

DIABETES:  
CANADA AT THE  
TIPPING POINT  
*Charting a New Path*

# Why We Are Here and What Can Be Done

## REASONS FOR CONCERN

*(Why We Are Here)*

- 1. COST OF DIABETES IN CANADA:** Diabetes cost the Canadian healthcare system and economy \$11.7 billion in 2010, and costs will rise to \$16 billion by 2020. This growing burden threatens both the sustainability of our healthcare system and the future economic prosperity of Canada.
- 2. PREVALENCE OF DIABETES:** Diabetes rates in Canada have almost doubled over the past decade and will continue to rise. Unless action is taken now, one in three people will be living with diabetes or prediabetes by the end of this decade.
- 3. POPULATIONS AT RISK:** Certain populations in Canada carry a heavier diabetes burden, such as Aboriginal peoples, new Canadians, low-income Canadians; women across these populations bear a disproportionate burden from the disease.
- 4. COMPLICATIONS OF DIABETES:** Complications account for over 80% of diabetes costs. Complications could be prevented or at least delayed if Canada had a more comprehensive diabetes secondary prevention strategy.
- 5. DEMOGRAPHICS:** Canada has a growing and aging population, and over 60% of Canadians are either overweight or obese. These factors, combined with an increase in sedentary lifestyles, will continue to drive growing diabetes prevalence, with many people being diagnosed with diabetes at younger ages.

## REASONS FOR HOPE

*(What Can Be Done)*

- 1. PRIMARY PREVENTION:** It is estimated that over 50% of type 2 diabetes could be prevented or delayed with healthier eating and increased physical activity.
- 2. SECONDARY PREVENTION:** Intensive multifactorial interventions can significantly reduce diabetes-related complications (e.g. heart attacks) and mortality by nearly 60%.
- 3. COST SAVING:** Even a modest reduction in diabetes prevalence would have a significant financial impact. A 2% reduction in prevalence rates would have a 9% reduction in direct healthcare costs.
- 4. SELF-MANAGEMENT:** Unlike many other chronic diseases, diabetes can be managed effectively, allowing people with diabetes to live long and healthy lives.
- 5. SOLUTIONS:** We know what needs to be done and how to do it. Broad-based societal change with a strong role by governments is needed, and it will not be easy. But we can change our current course and chart a new path for a healthier Canada. Change will take time, so it is critical that we begin today to chart a new course and take action. With this analysis, we offer governments recommendations for moving forward.

## DIABETES: CANADA AT THE TIPPING POINT *Charting a New Path*

### TABLE OF CONTENTS

	Acknowledgements	4
	Executive Summary and Recommendations	5
<b>SECTION I</b>	Introduction	6
<b>SECTION II</b>	The Burden of Diabetes	14
<b>SECTION III</b>	How Governments Are Meeting the Challenge of Diabetes	24
<b>SECTION IV</b>	Assessment and Recommendations	42
<b>SECTION V</b>	The Faces of Diabetes in Canada	49
	Notes	56

**DIABETES: CANADA AT THE TIPPING POINT** required the support of many individuals and organizations; we thank them for their important contributions:

Members of the project’s Expert Advisory Committee for their valuable advice, comment and insight to inform the development of the report:

**Ruth Colagiuri**, Associate Professor and Director, University of Sydney Health and Sustainability Unit; Vice President, International Diabetes Federation.

**Rita Fitzgerald**, PDt CDE, Director of Quality, Diabetes Educator Section of the Canadian Diabetes Association (Yarmouth).

**Dennis J. Furlong**, MD, Former Minister of Health, Government of New Brunswick; Past President of the New Brunswick Medical Society and College of Physicians and Surgeons of New Brunswick.

**Céline Huot**, MD, Endocrinologist, Diabetes Clinic, Hôpital Ste-Justine (Montreal).

**Margarite Keeley**, Executive Director (retired), Centretown Community Health Centre (Ottawa).

**Hans Krueger**, Adjunct Professor, University of British Columbia (Vancouver).

**Annette Robinson**, Pharmacist, CDE (Chilliwack).

**Jay Silverberg**, MD, Endocrinologist, Sunnybrook Health Sciences Centre (Toronto).

**Catherine Turner**, Past Chair, Board of Directors, National Aboriginal Diabetes Association (Winnipeg).

Federal, provincial and territorial ministers of health and their staff. Their assistance was vital in ensuring that this report reflects accurate information on diabetes policies, programs, services, medications and supplies as of the fall of 2010.

Members and volunteers of the Canadian Diabetes Association and Diabète Québec who shared their stories, which speak to the burden of diabetes on individuals and families.

**Jeffery A. Johnson**, PhD, and **Samantha Bowker**, PhD, Alliance for Canadian Health Outcomes Research in Diabetes at the University of Alberta, for their research on governments, diabetes programs and services, as well as on diabetes programs and outcomes in international jurisdictions.

**Joe Whitney** for updating the out-of-pocket costs from *Diabetes Report 2005*.

**Robin Somerville**, Centre for Spatial Economics, for extrapolations of the Canadian Diabetes Cost Model (DCM) to determine the economic costs at the provincial level. The Model was developed by Informetrica Limited (Ottawa) and presented in the Canadian Diabetes Association December 2009 report, *An Economic Tsunami: The Cost of Diabetes in Canada*.<sup>1</sup> Mr. Somerville presented national forecasts of prevalence and cost burden in *An Economic Tsunami* through the DCM for this report.

All other **consultants** who contributed to the development of this report.

**CDA staff** for their team effort to produce this report.

Finally, we thank you for taking the time to read this report, and we welcome your feedback at [advocacy@diabetes.ca](mailto:advocacy@diabetes.ca).

Note: The opinions expressed in this document are the views of the Canadian Diabetes Association and Diabète Québec and do not necessarily reflect the views and opinions of the Expert Advisory Committee or the lead researchers for the report.

Canada is at the “tipping point” in our response to diabetes. The total population with diabetes is estimated to be 2.7 million people (7.6%) in 2010, and is projected to rise to 4.2 million people (10.8%) by 2020. While the number of Canadians diagnosed with diabetes is already high, an additional almost one million are estimated to have the disease but do not know it. Currently, one in four Canadians lives with diabetes, undiagnosed diabetes, or prediabetes; this will rise to one in three by 2020 if current trends continue.

Diabetes cost our healthcare system and economy \$11.7 billion in 2010; it is projected to cost \$16 billion annually by 2020. Unless we take action, diabetes threatens not only more Canadians, but also the viability of our healthcare system and our economic prosperity.

Diabetes also costs those living with the disease. Affordability and access to diabetes medications, devices and supplies vary depending on where you live in Canada and the public programs and services available. While some jurisdictions have increased support, costs continue to be a major barrier for many with diabetes. We tell their stories directly.

No region of Canada is immune to diabetes. While the greatest burden is in Atlantic Canada, provinces with the lowest prevalence rates have the highest rates of prevalence growth. Aboriginal peoples, immigrants, some ethnocultural communities, low-income Canadians and women in these subpopulations bear a heavier burden of disease. Best practices in diabetes programs and services exist across Canada, but information about them is lacking.

While Canada performs comparably to peer countries with respect to diabetes-related amputations and the cost of care for diabetes, other countries perform better. For diabetes prevalence, hospitalizations, mortality and access to medications, Canada performs poorly.

Canada has a choice to make to “tip” the course of diabetes. We can continue on our current trajectory and achieve similar results, or chart a new path to provide hope to Canadians with diabetes and prediabetes. To move forward, the Canadian Diabetes Association (CDA) and Diabète Québec (DQ) recommend that governments collaborate with partners to:

- |  |  |  |
|--|--|--|
| <p><b>1. Reduce the burden of diabetes, including:</b></p> <ul style="list-style-type: none"> <li>• Implement a comprehensive pan-Canadian healthy weights strategy.</li> <li>• Institute a comprehensive secondary prevention strategy.</li> <li>• Implement a national knowledge dissemination platform for diabetes.</li> </ul> | <p><b>2. Enhance access to quality care and support for people living with diabetes, including:</b></p> <ul style="list-style-type: none"> <li>• Standardize the quality of diabetes education across Canada.</li> <li>• Renew the vision for the Canadian drug approval process.</li> <li>• Create a Canadian diabetes health charter.</li> </ul> | <p><b>3. Strategically invest in diabetes, including:</b></p> <ul style="list-style-type: none"> <li>• Enhance financial assistance for people living with diabetes.</li> <li>• Enhance the Canadian Diabetes Strategy (CDS) and Aboriginal Diabetes Initiative (ADI).</li> <li>• Increase investment in high-quality, pan-Canadian research.</li> </ul> |
|--|--|--|



# Today in Canada we stand at the **TIPPING POINT** IN OUR RESPONSE TO DIABETES.

## SECTION I INTRODUCTION

*“There have been times I have not tested at all because I had to save money for family expenses like groceries, rent or car insurance.”*

**Tammy Kilfoy, 33**  
London, Ontario

People with diabetes need access to medications, devices, supplies, diabetes education and care to effectively self-manage their condition. Without these, complications will increase and further strain our healthcare system.

---

Our efforts to address this disease are not meeting the burden it imposes. *An Economic Tsunami: The Cost of Diabetes in Canada* estimated that diabetes prevalence almost doubled from 2000 to 2010, and will continue to rise from 2010 to 2020, affecting almost 10% of the population.<sup>2</sup>

---

Disturbingly, based on updated National Diabetes Surveillance System (NDSS) information, we have now revised this estimate, projecting that diabetes will affect almost 11% of the population by 2020. Although the number of Canadians diagnosed with diabetes is already high, an additional almost one million are estimated to have undiagnosed diabetes.<sup>3</sup>

Diabetes is a chronic and sometimes fatal disease characterized by elevated blood glucose, which, if not managed properly, damages blood vessels, organs and nerves.

**Type 1 diabetes** is an autoimmune disease that occurs when the pancreas no longer produces any insulin or produces very little insulin. It usually develops in childhood or adolescence and affects up to 10% of people with diabetes. There is no cure. It is treated with lifelong insulin injections and careful attention to diet and physical activity.

**Type 2 diabetes** is a disease that occurs when the pancreas does not produce enough insulin to meet the body's needs and/or the body is unable to respond properly to the actions of insulin (insulin resistance). Type 2 diabetes usually occurs later in life (although it can occur in younger people) and affects approximately 90% of people with diabetes. There is no cure. It is treated with careful attention to

diet and exercise and usually also diabetes medications (antihyperglycemic agents) and/or insulin.

**Gestational diabetes (GDM)** is first diagnosed or develops during pregnancy. It affects 2 to 4% of all pregnancies and is rising in prevalence. Blood glucose usually returns to normal following delivery, but both mother and child are at higher risk of developing type 2 diabetes later in life.

**Prediabetes** exists when blood glucose is elevated, but not as high as type 2 diabetes. About 50% of Canadians with prediabetes develop type 2 diabetes in their lifetime.

Many Canadians face a higher risk of diabetes, including people of Aboriginal, Hispanic, Asian, South or Southeast Asian or African descent; people who are overweight or obese; people who have low incomes or live in poverty; people aged 40 and older; and those who have a family history of diabetes or a history of GDM. While more men than women have diabetes, diabetes rates are higher in women in high-risk and marginalized populations.

Many will also develop diabetes-related complications, including heart attack or stroke, kidney failure, blindness, non-traumatic limb amputation and depression. Complications can be life-threatening: life expectancy for people with type 1 diabetes may be shortened by as much as 15 years and, for those with type 2 diabetes, by five to 10 years.<sup>4</sup>

CDA and DQ are committed to improving standards and best practices in care and programs for people with diabetes to ensure that they have the tools, education and services to meet their needs while we work to find a cure. Since 2001, our associations have reported on diabetes in Canada and government responses to this disease.

*“I did not control my blood glucose levels and my health deteriorated. Today, I am dealing with a number of diabetes related complications including neuropathy.”*

**Kevin Kasunich, 33,  
Capreol, Ontario**

## Diabetes Report 2005:

# THE SERIOUS FACE OF DIABETES IN CANADA CONCLUDED THAT:

- The greatest challenge for Canadians living with diabetes was affordability and access to diabetes medications, devices and supplies.
- It matters where you live in Canada if you have diabetes. Out-of-pocket costs for medications, devices and supplies to manage diabetes vary across the country.
- Newer therapeutic interventions approved as safe and effective by Health Canada and available in other countries are not available in Canada.<sup>5</sup>

In the five years since that report, we have seen a dramatic rise in the prevalence and cost of diabetes in Canada; both are projected to escalate further over this decade. CDA and DQ have developed *Diabetes: Canada at the Tipping Point – Charting a New Path* to determine what has changed in terms of the burden diabetes imposes and policy responses to this disease. This report will attempt to answer the following questions:

- Have the challenges outlined in *Diabetes Report 2005* been met in terms of availability and accessibility of needed medications, devices and supplies across Canada?
- What are the major challenges in addressing diabetes across jurisdictions and populations in Canada in 2010?
- What policy measures can serve as examples of best practices?
- What policy measures need to change to enhance our ability to address diabetes prevalence and costs, especially for complications and out-of-pocket expenses?
- How has the face of diabetes changed, in terms of who is most vulnerable?

People with diabetes need access to medications, devices, supplies, diabetes education and care to effectively self-manage their condition. Without these, complications will increase and further strain our healthcare system. While all Canadians with diabetes should have comparable access to supports regardless of where they live, disparities continue to exist across the country.

Some progress has been made in meeting the needs of people living with diabetes, and we appreciate government efforts to improve the quality of life of this population. However, much more must be done. Canada is at the tipping point in terms of addressing the increasing prevalence of diabetes and the burden it imposes on our healthcare system, our economy and on Canadians living with this disease and their families.

This report assesses diabetes government policies and identifies progress toward meeting recommendations in *Diabetes Report 2005*, and offers new recommendations to address the burden of diabetes across Canada. *Diabetes: Canada at the Tipping Point* also contains several new elements, including the following:

- Analysis of the availability of medications associated with complications of diabetes.
- An assessment of Canada's performance in diabetes management internationally.
- A review of diabetes as it affects Aboriginal peoples and other high-risk populations.

Table 1 outlines the burden of diabetes in terms of prevalence and cost, and government responses across Canada.

Table 1: Overall Estimated Performance and Cost Burden on Key Indicators by Province and Territory, 2000–2020, plus Government Response																				
Estimated Diabetes and Prediabetes Prevalence										Estimated Cost Burden					Government Response					
P/T	Prevalence (%)			Prevalence Increase (%)			Prediabetes Prevalence (%)			Diabetes & Prediabetes Prevalence (%) 2020	Total Cost Increase (%) <sup>a</sup>			HC as % of Total Cost 2010	T2 Out-of-Pocket Costs 2010 (\$CN)	Coverage			Policy	
	2000	2010	2020	2000-2010	2010-2020	2000-2020	2005	2010	2020		2000-2010	2010-2020	2000-2020			Medications <sup>b</sup>		Insulin Pumps		Test Strips
															DR	DC				
<b>CN</b>	4.2	7.6	10.8	103	57	220	21.5	21.8	22.6	26.2	68	37	130	21	1,797.51 <sup>c</sup>	10/2/11 <sup>d</sup>	30/5/3 <sup>d</sup>	SA <sup>d</sup>	T1/T2 <sup>d</sup>	DS
<b>BC</b>	4.0	7.4	10.3	114	62	247	20.7	20.9	21.6	25.4	72	41	143	22	2032.79	8/6/9	26/9/5 <sup>e</sup>	Yes ≤18	T1/T2 <sup>f</sup>	CDS
<b>AB</b>	3.3	5.8	8.6	116	67	262	20.8	20.8	22.2	23.6	94	43	177	20	2052.84	9/3/11	31/3/4	SA	T1Ω/T2ΩΔ	DS
<b>SK</b>	4.2	7.0	9.9	75	49	160	23.7	23.5	24.0	25.8	63	27	107	18	1854.45	7/10/6	31/3/4	Yes ≤17	T1/T2	DS
<b>MB</b>	4.5	7.6	10.1	78	47	162	22.4	22.4	22.9	25.2	46	28	88	17	2527.20	10/4/9	31/2/5	No	T1 <sup>f</sup> /T2	DS
<b>ON</b>	4.5	8.3	11.9	114	63	249	21.4	21.6	22.2	26.9	71	42	142	22	2173.50	9/2/12	29/3/6	Yes	T1Ω/T2Δ	DS
<b>QC</b>	4.1	7.2	9.9	91	48	182	21.3	21.9	22.9	25.9	63	28	108	23	1546.58	9/9/5	36/1/1	No	T1/T2	CDF
<b>NB</b>	4.7	8.8	12.7	86	50	180	23.1	23.6	24.8	28.3	63	26	106	19	3426.99	6/8/9	30/3/5	No	T1Ω/T2ΩΔ	CDF
<b>NS</b>	5.1	8.9	12.2	79	44	158	23.2	23.8	24.8	29.4	68	26	112	20	2868.39	6/6/11	27/2/9	No	T1/T2	DS
<b>PEI</b>	4.4	8.0	11.4	89	57	197	23.9	24.4	25.3	28.8	118	33	189	17	3036.31	9/3/11	31/4/3	No	T1 <sup>f</sup> /T2Δ	CDS
<b>NL</b>	5.0	9.3	14.4	80	56	181	23.6	24.4	26.2	32.1	65	27	109	16	3396.04	6/8/9	29/4/5	Yes ≤25	T1/T2	None
<b>NU</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	10/2/11 <sup>d</sup>	31/3/4	Yes	T1/T2	CDF
<b>YK</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	250.00	8/2/13 <sup>d</sup>	33/2/3	SA	T1/T2	CDF
<b>NT</b>	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	10/2/11 <sup>d</sup>	30/5/3	SA	T1 <sup>f</sup> /T2	CDF

**Legend**

**CDF** = chronic disease framework  
**DS** = diabetes strategy  
**SA** = special approval (insulin pumps)  
**CDS** = chronic disease strategy  
**HC** = healthcare cost  
**Ω** = low-income  
**DC** = diabetes-related complications  
**NA** = not available  
**Δ** = insulin-dependent  
**DR** = diabetes-related  
**P/T** = province/territory

<sup>a</sup> For costs in \$ for each province/territory, see applicable fact sheets available at: [www.diabetes.ca/dpr/](http://www.diabetes.ca/dpr/).  
<sup>b</sup> Number of Health Canada–approved medications that appear on provincial/territorial formularies as “listed,” “restricted” and “not listed” (i.e. L/R/NL).  
<sup>c</sup> If NT, NU, and NIHB are removed (each with no costs), then average out-of-pocket costs are just under \$2300.00 annually.  
<sup>d</sup> Non-Insured Health Benefits for First Nations (NIHB).  
<sup>e</sup> The total for medications concerning diabetes-related complications for BC is 40 instead of 38, since some angiotensin-converting enzyme inhibitors, as well as thiazide-like diuretics, are listed *and* restricted.  
<sup>f</sup> With the following conditions: diabetes education centre training certificate (BC); maximum 4000 per year (MB); in diabetes centre program with a maximum 100 per month (PEI); prescription required (NT).

**Notes:**

- Prevalence and cost burden data for the territories are not provided due to their small populations. (Smaller sampling sizes may result in higher error rates.)
- Readings in the estimated diabetes prevalence and estimated cost burden categories receive an assessment of green, yellow or red. The Canadian average is in orange.
- Top three performers are shown in green. The top performers are those jurisdictions with the lowest prevalence, cost burden and type 2 out-of-pocket costs.
- Bottom three performers are shown in red. The bottom performers are those jurisdictions with the highest results in prevalence, cost burden and type 2 out-of-pocket costs.
- Middle performers are shown in yellow.

## The following methodology informs this report:

**OUT-OF-POCKET EXPENSES:** Costs are based on several sources, including Brogan (2009); wholesale costs plus pharmacy markup; the provinces; and the federal Non-Insured Health Benefit (NIHB). Insulin prices are approximate and do not include adjustments that may be negotiated between plans and manufacturers. Information from private plans or online prices from [www.canadadrugs.com](http://www.canadadrugs.com) are used when no public coverage is available. Dispensing fee sources include information from the Canadian Pharmacists Association (2009) and provincial health ministry websites. Publicly funded lancets and pen needles are subject to dispensing fees. Drug, supply and dispensing-fee costs are based on an annualized formula and assume that maximum day supply policies apply to all drugs and supplies purchased at a pharmacy. Supplies purchased online, when public plan coverage is not available, are not subject to dispensing fees or maximum day supply policies.

It is important to note that these estimates apply to those circumstances outlined for each composite case study (see section II). These situations apply to many people with type 1 and type 2 diabetes, but not all. Costs may be higher or lower depending on a person's individual circumstances. Generally, less access to public or private insurance means greater out-of-pocket costs. This is particularly difficult for low-income Canadians who are not on social assistance, seniors or those who have drug costs that are high but do not exceed the level that would qualify them for assistance. These estimates have been validated by federal, provincial and territorial representatives and all jurisdictions had the opportunity to validate these costs. Major influences affecting these cost calculations that have been updated from 2005 include: 1) the ability to validate assumptions and numbers within government programs; and 2) enhanced government program coverage (new or newly applied).

A detailed description of how out-of-pocket costs were calculated for both composite cases outlined in this report for each jurisdiction is available at: [www.diabetes.ca/dpr/](http://www.diabetes.ca/dpr/).

**GOVERNMENT RESPONSE:** Dr. Jeffery A. Johnson and his team obtained information on government programs and services via questionnaire<sup>6,7</sup> and interviews with government officials. To assess Canada's performance internationally, Dr. Johnson analyzed information from the Organization for Economic Cooperation and Development (OECD), the International Diabetes Federation (IDF) and the Conference Board of Canada.

*“Without the health benefit plan, it would cost me at least \$7,000 annually for insulin, other medications and supplies.”*

**Deborah Keating, 27,**  
*St. John's, Newfoundland and Labrador*

**THE DIABETES COST MODEL (DCM):** The Model integrates incidence estimates and administrative prevalence from the Canadian NDSS and economic cost estimates from *The Economic Burden of Illness in Canada*<sup>8</sup> to estimate and forecast diabetes prevalence and cost. It supports analysis of sensitivity in prevalence and cost in response to demographic data, incidence and mortality rates by age (from age 1+) and sex, and the average annual number of net general practitioner and specialist visits by people with diabetes. Additional information concerning details of the DCM are available at: [www.diabetes.ca/economicreport/](http://www.diabetes.ca/economicreport/).

Assumptions made in this Model are conservative and, in the opinion of the preparers, may understate the prevalence and cost of diabetes in the future, rather than to overstate it. While the Model is prepared on reasonable assumptions, there is no assurance that actual developments will be consistent with the assumptions used.

**FORMULARIES:** Health Canada–approved medications for diabetes and diabetes-related complications across formularies for provinces and territories, as well as the NIHB, are shown as “listed” (available as a full benefit to those who are eligible under the public drug plan); “restricted” (available only to those who are eligible under the public drug plan and meet specific eligibility criteria or conditions); and “not listed” (not available on the public drug plan regardless of being approved as safe and effective).

**ESTIMATES OF OVERWEIGHT/OBESITY:** Sixty-one percent of Canadians are overweight or obese.<sup>9</sup> *The Canadian Community Health Survey* (CCHS) (self-reported data) yields a national estimate of 51.6%, almost 10% lower than that of the *Canadian Health Measures Survey* (CHMS). Estimates of overweight/obesity for this report were derived from CCHS 2009 data<sup>10</sup> (CHMS samples were too small to form provincial estimates<sup>11</sup>) and augmented by 10%, since self-reports of weight are usually underreported compared to measured weights.<sup>12</sup>

*“Make sure you test regularly, take your medications and have an exercise plan to keep your weight down.”*

**R. Bruce Bennett, 77,**  
*Mackenzie, British Columbia*

**PREDIABETES ESTIMATES (AGES 20+):** These incorporate body mass index (BMI) data from the Public Health Agency of Canada (PHAC) and the World Health Organization prediabetes definition. They are adjusted to account for differences between self-reported and measured BMI values and assume that BMI proportions do not change over time among the overall or the diabetes population.

*The information contained in this report is based upon the best information available just prior to publication. As per our consultation process to develop this report, our associations have made all reasonable efforts to assure the accuracy of data.*

*“I can't afford to buy a replacement pump [for my daughter] and I don't have a workplace health plan that will cover the costs of supplies which would be more than \$400 a month.”*

**Courtney Riddoch and Bree Riddoch**  
**(Type 1 diabetes), 13**  
*Prince Albert, Saskatchewan*



## SECTION II THE BURDEN OF DIABETES\*

*“If I can’t go back to work, how do I pay for my medications and supplies, in particular if I need additional diabetes medications?”*

**Theresa Strawberry, 53**  
Rocky Mountain House, Alberta

People of South and Southeast Asian, Aboriginal, African and Hispanic descent have higher rates of prediabetes, obesity, childhood type 2 diabetes, GDM and type 2 diabetes occurring at younger ages. South Asians are the fastest-growing immigrant population with the highest rates of morbidity and mortality from diabetes-related cardiovascular disease (CVD).

## KEY OBSERVATIONS

- **Diabetes prevalence has almost doubled since 2000**, and will increase by another 1.5 million people by 2020. When combined with undiagnosed diabetes and prediabetes, about **one in three people will be affected by 2020**.
- **No region is immune from diabetes**. Some jurisdictions with lower rates of prevalence in 2010 have higher rates of predicted prevalence growth than those with higher rates of diabetes.
- **Canada has a higher rate of diabetes prevalence** than other peer countries.
- Certain **risk factors increase the risk of diabetes**, and **some populations bear a much higher burden of diabetes**.
- The **cost of diabetes is expected to more than double** from 2000 to 2020. Some jurisdictions with the lowest current prevalence face some of the highest increases in costs.
- **Costs** to treat diabetes and related complications **are much higher for Aboriginal peoples**.
- The national average **out-of-pocket expenses for type 2 diabetes are essentially unchanged** and continue to compromise the ability of Canadians with diabetes to self-manage their disease.

## KEY QUESTIONS

- Why, despite spending comparable to other OECD countries, is Canada’s diabetes prevalence rate higher than in other peer countries?
- What public policy measures need to be in place to address risk factors for diabetes and complications from diabetes across Canada?
- What policy measures are needed to ensure equitable access to medications, devices and supplies to support people with diabetes regardless of where they live?



\*Novo Nordisk Canada is the exclusive sponsor through an unrestricted educational grant of all provincial Canadian Diabetes Association Diabetes Cost Models. We thank Novo Nordisk Canada for its generous support of this project.

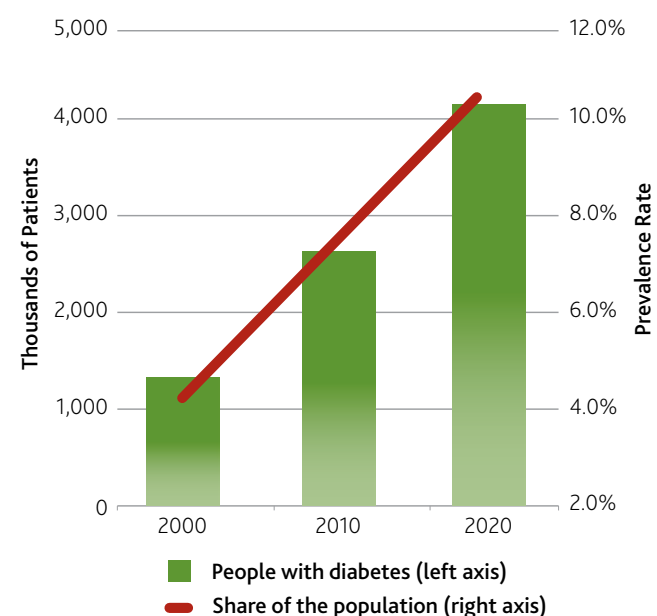
## A. The Prevalence of Diabetes

### 1. Canadian prevalence and factors driving increasing prevalence

In 2009, *An Economic Tsunami* forecast diabetes prevalence to rise from 1.3 million (4.2%) in 2000 to 2.5 million (7.3%) in 2010 and to 3.7 million (9.9%) by 2020.<sup>13</sup> New NDSS data has required changes to this forecast, however. In 2010, 2.7 million (7.6%) people have diabetes and it is estimated that this number will grow by 1.5 million over this decade to 4.2 million (10.8%) by 2020 (FIGURE 1).<sup>14</sup>

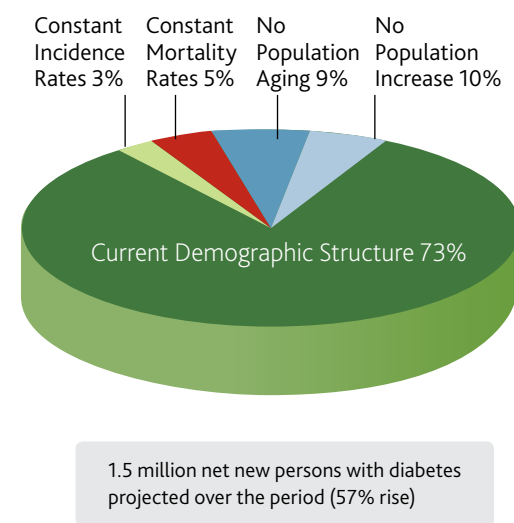
Rising obesity rates, sedentary lifestyles, an aging population and changes in the ethnic mix of new immigrants continue to drive this increase. From 2010 to 2020, a growing and aging population, rising incidence and falling mortality rates will contribute to the 57% net increase in diabetes prevalence (FIGURE 2). Three-quarters of this increase is locked in (based on diabetes prevalence and our current demographic structure) due to the net number of new people diagnosed with diabetes each year.

Figure 1: Diabetes in Canada: 2000 to 2020



Source: Canadian DCM

Figure 2: Factors Driving the Increase in Prevalence from 2010 to 2020



Source: Canadian DCM

Even more shocking is the fact that estimated prediabetes prevalence in Canada for 2010 is 21.8% of the population<sup>15</sup> (excluding those already living with diabetes). Prediabetes and diabetes combined constitute almost 8 million people in 2010 (23%), or more than one in five people.<sup>16</sup> By 2020, this number will grow to 26.2%, or more than one in four people. Furthermore, this does not include the almost one million people estimated to be living with undiagnosed diabetes. When they are added, more than one in four people were estimated to have diabetes or prediabetes in 2010; by 2020, this will rise to one in three.

### 2. Prevalence across provinces and territories: risk factors<sup>17</sup>

As outlined in Table 1, with the exception of QC, diabetes prevalence for 2000 to 2020 has diverged from a narrow difference between provinces to a wider gap between Western and Eastern Canada.

- AB has the lowest prevalence rates for 2000, 2010 and 2020. In contrast, NL has the highest estimated prevalence rates for 2010 and 2020.
- While NS had the highest prevalence in Canada in 2000, its rate is below that for NL in 2010 and 2020. In fact, prevalence growth for NS from 2000 to 2020 is lower than for all other provinces.
- There is no pattern in prevalence growth from 2000 to 2020. Diabetes will increase in BC, AB and ON by  $\geq 200\%$ ; increases will be below this threshold in SK, MB, QC, NB, NS, PEI and NL.

Diabetes prevalence is influenced by many risk factors, including demographic structures (e.g. age, ethnic and cultural background and immigration from high-risk communities); socioeconomic factors (e.g. income and low socio-economic status [SES]); and underlying health conditions such as overweight, obesity and prediabetes.<sup>18</sup>

**AGE:** The likelihood of developing diabetes increases with age, especially after age 40, rising from 6.3% of men and 4.6% of women aged 45 to 54, to 22.1% of men and 14.8% of women aged 65 and older.<sup>19</sup> Western Canada's population is younger than Eastern Canada's (Table 2). This mirrors the general distribution of diabetes prevalence across provinces.

Table 2: Median Age Across Provinces (2009)

CN	NL	PEI	NS	NB	QC	ON	MB	SK	AB	BC
39.5	42.9	41.7	42.6	42.4	41.1	39.2	37.7	37.7	35.6	40.7

Source: Statistics Canada. "Canada's Population Estimates: Age and Sex." Table 1. Population Estimates, Age Distribution and Median Age as of July 1, 2009. *The Daily*, November 27, 2009.

**HIGH-RISK POPULATIONS:** Of immigrants to ON between 1985 and 2005, almost 12% were diagnosed with diabetes.<sup>20</sup> Compared to the Canadian population, people of South and Southeast Asian, Aboriginal, African and Hispanic descent have higher rates of prediabetes, obesity, childhood type 2 diabetes, GDM and type 2 diabetes occurring at younger ages.<sup>21</sup> South Asians are the fastest-growing immigrant population with the highest rates of morbidity and mortality from diabetes-related cardiovascular disease (CVD).<sup>22</sup>

With the exception of Aboriginal peoples, populations with a higher risk of diabetes are concentrated in ON and BC (Table 3), reflecting evolving immigration patterns in Canada, since Toronto, Montreal and Vancouver were home to 68.9% of immigrants in 2006.<sup>23</sup>

*"If I don't have the money, I test less and use syringes instead of pen needles for injections. I feel that I am putting my health in jeopardy...but you've got to do what you've got to do."*

**Jennifer Palsson, 28**  
Castlegar, British Columbia

**Table 3:** High-Risk Populations (%) Across Provinces, 2006

	South Asian	Chinese	Aboriginal	Black	Latin American	Southeast Asian
<b>CN</b>	4.04	3.89	3.75	2.50	0.97	0.77
<b>NL</b>	0.31	0.26	4.64	0.18	0.10	0.02
<b>PEI</b>	0.10	0.19	1.29	0.48	0.16	0.02
<b>NS</b>	0.42	0.48	2.67	2.12	0.11	0.09
<b>NB</b>	0.27	0.34	2.45	0.62	1.00	0.06
<b>QC</b>	0.98	1.07	1.46	2.52	1.20	0.68
<b>ON</b>	6.60	4.80	2.01	3.94	1.22	0.91
<b>MB</b>	1.46	1.20	15.47	1.38	0.55	0.50
<b>SK</b>	0.54	1.00	14.88	0.53	0.26	0.27
<b>AB</b>	3.19	3.40	5.78	1.45	0.84	0.88
<b>BC</b>	6.44	10.00	4.81	0.70	0.71	1.00

Sources: Statistics Canada. Visible Minority Population, by Province and Territory, 2006 Census. Aboriginal Identity Population, by Province and Territory, 2006 Census.

Note: Total Aboriginal identity population includes Aboriginal groups (North American Indian, Métis and Inuit), multiple Aboriginal responses and Aboriginal responses not included elsewhere.

There are also important sex differences among immigrants in terms of diabetes: the rate of diabetes in immigrant men in ON was nearly 10% higher than their non-immigrant counterparts, but the rate among immigrant women in ON was about 24% higher.<sup>24</sup>

**INCOME:** Ample evidence links low socio-economic status (SES) and diabetes.<sup>25</sup> Poor Canadians have little money to purchase nutritious food or enjoy recreation. The effect of low SES on diabetes prevalence is compounded by education level<sup>26</sup> and sex.<sup>27</sup>

Median after-tax family income parallels the pattern for median age, with incomes being higher in Western Canada and far lower in Eastern Canada (Table 4). The only exception is ON, which is higher than MB and SK, but lower than AB and BC.

**Table 4:** Median After-Tax Income, Two-Person Family Across Provinces, 2008 (\$CN)

CN	NL	PEI	NS	NB	QC	ON	MB	SK	AB	BC
63,900	53,200	55,300	53,000	53,100	55,900	67,000	61,200	64,800	77,200	68,500

Source: Statistics Canada. The Daily, June 17, 2010. "Income of Canadians." Table 2 Selected Income Concepts for Economic Families of Two Persons or More by Province, 2008.

**WEIGHT:** Like SES, the link between excess weight and diabetes is clear. Obese persons have the highest individual diabetes risk (27.4%), but those who are overweight have the greatest population risk (9.9%) of developing diabetes over the next 10 years.<sup>28</sup> NL again differs, with a rate of overweight/obesity far higher than the Canadian average (Table 5). However, the pattern visible for age is not present with weight, with slight differences for SK, MB, PEI and NS. Only QC and BC have rates lower than the national average.

**Table 5:** Overweight and Obese as a % of the Population (2009)

CN	NL	PEI	NS	NB	QC	ON	MB	SK	AB	BC
61.6	74.6	69.0	70.3	72.9	59.2	66.4	68.0	68.6	65.1	55.1

Source: Statistics Canada. Canadian Community Health Survey, 2009, adjusted to account for overweight/obese based on self-reports.

**PREDIABETES.** Prediabetes imposes a higher risk of both diabetes and CVD.<sup>29</sup> Like diabetes, prediabetes is greater in Eastern than in Western Canada: by 2020, combined prevalence will approach or surpass 30% in these provinces, and surpass 20% in all others (Table 1).

**IN SUMMARY,** all jurisdictions have risk factors for diabetes. While Eastern Canada bears a greater risk due to higher median ages, lower median incomes and, to a lesser extent, obesity, jurisdictions with lower prevalence such as Western Canada and ON have greater concentrations of high-risk populations. So risk factors must be addressed across Canada.

### 3. Prevalence in Aboriginal<sup>30</sup> populations

Diabetes prevalence rates among Aboriginal populations are estimated to be at least three times higher than in the general population if not higher.<sup>31</sup> If diabetes prevalence for 2010 is 7.6% for the general population, this would mean prevalence rates of more than 20% across these populations.<sup>32</sup> In fact, compared to the general population:

- Aboriginal peoples are diagnosed with type 2 diabetes at a much younger age.<sup>33</sup>
- Prediabetes is more common among Aboriginal communities.<sup>34</sup>
- Obesity rates are higher in Aboriginal communities.<sup>35</sup>
- Aboriginal women are particularly vulnerable to diabetes. One study has shown that while diabetes is more than 2.5 times more prevalent among Aboriginal men than non-Aboriginal men (16.01 vs. 6.24%), Aboriginal women have more than

four times the rate of non-Aboriginal women (20.33 vs. 5.51%).<sup>36</sup> Aboriginal women also face more than double the risk for GDM.<sup>37</sup>

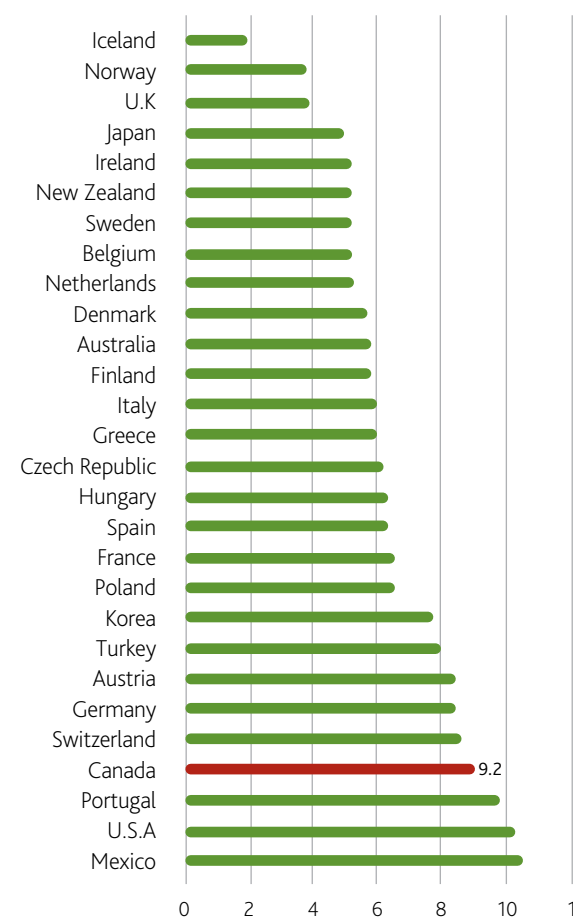
- High rates of diabetes among Aboriginal people are attributed to many factors, including: genetic predisposition; decreased physical activity; increased obesity; and dietary changes from traditional unprocessed "country" food to high-calorie processed foods,<sup>38,39</sup> and SES factors such as food security, safe water and overcrowding.<sup>40</sup>

### 4. Prevalence internationally: how does Canada compare?

Over 300 million people worldwide have diabetes, and another 300 million are at high risk.<sup>41</sup> This will rise to 500 million with diabetes and a further 500 million at high risk in under a generation. The greatest increases in diabetes will be in Africa, the Middle East and South-East Asia,<sup>42</sup> where increasing numbers of immigrants to Canada come from.

Diabetes prevalence is much lower in wealthier vs. low- or middle-income countries, but among OECD countries,<sup>43</sup> Canada has one of the highest rates at 9.2%<sup>44</sup> (FIGURE 3).

**Figure 3:** Age-Adjusted Prevalence (% of the population)



Source: IDF, 2009

*“With discipline, type 2 diabetes can be controlled. You need to get control by investing in yourself and making your physical health a priority.”*

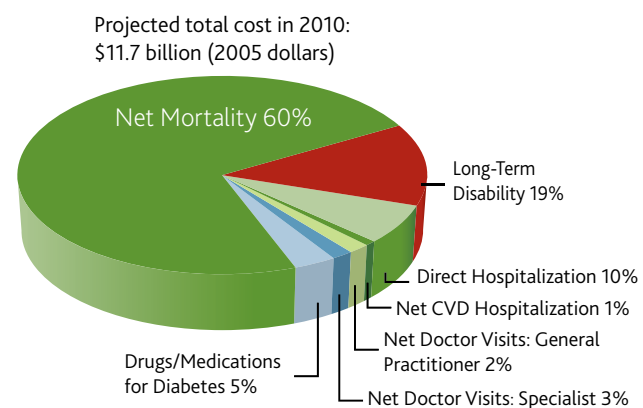
**Sheila J., 45**  
Langley, British Columbia

## B. The Cost Burden of Diabetes

### 1. Direct and indirect costs: Canada

Like prevalence, the cost of diabetes is approaching the tipping point. Factors responsible for increased prevalence also account for the projected \$4.3 billion increase over the next decade. Direct costs of diabetes, which account for 21% of the total cost, are led by hospitalization but also include general practitioners, specialists and medications. Indirect costs include loss of economic output from illness or premature mortality. Mortality and disability account for 79% of the total cost of diabetes (FIGURE 4).

Figure 4: Economic Cost of Diabetes in Canada by Source in 2010

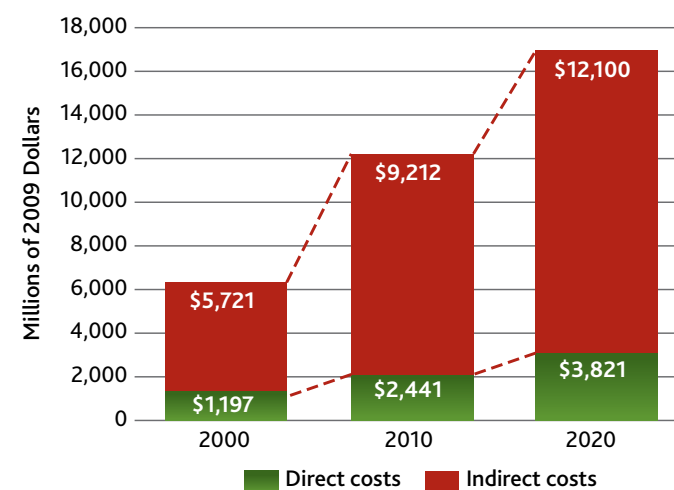


Source: Canadian DCM

Diabetes is also a significant burden for our economy, estimated at \$11.7 billion in 2010.<sup>45</sup> This is an increase of \$4.7 billion or nearly 70% since 2000 (FIGURE 5).<sup>46</sup>

Declining mortality rates for people with diabetes increase prevalence rates over this period and decrease costs associated with premature mortality, thus resulting in higher estimated prevalence but a lower overall cost burden than projected in 2009.<sup>47</sup> Nevertheless, the cost of diabetes is expected to rise by over 130% from 2000 to 2020.

Figure 5: Cost of Diabetes in Canada: 2000 to 2020



Source: Canadian DCM

### 2. Direct and indirect costs: provinces and territories

As per Table 1, the cost of diabetes in Canada is expected to more than double from 2000 to 2020. Given rising prevalence rates, this is not surprising. Variation exists across provinces for increases in the cost of diabetes. AB, with the lowest current prevalence, is nonetheless projected to have almost the highest increase in cost from 2000 to 2020; PEI, with higher current prevalence, will incur the highest increase. MB will incur the lowest increase.

### 3. Costs to treat diabetes-related complications in Aboriginal populations

Given the higher prevalence of diabetes among Aboriginal populations, complications of diabetes are also more common than in the general population<sup>48</sup>: almost 89% of those with diabetes report adverse consequences related to their condition.<sup>49</sup> For example, among Aboriginal peoples in MB, from 1996 to 2016, it is estimated that CVD, dialysis starts and lower limb amputations will all increase ten-fold, and strokes and blindness will increase five-fold.<sup>50</sup> Excess costs due to diabetes prevalence in Aboriginal populations added 15.9% to total costs in this province.<sup>51</sup> In SK, higher health services utilization was associated with 40 to 60% higher healthcare costs for registered Indian diabetes cases.<sup>52</sup>

### 4. The personal costs of diabetes: composite case studies and out-of-pocket costs

Successful diabetes self-management requires access to clinically effective, appropriate and safe medications for diabetes and diabetes-related complications, as well as diabetes supplies and devices. The CDA's 2008 *Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada* (CPGs) emphasize an aggressive approach to delaying or preventing complications, recommending glycated hemoglobin (A1C) levels of <7% to reduce the onset of complications such as heart attack, stroke, blindness, kidney disease and amputation.<sup>53</sup>

However, out-of-pocket costs often compromise the ability of Canadians with diabetes to manage their disease: 57% indicate that they do not comply with their prescribed therapy due to the cost of medications, devices and supplies. Only half of Canadians with type 2 diabetes have their blood glucose levels under control, and the majority of patients incur adverse health conditions linked to diabetes.<sup>54</sup> There are major provincial differences in out-of-pocket expenses, and while these costs for type 1 diabetes have declined, the average for type 2 diabetes is essentially unchanged from *Diabetes Report 2005*. People with diabetes can purchase the medications if they have the money to pay for them or if they have financial support from a private (e.g., employer) or public health benefit plan.

We update two composite case studies to show the challenges that Canadians with diabetes face. Annual out-of-pocket costs are calculated based on the methodology outlined on page 12, along with a summary of available support and analysis of changes from 2005. The CDA's CPGs continue to form the basis of their diabetes management. Coverage of medications, devices and supplies are shown on pages 38-41. To enable comparison, coverage charts for case studies from 2005 are available at: [www.diabetes.ca/dpr/](http://www.diabetes.ca/dpr/).

*"I don't want to be in a position of cutting back on medications or testing in order to live within our budget in retirement."*

**Doug Macnamara, 52**  
Banff, Alberta

**JANET, 22, TYPE 1 DIABETES COMPOSITE CASE STUDY:**

Janet takes insulin four times daily and tests her blood glucose five times daily. She does not require additional medications to manage or avoid complications. Janet lives alone with an annual income of less than \$15,000. She has no private health insurance plan and relies on government assistance. Table 6 outlines Janet’s costs to buy medications and supplies to manage her diabetes.

Since 2006, AB has dropped from the province with the second-highest cost to the lowest cost, due to Janet’s eligibility for the Alberta Adult Health Benefit.<sup>55</sup> PEI still has the highest costs, but there was an approximately \$1,000 decrease due to new partial coverage for test strips. As a result of these changes, the national average is \$385.65; out-of-pocket costs for type 1 are considerably lower than they were in 2005.

**Table 6:** Type 1 Diabetes Out-of-Pocket Expenses by Province/Territory, as of December 2009

Province/Territory	Annual Out-of-Pocket Costs (\$CN)	% of Annual Individual Income
PEI	1,564.58	10.8
ON	942.61	6.5
QC	838.55	5.8
NS	559.76	3.9
SK	499.20	3.4
BC	475.20	3.3
MB	390.05	2.7
<b>National Average</b>	<b>385.65</b>	<b>2.7</b>
YK	100	0.7
NB	29.20	0.2
AB	0	0.0
NIHB (federal)	0	0.0
NT	0	0.0
NL	0	0.0

**Table 7:** Type 2 Diabetes Out-of-Pocket Expenses by Province/Territory\*, as of December 2009

Province/Territory	Annual Out-of-Pocket Costs (\$CN)	% of Annual Individual Income	% of Annual Family Income
NB	3,426.99	11.4	6.2
NL	3,396.04	11.3	6.2
PEI	3,036.31	10.1	5.5
NS	2,868.39	9.6	5.2
MB	2,527.20	8.4	4.6
ON	2,173.50	7.2	4.0
AB	2,052.84	6.8	3.7
BC	2,032.79	6.8	3.7
SK	1,854.45	6.2	3.4
<b>National Average</b>	<b>1,797.51*</b>	<b>6.0</b>	<b>3.3</b>
QC	1546.58	5.2	2.8
YK	250.00	0.8	0.5
NIHB (federal)	0	0.0	0.0
NU	0	0.0	0.0
NT	0	0.0	0.0

\*If NT, NU and NIHB are removed, (each with no costs), the average out-of-pocket costs across jurisdictions is \$2,287.74 annually.

Since 2006, Aspirin has been removed from Peter’s diabetes regimen, which lowered his costs by approximately \$25. This moved NU and NIHB into a tie with NT for lowest costs (\$0). AB was approximately \$400 higher, primarily due to an increase in the Alberta Blue Cross non-group insurance premium. Overall, the national average for type 2 medications is essentially unchanged.

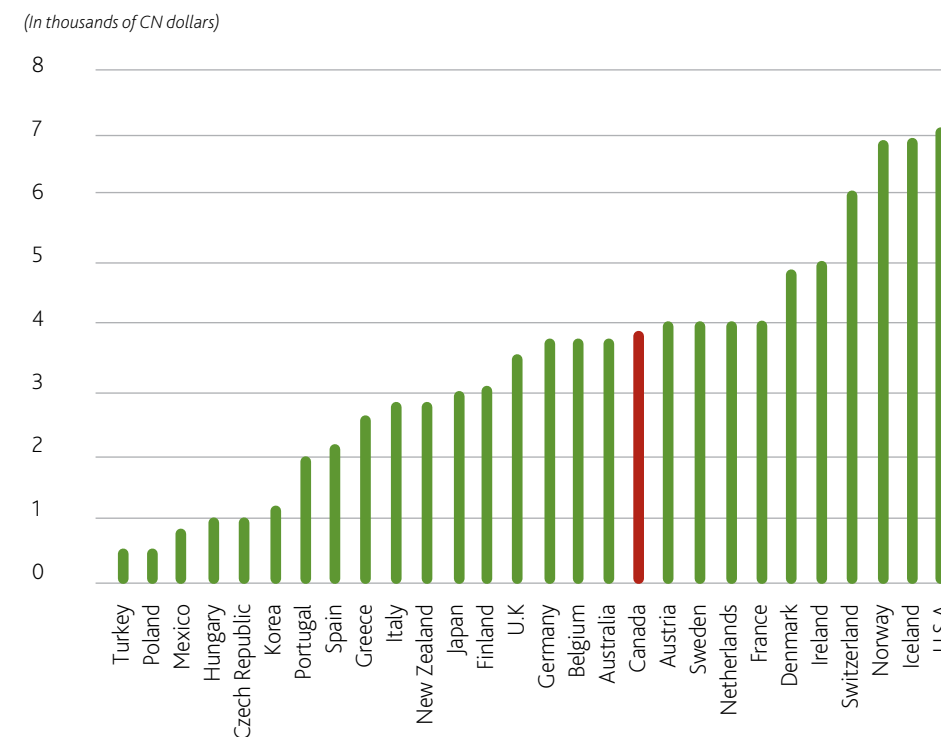
More generally, a number of advances in coverage for medications, supplies and devices have been initiated since 2005 across several jurisdictions, including:

- Improvements by ON for access to pumps and pump supplies for type 1 diabetes, and access to blood glucose test strips for people who use insulin to manage their diabetes (type 1, type 2 and GDM).
- Improvements by NS in help for people with type 2 diabetes, including enhanced access to blood glucose test strips, ketone strips, lancets and oral medications.
- Improvements by NL, providing coverage for insulin pumps up to age 25, test strips, insulin, oral medications and other supplies, such as syringes and lancets.

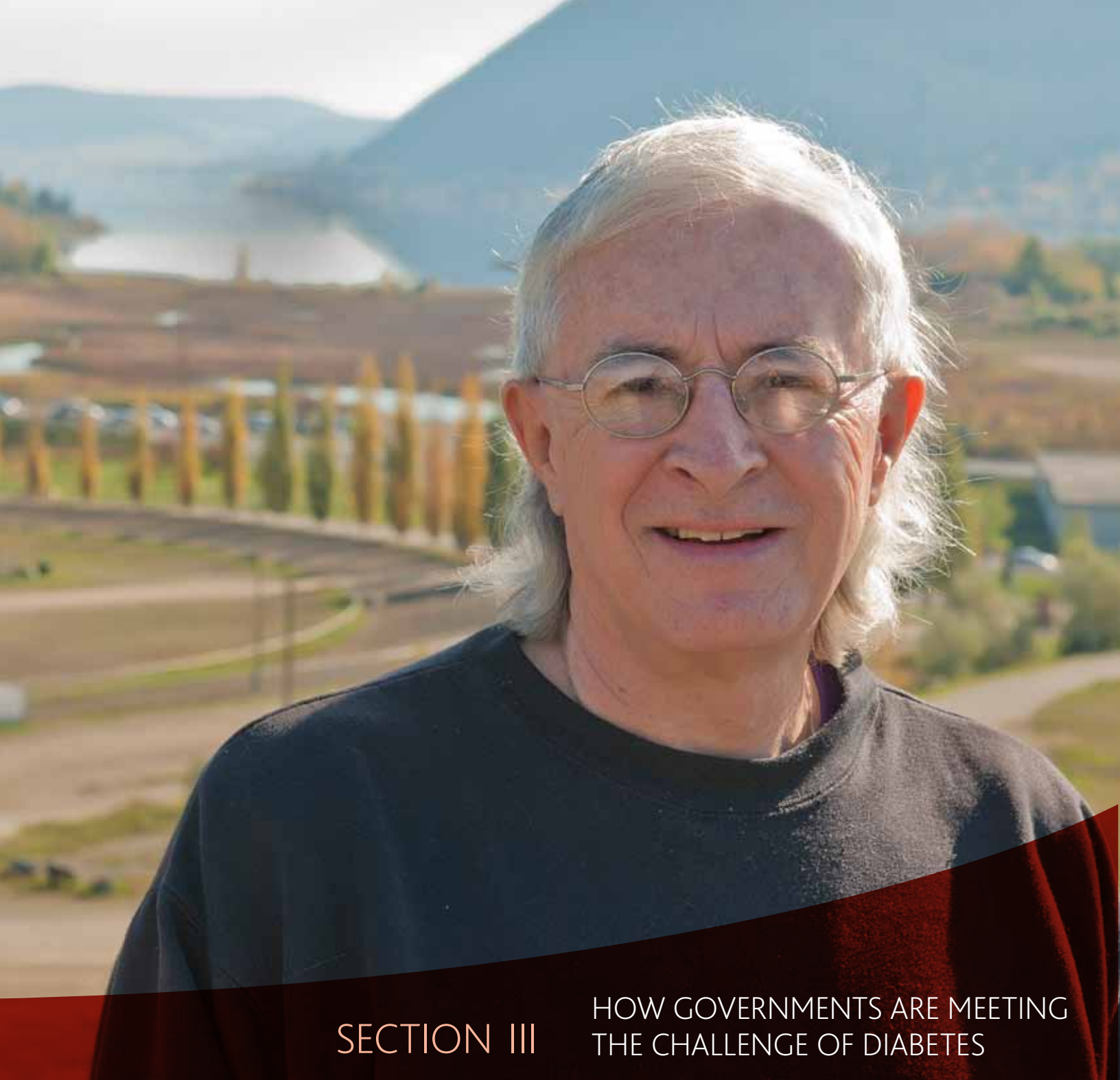
**5. Costs internationally: how does Canada compare?**

Canada’s spending on diabetes is just under \$4,000 per capita — approximately the middle range of OECD peer countries (FIGURE 6).<sup>56</sup>

**Figure 6:** Per Capita Cost of Diabetes



Source: IDF, 2009



## SECTION III

### HOW GOVERNMENTS ARE MEETING THE CHALLENGE OF DIABETES

*“The financial costs of diabetes have always been a worry. Before the plan’s annual deductible kicks in, usually in April, I struggle with the costs.”*

**C. Warren Williams, 67**  
*Williams Lake, British Columbia*

Warren is determined to stick to his diabetes management regimen, testing, taking his medications, exercising and keeping a proper diet to prevent possible complications. Knowing many people with diabetes experience heart problems, he wants to stay “heart strong.”

## KEY OBSERVATIONS

- While Canada performs comparably to peer countries with respect to some diabetes indicators, **we perform poorly with respect to prevalence, hospitalizations, mortality and access to medications.**
- Federal policy response through the Canadian Diabetes Strategy has both strengths and limitations. However, **funding for the CDS has not kept pace with increasing prevalence.**
- There are **many best practices in diabetes services and programs across Canada.** However, gaps remain in our knowledge of them.

## KEY QUESTIONS

- How can sharing of best practices in diabetes across jurisdictions be enhanced to strengthen evidence-based diabetes care and education?
- How can standards of diabetes care and education across jurisdictions be assured while respecting provincial/territorial responsibility for healthcare delivery?
- How must drug approval policy change to ensure equality of access to medications for all Canadians with diabetes?

### A. Diabetes Burden and Quality of Care: Canada

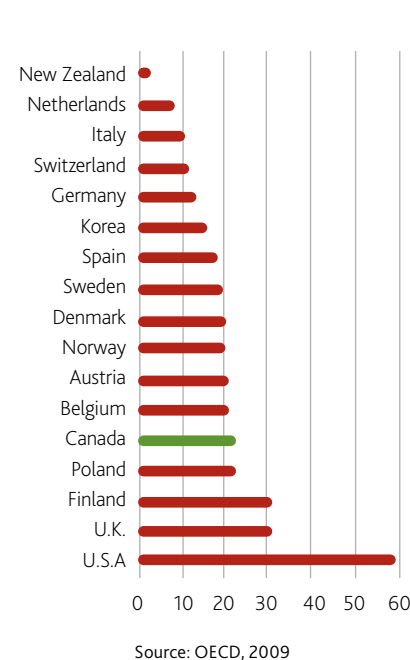
To understand Canada's policy response to diabetes, we must consider how Canada compares to peer countries in terms of quality of care and burden of diabetes.

**Avoidable hospitalizations<sup>57</sup>:**  
Canada's rate of 23.3 per 100,000 is above the OECD average of 21 per 100,000 (FIGURE 7).

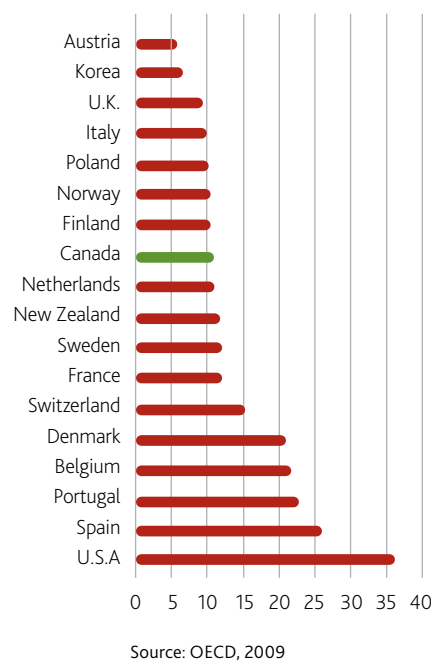
**Lower-extremity amputations<sup>58</sup>:**  
Canada was below the average of about 15 amputations per 100,000 population across OECD countries (FIGURE 8).

**Diabetes-related mortality<sup>59</sup>:**  
Canada has the third-highest mortality rate among peer countries, with 18 deaths per 100,000 population (FIGURE 9).

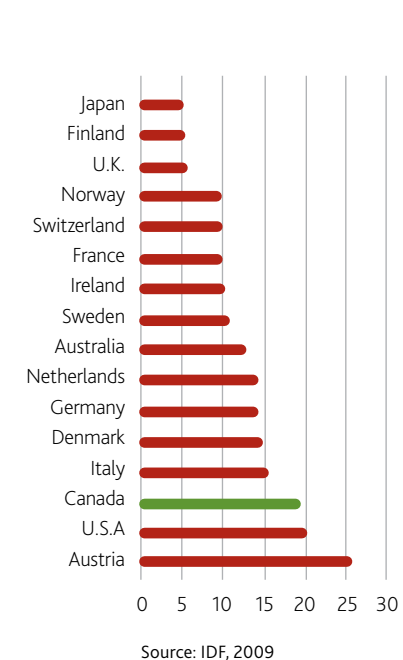
**Figure 7:**  
Avoidable Hospitalizations for Acute Diabetes Complications per 100,000 Population



**Figure 8:**  
Lower Extremity Amputation Rates per 100,000 Population



**Figure 9:**  
Mortality Due to Diabetes (% of the population)



While Canada is in the middle of peer countries concerning amputations and cost of care, we have higher diabetes prevalence and mortality. This is noteworthy given Canada's low rates of mortality due to CVD, which is the leading cause of death in people with diabetes.<sup>60</sup> Although Canada performs comparably in terms of amputations, and, to a lesser extent, avoidable hospitalizations, other countries have lower rates. As noted by the Canadian Institute for Health Information, "there is room for improvement in care provision for adults with diabetes in all jurisdictions."<sup>61</sup> Table 8 compares countries where information is available; not all countries had data for all indicators. Distribution by tier was assigned using the top and bottom 25% of countries with data available for each indicator.

**Table 8:** How Canada Compares Internationally on Diabetes

Indicator	Prevalence <sup>a</sup>	Cost of Care <sup>a</sup>	Hospitalizations <sup>a</sup>	Amputations <sup>a</sup>	Diabetes Mortality <sup>b</sup>
<b>Bottom Tier</b> (Highest on indicator)	Mexico US Portugal <b>CANADA</b> Switzerland Germany Austria Turkey	US Iceland Norway Switzerland Ireland Denmark France Netherlands	US UK Finland Poland <b>CANADA</b>	US Spain Portugal Belgium Denmark	Austria US <b>CANADA</b> Italy
<b>Middle Tier</b>	Korea Poland France Spain Hungary Czech Republic Greece Italy Finland Australia Denmark Netherlands	Sweden Austria <b>CANADA</b> Australia Belgium Germany UK Finland Japan New Zealand Italy Greece	Belgium Austria Norway Denmark Sweden Spain Korea	Switzerland France Sweden New Zealand Netherlands <b>CANADA</b> Finland Norway	Denmark Germany Netherlands Australia Sweden Ireland France Switzerland
<b>Top Tier</b> (lowest on indicator)	Belgium Sweden New Zealand Ireland Japan UK Norway Iceland	Spain Portugal Korea Czech Republic Hungary Mexico Poland Turkey	Germany Switzerland Italy Netherlands New Zealand	Poland Italy UK Korea Austria	Norway UK Finland Japan

<sup>a</sup> OECD, 2009  
<sup>b</sup> IDF, 2009

### Policy framework - the Canadian Diabetes Strategy (CDS):

The CDS, created in 1999 and renewed in 2005, focuses on the prevention and management of type 2 diabetes, high-risk populations and complications. In 2005, the CDS, which is managed by the PHAC, was allocated \$90 million over five years (\$18 million per year). Despite the doubling of diabetes prevalence and cost, funding for the CDS has not increased accordingly.

An expert review of the CDS led by the former Premier of NL, Brian Peckford was undertaken in 2008. The final *Diabetes Policy Review, Report of the Expert Panel* noted successes as well as limitations of the CDS and made recommendations.<sup>62</sup>

One area where Canada is a leader internationally is diabetes surveillance. The CDS supports the successful NDSS, which is a model for the Canadian Chronic Disease Surveillance System (CCDSS). However, gaps remain in our knowledge about diabetes in Canada, and in the application of available data. The Expert Panel noted areas of needed improvement in surveillance, including differentiation between type 1 and type 2 diabetes, and use of other data sources (e.g. laboratory) to better understand healthcare and self-care activities.

The Expert Panel noted key international comparisons in national diabetes strategies. In particular, it pointed out that partnerships are prevalent in other countries that have achieved success in addressing diabetes. The Expert Panel envisaged partnerships between the public and private sectors and non-governmental organizations to advance research and deliver programs. However, at present, Canada is weak in this regard.

The Expert Panel also criticized the CDS regarding its lack of clear and measurable goals, which have been established in other jurisdictions. It advocated for clear goals, measurable targets, research, effective prevention and partnerships to achieve progress and positive results in five years.

## B. Aboriginal Diabetes Initiative (ADI)

Health Canada's First Nations and Inuit Health Branch (FNIHB) manages the ADI to reduce diabetes incidence and prevalence and improve the health of First Nations and Inuit people. The ADI delivers community-based and culturally appropriate health promotion, primary prevention, screening and treatment services to more than 600 communities. Services are delivered in partnership with tribal councils, First Nations organizations, Inuit community groups and provincial and territorial governments. The ADI also undertakes screening and treatment; capacity building and training; research; surveillance; and evaluation of services.

ADI funding was renewed until 2012 in the 2010 federal budget. Areas of enhanced focus include initiatives for children, youth, parents and families; diabetes in pre-pregnancy and pregnancy; food security and traditional and healthy food initiatives; and enhanced training for home and community care nurses on CPGs and chronic disease management. We applaud this federal commitment and urge permanent funding for the ADI.

One of the key barriers to dealing with diabetes in Aboriginal populations is the political environment (federal, provincial, regional, municipal and indigenous) in which these populations live. The FNIHB also notes the remoteness of communities, lack of qualified healthcare personnel, and some determinants of health (housing, water, infrastructure and access to nutritious foods) as barriers to addressing diabetes.

## C. Provincial/Territorial Best Practices

Since *Diabetes Report 2005*, many jurisdictions have initiated new policies and programs. Innovative programs are identified to highlight best practices and advocate for policy and program change.<sup>63</sup> Governments were asked to confirm:

- If they had a diabetes policy or strategy, and, if so, its components.
- Their coverage for diabetes medications, devices, supplies and services.
- What standards and guidelines their policies reference.
- Prevention programs and activities.
- Diabetes surveillance activities.
- Barriers they face to addressing diabetes.

Below is a snapshot of diabetes policies, programs and best practices across jurisdictions, summarized from west to east under each survey section. Recommendations within *Diabetes Report 2005* are referenced to assess change in policies and programs across jurisdictions. Fact sheets for each jurisdiction are available at: [www.diabetes.ca/dpr/](http://www.diabetes.ca/dpr/).

### Diabetes Policy or Strategy

#### DIABETES REPORT 2005 RECOMMENDATIONS

- Accelerate and enhance implementation of the Canadian Diabetes Strategy and the Aboriginal Diabetes Initiative.
- Increase awareness of existing government programs and services for Canadians living with diabetes.

## FINDINGS

- AB, SK, MB, ON and NS have established diabetes strategies.
- BC, QC and PEI have broader chronic disease strategies and frameworks that include diabetes. SK also funds a separate program concerned with living challenges for those with chronic conditions.
- NL does not have diabetes policies or strategies. NB has recently developed a strategy as part of broader chronic disease prevention and management frameworks, and NL is in the process of doing this.
- While QC, NU, YK and the NT do not have formally developed diabetes strategies, coordinated care is integrated within their chronic disease and care frameworks.
- Provinces with diabetes or chronic disease strategies (BC, AB, SK, MB, ON, NS, PEI) identify objectives for diabetes prevention, care, education, research and surveillance.
- All provinces with diabetes or chronic disease strategies have stated goals or objectives for managing complications or comorbidities.
- While BC, AB, SK, MB, ON and NS identify Aboriginal people as important at-risk populations, only ON, AB and MB have a specific Aboriginal component to their strategies.
- All jurisdictions, except the territories, report investments in research to develop tools, services and programs to help people with diabetes effectively self-manage.

## BEST PRACTICES ACROSS JURISDICTIONS

- BC's *Primary Health Care Charter* identifies diabetes management as a priority medical condition and establishes outcome measures (2007).
- AB and SK identify a 10-year time frame for their diabetes strategies, with ongoing funding to ensure sustainability. BC, MB, ON and NS have ongoing funding to ensure sustainability, but no specific time reference.
- AB has evaluated its diabetes policy and programs and the province's Monitoring for Health program, which provides funding to cover a portion of the cost of eligible diabetes management supplies (2008–2009).
- AB, SK, MB, ON, NS, NB, PEI, YK and NU have government staff positions dedicated to the coordination and delivery of diabetes policy and programs. Other provinces have staff responsible for broader chronic disease management and strategies.
- MB released *Diabetes in Manitoba: A Call to Action* to strengthen existing diabetes partnerships and build new ones to reduce the burden of type 2 diabetes. The province has established a retinal screening program for northern communities (2007) and screens for prediabetes in Winnipeg. It has enhanced funding for several self-management tools, including *Get Better Together! Manitoba*, a free peer-led program for people with ongoing health conditions to take control of their own health (2007), and *CareLink*, a telephone- and telehealth-based chronic disease self-management program to expand services to northern, rural and remote regions (2008). MB is also revising a complications screening toolkit to include oral health, sexual dysfunction and mental health for people with diabetes and other chronic diseases.
- ON released its Aboriginal Diabetes Strategy, a long-term approach to prevention, care and treatment, education, research and coordination (2006). The province has also implemented its Chronic Kidney Disease Strategy, which includes primary and secondary prevention and increased access to dialysis (both community-based dialysis and peritoneal dialysis).
- ON and QC have strategies to enhance access to bariatric surgery (2008), (2009).
- The Diabetes Care Program of Nova Scotia (DCPNS) has been in existence since 1991 and was renewed for 2008 to 2012. The DCPNS implements NS's strategy and serves as a network for provincial diabetes centres. Priorities are reviewed and approved by an Advisory Council, thus ensuring stakeholder input.

Coverage of diabetes medications, supplies and services

DIABETES REPORT 2005 RECOMMENDATIONS

- Ensure that the cost for diabetes medications and supplies (including secondary complications) are not a barrier or a burden to individuals managing their diabetes.

FINDINGS

- MB, NU and NT have the most “listed” diabetes-related medications on their formularies (10 of 23). NB, NS and NL have the fewest diabetes medications (6 of 23) appearing as “listed” on their formularies.
- Coverage for test strips is limited in AB, ON, NB and PEI, depending on individual circumstances (see Tables 1, 11 and 12).
- BC, SK, ON and NL provide insulin pump coverage. ON’s program is the most comprehensive, offering coverage for both children and adults with type 1 diabetes, as well as pump supplies to a maximum of \$2,400. Pump and supplies programs in BC, SK and NL limit support to children and youth with type 1 diabetes under the ages of 18, 17 and 25, respectively. NL has also announced coverage of up to \$2,500 for insulin pumps for public sector employees. AB and MB pay for infusion sets. NU pays for pumps and supplies, while YK and the NT provide access through special authorization.
- AB does not normally pay for pumps, but may do so under special authorization. QC is conducting a pilot project concerning pumps for children; a decision on coverage is expected in 2011.
- QC has simplified the reimbursement process for several restricted diabetes-related medications.
- NL has increased income thresholds for its prescription drug program, making it more accessible to residents, as well as adding new medications for diabetes and neuropathy.
- For treatment for comorbidities and diabetes-related complications that would otherwise fall under publicly insured medical services, QC, NB, NS, NT and MB provide coverage for dilated eye exams and mental health counselling or depression screening. YK, AB, SK, NU and NL do not. PEI covers mental health counselling, but not eye exams, while the reverse is true for BC and ON.

BEST PRACTICES ACROSS JURISDICTIONS

- MB, NU and NT provide the most extensive coverage for diabetes medications (10 medications out of 23 are listed). The territories have raised the eligible income levels for benefits under their Monitoring for Health Program (2006).
- BC (2008), SK (2007) and NL (2010) have public coverage for insulin pumps and supplies for children and youth. ON first provided coverage to children (2006) and has expanded access to adults (2008).
- BC requires that people with type 2 diabetes visit a diabetes educator before gaining access to test strips under its pharmacare program.
- The SK Children’s and Seniors’ Drug Plans (2007 and 2008, respectively) are available to children (age 14 and under) and eligible seniors. Children and seniors pay only \$15 for drugs listed on the provincial formulary and those approved under its Exception Drug Status (EDS). (In 2008, eligibility criteria based on income were introduced into the Seniors’ Drug Plan; approximately 95% of seniors are eligible for the \$15 prescription cap.) SK also introduced an online Exception Drug Status

(EDS) adjudication for Actos and Avandia. This enables an automatic search for alternatives on a patient’s online profile, and/or expired EDS approval of Actos or Avandia, and approving those cases where the EDS criteria are met. This allows for EDS approval without a request from the prescriber or pharmacist (2006).

- MB’s Pharmacare Program provides drug coverage for all eligible participants, with an annual deductible based on family income. The deductible instalment payment program enables eligible participants to pay their deductible in interest-free installments (2007). Additional income brackets have been introduced to reduce deductible increases as families incomes move between brackets (2009).

- ON has increased the Monitoring for Health reimbursement level for strips and lancets by 42% since 2005.
- The NS Family Pharmacare Program (NSFPP) (2008) replaced the Diabetes Assistance Program (2005). The NSFPP assists people without drug coverage or with high drug costs by providing access to diabetes medications and supplies on the NS formulary. There is a yearly deductible and a 20% co-payment with an annual maximum.

Standards and guidelines

DIABETES REPORT 2005 RECOMMENDATIONS

- Implement CDA clinical practice guidelines [CPGs] for the prevention and management of diabetes in Canada.

FINDINGS

- All jurisdictions indicate recognition of the CDA 2008 CPGs in various ways and to varying degrees.
- None of the governments formally require the DES<sup>64</sup>/CDA *Standards for Diabetes Education in Canada* to be used. Only SK, MB, ON and PEI encourage diabetes education centres to use the standards.
- BC has requested further information concerning CPGs for self-monitoring of blood glucose. The CDA has established a public policy process to look at this issue.
- AB, SK, MB, ON, QC, NB, NS, PEI, NL, NU, NT and YK report diabetes education programs targeted at Aboriginal populations. NL has recently hired diabetes education staff in its Aboriginal communities. Improving access for these populations is important given that access to diabetes education can be especially difficult for Aboriginal people in isolated communities across the country.<sup>65</sup> (Some jurisdictions noted that diabetes education centres are the responsibility of external agencies.)
- All jurisdictions have some accountability mechanisms to promote the CPGs. BC, YK, NS, NB, ON and MB have specific mechanisms to evaluate their use. Other jurisdictions refer to the respective professional colleges responsible for quality of care assessment.
- NS has engaged in guideline development for foot assessment tools and resources in long-term care; a physical activity and exercise toolkit aimed at improving activity levels in people with diabetes; and insulin dose adjustment guidelines.

**BEST PRACTICES ACROSS JURISDICTIONS**

- Several jurisdictions have enhanced their provision of primary care. For example, BC, AB, NB and NS have family practice incentive programs and billing codes for physicians providing care for chronic illnesses, including diabetes. MB's Physician Integrated Network seeks to improve primary care for chronic disease management, including diabetes, through multidisciplinary teams and the use of electronic medical records.
- BC's Guidelines and Protocols Advisory Committee has produced a diabetes care guideline (2010).
- AB has a Mobile Diabetes Screening Initiative (MDSI) geared at Aboriginal communities (2003). The University of Alberta's MDSI team of health professionals visits remote, off-reserve Aboriginal and northern communities to screen for diabetes and its complications, deliver health promotion and diabetes education and encourage links with local healthcare providers where possible.
- The Health Quality Council of Saskatchewan developed and implemented a diabetes toolkit and diagnostic/clinical flow sheet as part of its Chronic Disease Management Collaborative on diabetes, a major quality improvement initiative to enhance the care and health of people living with coronary artery disease and diabetes, and to improve access to physician practices (2005). SK has also developed *Clinical Practice Guidelines for the Prevention and Management of Diabetes Foot Complications* (2008).
- In MB, the CPGs are used by the regional health authorities to develop flow sheets to manage diabetes. The province has developed and distributed the *Manitoba Diabetes Care Recommendations* (2010), which are consistent with the CDA's CPGs. MB has also implemented a number of other projects to improve the

health status of Aboriginal populations by preventing or delaying complications and addressing foot ulcers.

- ON has begun reporting two annual targets: 1) the percentage of people with diabetes attached to a primary care physician; and 2) the percentage of people with diabetes receiving A1C tests, lipid tests and dilated retinal exams, in accordance with the CDA's guidelines. In addition, ON's Diabetes Program Policies and Procedures state that "Diabetes programs' education/work plans must reflect an integration of current principles and practices for diabetes" as outlined in the Association's CPGs and the DES/CDA's *Standards for Diabetes Education in Canada*. Provincially funded diabetes programs must submit quarterly and annual reports to the ministry (2009).
- In NS, the CPGs are embedded in standard forms, including referral, assessment, follow-up and flow sheets, applicable guideline documents and the chronic disease flow sheet. The DCPNS Registry allows tracking of newly diagnosed referrals, including those with prediabetes and key self and clinical indicators of care. NS can track waiting lists and changes from diagnosis of diabetes onward, including lower-extremity amputation data, hypertension rates, retinopathy screening rates etc., longitudinally.
- PEI's diabetes program has developed a clinic flow sheet that reflects the CPGs and encourages its use within physician offices and primary health centres. The CPGs are referenced in the province's diabetes program policy and procedure manual.
- NL's pharmaceutical division has used the CPGs.

*"We need to do more to help teachers to recognize and respond to students with diabetes when they experience blood glucose control problems when they are in school."*

**Randy Wepruk, 50**  
Thunder Bay, Ontario

**Primary prevention programs**

**DIABETES REPORT 2005 RECOMMENDATIONS**

- Implement CDA clinical practice guidelines for the prevention and management of diabetes in Canada.
- Accelerate and enhance implementation of the Canadian Diabetes Strategy and the Aboriginal Diabetes Initiative.
- Increase awareness of existing government programs and services for Canadians living with diabetes.
- Ensure that the cost for diabetes medications and supplies (including secondary complications), are not a barrier or a burden to individuals managing their diabetes.

**FINDINGS**

- All jurisdictions have healthy lifestyle programs within chronic disease mandates.
- Many jurisdictions have school-based programs for healthy eating and physical activity.
- Aboriginal populations, women, the socially disadvantaged and children and youth are commonly identified as target populations for diabetes prevention programs.

**BEST PRACTICES ACROSS JURISDICTIONS**

- *ActNow*, BC's healthy living initiative, focuses on healthy eating, physical activity, healthy body weight and living tobacco-free that together contribute to preventable chronic diseases, including diabetes (2005).
- AB has invested \$18 million to promote healthy weights in children and youth to reduce obesity and decrease chronic disease through additional health promotion coordinators and measures to promote health in schools, including healthy eating (2006). The province's *Healthy U* health information and education campaign seeks to increase physical activity and healthy eating among Albertans and reduce chronic disease risk, including diabetes and heart disease (2002, ongoing).
- MB's Chronic Disease Prevention Initiative promotes healthy eating, physical activity and smoking cessation through local partnerships, citizen engagement and community development (2004). *Reduce Your Risk*, a province-wide public education campaign, helps Manitobans identify and reduce their risk for type 2 diabetes (2008).
- QC's *Investir dans l'avenir (Invest in the Future)* program is designed to provide healthier food in schools and more physical activity aimed at children.
- NB's wellness strategy (2009 to 2013) includes healthy eating and physical activity.
- NS has produced *Prediabetes Screening and Management Guidelines* (2008).
- MB, NB and PEI, in partnership with the PHAC, are conducting a Prediabetes Screening Project to develop province-wide screening tools.
- NL's wellness plan and *Go Healthy* initiative focus on physical activity, healthy body weight and tobacco control. Physical education is mandatory to graduate from high school in the province.
- All jurisdictions except YK have primary prevention programs for high-risk populations.

Diabetes surveillance

DIABETES REPORT 2005 RECOMMENDATIONS

- Accelerate and enhance implementation of the Canadian Diabetes Strategy and the Aboriginal Diabetes Initiative.

FINDINGS

- All jurisdictions continue to participate in the NDSS and most create specific reports based on NDSS data, or unique case definition using additional administrative data.
- Diabetes surveillance in Aboriginal populations remains quite limited in Canada. The latest NDSS reports included information on Aboriginal populations in BC and QC.
- ON's Baseline Diabetes Dataset Initiative (BDDI) provides primary care physicians with information about patients' testing practices for A1C, lipids tests and retinal eye exams.
- NL has conducted a study of diabetes in an Aboriginal community in that province.

BEST PRACTICES ACROSS JURISDICTIONS

- AB has established a five-year Alberta Diabetes Surveillance System, in partnership with Alliance for Canadian Health Outcomes Research in Diabetes at the University of Alberta. It supports regular and ongoing surveillance and reporting through the *Alberta Diabetes Atlas* in 2007, 2009 and 2011; an interactive website; and an inquiry service for regional or local data (2005 to 2010). The *Alberta Diabetes Atlas 2009* included a report on diabetes epidemiology and healthcare utilization for Status Aboriginals.
- MB has released *Diabetes in Manitoba 1989 to 2006: Report of Diabetes Surveillance*, and an accompanying public summary (2009).
- ON's BDDI facilitates identification of patients for testing on the three tests/exams noted above, helping the government meet the target of 80% of patients with diabetes completing these tests within the recommended guidelines.
- QC reports tracking of diabetes among Aboriginal populations.
- NS produces an annual report for district health authorities on diabetes epidemiology and health services utilization using the NDSS. The DCPNS Registry allows for a review of process and outcome measures in diabetes centres that use the Registry onsite.

D. Diabetes Policy and Future Policy Response: Barriers and Challenges

Provinces and territories noted the following barriers to addressing diabetes:

- Overwhelming demographic trends of aging and increasing rates of overweight and obesity drive growth of diabetes prevalence, which is confirmed by the DCM.
- The rising costs to our healthcare system of treating diabetes and its complications.
- Limited access to complete, integrated information about diabetes; service delivery to rural and remote communities; diabetes as one of several competing health priorities; and health human resources to support programs.

THE NEED TO ENHANCE KNOWLEDGE DISSEMINATION:

While Canada is a leader in diabetes surveillance, gaps remain concerning knowledge of best practices across the country. The *Diabetes Policy Review* noted the "lack of access to information about existing diabetes initiatives ... This has resulted in the duplication of work and lost opportunities for collaboration and learning from the experiences of the existing initiatives."<sup>66</sup> *The Review* recommended a "national system/platform for knowledge dissemination and exchange."<sup>67</sup>

THE NEED TO ENHANCE PRIMARY CARE FOR PEOPLE WITH DIABETES:

We applaud enhancements to primary care, especially those that support services for people with chronic diseases such as diabetes. However, too many people with diabetes across jurisdictions still do not have access to a family doctor. Without this, they must wait in an emergency room for routine diabetes care services. All people with diabetes need access to a family doctor to ensure optimal diabetes management.

THE NEED TO ENSURE STANDARDIZED DIABETES EDUCATION ACROSS CANADA:

Several jurisdictions have established innovative diabetes education programs. However, most jurisdictions do not require their diabetes education centres to comply with DES/CDA's *Standards for Diabetes Education*. All Canadians need access to high-quality diabetes education to ensure optimal self-management in order to delay or avoid diabetes-related complications. Certification programs must be available to all healthcare professionals.

THE NEED FOR DIABETES STRATEGIES TO ADDRESS RISK FACTORS AND COMPLICATIONS:

Strategies must address both risk factors given increasing diabetes prevalence across Canada and complications given their implications concerning healthcare costs and decline in quality of life. For example, when we compare growth in diabetes in Atlantic Canada, with many risk factors, provinces with established policies (NS and PEI) have fared better than those that have recently developed or have yet to develop frameworks or policies (NB and NL). While prevalence in NS was the highest in Canada in 2000, by 2020, prevalence in NL and NB will surpass that in NS. While PEI's growth in prevalence from 2000 to 2020 will be more than 250%, it will still have the lowest prevalence rate among these provinces.

*"Education is critical to treating diabetes and to supporting people with diabetes and their families."*

Mike Felske, 33  
Eganville, Ontario

**THE NEED FOR CULTURALLY APPROPRIATE DIABETES PROGRAMS:**

ON, BC and AB have fewer risk factors given lower median ages, higher median family incomes and comparatively lower rates of obesity. Nonetheless, they face rates of diabetes prevalence growth of 2.5 times or more from 2000 to 2020. These provinces also have the highest percentage of population by immigrant status of 28.3, 27.5 and 16.2%, respectively, exceeding the Canadian average of 19.8%. Given the higher risk of diabetes and diabetes complications faced by specific immigrant populations, culturally appropriate diabetes education and screening programs need to be a priority component of diabetes strategies, especially in these provinces.

The need for culturally appropriate services also applies to Aboriginal populations across Canada given their catastrophic rates of diabetes. This is especially true for the prairies, where Aboriginal populations exceed the national average. While most diabetes policies include measures targeted to Aboriginal peoples, only AB, MB and ON have

formally developed diabetes strategies for these populations. All jurisdictions need to expand their efforts to address diabetes in these populations, including rural and remote communities, in collaboration with Aboriginal peoples and, where appropriate, the federal government.

**THE NEED TO CONSIDER BROADER SUPPORTS TO COMBAT DIABETES:**

When considering measures to combat diabetes we must examine the broader social policy environment. In terms of risk factors for diabetes, BC and QC are the only jurisdictions with overweight/obesity rates lower than the national average. In fact, QC has the lowest rate of obesity for ages six to 11 in Canada; NL's rate is 37.6%, while QC's is 18.4%.<sup>68,69</sup> One factor in curbing childhood obesity in QC may be its *Consumer Protection Act* (1980), which bans all commercial advertising directed at children, including unhealthy foods. Given the link between excess weight and diabetes, we urge governments to move forward with their *Framework for Action to Promote Healthy Weights* (September 2010).<sup>70</sup>

**E. Drug Formulary Listings and Coverage Charts**

Health Canada determines the safety of all medications and approves them for use. Then, each jurisdiction determines if the medication is included in its formulary of medications and medical supplies covered by its drug plan. A product may be available to everyone who is eligible (“listed”); only available under special circumstances (“restricted”); or not available (“not listed”). The practice of new diabetes medications approved by Health Canada being classified as “restricted” or “not listed” in formularies means that these effective treatments are not available to some Canadians, potentially compromising their self-management. Only those with private drug plans or their own resources can acquire these therapies, meaning two-tiered access to these supports.

*“When I was struggling to afford my diabetes supplies and was unhealthy with blood sugars way out of control, my grandmother invited me to move to Whitehorse where I could access a program that would provide the support I needed to help me to manage my diabetes.”*

**Melissa McKinney, 24**  
Whitehorse, Yukon

**DIABETES MEDICATIONS:** Since *Diabetes Report 2005*, eight medications have been approved by Health Canada. Of these, Onglyza, Victoza and Avandaryl remain unavailable on all formularies, while five have been listed fully or with restrictions on select formularies. Januvia is fully listed in ON and restricted in QC, while Apidra is fully listed in BC, AB, MB, ON, QC and restricted in SK, NB, NS and NL. Janumet is only listed as restricted in QC. Hypurin insulin is fully listed in SK and restricted in BC. Levemir is fully listed in ON and restricted in SK and QC. Access to many diabetes medications remains inconsistent across jurisdictions (Table 9). In 2009, Canada reimbursed fewer drugs than the OECD average and we rate near the bottom in reimbursement for the latest treatments for diabetes.<sup>71</sup>

**MEDICATIONS CONCERNING DIABETES-RELATED COMPLICATIONS**

Many Canadians with diabetes will develop serious, potentially fatal diabetes-related complications:

- 80% of Canadians with diabetes die from a heart attack or a stroke.
- Over 40% of new kidney dialysis patients have diabetes.
- Diabetic retinopathy is the single leading cause of blindness in Canada.
- 25% of people with diabetes suffer from depression due to the burden of coping with the disease, as well as discrimination and stigma that often accompanies diabetes.
- 70% of non-traumatic limb amputations are caused by diabetes complications.<sup>72,73</sup>

Coverage of these medications was not featured in *Diabetes Report 2005*. They are included here given the importance of preventing and managing these complications (Table 10).

- Overall, complications that have the most coverage are dyslipidemia (high cholesterol), treatment of diabetes in people with heart failure, chronic kidney disease in diabetes and psychological aspects of diabetes. All of the formularies list most, if not all, of the drugs for these complications without restrictions.
- Complications with the least coverage are management of obesity in diabetes, neuropathy, smoking cessation and management of acute coronary syndromes. Almost all of the formularies lack coverage in these categories, or have restrictions on these drugs.
- Some complications, such as vascular protection or hypertension, are well covered in most formularies, but some lack coverage or have restrictions on these medications.

**DIABETES DEVICES AND SUPPLIES:** Several jurisdictions have enhanced access to test strips and insulin pumps. We encourage all jurisdictions to enable access to test strips, coupled with enhanced diabetes education to ensure optimized use of these supplies to support self-management, and access to insulin pumps when clinically appropriate.

Access to medications, devices and supplies should not depend on where you live in Canada. Our drug-approval policies must change to ensure that all people with diabetes across jurisdictions can access the medications they need to manage their condition.

**Table 9:** Formulary Listings for Diabetes Medications in Canada, 2010

CLASS	DRUG (Brand Name)	BC	AB	SK	MB	ON	QC	NB	NS	PEI	NL	NIHB <sup>a</sup>	NT	YK	NU
<b>Alpha-Glucosidase Inhibitor</b>	Acarbose ( <i>Glucobay</i> )	L	L	L	L	R	L	R	L	L	R	L	L	L	L
<b>Incretin Agents</b>	<b>DPP-4 inhibitor</b> Sitagliptin ( <i>Januvia</i> )	NL	NL	NL	NL	L	R	NL	NL	NL	NL	NL	NL	NL	NL
	Saxagliptin ( <i>Onglyza</i> )	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL
<b>Insulin</b>	<b>GLP-1 agonist</b> Liraglutide ( <i>Victoza</i> )	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL
	<b>Rapid-acting analogues</b> Aspart ( <i>NovoRapid</i> )	L	L	R	L	R	L	R <sup>i</sup>	R	L	R	L	L	L	L
	Glulisine ( <i>Apidra</i> )	L	L	R	L	L	L	R <sup>b</sup>	R	NL	R	NL	NL	NL	NL
	Lispro ( <i>Humalog</i> )	L	L <sup>c</sup>	R <sup>c</sup>	L	L	L	R <sup>i</sup>	R	L	R	L	L	L	L
	<b>Insulins, regular</b>	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	<b>Pork</b> Hypurin Regular, Hypurin NPH	R	NL	L	NL	NL <sup>h</sup>	NL	NL	NL	NL	NL	NL	NL	NL	NL
<b>Insulin Secretagogues</b>	<b>Long-acting basal analogues</b> Detemir ( <i>Levemir</i> )	NL	NL	R	NL	L	R	NL	NL	NL	NL	NL	NL	NL	NL
	Glargine ( <i>Lantus</i> )	R	NL	R	R	L	R	NL	NL	NL	NL	NL	NL	NL	NL
	<b>Sulfonylureas</b> Gliclazide ( <i>Diamicon, Diamicon MR, generic</i> )	R	L	L	L	L	L	L	L	L	L	L	L	L	L
	Glimepiride ( <i>Amaryl</i> )	NL	NL	NL	R	NL	R	L	NL	L	L	NL	NL	NL	NL
	Glyburide ( <i>Diabeta, Euglucon, generic</i> )	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Tolbutamide <sup>d</sup>	L	NL	L	L	NL	L	L	L	L	L	L	L	NL	L
<b>Biguanide</b>	<b>Meglitinides</b> Nateglinide ( <i>Starlix</i> )	NL	NL	R	NL	NL	NL	NL	NL	NL	NL	L	L	NL	L
	Repaglinide ( <i>GlucoNorm</i> )	NL	L	R	R	NL <sup>h</sup>	R	R	NL	NL	R	L	L	L	L
	<b>Metformin</b> ( <i>Glucophage, Glumetza</i> )	L <sup>e</sup>	L	L <sup>e</sup>	L	L	L	L	L	L	L	L	L	L	L
<b>TZDs</b>	Pioglitazone ( <i>Actos</i> ) <sup>f</sup>	R	R	R	R	NL <sup>h</sup>	R	R	R	R	R	R	R	R	R
	Rosiglitazone ( <i>Avandia</i> ) <sup>g</sup>	R	R	R	L	NL <sup>h</sup>	R	R	R	R	R	R	R	R	R
<b>Combined Formulations</b>	Metformin + rosiglitazone ( <i>Avandamet</i> ) <sup>g</sup>	R	R	R	NL	NL	R	R	R	R	NL	NL	NL	NL	NL
	Glimepiride + rosiglitazone ( <i>Avandaryl</i> ) <sup>g</sup>	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL
	Sitagliptin + metformin ( <i>Janumet</i> )	NL	NL	NL	NL	NL	R	NL	NL	NL	NL	NL	NL	NL	NL

**TZD** = thiazolidinedione  
**DPP-4** = dipeptidyl peptidase-4  
**GLP-1** = glucagon-like peptide-1  
**L** = Listed; listed on the provincial formulary as a full benefit; available to recipients who meet eligibility requirements under the public drug plan.  
**R** = Restricted; listed on the provincial formulary, but available only to those who meet eligibility criteria or conditions.  
**NL** = Not Listed; not listed on the provincial formulary, and therefore not available through the public drug plan.

<sup>a</sup> Most residents of the three territories receive coverage for their diabetes medication under the NIHB, available to registered Indians, specified Innu or Inuk peoples, or infants under 1 year of age whose parent is an eligible recipient.  
<sup>b</sup> Is a regular benefit for beneficiaries under 18 years.  
<sup>c</sup> Does not cover Humalog Pen 300 µ syringe, Humalog Mix 25 Pen or Humalog Mix 50.  
<sup>d</sup> These diabetes drugs are known as "first generation" drugs and are rarely prescribed. They are still listed on some formularies, but many provinces/territories have delisted them because there are better alternatives available.  
<sup>e</sup> Glumetza not covered.  
<sup>f</sup> Health Canada has noted that Actos is contraindicated in patients with any stage of heart failure, and should also not be taken with metformin and a sulfonylurea.  
<sup>g</sup> Health Canada has placed restrictions on the prescribing of these medications due to cardiovascular-related events.  
<sup>h</sup> Considered on a case-by-case basis under Ontario's Exceptional Drug Access Program  
<sup>i</sup> Special authorization not required when prescribed by an Endocrinologist or Internist.

**Table 10:** Formulary Listings for Medications to Treat Diabetes-Related Complications in Canada, 2010

Complication	Brand Name	Generic Name	BC	AB	SK	MB	ON	QC	NB	NS	PEI	NL	NIHB	NT	YK	NU
Vascular Protection	Altace	Ramipril	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Coversyl	Perindopril	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Micardis	Telmisartan	R	L	L	L	L	L	L	L	L	L	L	L	L	L
	Plavix	Clopidogrel	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Dyslipidemia	Lipitor	Atorvastatin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Lescol	Fluvastatin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Mevacor	Lovastatin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Pravachol	Pravastatin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Crestor	Rosuvastatin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Zocor	Simvastatin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Hypertension	Altace	Ramipril	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Coversyl	Perindopril	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Capoten	Captopril	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Mavik	Trandolapril	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Cozaar	Losartan	R	L	L	L	L	L	L	L	L	L	L	L	L	L
	Avapro	Irbesartan	R	L	L	L	L	L	L	L	L	L	L	L	L	L
	Tenormin	Atenolol	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Isoptin	Verapamil	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Lozide	Indapamide	R	L	L	L	L	L	L	NL	L <sup>a</sup>	L	L	L	L	L
	Acute Coronary Syndromes	ACE inhibitor [not specified]	-	L	L	L	L	L	L	L	L	L	L	L	L	L
-		Carvedilol	R	L	R	L	NL	L	R	NL	R	R	NL	NL	L	R
Lopresor		Metoprolol	L	L	L	L	L	L	L	L	L	L	L	L	L	L
-	Bisoprolol	L	L	L	L	L	L	L	NL	L	L	L	L	L	L	
Diabetes in People with Heart Failure	An ACE inhibitor or an ARB [not specified]	-	L/R	L	L	L	L	L	L	L	L	L	L	L	L	L
	Glucophage/Glumetza	Metformin	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Monacor	Bisoprolol	L	NL	L	L	L	L	L	NL	L	L	L	L	L	L
	Lopresor	Metoprolol	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Chronic Kidney Disease in Diabetes	Thiazide-like diuretics [not specified]	-	L/R	L	L	L	L	L	L	L	L	L	L	L	L	L
	Lasix	Furosemide	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Neuropathy	Neurontin	Gabapentin	L	L	L	L	R	L	L	L	R	L	L	L	L	L
	Lyrica	Pregabalin	NL	NL	R	NL	NL	L	NL	NL	NL	NL	NL	NL	NL	R
	Sustained-release oxycodone [not specified]	-	R	L	L	R	R	L	R	R	R	R	R	R	L	L
Obesity in Diabetes	Xenical	Orlistat	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL
Psychological Aspects of Diabetes	Zoloft	Sertraline	L	L	L	L	L	L	L	L	L	L	L	L	L	L
	Prozac	Fluoxetine	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Smoking Cessation	Nicorette/Thrive/Habitrol/Nicoderm	Nicotine	NL	R <sup>b</sup>	NL	NL	NL	L	NL	NL	L <sup>c</sup>	NL	R	R	NL	NL
	Champix	Varenicline	NL	NL	NL	NL	NL	L	NL	NL	NL	NL	R	R	R	NL
	Zyban	Bupropion	NL	R <sup>b</sup>	NL	NL	NL	L	NL	NL	R	NL	R	R	L	NL

**ACE** = angiotensin enzyme-converting  
**ARB** = angiotensin receptor blocker  
**L** = Listed; listed on the provincial formulary as a full benefit; available to recipients who meet eligibility requirements under the public drug plan.  
**R** = Restricted; listed on the provincial formulary, but available only to those who meet eligibility criteria or conditions.  
**NL** = Not Listed; not listed on the provincial formulary, and therefore not available through the public drug plan.

<sup>a</sup> Listed under seniors, nursing home, family health benefit and social assistance.  
<sup>b</sup> Smoking cessation products in AB are covered only under the AB Employment and Immigration Drug Benefit Supplement coverage to a lifetime of \$500.  
<sup>c</sup> Listed under smoking cessation program.

**Table 11:** Coverage Chart for Diabetes Supplies and Devices, Type 1 Diabetes

If Janet (see page 22) lives in:

COSTS Y= Yes N= No	Blood Glucose Strips	Ketone Strips (Urine Test)	Lancets	Meters	Syringes & Pen Needles	Pump & Pump Supplies	Insulin
<b>ALBERTA</b> AMFH: Eligible for up to \$550/ year. AAHB administered by Employment and Immigration provides 100% coverage for medications and supplies.	Y	Y	Y	Y	Y	Pump and supplies: May be provided through Special Authorization by the HBRC	Y
<b>SASKATCHEWAN</b> Janet may apply under the income-based SSP, with deductibles based on 3.4% of AFI. Co-pay rate is based on income and benefit drug costs.	Y	Y	Y	N	Y	Pump and supplies: <b>NO</b> (pump program limited to age ≤17, provided program eligibility criteria met)	Y
<b>MANITOBA</b> Deductible: 2.71% of Janet's AFI (AFI <\$15,000/year).	YES, to max 4000 strips/year	Y	Y	N	Y	Pump: <b>NO</b> Supplies: Some	Y
<b>ONTARIO</b> TDP: For low income and high drug cost, deductible based on income, \$2 fee per Rx. OMFH: For those using insulin, or with GDM, 75% government co-pay to a maximum \$820/year for strips and lancets.	Y	N	Y (OMFH)	Y (OMFH)	N	Pump: <b>YES</b> provided program eligibility criteria met Supplies: <b>YES</b> (\$2,400/year)	Y
<b>QUEBEC</b> Annual premium: Varies from \$0 to \$600 depending on income. Deductible: \$16/month. Co-insurance: 32% of drug costs to monthly maximum of \$80.25 depending on income.	Y	Y	N	N	Y	Pump and supplies: <b>NO</b>	Y
<b>NEW BRUNSWICK</b> Janet would be eligible for a health card through Social Development, which can be applied for if a person experiences financial hardship due to health-related expenses. Applicants must complete a financial means assessment.	Y	Y	Y	Y	Y	Pump and supplies: <b>NO</b>	Y
<b>NOVA SCOTIA</b> Employment support and income assistance — maximum \$5 per Rx with no annual maximum.	Y	Y	Y	N	Y	Pump and supplies: <b>NO</b>	Y
<b>PRINCE EDWARD ISLAND</b> Register with DCP. Fee varies per Rx.	YES, if registered with DCP, max 100 strips/mo \$11 per Rx	Y	N	N	N	Pump and supplies: <b>NO</b>	Y
<b>NEWFOUNDLAND &amp; LABRADOR</b> Full coverage for drugs and supplies under Foundation Plan — eligibility assessed through Human Resources, Labour and Employment.	Y	Y	Y	Y	Y	Pump and supplies: <b>YES</b> (pump program limited to age ≤25, provided program eligibility criteria met)	Y
<b>NUNAVUT</b> EHBP: No deductible or co-pay.	Y	Y	Y	Y	Y	Pump and supplies: <b>YES</b>	Y
<b>NORTHWEST TERRITORIES</b> 100% coverage for all diabetes drugs and supplies.	YES, with Rx	Y	Y	Y	Y	Pump and supplies: May be supplied with special approval	Y
<b>YUKON</b> \$250 deductible under CDP, then 100% coverage.	Y	Y	Y	Y	Y	Pump and supplies: May be supplied with specialist recommendation and meeting specific criteria	Y
<b>NIHB*</b> No deductible, no co-pay.	Y	Y	Y	Y	Y	Pump and supplies: May be supplied with exceptional status	Y

AAHB = Alberta Adult Health Benefit  
AFI = adjusted family income  
AMFH = Alberta Monitoring for Health  
CDP = Chronic Disease Program  
DCP = Diabetes Control Program

EHBP = Extended Health Benefits Program  
HBRC = Health Benefits Review Committee  
NFI = net family income  
NIHB = Non-Insured Health Benefit  
OMFH = Ontario Monitoring for Health

SSP = Special Support Program  
TDP = Trillium Drug Program  
\*If Janet were eligible for the NIHB (as a resident of Canada and a registered Indian, an Innu member of a specified community or a recognized Inuk).

**Table 12:** Coverage Chart for Diabetes Supplies and Devices, Type 2 Diabetes

If Peter (see page 22) lives in:

COSTS Y= Yes N= No	Blood Glucose Strips	Ketone Strips (Urine Test)	Lancets	Meters	Oral Medications
<b>ALBERTA</b> Alberta Blue Cross family quarterly premium \$354. 70% government co-pay to a max of \$25,000/year. Peter pays 30%, up to \$25 per Rx..	N	N	N	N	Y
<b>SASKATCHEWAN</b> Peter may apply under the income-based SSP, with deductibles based on 3.4% of AFI. Co-pay rate is based on income and benefit drug costs.	Y	Y	Y	N	Y
<b>MANITOBA</b> Deductible: 4.89% of Peter's AFI (AFI >\$47,500/year and ≤\$75,000/year).	YES to a max 4000 strips per year	Y	Y	N	Y
<b>ONTARIO</b> TDP: for high drug costs in relation to income; deductible based on income, \$2 per Rx.	YES (through TDP on select strips)	N	N	N	YES (through TDP on approved oral agents)
<b>QUEBEC</b> Annual premium: varies from \$0 to \$600, depending on income. Deductible: \$16/month Co-insurance: 32% of drug costs to monthly maximum of \$80.25.	Y	Y	N	N	Y
<b>NEW BRUNSWICK</b> Coverage for people with diabetes who depend on insulin. Coverage is available but is dependent on a means test. Peter would not qualify based on his family income.	N	N	N	N	N
<b>NOVA SCOTIA</b> NSFP: deductible based on family size and income, 20% co-payments per Rx up to annual income-based maximum.	Y	Y	Y	N	Y
<b>PRINCE EDWARD ISLAND</b> Register with DCP. Fee varies per Rx.	NO, because coverage for type 2 only for those on insulin and registered with DCP, to a max 100 strips per month, \$11 per Rx	Y	N	N	YES if registered with DCP
<b>NEWFOUNDLAND &amp; LABRADOR</b> Assurance Plan for residents who have high drug costs. Peter pays a maximum 7.5% of family income on drugs with drug card.	Y	Y	Y	N	Y
<b>NUNAVUT</b> EHBP: No deductible and no co-pay.	Y	Y	Y	Y	Y
<b>NORTHWEST TERRITORIES</b> 100% coverage for all diabetes drugs and supplies.	YES, with Rx	Y	Y	Y	YES (Avandia and Actos require preapproval)
<b>YUKON</b> \$250 deductible per person; maximum \$500 per family, then 100% coverage.	Y	Y	Y	Y	Y
<b>NIHB*</b> No deductible, no co-pay.	Y	Y	Y	Y	Y

AFI = adjusted family income  
DCP = Diabetes Control Program  
EHBP = Extended Health Benefits Program  
NFI = net family income

NIHB = Non-Insured Health Benefit  
NSFP = Nova Scotia Family Pharmacare  
SSP = Special Support Program  
TDP = Trillium Drug Program

\*If Peter were eligible for the NIHB (as a resident of Canada and a registered Indian, an Innu member of a specified community or a recognized Inuk).



## SECTION IV ASSESSMENT AND RECOMMENDATIONS

*“I have learned the importance of an active life, not letting diabetes defeat you and overcoming its obstacles.”*

**Anthony M., 24**  
*Tyne Valley, Prince Edward Island*

Decisions made today will determine the course of diabetes in Canada in the coming decades. We can “tip” current trends in a positive direction to begin to slow or reduce the prevalence of diabetes and its economic and social burden.

# More than one in four CANADIANS

LIVES WITH DIABETES OR PREDIABETES.  
THIS WILL RISE TO MORE THAN ONE IN  
THREE BY 2020.

---

Canada is at the “tipping point” in our response to diabetes. More than one in four Canadians lives with diabetes or prediabetes; this will rise to more than one in three by 2020 if current trends continue. Diabetes currently costs our healthcare system and our economy \$11.7 billion and will cost Canadians about \$16 billion annually by 2020. If we continue down our current path, diabetes will not only threaten millions more Canadians, but also the future sustainability of our healthcare system and our economic prosperity.

---

While the greatest burden of diabetes, in terms of both prevalence and cost, is found in the Atlantic region, some provinces with the lowest prevalence, such as AB, have the highest rates of growth in prevalence. No region of Canada is immune to the increasing prevalence and burden of diabetes. More disturbingly, many populations are particularly vulnerable and bear a disproportionate burden from the disease.

## WE NOW RETURN TO THE QUESTIONS WE ASKED AT THE BEGINNING OF THIS REPORT:

**Have the challenges outlined in *Diabetes Report 2005* been met in terms of availability and accessibility of needed medications, devices and supplies across Canada?**

Access to approved diabetes medications, devices and supplies still depends on where you live in Canada. While average out-of-pocket costs for type 1 diabetes have declined, they remain essentially unchanged for type 2 diabetes.

**What are the major challenges in addressing diabetes across jurisdictions and populations in Canada in 2010?**

All jurisdictions across Canada face a tsunami of rising diabetes prevalence and cost. Multiple risk factors across jurisdictions add to the complexity of needed response.

**What policy measures across Canada can serve as examples of best practices?**

Gaps in our knowledge of diabetes best practices across jurisdictions hamper our ability to learn from each other to address diabetes. We need a mechanism to share best practices across jurisdictions to leverage existing initiatives.

**What policy measures need to change to enhance our ability to address diabetes prevalence and costs, especially for complications and out-of-pocket expenses?**

We must review best practices internationally to identify more effective and efficient drug review and approval processes to formulate a renewed common drug review to better serve the health needs of all Canadians, regardless of where they live.

**How has the face of diabetes changed, in terms of whom is most vulnerable?**

While the risk faced by certain populations within Canada has always been greater, diabetes prevalence and complications rates among new immigrants and especially Aboriginal peoples are truly alarming; action must be taken now to promote primary and secondary prevention in these populations. Gender considerations must be incorporated into efforts addressing diabetes within high-risk and marginalized populations given the increased vulnerability of women within these groups to the disease.

Canada has an important choice to make when it comes to diabetes. We can either continue as we have done and achieve similar results, or we can chart a new path that provides hope to Canadians with diabetes and prediabetes, ensuring they have the tools and supports to successfully self-manage and prevent or delay serious complications.

Decisions made today will determine the course of diabetes in Canada in the coming decades. We can “tip” current trends in a positive direction to begin to slow or reduce the prevalence of diabetes and its economic and social burden. Or, if we take no action, and “tip” further toward even greater diabetes prevalence and cost, we can be assured that this disease will pose an even greater burden to future generations of Canadians.

## SOLUTIONS ARE AVAILABLE TO LESSEN THE BURDEN OF DIABETES. FOR EXAMPLE:

- It is estimated that over 50% of type 2 diabetes could be prevented or delayed with healthier eating and increased physical activity.
- Intensive multifactorial interventions can significantly reduce diabetes-related complications and mortality by nearly 60%.
- A modest reduction in diabetes prevalence would have a significant financial impact. A 2% reduction in prevalence would have a 9% reduction in direct healthcare costs.<sup>74</sup>

## Here we assess Canada’s performance on diabetes and OFFER OUR RECOMMENDATIONS FOR ACTION, SEVERAL OF WHICH BUILD ON THOSE NOTED IN THE *DIABETES POLICY REVIEW*.

## A. ASSESSING OUR PERFORMANCE

Canada’s federal, provincial and territorial governments are not performing as well as they must to address the burden of diabetes for those living with the disease, and as a priority public health challenge. For example:

**How we compare to peer countries:** While Canada performs comparably to peer countries with respect to indicators concerning quality of care for diabetes, other OECD countries perform better, suggesting room for improvement. On diabetes prevalence, hospitalizations and mortality, Canada performs poorly compared to peer countries.

**The changing face of diabetes:** Diabetes affects Canadians from all walks of life. Certain populations have a higher prevalence and face greater challenges in managing their condition. Several demographic trends will affect our ability to deal with diabetes. They represent the changing face of diabetes in Canada and new challenges to overcome:

- Diabetes among Aboriginal peoples is an epidemic — prevalence is three times or higher than that of the general population. The burden of diabetes is particularly severe for Aboriginal women.
- Low-income Canadians, particularly women, also bear a greater burden of diabetes.
- 80% of new immigrants are from countries with an increased risk of diabetes.
- The Canadian population is growing, as well as aging. Both of these factors will continue to drive prevalence and the cost of diabetes to the healthcare system.

**Affordability and access to medications, devices and supplies:** In *Diabetes Report 2005*, the greatest challenge for Canadians with diabetes was affordability and access to diabetes medications, devices and supplies. Affordability and access depends on where you live in Canada and available public programs and services. While the average for out-of-pocket costs for type 1 diabetes has declined, it remains essentially unchanged for type 2 diabetes. While some jurisdictions have increased support for medications, devices and supplies, costs continue to be a major barrier for many with diabetes.

**Healthy weights:** Almost two-thirds of Canadian adults and over one-quarter of Canadian children and youth are overweight or obese. If these rates remain constant, diabetes rates will continue to climb for the foreseeable future given that an estimated 80-90% of people with type 2 diabetes are overweight or obese.<sup>75</sup> Efforts to promote healthy weights must also address the stigma incurred by people who are overweight given widespread negative stereotypes about these populations and the resulting impact on weight management, health services utilization, and psychological well-being.<sup>76</sup> This is especially important for people with diabetes, given that it has been estimated that diabetes doubles the risk for depression, which in turn may compromise self-management and thus increase the risk of diabetes-related complications.<sup>77</sup>

**Diabetes education:** Diabetes education is critical to effective self-management. However, standards of diabetes education are not uniform in most jurisdictions, let alone across the country. In addition, there is a lack of access for healthcare professionals to attain certification programs in diabetes education.

While progress has been made since 2005, it is insufficient to meet the coming tsunami of diabetes. Prevalence is increasing at an alarming, unsustainable rate, particularly among high-risk populations, who continue to drive prevalence and cost. To effectively self-manage diabetes and diabetes-related complications, people with diabetes need access to medications, as well as diabetes devices and supplies. While some improvements have been made, access remains inequitable, and out-of-pocket costs unchanged. Out-of-pocket costs are a major factor in lack of compliance with prescribed therapies and increasing diabetes-related complications. Given this, it is not surprising that internationally, Canada is not keeping up with peer countries when it comes to access to needed medications. To address the growing burden of diabetes, we must also address complications, given their cost and diminishment of quality of life. While governments have a central role to play, this challenge requires collaboration by all sectors of society and widespread societal change.

## B. CHARTING A NEW PATH

To move forward, we recommend that federal, provincial and territorial governments use whatever suitable methods are available to them to work in collaboration<sup>78</sup> with stakeholders and partners to do the following:

### 1. REDUCE THE BURDEN OF DIABETES:

Governments must reassess and refocus their strategic approach to diabetes to achieve the greatest gains in addressing the burden of diabetes, including costly and potentially life-threatening complications from the disease:

**Implement a comprehensive pan-Canadian healthy weights strategy:** Maintaining a healthy weight is key to both preventing diabetes and diabetes-related complications. A pan-Canadian healthy weights strategy would increase the percentage of Canadians maintaining a healthy weight and focus on five main goals:

- Identifying and understanding the underlying societal causes of unhealthy weights.
- Setting targets to increase the number of Canadians achieving healthy weights, specifically within high-risk populations.
- Improving access to programs and services for high-risk populations.
- Initiating a public education campaign across all sectors of society.
- Incorporating a multisectoral approach involving governments, non-governmental organizations, the private sector and Canadians as a whole.

This will mean a significant shift in government approach, private sector involvement and, most of all,  
**A WIDESPREAD PERSONAL AND SOCIAL CHANGE.**

**Institute a comprehensive secondary prevention strategy:** A diabetes secondary prevention strategy would exclusively target people who have been diagnosed with diabetes or prediabetes, and provide them with the tools, support and services to effectively self-manage their disease and prevent or delay diabetes-related complications. The strategy should also provide a comprehensive diabetes risk assessment model for screening, and culturally specific educational and nutrition tools to support lifestyle modification counselling.

**Implement a national knowledge dissemination platform for diabetes:** As noted by the *Diabetes Policy Review*, there is a lack of access to information about existing diabetes initiatives, resulting in the duplication of work and lost opportunities for collaboration and learning. We echo the Expert Panel's recommendation for a national platform for knowledge dissemination and exchange to enable jurisdictions and healthcare providers to learn from each other to provide optimal care and support for people with diabetes.

### 2. ENHANCE ACCESS TO QUALITY CARE AND SUPPORT:

Governments must ensure that all people living with diabetes have comparable access to the supports they need to effectively self-manage their disease in collaboration with their healthcare providers.

**Standardize the quality of diabetes education across Canada:** All jurisdictions should recognize the DES/CDA's *Standards for Diabetes Education* as the model for diabetes education in Canada. However, most may not satisfy the requirements of the programming that is available for both individuals and diabetes education centres in a consistent way. To ensure all Canadians receive high-quality diabetes education, certification programs accessible to all healthcare professionals<sup>79</sup> are needed. Further, diabetes education centres should meet and adhere to the DES/CDA's *Standards for Diabetes Education*, undergo regular evaluation and promote their best practices in care and programs across jurisdictions. In addition, access to diabetes education as an important component of self-management should be assured for all people living with diabetes regardless of where they live in Canada.

**Renew the vision for the Canadian drug approval process:** The current drug review process results in too many Canadians not having equitable access to the medications, devices and supplies required for effective self-management. Canada must do better. A review of best practices internationally to identify a more effective and efficient drug review system that better serves the health needs of all Canadians is required. Jurisdictions should also explore a common drug formulary to standardize access.

**Create a Canadian diabetes health charter:** Canada must develop benchmarks to assess both the quality and accessibility of diabetes care, programs and services, medications, education and other supports, including those that would help lessen the stigma of having diabetes. These standards will enable us to assess the performance of all jurisdictions against these benchmarks. A Canadian diabetes charter would provide such benchmarks to assess performance and, ultimately, to enhance supports for people living with diabetes and diabetes outcomes.

**3. STRATEGICALLY INVEST IN DIABETES:**

Governments must enhance and refocus its investments in addressing the burden of diabetes into programs and services that provide the greatest support to those people living with the disease.

**Enhance financial assistance for people with diabetes:** Canadians with diabetes face a significant health and financial burden. Healthcare costs for Canadians with diabetes not covered by either public or private insurance plans can be two to five times higher than for people without diabetes. The average annual out-of-pocket cost for a person with diabetes is just under \$2,300. Governments must enhance existing financial supports, such as the Disability Tax Credit, for people with diabetes.

**Enhance the Canadian Diabetes Strategy and Aboriginal Diabetes Initiative:** Funding for both the CDS and the ADI is insufficient and not keeping pace with the rising number of Canadians with diabetes. While funding for the CDS has remained the same and the ADI increased somewhat over the past decade, rates of people with diabetes have doubled. Funding for each initiative must keep pace with the needs of Canadians with diabetes, and funding for the ADI should be made permanent.

**Increase investment in high-quality research:** 84% of Canadians indicate such research makes an important contribution to the economy. Furthermore, 90% think basic research should be supported by government even if it brings no immediate benefit, and a majority of Canadians are willing to pay more to improve health and research capacity even in uncertain economic times. While a majority of Canadians consider our country to be “middle-of-the-pack” among industrialized nations, 89% believe that Canada should be a global leader in this area.<sup>80</sup> These perceptions are not misplaced. Canada is not keeping pace with its peer countries for investment in diabetes research, given funding reductions to our three granting councils in 2009 and limited reinvestments.<sup>81</sup> Canada needs to increase its commitment to research to build on the accomplishments that previous investments in research have achieved. To reach parity with its OECD peers, the federal government should endeavour to achieve a threshold of 3% of GDP for investment in research by 2012. This increase would benefit research activity in many areas of importance to Canadians and Canada’s productivity and competitiveness.

*“I pay a \$250 annual deductible and when I turn 65, that deductible will be waived. I had no idea that other jurisdictions in Canada do not provide the same support for their residents with diabetes. I am very fortunate.”*

**Brian Sweeney, 64**  
Whitehorse, Yukon

*“I cannot get a comparable job or health benefit plan back home [in Newfoundland and Labrador].”*

**David Bennett, 38**  
Fort McMurray, Alberta



SECTION V THE FACES OF DIABETES IN CANADA

*“I live day to day...my budget is always tight...I have about \$50 a month for groceries so I need to stretch the budget, and if need be, I get assistance from a food bank.”*

**Michael Brierley, 55**  
Peterborough, Ontario

Personal stories of Canadians with diabetes who speak candidly about the successes and the struggles they face.

# The Faces of DIABETES IN CANADA<sup>\*,+</sup>

Diabetes Report 2005 featured the personal stories of Canadians with diabetes who spoke candidly about the successes and the struggles they faced. Since 2005, to our knowledge, three have passed away: Dave Speer from Rosspport, ON; Chris Laird of Vancouver, BC; and Pierre Boisclair of Montreal, QC. Here we feature new profiles of Canadians with diabetes, as well as four people whose profiles have been updated since Diabetes Report 2005. Some are successfully managing their disease, while others face difficulties with diabetes and its complications. **Here are their stories.**<sup>±</sup>



**Barb Marche and  
Liam Marche, 13**

(First profiled in Diabetes Report 2005)  
St. John's, NL

“Working with Liam to manage his type 1 diabetes is still very much a 24-hour/seven-day-a-week job,” says Barb. Liam has experienced no changes in his condition and has an active lifestyle.

Teenagers with diabetes typically feel and want more independence. “The big difference now is that Liam is no longer a child. He is a teenager with a different physiology and routine, so we are learning about diabetes and its management all over again.” Barb relies on social networking and other parents for information and support.

Liam has used an insulin pump since 2003 for more effective control of his blood glucose levels. A provincial program will cover the cost of the pump until he is 25, supporting his family to manage his condition. “The pump is good for me. It makes it easier to be active.”

Barb continues to advocate for children with diabetes in school. “It’s more than just educating teachers. Guidance needs to be offered to staff and parents about roles for each, as well as a better understanding of the needs of the children in school.” She hopes governments will provide more education to teachers and parents about managing diabetes and embrace new technologies. “It took 25 years since insulin pumps have been available before the province covered them; hopefully it will be sooner for other developments like continuous glucose monitoring systems. Governments must be proactive in addressing diabetes to help keep people healthy and avoid the costs of life-threatening complications.”



**Florence Flynn, 68**

(First profiled in Diabetes Report 2005)  
Cornwall, PEI

Florence was diagnosed with type 1 diabetes at age nine. She raised four children and has an active life. Now retired, she travels with her husband Wayne, who has type 2 diabetes.

“I have kept my blood glucose levels stable, and I would be even more diligent if I had to do it all over again. I am at greater risk for complications and my biggest challenge is the neuropathy in my feet combined with arthritis.” Florence often uses a scooter to get around. She maintains daily testing, takes her medications, watches her diet and tries to exercise regularly. “I want to stay active and worry about my feet and being able to walk and exercise.” As retirees, Florence and Wayne pay about \$4,000 annually for extended health coverage, which covers 80% of their costs, so they also have out-of-pocket costs.

Since 2003, Florence has used an insulin pump to give her more effective control of her blood glucose. Her replacement pump, which she got two years ago, tracks information that she downloads for her doctor. “The information provides my doctor with a better report, and the technology relieves me of the stress of keeping records.” Florence hopes that all provincial governments will provide financial support to help people to get a pump.



**Janet Clothier, 58**

Bedford, NS

Janet was diagnosed with type 2 diabetes in 1980 at age 28. Her family has a history of diabetes, including her aging parents, daughter and grandson all living with the disease.

In the past 10 years, she has experienced a lot of difficulty in controlling her diabetes. She now requires medication for high blood pressure and high cholesterol.

Following back surgery, Janet is disabled and can no longer work. Her income is limited to a \$700 a month disability pension, from which she needs to cover her testing strips, room, board and transportation costs. Fortunately, she has access to a private program to cover drug costs of about \$500 a month. “I have a significant financial hardship . . . my personal freedom is limited, and managing my diabetes is difficult. There have been too many times when I have cut back on my daily testing because I cannot afford to buy testing strips. If I didn’t have to test less [due to costs], I’d be happier and better able to manage my condition.” Janet hopes that she will have her own place in a social housing development in her community soon.

*“I worry and don’t know how I will be able to support my needs once I retire.”*

**Aurora Villanueva, 61**  
Toronto, Ontario

\* The ideas in this section are the views of individuals profiled and do not necessarily represent those of the CDA or DQ.  
+ Although representatives from NU and YK are not available for these stories, we continue to investigate case reports for these territories.  
± All profiles conducted for this report are available at [www.diabetes.ca/dpr/](http://www.diabetes.ca/dpr/).



**Angela Acquin, 33**  
Fredericton, NB

Angela grew up with diabetes in her family. Her father and grandfather have type 1 diabetes, while her mother has type 2 diabetes. “I was surprised and angry when I found out that I had type 1 diabetes. I knew it would be life changing and affect all aspects of my life,” says Angela recalling her reaction to her diagnosis in 2000. She notes her difficulties in dealing with her disease: “I struggle with control and discipline to manage my disease. I take my medications, but I will miss testing or I will eat something I shouldn’t. But I understand the risks of complications if I don’t stay with my management program.”

Angela also understands diabetes professionally as a diabetes educator for the St. Mary’s First Nation near Fredericton. She explains to her community the importance of being proactive in dealing with diabetes. The starting point is education and learning about how the disease affects a person’s body and life. “You don’t always see or feel a physical reaction to diabetes. It is important to learn about the full impact of the disease and its complications like heart or kidney disease. You can live a healthy, happy life if you don’t let diabetes control you. That’s what I hope to achieve for myself and the members of my community.”



**Sharon Rothwell, 37**  
Beaconsfield, QC

Sharon is a mother of two young children who works as an IT quality assurance analyst. She learned of her type 1 diabetes almost 30 years ago. When she first found out, Sharon felt that it “wasn’t fair” and that she had been “singled out.” She went to CDA’s camp for youth with diabetes and learned a lot about her disease. The camp, together with her mother, a registered nurse, instilled a sense of responsibility to manage the disease.

Sharon has had access to medications and supplies, and limited out-of-pocket costs because of health benefit plans through her parents and from her employer. “Advances in technology have helped me enormously to achieve better control of my diabetes. I use an insulin pump and a blood glucose monitor. Treatment advances and financial support have given me security to live an active life and meet my responsibilities as a mother and in my career.”

Sharon believes governments need to extend access for insulin pumps for people of all ages with diabetes. She paid for her own pump two years ago, and hopes there will be financial support for her when she needs to replace the pump in three years. “Greater access to new devices and medications will strengthen personal self-management and help reduce the risk of deadly complications while reducing demands on our healthcare system.”

*“For years I knew that smoking was hindering the management of my diabetes and increasing the risks to my health.”*

**Christina Dalkin, 43**  
London, Ontario



**Edgar Dawson, 58**  
Scarborough, ON

Edgar, a husband and father of five, has type 2 diabetes. He recalls his shock when told of his condition 19 years ago. “Up till then, diabetes wasn’t part of our family vocabulary.”

Edgar works hard to manage his diabetes, including trying to eat the right foods, exercise, test his blood glucose, take his medications and visit his care team. He is concerned about managing his disease while dealing with family demands. “We’ve managed pretty well. But, there have been financial challenges that have meant making choices about testing less because of the high cost of test strips so that there was enough money for food.”

Edgar’s out-of-pocket costs for diabetes are covered by the workplace health benefit plan of his spouse, Eva. But once she retires, these costs may increase. Recently Eva was also diagnosed with type 2 diabetes. “I expect to be paying more when we retire.”

As a vice-president of a local CDA chapter of Caribbean immigrants, Edgar was given a 2010 regional volunteer award. He believes provincial drug plans need to change to improve access to new, more effective diabetes medications. “Too often, people with diabetes are forced to take less expensive or effective medications because new, better medications have not been approved for coverage. This is another obstacle to personal management of diabetes and may put individuals at risk for possible complications.”



**Carissa Nikkel, 26**  
(First profiled in Diabetes Report 2005)  
Winnipeg, MB

Diagnosed with type 1 diabetes at age seven, Carissa has pursued her career, an active lifestyle and volunteer work with the CDA. She maintains a careful diet, exercise, daily insulin injections and testing. “I have been doing extremely well over the past five years despite having diabetes, celiac disease and my pancreas removed. I have an ongoing challenge to control my blood glucose levels and occasional blurred vision. I also get infections and scar very easily, but I refuse to let these things get in my way.”

Carissa has a term position teaching in Winnipeg. “The diabetes has been challenging for my students and me in the classroom. They know when I have ‘highs or lows’ and are patient and supportive. While learning about diabetes, it shows them that they too can overcome obstacles and succeed.” Her position ends June 2011, and unless she continues to work, she will lose her private health benefits, which include coverage for medications and supplies. Carissa would like to see if an insulin pump would benefit her. However, it costs about \$7,000, and Manitoba does not offer financial assistance. “The cost of managing diabetes is a big challenge for many, and we are nowhere near effectively supporting people with diabetes. Greater access to new treatments will improve personal management and help to reduce the possibility of complications that harm people and cost our healthcare system.”



**Robert Cote, 45**  
Cowessess, SK

Three years ago, when Robert was diagnosed with type 2 diabetes, he was angry. That changed as he committed to addressing his diabetes. “I changed my diet, exercised and lost 50 pounds. Along with medications, these were important to controlling my diabetes.” But Robert’s lifestyle changes were not enough. This summer he faced diabetes-related complications and other health issues. He now depends on insulin and has had major surgery to remove his spleen and a portion of both his pancreas and intestine.

Despite this, Robert is determined to be healthy. A member of the Cote First Nation, he is anxious to teach again at the high school on the Ochapowace Reserve. He worries about the growing incidence of diabetes among Aboriginal peoples and wants to make students more aware of diabetes and how to deal with it. “With so many in our communities suffering from diabetes, we desperately need to do more to educate about diabetes. We also need to focus on improving eating habits, replacing junk foods with better access to affordable and nutritious foods and educating those with diabetes to strengthen self-management.”

*“The pump will help to strengthen my personal management and at the same time help me to sustain my diligent lifestyle.”*

**Aryssah Stankevitsch, 20**  
Kingston, Ontario



**Vaidy Bala, 70**  
Edmonton, AB

Vaidy is a retired public servant who has had type 2 diabetes since 2000. “I follow a vegan diet by upbringing in India and strict exercise, including yoga and tai chi. Together with taking my medications and regular testing, I have been fortunate to be able to maintain my blood glucose levels and blood pressure in the normal range. I am lucky that I have never had to make choices like testing less or not buying nutritious foods in order to make sure I had money for medications.” He pays regular visits to members of his healthcare team.

Vaidy knows people with diabetes who have had to make those choices and put their health at risk. “There are still too many people with diabetes who cannot afford nutritious foods, or enough testing strips every month. Governments across Canada need to do more so these individuals have access to affordable, nutritious foods, medications, supplies and education services so they can effectively manage their diabetes.” Vaidy has been a CDA volunteer since 2003.



**Richard Luan, 45**  
Vancouver, BC

Richard learned of his type 2 diabetes in 1995 while living in China. “At first, I didn’t pay attention and thought it wasn’t serious. That changed quickly, and I was determined to get control through a proper diet and lots of exercise.” Richard followed through with his planned management and frequent daily testing of his blood glucose. This commitment paid off, and he has not needed to take any medications. However, his blood glucose levels lately have been more difficult to control, and he also has high cholesterol. These changes may in part result from not being able to sustain his diet and exercise due to shift work.

Richard has worked with his diabetes team to determine if he should take medications. In addition, he is trying to increase his exercise. “I’d like to continue without medications, but if I need them, I will take them. Diabetes is a life-long disease, and I know I will need to change how I manage it so that I am doing everything to prevent possible complications.”

*“I watch my health very closely now. I work at being fit and watch what I eat. I’ve lost about 70 lbs since I was diagnosed with type 2 diabetes in 2007.”*

**Diane Angma, 50**  
Arviat, Nunavut



**Jerry Loomis, 68**  
(First profiled in Diabetes Report 2005)  
Norman Wells, NT

Jerry recalls the anger he felt when he learned of his type 2 diabetes in 2000. Nonetheless, he took seriously his doctor’s warning that he could suffer a heart attack or stroke, and took control of his situation. “I went on a diet, exercised and lost 116 pounds in 16 months. I’m careful to eat properly, keep my weight in check and stick to my management program.” Jerry’s condition is well managed, and he still does not require daily medications.

Jerry advocates improving the availability and affordability of nutritious food in the north and worries about the federal government’s decision to end its food mail program that subsidized the cost of mailing food to northern communities. Instead, the subsidy will be given directly to food retailers. “This will work against consumers and especially people with diabetes, as we do not expect retailers to include the full subsidy in pricing. Food will be more expensive, and people with diabetes who can’t afford healthy foods will be at risk.”

Jerry and his wife Monica are considering moving to Edmonton, where he will have better access to medical professionals. He remains active as a diabetes advocate in the north.

## Notes

- <sup>1</sup> CDA. *An Economic Tsunami: The Cost of Diabetes in Canada*, 2009. Available at: <http://www.diabetes.ca/economicreport/>.
- <sup>2</sup> *An Economic Tsunami*, p. 10.
- <sup>3</sup> According to the PHAC, "prevalence may be underestimated by 30% as a result of subclinical, undiagnosed diabetes" ... [it] has been estimated that as many as one third of all cases of diabetes are undiagnosed in Canada." Diabetes Data, NDSS 1997–1998 to 1999–2000 Canadian, provincial and territorial data tables (XLS) and research files (CSV). Accordingly, it "has been estimated that as many as one third of all cases of diabetes are undiagnosed in Canada." Diabetes in Canada: Highlights, 2003.
- <sup>4</sup> *An Economic Tsunami*, p. 7.
- <sup>5</sup> CDA and Diabète Québec, *Diabetes Report 2005: The Serious Face of Diabetes in Canada*, 2005, p. 5.
- <sup>6</sup> Available at: [www.diabetes.ca/get-involved/helping-you/advocacy](http://www.diabetes.ca/get-involved/helping-you/advocacy).
- <sup>7</sup> The survey was developed and revised by Dr. Johnson after consultation with the CDA. All jurisdictions responded and were consulted in advance regarding its intent and content. To compare to *Diabetes Report 2005*, much of the survey indicators were based on this previous survey; revisions focused on policy, programs and resources. Governments also reviewed these findings to ensure accuracy.
- <sup>8</sup> *The Economic Burden of Illness in Canada* (PHAC) was first issued in 1986 and provided estimates of the main direct and indirect costs of illness in Canada. It was updated in 1993 and 1998; all versions are available through the PHAC.
- <sup>9</sup> Statistics Canada. "Canadian Health Measures Survey, 2007 to 2009," *The Daily*, January 13, 2010. According to this survey, approximately 38% of Canadian adults were at a healthy weight. About 1% were underweight, 37% were overweight and 24% were obese.
- <sup>10</sup> Based on data requests through Statistics Canada, CANSIM, Table 105-0501: Health indicator profile, annual estimates, by age group and sex, Canada, provinces, territories, health regions (2007 boundaries) and peer groups, occasional.
- <sup>11</sup> Personal communication with Margot Shields, Statistics Canada, November 18, 2010.
- <sup>12</sup> For example, according to a January 2011 poll by Leger Marketing, 43% of Canadians believe they are at a healthy weight, while 44% believe they are overweight, and only 7% believe they are obese. Available at: <http://www.cbc.ca/health/story/2010/12/31/canada-weighs-in-poll-health-myths.html>.
- <sup>13</sup> Ibid.
- <sup>14</sup> In 2010, the DCM indicated that prevalence will be considerably higher by 2020 than anticipated in 2009. Much of the reason for this increase is an improvement in modelling of all-cause deaths of persons with diabetes. Estimated deaths are lower in this report relative to estimates in *An Economic Tsunami*, which leads to an increase in the number of prevalent cases in the population. The change in approach to modelling deaths arises from the observation that death rates by age/sex have been declining over the last few years, coincident with lower death rates in the general population. The current forecast assumes that the relative mortality rate remains fixed over the forecast period, whereas *An Economic Tsunami* assumed that the diabetes death rate remained fixed while the overall population death rate fell, leading to an increase in the relative mortality rate over the forecast period.
- <sup>15</sup> CDA's previous estimate of six million people with prediabetes (2008) was based on US assumptions. As noted in the Introduction, our methodology to estimate prediabetes prevalence has changed to include estimates from the World Health Organization.
- <sup>16</sup> Prediabetes and diagnosed diabetes rates added together total less than the sum of each of their respective prevalence rates, since total prevalence rates for both are derived from diagnosed and prediabetes prevalence divided by the population. However, the diagnosed diabetes prevalence rate is derived from diagnosed prevalence divided by population, and the prediabetes prevalence rate is derived from prediabetes prevalence divided by the population minus diagnosed prediabetes prevalence.
- <sup>17</sup> All provinces and territories are referred to by their respective abbreviations: BC (British Columbia), AB (Alberta), SK (Saskatchewan), MB (Manitoba), ON (Ontario), QC (Quebec), NB (New Brunswick), NS (Nova Scotia), PEI (Prince Edward Island), NL (Newfoundland and Labrador), YK (Yukon), NT (Northwest Territories) and NU (Nunavut).
- <sup>18</sup> Factors such as family history, diet and physical activity also influence prevalence, but it is beyond the scope of this report to discuss these factors in detail.
- <sup>19</sup> Statistics Canada. *Health Fact Sheet: Diabetes*, 2009, 2009.
- <sup>20</sup> The risk for diabetes for people of South Asian descent was at least triple that of immigrants from Western Europe and North America; the risk among immigrants from Latin America, the Caribbean and sub-Saharan Africa was almost double. Maria Isabella Creatore et al, "Age- and Sex-Related Prevalence of Diabetes Mellitus among Immigrants to Ontario, Canada," *CMAJ* 182 (2010): pp. 781–789.
- <sup>21</sup> CDA. "Canadian Diabetes Association 2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada," *Canadian Journal of Diabetes* 32(2008): p. S191.
- <sup>22</sup> Ibid., p. S191.
- <sup>23</sup> Statistics Canada. "Census: Immigration, Citizenship, Language, Mobility and Migration," *The Daily*, December 4, 2007: p. 2.
- <sup>24</sup> CDA 2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada, p. S191
- <sup>25</sup> For example, University of Calgary researchers have found that low socioeconomic status is associated with higher rates of diabetes and a higher population rate of referral to regional diabetes education centres. Doreen M Rabi et al, "Association of Socio-economic Status with Diabetes Prevalence and Utilization of Diabetes Care Services," *BMC Health Services Research* 6 (2006): p. 124.
- <sup>26</sup> Ibid.
- <sup>27</sup> "Even allowing for the effects of overweight, obesity and ethno-cultural origin, lower-income women were significantly more likely to develop type 2 diabetes than were their counterparts in high-income households. . . . By contrast, among men, any relationship between household income and the onset of diabetes disappeared when other factors were taken into account." Statistics Canada. "Study: The Role of Socio-economic Status in the Incidence of Diabetes." *The Daily*, August 18, 2010.
- <sup>28</sup> Institute for Clinical Evaluative Science. *How Many Canadians Will Be Diagnosed with Diabetes Between 2007 and 2017?* 2010, p. 27.
- <sup>29</sup> CDA 2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada, p. S11.
- <sup>30</sup> The term "Aboriginal" in this report refers to First Nations, Métis and Inuit located in urban, rural and remote locations across Canada both on and off reserves.
- <sup>31</sup> Ibid., p. S187.
- <sup>32</sup> Indeed, rates of diabetes among some First Nations communities were found to be as high as 26% based on data from the late 1990s, so rates for 2010 would be significantly higher. Harris SB, et al, "The Prevalence of NIDDM and Associated Risk Factors in Native Canadians." *Diabetes Care* 20 (1997): pp. 185–187.
- <sup>33</sup> CDA 2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada, p. S187.
- <sup>34</sup> Ibid., p. S187.
- <sup>35</sup> The prevalence of obesity in adults was 22.9% among the general population for 2004, far lower than for First Nations adults, at 37.8%. Peter T. Katzmarzyk, "Obesity and Physical Activity among Aboriginal Canadians," *Obesity* 16 (2008): pp. 184–190.
- <sup>36</sup> Roland Dyck et al, "Epidemiology of Diabetes Mellitus among First Nations and Non-First Nations Adults," *CMAJ*, 182 (2010): pp. 249–256.
- <sup>37</sup> The prevalence of GDM is higher than previously thought, varying from 3.7% in non-First Nations populations to 8–18% in First Nations populations. CDA 2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada, p. S171.
- <sup>38</sup> Ibid., p. S187.
- <sup>39</sup> PHAC, "Diabetes in Aboriginal Communities," *Diabetes in Canada*, 2003, chapter 6.
- <sup>40</sup> Assembly of First Nations, *A First Nations Diabetes Report Card*, 2006, p. 3.
- <sup>41</sup> IDF. *A Call to Action: The Time to Act for Diabetes is Now*, 2010, p. 2.
- <sup>42</sup> Ibid., p. 5.

<sup>43</sup> Ibid., p.4.

<sup>44</sup> Differences in estimated prevalence rates between the DCM and OECD may be attributable to differences in methodology used to calculate these estimates.

<sup>45</sup> Measured in inflation-adjusted 2009 dollars.

<sup>46</sup> This is a decline of \$0.5 billion from the 2009 DCM estimate of \$12.2 billion. Direct costs are higher in the 2010 report than the 2009 report due to the change in prices from 2000 and because there are more prevalent cases (see 2010 and 2020). Indirect costs are higher in 2000 because of the change in prices but lower in 2010 and 2020 because of the reduction in diabetes mortality, (see note 14) which reduces indirect mortality costs. While the reduction in overall estimated costs may seem positive, it is not due to higher direct health system costs.

<sup>47</sup> See note 14.

<sup>48</sup> *Diabetes in Canada*, chapter 6.

<sup>49</sup> Assembly of First Nations. *First Nations Regional Longitudinal Health Survey, 2002-2003*, 2003, p. 71.

<sup>50</sup> "Report Highlights," *Diabetes in Canada*.

<sup>51</sup> P. Jacobs et al, "Excess Costs of Diabetes in the Aboriginal Population of Manitoba, Canada," *Canadian Journal of Public Health*, 91 (2000), pp. 298–301.

<sup>52</sup> Sheri L. Pohar and Jeffrey A. Johnson, "Health Care Utilization and Costs in Saskatchewan's Registered Indian Population with Diabetes," *BMC Health Services Research*, 7 (2007), p. 126.

<sup>53</sup> CDA 2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada, p. S29.

<sup>54</sup> CDA, University of Western Ontario. Diabetes in Canada Evaluation (DICE) Study Backgrounder [no date], p. 3.

<sup>55</sup> Janet may have been eligible for this coverage in 2006, but it was not flagged by Alberta Health & Wellness at that time.

<sup>56</sup> An international comparison of healthcare costs for diabetes is difficult due to limited availability of data, as well as differences in how costs are estimated. The IDF has attempted to compare internationally the per capita cost of diabetes for international comparisons (*Diabetes Atlas*, 4th edition, 2009). Many different approaches have been used to estimate the current and future costs of diabetes in Canada, but to facilitate this international comparison, we refer to the IDF estimates, as they have applied a standard approach.

<sup>57</sup> Avoidable diabetes complications and lower-extremity amputation hospital admissions are defined as hospital admissions of people 15 years and over per 100,000 population in that age group per year. Rates are adjusted for differences in the age and sex of each country's population. Lower-extremity amputations include amputation of the foot and toes, in addition to major amputations (e.g. above the ankle, through the knee and up to hip amputations). Amputation rates are not strongly correlated with diabetes prevalence, and minor amputations (toe and foot) do not necessarily indicate poor quality of care, as they may be carried out to prevent major amputations. Since some minor amputations can be performed in primary care settings, clinical practices between countries might also affect indicator rates. Since definition rely on procedure codes, different classification systems across countries may impact on comparability of data.

<sup>58</sup> See note 57.

<sup>59</sup> Mortality is an important measure of population health. Estimating mortality due to diabetes for international comparisons is challenging because more than a third of countries have no reliable data on mortality and available routine health data often underestimate mortality from diabetes. This is largely because people with diabetes most frequently die of CVD or renal failure or other conditions. Cause-specific mortality statistics are based on the underlying cause of death recorded on the death certificate. In cases of CVD, diabetes is frequently not mentioned at all, or if it is, it is not specified as the underlying cause of death. Therefore, we often rely on models to estimate the mortality due to diabetes, as was done by the IDF for their *Diabetes Atlas*, 4th edition.

<sup>60</sup> Canada has 148.9 deaths per 100,000 population from CVD compared to Finland at 219.8 per 100,000 population. Like the rest of the developed world, overall mortality and CVD-related mortality has declined in Canada. However, people with diabetes face higher risk of comorbidities such as CVD and CVD-related mortality, so a focus on improved prevention and treatment of cardiovascular risk for people with diabetes must be maintained. Japan has a low mortality rate due to CVD, similar to their rate for mortality due to diabetes.

<sup>61</sup> In 2009, of adults living with diabetes, only 32% received all four of the recommended care components (A1C test, urine tested for protein, dilated eye exam, foot exam). Canadian Institute for Health Information (CIHI), *Diabetes Care Gaps and Disparities in Canada*, 2009, pp. 1–2.

<sup>62</sup> The *Report of the Expert Panel for the Diabetes Policy Review* is available in its entirety on the website of the PHAC at: [www.phac-aspc.gc.ca/publicat/2009/dpreprepdgrge/index-eng.php](http://www.phac-aspc.gc.ca/publicat/2009/dpreprepdgrge/index-eng.php).

<sup>63</sup> Best practices are examples of policies and programs that optimize diabetes care, education and support to people with diabetes. The CDA reviewed and confirmed examples of best practices across jurisdictions suggested by ACHORD.

<sup>64</sup> DES refers to CDA's Diabetes Education Section, a multidisciplinary professional section of the Canadian Diabetes Association committed to excellence in diabetes education. The Diabetes Education Standards are a collaborative venture of the DES and CDA.

<sup>65</sup> *First Nations Regional Longitudinal Health Survey, 2002–2003*, p. 72.

<sup>66</sup> CIHI, *Diabetes Care Gaps and Disparities in Canada*, 2009, pp. 1–2.

<sup>67</sup> Ibid.

<sup>68</sup> Statistics Canada, *Canadian Community Health Survey, 2004*, 2004.

<sup>69</sup> The House of Commons Standing Committee on Health has called childhood obesity in Canada an "epidemic," with over a quarter of young Canadians overweight or obese, and even higher rates among First Nations children. *Healthy Weights for Healthy Kids*, 2007, p.1.

<sup>70</sup> Annual Conference of Federal-Provincial-Territorial Ministers of Health, St. John's, NL. "Federal, Provincial and Territorial Health and Healthy Living/Wellness Ministers Agree on Ways to Strengthen the Health of Canadians," press release, September 14, 2010.

<sup>71</sup> For diabetes medications, Canada's positive reimbursement percentage is 42%, compared to 88% internationally. Rx&D. *International Report on Access to Medicines*, 2009, pp. 21, 37.

<sup>72</sup> *An Economic Tsunami*, p. 7.

<sup>73</sup> Diabetes has many complications, including microalbuminuria (protein in the urine), which is linked to kidney failure; foot ulcers, which often precede amputation; gastroparesis (partial paralysis of the stomach); erectile dysfunction; and other conditions. Optimal glycemic control is essential to avoiding complications. See CDA. *Canadian Journal of Diabetes*. *CDA 2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada*, September 2008. S29.

<sup>74</sup> *An Economic Tsunami*, pp. 15-17.

<sup>75</sup> CDA 2008 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada, p. S77.

<sup>76</sup> Rebecca M. Puhl and Chelsea A. Heuer. The Stigma of Obesity: A Review and Update. *Obesity* 17 5 (2009): 941–964.

<sup>77</sup> Richard R. Rubin et al. Recognizing and Treating Depression in Patients with Diabetes. *Current Diabetes Reports* 4 (2004): pp 119-125.

<sup>78</sup> In any collaboration between governments, it is important to respect provincial/territorial responsibility for healthcare delivery.

<sup>79</sup> These include physicians, nurses and nurse practitioners, certified diabetes educators, dietitians, nutritionists, public health officials, and others.

<sup>80</sup> The Association of Faculties of Medicine of Canada, BIOTechCanada, Rx&D, Canadian Healthcare Association, MEDEC, Research Canada: An Alliance for Health Discovery. Canada Speaks! 2010: Canadians Go for Gold in Health and Medical Research - A National Public Opinion Poll in Health and Medical Research, January 2010, p. 5.

<sup>81</sup> Budget 2009 reduced funding to Canada's three granting agencies by \$147.9 million over three years. Budget 2010 increased core funding for these councils by only \$32 million, which does not restore cuts from the previous year.

# The Faces of DIABETES IN CANADA



Deborah Keating, 27  
St. John's,  
Newfoundland  
and Labrador



Christina Dalkin, 43  
London, Ontario



Carissa Nikkel, 26  
Winnipeg, Manitoba



Sheila J., 45  
Langley, British  
Columbia



Barb Marche and  
Liam Marche, 13  
St. John's,  
Newfoundland



Photo  
Unavailable

Aurora Villanueva, 61  
Toronto, Ontario



Courtney Riddoch  
and Bree Riddoch  
(Type 1 diabetes),  
13, Prince Albert,  
Saskatchewan



Richard Luan, 45  
Vancouver, British  
Columbia



Anthony M., 24  
Tyne Valley,  
Prince Edward  
Island



Mike Felske, 33  
Eganville, Ontario



Robert Cote, 45  
Cowessess,  
Saskatchewan



Jennifer Palsson, 28  
Castlegar,  
British Columbia



Florence Flynn, 68  
Cornwall, Prince  
Edward Island



Kevin Kasunich, 33  
Capreol, Ontario



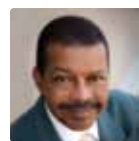
Vaidy Bala, 70  
Edmonton, Alberta



C. Warren Williams,  
67  
Williams Lake,  
British Columbia



Janet Clothier, 58  
Bedford,  
Nova Scotia



Edgar Dawson, 58  
Scarborough,  
Ontario



David Bennett, 38  
Fort McMurray,  
Alberta



Brian Sweeney, 64  
Whitehorse, Yukon



Angela Acquin, 33  
Fredericton,  
New Brunswick



Tammy Kilfoy, 33  
London, Ontario



Doug Macnamara, 52  
Banff, Alberta



Melissa McKinney,  
24  
Whitehorse, Yukon



Sharon Rothwell, 37  
Beaconsfield,  
Quebec



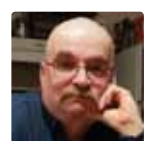
Aryssah  
Stankevitsch, 20  
Kingston, Ontario



Theresa Strawberry, 53  
Rocky Mountain  
House, Alberta



Jerry Loomis, 68  
Norman Wells,  
Northwest Territories



Michael Brierley, 55  
Peterborough,  
Ontario



Randy Wepruk, 50  
Thunder Bay,  
Ontario



R. Bruce Bennett, 77  
Mackenzie,  
British Columbia

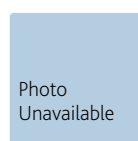


Photo  
Unavailable

Diane Angma, 50  
Arvai, Nunavut

The CDA and DQ wish to thank the following corporate sponsors for their generous unrestricted educational grants to support the development of this report.



#### Photography credits

Angela Acquin  
Vaidy Bala  
R. Bruce Bennett  
David Bennett  
Michael Brierley  
Janet Clothier  
Christina Dalkin  
Edgar Dawson  
Mike Felske  
Florence Flynn

David Smith/KlixPix  
Franson/KlixPix  
Danita McLaren/KlixPix  
Jason Franson/KlixPix  
Wayne Eardley/KlixPix  
Precision Photo  
Strangemore Photo  
Strangemore Photo  
Ron Harshman/KlixPix  
Ella Hutt/KlixPix

Sheila J  
Kevin Kasunich  
Deborah Keating  
Tammy Kilfoy  
Jerry Loomis  
Richard Luan  
Doug Macnamara  
Liam Marche  
Anthony M  
Carissa Nikkel

Dina Goldstein/KlixPix  
Mike Dupont  
Ned Pratt/KlixPix  
Strangemore Photo  
Dave Brosha  
Dina Goldstein/KlixPix  
Jason Molyneux/KlixPix  
Ned Pratt/KlixPix  
Ella Hutt/KlixPix  
Tobias Beharrell

Jennifer Palsson  
Courtney and Bree Riddoch  
Sharon Rothwell  
Aryssah Stankevitsch  
Theresa Strawberry  
C. Warren Williams  
Randy Wepruk

Greg Mayrhofer /  
Vogue Photographic  
Hannah Zitner/KlixPix  
Benoit Aquin/KlixPix  
Strangemore Photo  
Jason Franson/KlixPix  
About Face Photography  
Sandi Krasowski/KlixPix