at risk. These have often been designed, however, with intensive one-on-one programming. It is important to continue to develop strategies that take advantage of real-world group settings as well as technology-enabled education and support to increase the overall efficiency for wider application. While research is ongoing, it is clear that lifestyle programs can prevent or delay diabetes in at-risk individuals. A pilot program will support intentional risk-reduction focused on weight reduction through group-mediated programs that promote healthy eating, physical activity and positive mental fitness in severely at-risk individuals.

Key deliverables:

2.2 Develop strategies for at-risk individuals.

2.2.1 Develop content housed on a web-based platform, supported by an appropriate awareness strategy, to enable open access to all New Brunswickers who may be interested and ready to make the lifestyle changes needed to prevent or delay the development of Type 2 diabetes.

2.2.2 Provide pilot funding to each RHA to enable the development of enhanced partnerships with community-based organizations to provide structured education in stress management, diet and physical activity training to at-risk individuals, referred by the family physician or health-team member. These pilots will be evaluated after Year 3 to determine the overall impact and future funding.

2.2.3 Implement a provincial screening tool to identify pre-school children at risk for nutritional concerns such as obesity; and establish a process for addressing those with identified risk factors.

⁷⁸ Flynn M.A.T. et al (2006). Reducing obesity and related chronic disease risk in children and youth: a syntheses of evidence with best practice recommendations. *Obesity Reviews* 7 (suppl 1): 7-66

⁷⁹ Doak C.M. et al (2006). The prevention of overweight and obesity in children and adolescents: a review of interventions and programmes. *Obesity Reviews* 7: 111-136

Strategic Area #3: DETECTION

Implement screening programs that target vulnerable population and at-risk individuals

While earlier case finding would enable persons with diabetes to obtain treatment earlier during the course of the disease, thereby avoiding or delaying the development of complications, the cost of screening the whole population may be prohibitive. The risk factors for diabetes, however, are easily screenable through self-assessment. Implementing a two-step process that limits more expensive screening tests to those most likely to have the disease will be most feasible and yield the greatest benefit.

Key deliverables:

3.1 Implement screening programs that target those at risk.

3.1.1 Implement a population-wide campaign that encourages New Brunswickers to participate in a personal health risk assessment and pursue appropriate accessing of health-care resources for follow-up. The provincial government will explore the opportunity to leverage CANRISK, continuing as a key partner in further refinement and evaluation of this tool.

3.1.2 Partner with programs administered by non-government organizations, First Nations, food banks and charities such as the Heart and Stroke Foundation of Canada and the CDA to embed self-screening activities particularly within at-risk populations, (e.g., the homeless, middle-aged men, aboriginal populations).

Strategic Area #4: MANAGEMENT

Improve primary-care provision of comprehensive risk-factor control and early detection of complications

The vast majority of care is offered and is best positioned within the primary-care, family-practice setting. It is here that the health-care team should be able to provide the requisite monitoring, treatment and counseling to support the patient. Except in unusual cases, physicians should be able to obtain the needed support and expertise to care for patients within the medical home and local community.

Although persons with diabetes are most often managed within the primary-care setting, the typical 10-minute office visit does not easily accommodate the complex risk factor monitoring and management. We must create decision-support systems and reminders:

- to enable access to a broader health-care team; and
- to facilitate access to information to assist better the primary-care provider and patient.



Case Managers: People in photo: (left to right): Shelley Jones (Nurse), Chantal Morisset (Nurse), Michelle Corcoran (Dietician), Rob Roscoe (Pharmacist).

Primary-care physicians have identified the need for tools such as the insulin start tool as developed by the Canadian Agency for Drugs and Technology in Health (CADTH)⁸⁰ to help transition their patients to insulin management and other simple solutions that have evolved from innovation within the province. A local quality improvement effort has developed and validated two simple tools:

- Pink Sheet – a report highlighting a patients’ historical A1C values that is generated if the patient’s A1C is greater than seven per cent; and,⁸¹
- a case manager who sees referred patients with diabetes at the physician’s office.

In both cases, there is ongoing evidence that these interventions have resulted in the minimum goal of a decrease of one per cent in A1C results that exceed 10 per cent.

The direction is clear. If poorly controlled blood pressure, blood sugar and cholesterol are in better control, even if not completely normal, this will protect these patients from early or further complications, improve their quality of life and save the health-care system money. The following primary-care action areas target the control of blood pressure, blood sugar and cholesterol by integrating decision-support tools, enhanced delivery system design, robust information systems and patient self-management.

- 1 *Support the use of reminders to improve adherence and recognition of best practice guidelines related to blood pressure, blood glucose and lipid control.*
- 2 *Provide practice profiles to physicians to aid in the development of practice registries; and to identify at-risk patients.*
- 3 *Introduce primary-care, community-based case managers as part of an outreach of local diabetes education clinics.*
- 4 *Continue to support the ongoing study of integration of decision-support tools to enable optimal pharmaceutical support of patients to avoid or minimize the development of complications.*
- 5 *Support availability of academic detailing (ongoing education) for health-care providers to ensure up-to-date clinical practices, including dissemination of tools such as those to support insulin starts for persons with Type 2 diabetes as well as skills in lifestyle counseling and behaviour modification.*
- 6 *Improved access to annual screening for retinopathy and ensuing treatment.*
- 7 *Improved access to lifestyle counseling and support, including stress management, tobacco cessation, diet and exercise.*
- 8 *Improved screening, diagnosis and treatment of depression.*
- 9 *Improved access to expanded scope of services within the diabetes education clinics to enable equitable access across New Brunswick to certified diabetes educators and community-based health-care teams made up of nurses, dietitians, social workers, pharmacists, mental-health counsellors and physicians.*

Key deliverables:

4.1 Improve primary-care provision of comprehensive risk factor control and early detection of complications

4.1.1 Support the use of reminders to improve adherence and recognition of best practice guidelines related to blood pressure, blood glucose and lipid control

⁸⁰ <http://www.cadth.ca/media/pdf/c1109-guide-to-starting-insulin-final-e.pdf>

⁸¹ Howard, J., Sommers, R., Gould, O., & Mancuso, M. (2009). Effectiveness of an HbA1c tracking tool on primary care management of diabetes mellitus: glycaemic control, clinical practice and usability. *Infomatics in Primary Care*. 17:41-6.

- 4.1.2 Provide physician practice profiles. On an ongoing basis, support the development of a diabetes registry and the adoption of best practices by physicians.
- 4.1.3 Fund outreach case manager positions within the RHAs' diabetes education centres to provide case management services within physician offices for persons with uncontrolled diabetes.
- 4.1.4 Continue to support the ongoing study of decision-support tools to enable optimal pharmaceutical support of patients to avoid or minimize complications (specifically, this includes appropriate glycemic control; the use of ACE inhibitors [ACEIs] for intensive hypertension control; the use of ACEIs or an angiotension receptor blocker [ARB] to prevent end-stage renal disease; and the use of statin therapy for hyperlipidemia and secondary prevention of cardiovascular disease).
- 4.1.5 Support the integration of depression screening tools and management skills within primary-care practices.
- 4.1.6 Support the development of study groups known as collaboratives that support quality improvement within the primary-care settings in each zone. Collaboratives enable local primary-care physicians to learn about advances in comprehensive multicomponent interventions and to share innovative approaches for management of diabetes within their practices. This will support risk-factor management, including initiating insulin when required, particularly for persons with type 2 diabetes; better use of outreach services; improved skills and confidence in earlier management of mood disorders, including depression; and use of motivational interviewing techniques to support behaviour change.
- 4.1.7 Study and make recommendations to current services and service providers under Medicare on innovative approaches that provide cost-effective strategies that support improved retinopathy screening.
- 4.1.8 Provide pilot funding to the RHAs to enable the development of enhanced partnerships with community-based organizations to provide structured education in stress management, diet and physical activity training to at-risk individuals, referred by the family physician or health-team member. These pilots will be evaluated for future funding and expansion.
- 4.1.9 Support implementation, adoption and refinement of the chronic disease billing initiative code among fee-for-service physicians as a tool to encourage best-practice management.
- 4.1.10 Complete a detailed evaluation of diabetes education clinics across the province and, based on the needs assessment, provide funds to address challenges or weaknesses in overall access to diabetes education and support.

Improve secondary and tertiary care support to persons with diabetes

Hospitals should be recognized for their commitment to best practices. The adjustment of insulin dosages is one of the highest areas of medication errors within hospitals. Simple strategies such as implementing standard insulin order sets will help avoid medication errors.⁸²

Almost 27 per cent of hospital bed days are used by someone with diagnosed diabetes. We must use these opportunities to provide optimal management and education to limit the need for readmission.

From 2004 to 2009, there were 2,294 discharges of patients with diabetes and foot ulcers included within all diagnosis types. If we consider only 2009, there were 449 discharged patients who stayed an average of 20 days receiving acute care. This is largely preventable. This was one of the top four cost-saving recommendations of the WB.

⁸² <http://www.ncbi.nlm.nih.gov/pubmed/15251647>

Key deliverables:

4.2 Improve secondary and tertiary care support to persons with diabetes.

4.2.1 Establish interdisciplinary diabetes management committees associated with each hospital. They will be responsible for evaluating local hospital, outpatient and primary-care practices; identifying opportunities for improvement; and co-ordinating and implementing practical quality improvement projects. They will be key in facilitating communication and sharing knowledge at the practice level.

4.2.2 Implement recommended clinical practice guidelines within hospitals. Facilitate the review and implementation of best practices within hospitals. This would include current work focusing on the development of standard insulin order sets.

4.2.3 Establish processes to review and implement clinical practice guidelines, decision-support tools and reminders within daily operating processes.

4.2.4 Support allied health-care providers to become certified diabetes educators. Create a forgivable bursary fund, with a return-of-service agreement, available to clinicians interested in becoming certified as diabetes educators. This would be managed through the New Brunswick chronic disease prevention and management unit in co-operation with the RHA. The RHAs would be expected to support funded individuals to obtain the necessary clinical practice experience arranged co-operatively within the appropriate RHA.

4.2.5 Support access to foot care services for those with at-risk feet. Provide financial assistance to support foot care services for uninsured individuals who are at high risk of a foot ulcer or who have had a history of a foot ulcer.



Improve access to tools that enable self-management

Self-management is the foundation for optimal diabetes management. In the course of a year, persons may spend half a day in total discussing their health with a health-care provider. They spend the other 364½ days taking care of themselves. We need to ensure that all New Brunswickers have access to necessary information and useful supports that help them manage their diabetes. This includes providing common educational and motivational support that recognizes the breadth of learning styles and literacy limitations. It should also be available across a variety of settings as well as through technology-enabled education and support.

My Choices - My Health is a free six-week workshop to help individuals develop the skills needed to manage better the daily challenges of living with chronic mental and physical health conditions. In these workshops, persons with many different types of chronic illnesses learn through conversation, sharing and support common strategies to manage themselves better. Since 2008, there have been almost 100 workshops, and participants have strongly endorsed the value of learning basic skills such as setting goals and solving problems. We need to continue to strengthen and make more tools available to New Brunswickers so that they are better equipped to manage their health challenges.



Technology can be used to extend the reach and efficacy of lifelong education. The use of web-based platforms for a content delivery mechanism can be a valuable tool to address disparities. New Brunswickers living with diabetes need education, motivation and support to engage in successful lifestyle changes that will delay or avoid further complications from diabetes. Provincial challenges such as a significant rural population, poverty and literacy point to the probability that not every patient with diabetes can or will attend an educational session. There is a need for consistent evidence-based diabetes education and information across the province. Education could be easily accessible through a secure web-based site available 24/7. Accessing appropriate educational content, New Brunswickers will be able to apply the soft skills embedded on the site, such as setting goals, planning action, tracking and monitoring their health and engaging in self-care. Informed patients are empowered to make the behavioural changes needed to improve their overall health. Through acquiring information and skills, persons will develop greater confidence in their abilities, and their relationship and interaction with health-care providers will be more productive, further enabling control of diabetes symptoms.

Key deliverables:

4.3 Improve access to tools that enable self-management.

4.3.1 Provide opportunities for health-care providers to acquire competencies in behaviour change counselling to support patient self-management.

4.3.2 Continue the development of content suitable for a web-based platform.

4.3.3 Standardize the availability of high-quality, patient educational material in both official languages throughout the province. This material should also be available to meet the needs of persons with low health literacy.

4.3.4 A New Brunswick chronic disease prevention and management unit will develop partnerships with other jurisdictions across Canada to enable the access of material in other languages to support the aboriginal population, visiting students, immigrants and other minority populations.

Improve access to necessary and affordable medications

Research clearly shows that it is not simply access to insulin or oral hypoglycemic agents that is needed to support optimal diabetes management. Recent work completed on current coverage across Canada highlights the fiscal burden related to diabetes, particularly in this province. Within New Brunswick, there is commitment to develop a prescription drug plan for uninsured individuals that will provide coverage of a broad range of drugs, including those needed by persons with diabetes. This commitment recognizes that the management of chronic diseases share when required, a common need for appropriate, available and affordable pharmaceutical support. The prescription drug plan for uninsured individuals will help all New Brunswickers to have affordable and available access to necessary medications.

Key deliverables:

4.4 Improve access to necessary and affordable medications.

4.4.1 Complete a more detailed study on ordering practices of physicians to determine better if there are gaps or opportunities to improve pharmaceutical management.

4.4.2 The Economic and Social Inclusion initiative will continue to develop a prescription drug plan for uninsured individuals in New Brunswick that will provide coverage of a broad range of drugs. The Department of Health will advocate that diabetes medication be included so as to ensure this aspect of the strategy is achieved through this avenue.

Improve affordable access to necessary supplies

Recently, the practice of self-monitoring of blood glucose using test strips has been scrutinized in terms of the benefit it provides to patients and its cost-effectiveness. In many Canadian public drug plans, blood glucose test strips are among the top five classes in terms of total expenditure, but there is limited evidence of clinical or cost-effectiveness, particularly among persons with type 2 diabetes who are not using insulin. Benefit coverage under the *Family Income Security Act*, should be updated to reflect recent evidence-based recommendations, including those released by CADTH in its 2009 report, *Optimal Therapy Recommendations for The Prescribing and Use of Blood Glucose Test Strips*.^{83,84,85,86}

The New Brunswick *Family Income Security Act* “health card only” coverage issued through the Department of Social Development does not include benefits for blood glucose test strips for persons on oral medications. Evidence suggests that persons who are on insulin secretagogues should have access to a limited quantity to help them monitor their blood sugar. Policies relating to benefit coverage for blood glucose test strips should be harmonized within the *Family Income Security Act* and updated to reflect recommended guidelines. There should be controlled access for those on insulin, on select groups of oral medications, and for those newly diagnosed or severely uncontrolled, to assist in learning self-management skills.

Third-party insurers design private health benefit plans to include varying degrees of coverage to ensure these plans remain viable and sustainable for all members. Some private plans require medical underwriting to determine existing health conditions that help determine premiums. For applicants with existing medical conditions, there may be a required wait time to ensure an accumulation of premiums to offset the cost of expected claims. In certain instances, the individual may elect to waive coverage for existing medical conditions entirely. These private plans are not subsidized and are designed and priced to be sustainable for their members. Opportunities exist to acquire health coverage while healthy and before the onset of health conditions such as diabetes.

⁸³ http://www.cadth.ca/media/pdf/compus_BGTS_OT_Rec_e.pdf

⁸⁴ <http://www.ihe.ca/publications/library/2006/consensus-statement-on-self-monitoring-in-diabetes/>

⁸⁵ http://www.cadth.ca/media/pdf/BGTS_SR_Report_of_Clinical_Outcomes.pdf

⁸⁶ Diabetes Care Program of Nova Scotia. (April 2010) Non Insulin using Type 2 Diabetes Decision tool for Self Monitoring of Blood Glucose www.diabetescareprogram.ns.ca

Key deliverables:

4.5 Improve access to necessary supplies.

4.5.1 Harmonize benefit coverage under the *Family Income and Security Act* for qualified persons relative to coverage for blood glucose test strips.

4.5.1.1 Individuals who are on select oral diabetes medications will be eligible for a limited number of strips each month.

4.5.1.2 Individuals, who are newly diagnosed, will also be eligible for one-time coverage for a limited supply for purposes of learning self-management of diabetes.

4.5.1.3 Individuals will be eligible for a limited supply of blood glucose test strips when ordered by a certified diabetes educator or physician as part of a self-management plan to improve glycemic control. This would include those individuals who are:

- at an increased risk of hypoglycemia (e.g., due to a history of severe hypoglycemia or hypoglycemia unawareness, instances of inadequate caloric intake, unforeseen or unplanned physical activity);
- experiencing acute illness;
- undergoing changes in pharmacotherapy or significant changes in routine;
- experiencing poorly controlled or unstable blood glucose levels;
- pregnant or planning a pregnancy.

4.5.2 Work with key senior lobby groups and third-party payers to review policies that may better manage the coverage of diabetic supplies.

Improve affordable access to necessary devices

A previous section, *Types of Diabetes*, explains how and why persons with diabetes take insulin. Further on this topic, insulin is typically administered through multiple daily injections (MDI). Insulin may also be administered through a small device, called insulin pumps, that provides continuous subcutaneous insulin infusions (CSII). This means that the person only needs to insert the catheter every two to three days, instead of making multiple injections. The pump technology minimizes discomfort and trauma from repeated injections. There is also evidence that it may improve glycemic management, resulting in a lower incidence of diabetes complications, primarily related microvascular disorders⁸⁷ as well as reducing hospitalization particularly in those persons who have severe or unpredictable hypoglycemia requiring more than two hospitalizations in a year.⁸⁸



⁸⁷ St Charle, M., Sadri, H., Minshall, M., & Tunis, S. (2009). Health Economic Comparison Between Continuous Subcutaneous Insulin Infusion and Multiple Daily Injections of Insulin for the Treatment of Adult Type 1 Diabetes in Canada. *Clinical Therapeutics*. 31(3) 657-667.

⁸⁸ Scuffman, P. & Carr, L. (2003) The cost effectiveness of continuous sub-cutaneous insulin infusion compared with multiple daily injections for the management of diabetes. *Diabetes Medicine*. 20: 586-593.

Several Canadian jurisdictions have introduced or are considering introducing publicly funded insulin pump programs ranging from open access to all eligible individuals with diabetes (Ontario) to limited access for those in select age groups or by special authorization (British Columbia, Alberta, Saskatchewan, Newfoundland, Nunavut, Yukon, Northwest Territories). There is growing social sentiment in jurisdictions across Canada that eligible children with diabetes should not be penalized if their parents are unable to afford to provide them with access to an insulin pump. There is public support to provide the necessary funding to ensure that the child is not denied access due to a family's financial situation. As well, there is some evidence suggesting that there are lowered health-care costs over time.

Key deliverables:

4.6 Ensure affordable access to necessary devices.

4.6.1 Establish a pediatric insulin pump device and supply program for children younger than 19 who are eligible for a pump with the family responsible for a portion of the equipment and supplies, based on family income.

Summary of initiatives and key deliverables

1. Capacity building

1.1 Establish a New Brunswick chronic disease prevention and management unit

1.1.1 Create an innovation fund to provide seed support for practical quality improvement projects for non-government organizations, RHAs, family physicians and health-care providers

1.1.2 Provide enhanced surveillance and analytical reporting, leveraging available sources.

2. Prevention

2.1 Support action across government on the determinants of health.

2.1.1 Government commitment on a comprehensive primary prevention action plan for all New Brunswickers to reduce the burden of chronic diseases, including diabetes.

2.1.1.1 Conduct an environmental scan of public policy to serve as a foundation and to support further the development of the primary prevention action plan.

2.1.2 Develop and implement a public health nutrition strategy that will provide a co-ordinated and comprehensive approach to priority nutrition areas across the Public Health system.

2.2 Develop strategies for at-risk individuals

2.2.1 Develop content housed on a web-based platform, supported by an appropriate awareness strategy, to enable open access to all New Brunswickers who may be interested and ready to make the lifestyle changes needed to prevent or delay type 2 diabetes.

2.2.2 Provide pilot funding to each RHA to partner with community-based organizations to provide structured education in stress management, diet and physical activity training to at-risk individuals, referred by the family physician or health-team member. These pilots will be evaluated after Year 3 to determine the overall impact and future funding.

2.2.3 Implement a provincial screening tool to identify pre-school children at risk for nutritional concerns such as obesity; and to identify a process for addressing those with identified risk factors.

3. Detection

3.1 Implement screening programs that target those at risk.

- 3.1.1 Implement a population-wide campaign that encourages New Brunswickers to participate in a personal health risk assessment and pursue appropriate follow-up.
- 3.1.2 Partner with programs administered by non-government organizations to embed self-screening activities, particularly within at-risk populations.

4. Management

4.1 Improve primary-care provision of comprehensive risk factor control and early detection of complications

- 4.1.1 Support the use of reminders to improve adherence and recognition of best practice guidelines related to blood pressure, blood glucose and lipid control
- 4.1.2 Provide physician practice profiles.
- 4.1.3 Fund outreach case managers.
- 4.1.4 Continue to fund the decision support pilot for pharmaceutical management.
- 4.1.5 Support integration of depression screening tools and management skills within primary-care practices.
- 4.1.6 Support the development of study groups known as collaboratives that support quality improvement within primary-care settings in each zone.
- 4.1.7 Study alternative insured remuneration models for routine retinopathy screening
- 4.1.8 Provide pilot funding to the RHAs to partner with community-based organizations to provide structured education in stress management, diet and physical activity training to individuals with uncontrolled diabetes, referred by the family physician or health team member.
- 4.1.9 Support ongoing implementation of the chronic disease billing incentive for physicians.
- 4.1.10 Evaluation and recommendations to improve existing diabetes education centres.

4.2 Improve secondary and tertiary care support to persons with diabetes

- 4.2.1 Establish a regional network of diabetes management committees.
- 4.2.2 Implement recommended clinical practice guidelines within hospitals.
- 4.2.3 Establish processes to embed decision support and guidelines.
- 4.2.4 Support allied health-care providers to become certified diabetes educators.
- 4.2.5 Support access to foot care services for those with at-risk feet.

4.3 Improve access to tools that enable self-management

- 4.3.1 Provider training in lifestyle and behaviour counseling.
- 4.3.2 Continued development of content suitable for a web-based platform.
- 4.3.3 Library of diabetes related content for patient assessment and patient education.
- 4.3.4 Library collated of diabetes patient education in a number of languages.

4.4 Improve access to necessary and affordable medications

- 4.4.1 Evaluate primary care pharmaceutical management patterns to determine opportunities for improvement.
- 4.4.2 The Economic and Social Inclusion initiative will continue the development of a prescription drug plan for uninsured individuals in New Brunswick that will provide coverage of a broad range of drugs. The Department of Health will advocate that diabetes medication be included so as to ensure this aspect of the strategy is achieved.

4.5 Improve access to necessary supplies

- 4.5.1 Harmonize benefit coverage under the *Family Income and Security Act* for qualified persons relative to coverage for blood glucose test strips
 - 4.5.1.1 Individuals who are on select oral diabetes medications will be eligible for a limited number of strips each month.
 - 4.5.1.2 Individuals, who are newly diagnosed, will also be eligible for one-time coverage for a limited supply for purposes of learning self-management of diabetes.
 - 4.5.1.3 Individuals will be eligible for a limited supply of blood glucose test strips when ordered by a certified diabetes educator or physician as part of a self-management plan to improve glycemic control. This would include those individuals who are:
 - at an increased risk of hypoglycemia (e.g., due to a history of severe hypoglycemia or hypoglycemia unawareness, instances of inadequate caloric intake, unforeseen or unplanned physical activity;
 - experiencing acute illness;
 - undergoing changes in pharmacotherapy or significant changes in routine;
 - experiencing poorly controlled or unstable blood glucose levels; and
 - pregnant or planning a pregnancy.
- 4.5.2 Work with key senior lobby groups and third-party payers to review policies that may better manage the coverage of diabetic supplies.

4.6 Improve affordable access to necessary devices.

- 4.6.1 Introduce a publicly funded, insulin pump program for children, with the family responsible for a portion of the equipment and supplies based on family income.

How will we know if it works?

A *Comprehensive Diabetes Strategy for New Brunswickers 2011-15* will use the global indicators profiled in Figure 9 to monitor the overall effectiveness of this investment. We looked to the National Health Service in the United Kingdom and the State of New York to identify useful, valid and reliable indicators that may be used as quality improvement benchmarks. These global indicators and expected outcomes have been chosen because they are measurable, can be generated with current databanks and have been validated in both practice and research. It is expected that a downward trend in uncontrolled A1Cs and low-density lipoprotein (LDL) as well as an upward trend in the percentage of those in control will moderate the development of complications and lessen the need for hospitalization. Using this list, we will be able to track a variety of other process indicators informing select components in implementation strategy. As the electronic medical record and other tools become available, this list may be expanded.

Figure 9: Recommended global indicators

1. The incidence of diabetes within the 20- to 45-year-old age groups
2. The percentage of persons who are monitored according to recommended guidelines – percentage with A1C testing, lipid testing, recorded blood pressure
3. The percentage of persons with diabetes in whom the last A1C is seven or less (under control).
4. The percentage of persons with diabetes in whom the last A1C is more than nine (very uncontrolled)
5. The percentage of persons with documented foot assessments
6. The percentage of persons with diabetes in whom the last LDL is two or less (under control).
7. The percentage of persons with diabetes in whom the last LDL is more than five (very uncontrolled)

Figure 10: Expected outcomes

1. There will be a decrease in the incidence of diabetes in persons 20 to 45.
2. There will be a decrease of 10 per cent in total use of hospital days by persons with diabetes

Conclusion

A Comprehensive Diabetes Strategy for New Brunswickers 2011-15 is based on experiences of New Brunswickers who have diabetes, experience of expert clinicians, and research.

The health-care system cannot continue to wait until the person with diabetes develops costly complications clearly associated with uncontrolled diabetes. To sustain our health-care system, we must invest in better primary prevention of diabetes. We must also invest in minimizing the development of complications in those with diabetes. Research clearly proves that strategies to control blood pressure, blood glucose and cholesterol are critical targets. If we do not make the additional investment required, we will spend even more than this in expensive hospital care or dialysis clinics, to say nothing of lost productivity.

The infrastructure needed will benefit more than just the person at risk or with diabetes. The risk factors being addressed are common to the major chronic illnesses faced by New Brunswickers, including cardiovascular disease, respiratory diseases and cancers. This means that the reach of these strategies will be far greater than strictly combating diabetes.

Appendix A

Recommendations of the DTG

1. Building accountability through reporting and surveillance

- Fund and support a data repository and registry.

2. Implement and standardize best practices

- Establish and fund a central body known as the New Brunswick Diabetes Care Program, responsible for developing, implementing and maintaining a set of standardized evidence-based care processes and for managing monitoring, surveillance and knowledge transfer.

3. Enable self-management

- Develop standardized assessment and educational tools and self-management support.
- Complete a review of publicly funded programs available to support persons with diabetes.
- Establish an ongoing awareness strategy to ensure that public and key providers know about available programs to assist New Brunswickers.

4. Support primary care

- Provide funding for primary-care case managers in the community.
- Enable dietitians and pharmacists who are certified diabetes educators and appropriately trained to initiate and adjust insulin.
- Expand insured medicare services to include diabetes screening by optometrists.
- Enable introduction of electronic medical records and implement support tools in primary-care practices.

5. Integrating prevention

- Continue support for community-based healthy living programs to focus on youth.
- Develop screening programs for those at highest risk for diabetes and prediabetes.

6. Improve hospital care

- All hospitals should follow the CDA clinical practice guidelines.
- All zones should establish diabetes management committees to work in partnership with the Diabetes Care Program to support ongoing quality improvement.