

# PEI Diabetes Strategy 2014-2017



**Health PEI**  
One Island Health System



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## *Message from the Minister*



Diabetes is a very serious health issue that more than 11,000 Islanders deal with every day. Government recognizes the burden of diabetes and is committed to continue to support investments in diabetes care and management. The PEI Diabetes Strategy is a response to a unanimous vote by all Members of The Legislative Assembly in the spring of 2013.

Over the last number of years we have made great strides in providing improved access to the required medications, equipment and supplies, including subsidization of the cost of: approved diabetes medications such as insulin products, and several oral diabetes medications; diabetes supplies such as urine testing material, and blood glucose test strips for insulin dependent Islanders; as well as the newly funded insulin pump program for children and youth. All of these initiatives help to ensure those with diabetes are able to maintain healthy, active and productive lives.

I would like to commend the work done at Health PEI by the working group to develop the PEI Diabetes Strategy 2014-2017 and look forward to the positive outcomes that will be seen through the implementation of this strategy.

A handwritten signature in black ink that reads "Doug Currie". The signature is written in a cursive, flowing style.

Honourable Doug W. Currie  
Minister of Health and Wellness



## Setting the Stage

On Prince Edward Island the prevalence of diabetes is on the rise, increasing from 3.9 percent of the population in the year 2000 to 5.7 percent in 2009. Islanders living with diabetes are hospitalized more often and their length of hospitalization is 3.5 times longer than those without diabetes.<sup>1</sup> Diabetes is a serious and progressive chronic disease that takes a heavy toll on those living with the disease and their families, often resulting in significant related health care costs.

In 2013 a diabetes working group met to review current services and to identify gaps in care delivery in the province. This work provided a starting point for the development of a comprehensive diabetes strategy for Prince Edward Island. In June 2013, Health PEI published *Stemming the Tide: Health PEI Chronic Disease Prevention and Management Framework 2013-2018* to guide chronic disease care in PEI. Together with this framework and the goals of quality, access and efficiency identified in the Health PEI 2013-2016 Strategic Plan, the PEI Diabetes Strategy 2014-2017 serves as a link between the overall planning and implementation of actions to improve diabetes care for Islanders.

## What is Diabetes?

Diabetes mellitus is a chronic condition that results from the body's inability to produce and / or use insulin sufficiently. The body needs glucose (sugar) as an energy source. Insulin moves the sugar from our blood stream into our cells, where it is used for energy. In the absence of insulin or sufficient amounts of insulin, blood glucose levels rise, which can result in immediate and long term detrimental effects for the individual.

Type 1 diabetes accounts for 5-10 percent of all diabetes cases. It is an auto-immune disorder in which the body's own ability to produce insulin in the pancreas is destroyed. It often occurs in childhood or early adult years and its onset is usually very rapid. Despite recent studies, there is currently no identified way to prevent type 1 diabetes and there are no modifiable risk factors to delay the onset of type 1 diabetes. Best practice guidelines in Canada do not recommend random screening of individuals for the presence of type 1 diabetes. People living with type 1 diabetes must take insulin daily through injections, whether by a needle/pen device or continuous insulin pump therapy. Current estimates would indicate that there are approximately between 600-1200 people on PEI living with type 1 diabetes, representing the estimated 5-10 percent of the total population within the province diagnosed with diabetes.<sup>1</sup>

Type 2 diabetes is characterized by two different metabolic defects: insulin resistance coupled with impaired insulin secretion by the cells of the pancreas.<sup>2</sup> It accounts for 90-95 percent of all cases of diabetes. There are many risk factors for type 2 diabetes. Some risk factors such as increasing age, ethnic background, family history and gender are not modifiable; however, there are several risk factors that can be modified / improved in an effort to reduce or delay the onset of diabetes: excessive weight, limited physical activity, unhealthy diet, smoking, hypertension and elevated lipid levels for example. Screening for type 2 diabetes is through the use of laboratory fasting blood glucose level or glycated hemoglobin level (commonly referred to as an A1C level). In its 2013 guidelines, the Canadian Diabetes Association recommends the screening should be completed every 3 years for individuals aged 40 years and over. Earlier and more frequent screening should be done for those who have identified risk factors.<sup>3</sup>

Prediabetes refers to blood glucose levels that are higher than normal, but not yet high enough to be diagnosed as type 2 diabetes. It is diagnosed using the same laboratory screening recommendations as for type 2 diabetes. Nearly 50 per cent of those with prediabetes will go on to develop type 2 diabetes. It is important to screen for the presence of prediabetes, because research has shown that some long-term complications associated with diabetes – such as heart disease and nerve damage – may begin during prediabetes.<sup>3</sup>

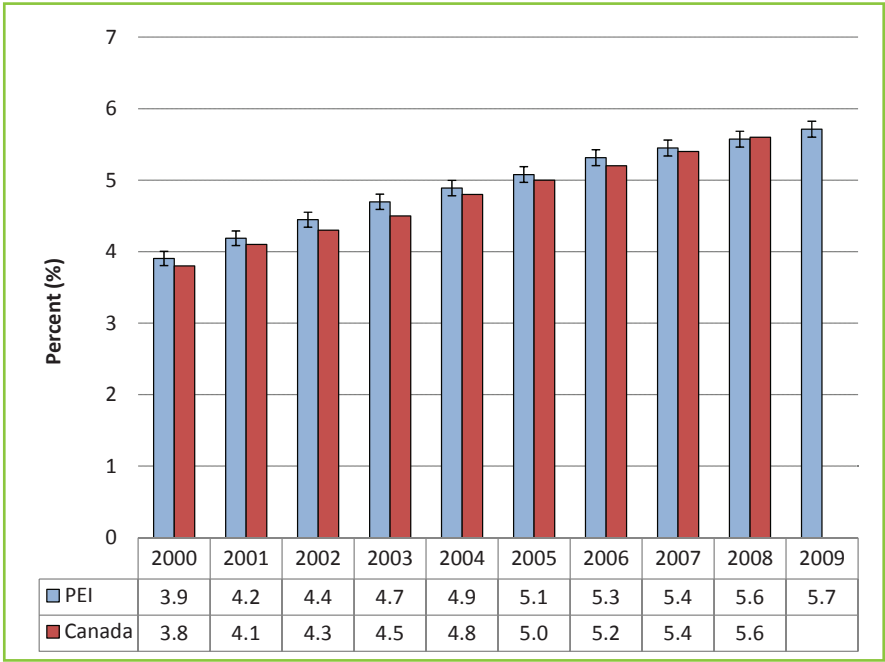
# Diabetes on Prince Edward Island

As previously noted, the province has high rates of overweight / obesity and physical inactivity which lead to the increasing prevalence rates of type 2 diabetes within the population. The chances of developing type 2 diabetes dramatically increase with age and given the aging population in PEI, the prevalence of diabetes is expected to grow in the future years. Current estimates within the province indicate that there are 11,000 people living with type 2 diabetes. <sup>1</sup>

Type 2 diabetes is a disease that develops over time and individuals may have impaired blood glucose levels for several years preceding a diagnosis of type 2 diabetes. This “pre-diabetes” phase is the focus of much research in an effort to identify those individuals who are at a high risk of developing type 2 diabetes in the near future and thus implement strategies to prevent or delay the onset of type 2 diabetes.



The 2013 report titled Prince Edward Island Diabetes Trends 2000-2009 identifies a concerning trend in diabetes rates within the province. The percentage of Islanders, aged one year of age and older, who have been diagnosed with diabetes (prevalence) rose from 3.9 percent in 2000 to 5.7 percent in 2009 an increase of 46 percent in the 10 year period. Diabetes prevalence continues to rise as demonstrated by preliminary data made available for 2010 showing a rate of 5.7 percent.<sup>4</sup> One of the major reasons for the rising prevalence of diabetes within the province is the increasing age of the population. The rates of diabetes prevalence increase with age, in both sexes, with a significant rise in prevalence after the age of 39. In 2009, 25 percent of Islanders aged 80-89 years were living with diabetes. It is also important to note however, that in 2009, 50 percent of all Islanders living with diabetes were of working age (between 25 and 65 years of age).<sup>1</sup>



Age standardized  
Note: 2009 Canadian data are not currently available.

The number of new cases of diabetes (incidence) has remained relatively constant between the years 2000-2009 with an average of 859 new cases per year (i.e. 5.7 new cases per 1,000 Islanders). In 2009, the prevalence of diabetes in males (8.6 percent) aged 20 and over was significantly higher than females (6.6 percent). Essentially, 1 in 12 adult males and 1 in 15 adult females have been diagnosed with diabetes in PEI.<sup>1</sup>



Being overweight or obese is the number one modifiable risk factor for diabetes and PEI has a high proportion of overweight / obese people. In the 2009/10 Canadian Community Health Survey, 36 percent of Islanders were overweight and 22 percent were obese. In addition, 58 percent of Islanders with diabetes reported they were inactive, while 48 percent of Islanders without diabetes were inactive.<sup>5</sup>

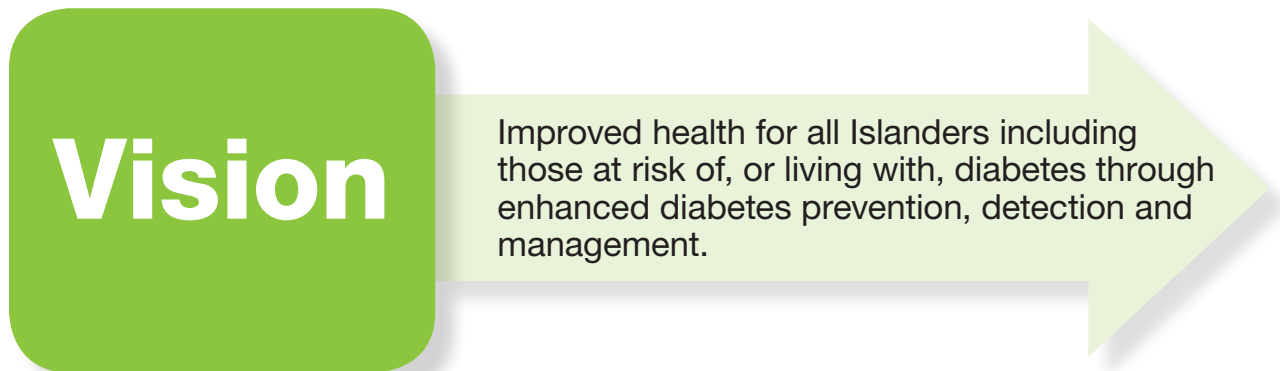
Patients are advised to keep their blood sugar at target levels (A1C of seven percent or less) in order to reduce microvascular, macrovascular and other future serious complications.<sup>3</sup> However, it is estimated that only half of Canadians with type 2 diabetes are meeting the target of seven percent or less.<sup>6</sup> Disease complications have serious implications in terms of costs to the individual and the health care system. Individuals with diabetes use more health care resources than those who do not have diabetes.<sup>1</sup>

Within the province in 2009, cardiovascular disease was the most common health problem that resulted in hospitalizations among Islanders living with diabetes. In addition, adults aged 20 years and over with diabetes were hospitalized more often than those without diabetes including:

- Thirteen times more often with lower limb amputations
- Over four times more often with heart failure
- Three times more often with ischemic heart disease
- Over two and a half times more often with heart attacks
- Over two times more often with chronic kidney disease
- Over two times more often with strokes<sup>1</sup>

## The Vision

The PEI Diabetes Strategy for 2014-2017 focuses on three overarching priority areas identified by key stakeholders: enhanced prevention, detection and management of diabetes. The strategy provides a high level road map for diabetes care on PEI based on stakeholder consultations and consistency with national standards and protocols. The implementation of the strategy aims to address current gaps in services and further develop diabetes programs and supports on PEI.



## Guiding Principles

- Person-centered programs and services
- Evidence-based decision making
- Maximizing the effectiveness of existing resources, given the current fiscal environment and human resources available
- Service provider and client input during the planning and implementing process
- Co-ordination and integration of services using an interdisciplinary approach
- Use of technology for monitoring and performance measurement.

## Achieving the Vision

Twenty-two goals linking the *Stemming the Tide: Health PEI Chronic Disease Prevention and Management Framework 2013-2018*<sup>7</sup> and the Health PEI Strategic Plan 2013-2016<sup>8</sup> have been identified to address the three priority areas:

Prevention	Detection	Management
Overall population health High risk population Population diagnosed with prediabetes	Diabetes Screening as per current Canadian guidelines (for Type 2 diabetes, prediabetes and gestational diabetes)	Primary Care Home-care and Long-term Care Hospital/Acute Care

Figure 2: Priority Areas for the PEI Diabetes Strategy

## Evidence from Research to Support Priority Areas

There has been significant research related to best practice in delivering effective diabetes services including prevention of type 2 diabetes, management of diabetes (all types) and avoidance of long term complications. In terms of examining a targeted approach to diabetes within this provincial plan there are some key studies that can provide direction. A brief overview of the studies and their key findings are provided below.

### Prevention

Within 5 to 10 years, as many as 50 percent of those with prediabetes will develop diabetes if intervention does not occur.<sup>9</sup> Two landmark studies, the Diabetes Prevention Program trial and the Finnish Diabetes Prevention Study both demonstrate the ability to significantly reduce the incidence of type 2 diabetes with lifestyle intervention, in particular weight loss and increased physical activity.<sup>10,11</sup>

Preventing diabetes, in particular by lifestyle modification is not only effective but also a very efficient use of health care resources.<sup>9</sup>

## Detection / Screening

Current guidelines from the Canadian Diabetes Association recommend that screening for type 2 diabetes using fasting plasma glucose and/or A1C should be performed every three years in individuals 40 years of age and over, or at high risk using a risk calculator. More frequent and/or earlier testing should be considered in those at very high risk using a risk calculator or in people with additional risk factors for diabetes. The Canadian Diabetes Risk Assessment Questionnaire (CANRISK) is a statistically valid tool that may be suitable for diabetes risk assessment in the Canadian population.<sup>3</sup>

When considering allocating financial resources efficiently, universal laboratory screening for undiagnosed diabetes does not prove to be cost effective. An alternative approach could focus on screening individuals with additional risk factors, such as hypertension. Such targeted screening is shown to be cost-effective when compared with no screening or universal screening.<sup>12</sup>

## Management

The risks of complications from diabetes can be reduced with improved blood glucose control. The Diabetes Control and Complications Trial (DCCT), (1982-1993) which examined risk reduction in those living with type 1 diabetes, demonstrated that for every one percent reduction in A1C, the risk of microvascular (i.e. eye, kidney, nerve) complications was reduced by 45 percent.<sup>13</sup> In the follow-up study, known as the Epidemiology of Diabetes Interventions and Complications (EDIC) study, these same study participants demonstrated an extended benefit in delaying the progression of complications in the intensive-therapy group who were targeted to reach an A1C less or equal to than seven percent. During the 17 year follow up, EDIC also showed that intensive treatment reduced the risk of any cardiovascular event by 42 percent.<sup>14</sup>

For people living with type 2 diabetes, the landmark United Kingdom Prospective Diabetes Study, (UKPDS) demonstrated that for every one percent reduction in A1C, the risk of microvascular complications was reduced by 37 percent.<sup>15</sup> Long term follow up of UKPDS patients identified a reduction in macrovascular disease, in particular myocardial infarctions (heart attacks) by up to 33 percent and all-cause mortality by up to 27 percent.<sup>3</sup>

The majority (65-80 percent) of people with diabetes will die from heart disease, therefore aggressive management of cardiovascular risk factors is necessary to improve health outcomes, resulting in decreased morbidity and mortality.<sup>3</sup> There are two primary medication classes proven effective in clinical trials to reduce cardiovascular events: statins and ACE inhibitors (angiotensin converting enzyme).<sup>16,17</sup> Statins are a class of medication that reduces cholesterol, specifically low density lipoproteins (LDL). ACE inhibitors are a class of medications that reduce high blood pressure and have the proven ability to slow progression of nephropathy (kidney disease) which is a common, but detrimental effect for people living with diabetes. ACE inhibitors also delay or prevent other microvascular complications such as retinopathy (eye disease) or neuropathy (nerve damage). In its 2013 guidelines, the Canadian Diabetes Association recommends the use of both statin therapy and ACE inhibitors for those living with type 1 or type 2 diabetes and outlines the recommended criteria (age, risk factors, pre-existing conditions) in an effort to improve vascular health.<sup>3</sup>

In examining approaches to diabetes care, a meta-analysis review of randomized controlled trials identified that a structured multifaceted “disease management” intervention program that includes patient education, psychological intervention, dietary education, self-monitoring and telemedicine in addition to pharmacological management has proven effective in improving A1C values.<sup>18,19</sup>

## Alignment with Health PEI Goals

The PEI Diabetes Strategy is aligned with the goals and objectives of the Health PEI Strategic Plan and the Health PEI Chronic Disease Prevention and Management Framework, which is based on the Expanded Chronic Care Model (ECCM). The goals and objectives outlined in this strategy focus on enhanced service quality, increased service access, and increased efficiencies to support Islanders at risk or living with diabetes.

## Overarching Chronic Disease Prevention and Management Goals

- Develop a person-centered, integrated and sustainable approach to the prevention and management of chronic disease.
- Create informed, engaged, and activated patients and communities, and prepared, proactive health teams and community partners.
- Address disparities related to chronic disease prevention and management.<sup>7</sup>

## Alignment to Goals and Objectives of Health PEI Strategic Plan

- Quality: providing safe, quality and person-centered care and services
- Access: providing access to the appropriate care by the right provider in the right setting
- Efficiency: optimized resources and processes to sustain a viable health care system<sup>8</sup>

## Alignment with the Diabetes Charter for Canada

The Diabetes Charter for Canada was launched on April 7, 2014, with the support of the Minister of Health and Wellness for Prince Edward Island. The PEI Diabetes Strategy 2014-2017 is aligned with the guiding principles of the Canadian Diabetes Association in its Charter. This includes addressing the responsibility of government and health care providers to:

- form comprehensive plans for the prevention, diagnosis and treatment of diabetes and its complications
- collect data on diabetes burden
- apply up to date evidence-based clinical practice guidelines
- diagnose people living with diabetes as early as possible
- fair access to diabetes care, education, prescribed medication, devices and supplies
- address the needs of high risk and vulnerable populations<sup>20</sup>

## Moving Forward

To move the strategy forward, a Steering Committee comprised of Health PEI staff and physicians and key stakeholders was formed to oversee the process of planning and implementation of the three overarching priority areas of work and their respective goals based on the current best practice guidelines. As the strategy is implemented, working groups will be established for these priority areas which span the continuum of care, and consultation and engagement with clients and external groups will also take place.

## PEI Diabetes Strategy 2014-2017 Goals

Priority Area	Level of approach	Goals
Diabetes Prevention	Overall Population	Increase public awareness that type 2 diabetes can be prevented or delayed through modification of risk factors
		Promote personal health management for Islanders in an effort to reduce modifiable risk factors
		Build collaborative efforts with Public Health to support children and families
	High Risk Population	Collaborate with Obesity Working Group to build a strategy for obesity management
		Establish wellness clinics for high risk populations to reduce modifiable risk factors
		Implement strategies to increase screening for the presence of prediabetes or type 2 diabetes in the high risk population
	Populations Diagnosed with Prediabetes	Develop targeted programming to influence behavior change in the prediabetes population
		Increase screening for the presence of type 2 diabetes in the prediabetes population
Diabetes Detection	As defined by CDA guidelines	Implement screening for diabetes (type 2, prediabetes, gestational diabetes) as per Canadian Diabetes Association (CDA) guidelines
Diabetes Management	Primary Care	Improved primary diabetes care through embedding national guidelines into clinical practice
		Work with the Provincial Drugs and Therapeutics Committee to identify and prioritize expansion of coverage for diabetes medications and supplies
		Increase screening and awareness of related mental health / social issues
		Reduce risk of short and long term diabetes related complications through client education, early and appropriate screening and intervention.
		Focus on improved data collection through use of appropriate information technology
		Focus strategies to support children, youth and young adults with type 1 diabetes
		Improve gestational care supports for women who have diabetes during pregnancy
		Ensure successful implementation of the insulin pump program, including system supports through the life span for individuals with insulin pumps
		Ensure implementation of best practice guidelines for the senior population living with diabetes to incorporate individualized targets
	Home-care / Long-term Care	Promote improved diabetes care for those receiving services through the Provincial Home Care Program with implementation of clinical best practice guidelines
		Build safer long term and community care environments for those living with diabetes
	Hospital / Acute Care	Build strategies for patient education / discharge planning while in hospital
		Embed best practice guidelines within clinical practice in hospital settings across Health PEI

## Performance Measures

An initial set of measures has been identified to monitor the effectiveness of the PEI Diabetes Strategy 2014-2017. As the working groups are formed and their work plans established, detailed indicators and measures will be developed:

Prevention	Detection and Management	Diabetes Management Specialty Services
<p>Audits of material available to the public in physician offices and Health PEI facilities including health centers, hospital emergency departments, and walk in clinics.</p> <p>Record of educational sessions</p> <p>Surveys to the public re: level of awareness of diabetes prevention</p> <p>Visits to information on Health PEI website regarding diabetes prevention</p>	<p>Wait times for initial appointment upon receipt of new referrals to the Provincial Diabetes Program</p> <p>Wait times for re-referrals</p> <p>Number of referrals to the Provincial Diabetes Program</p> <p>Continuing professional education opportunities for staff</p> <p>Percentage of persons who have received appropriate diabetes monitoring including: A1C, LDL, blood pressure, foot assessment and eye care according to CDA guidelines.</p>	<p>Number of children / youth who are receiving coverage through the Insulin Pump Program</p> <p>Rate of hospitalization for gestational diabetes management/insulin starts during pregnancy</p> <p>Adherence to diabetes care guidelines for hospitalized patients (chart audits)</p>

Figure 3: Initial Approach Indicators/Measurement of Outcomes

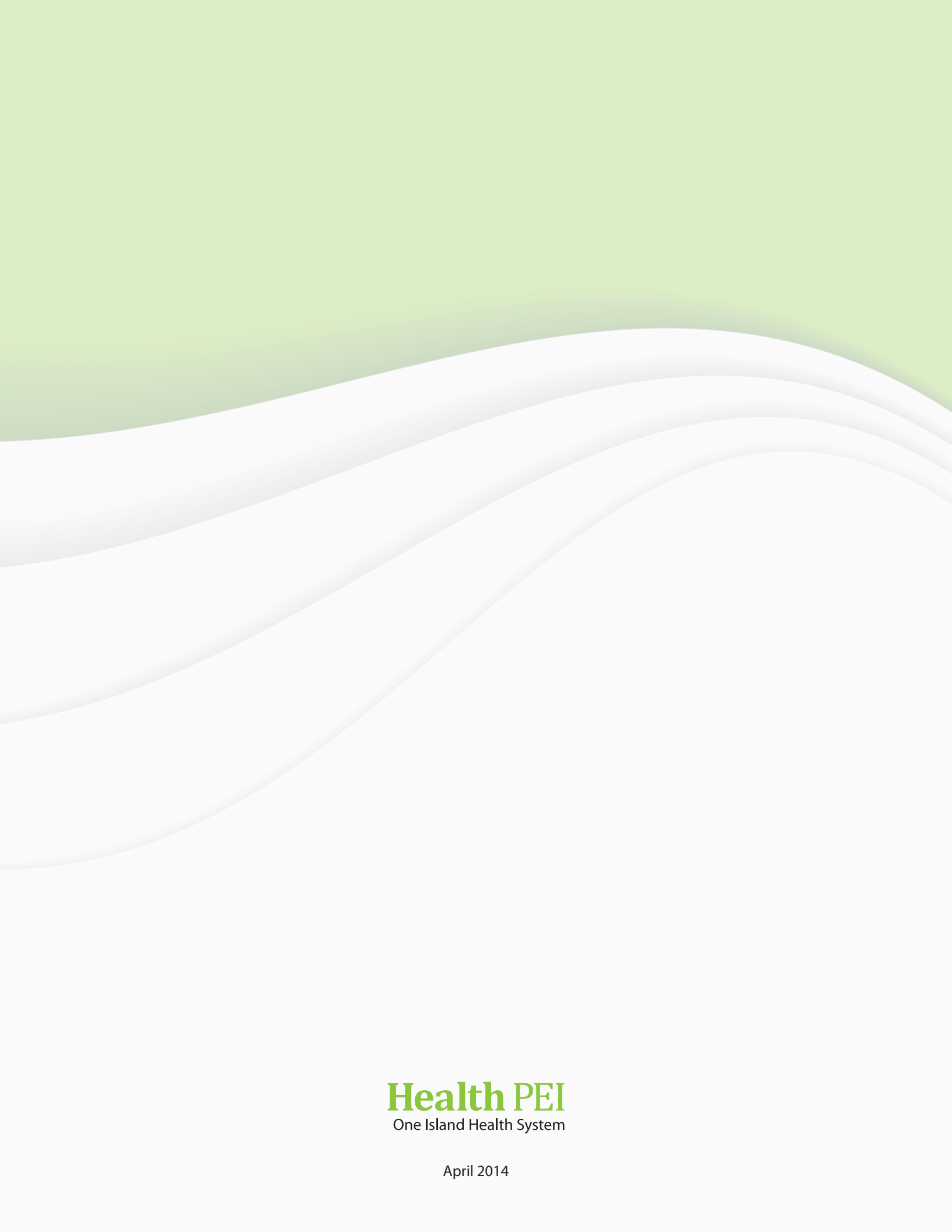
## Conclusion

Current diabetes care and delivery within the province is delivered by health professionals encompassing primary health care, hospital based services, home care and community/long term care in collaboration with community partners and those living with diabetes. Future efforts will continue to build on the work of many Islanders to improve health outcomes, enhance integration of services and create efficiencies in diabetes care across the province. The PEI Diabetes Strategy 2014-2017 provides a road map for diabetes care including the development of a vision and framework that are aligned with the organization's chronic disease framework and strategic direction.

## References

1. Chief Public Health Office. Department of Health and Wellness. *Prince Edward Island Diabetes Trends 2000-2009*. Available at [www.gov.pe.ca/health](http://www.gov.pe.ca/health), July 2013.
2. Ahmad L, and Crandall J; Type 2 diabetes prevention: a review. *Clinical Diabetes* 2010; 28(2):53-59
3. Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. *Canadian Diabetes Association 2013 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada*. Can J Diabetes 2013;37 (suppl 1) S1-S212.
4. Data provided by the Epidemiology Unit, Chief Public Health Office, Department of Health and Wellness, April, 2014.
5. Chief Public Health Office, Department of Health and Wellness, Government of PEI. *Promote, Prevent, Protect-PEI Chief Public Health Officer's Report and Health Trends 2012*. (2012) Accessed November 2013 at [http://www.gov.pe.ca/photos/original/hw\\_cphoar2012.pdf](http://www.gov.pe.ca/photos/original/hw_cphoar2012.pdf)
6. Harris S, Stewart M, Brown J et al; Type 2 diabetes in family practice: room for improvement. *Canadian Family Physician* 2003; 49: 778-785
7. Health PEI (2013). *Stemming the Tide: Health PEI Chronic Disease Prevention and Management Framework 2013-2018*, Charlottetown: Health PEI
8. Health PEI (2013) *Strategic Plan 2013-2016*, Charlottetown: Health PEI.
9. Knowler WC, Barrett-Connor E, Fowler SE, Hamman RF, Lachin JM, Walker EA, Nathan DM; Diabetes Prevention Program Research Group. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl J Med* 2002; 346: 393-403.
10. National Institute of Diabetes and Digestive and Kidney Diseases. *Diabetes Prevention Program*. Retrieved November 2013 from <http://diabetes.niddk.nih.gov/dm/pubs/preventionprogram/>
11. Lindstrom J, Ilanne-Parikka P, Peltonen M et al; Sustained reduction in the incidence of type 2 diabetes by lifestyle intervention: follow up of the Finnish Diabetes Prevention Study. *Lancet* 368:1673-1679, 2006.
12. Li R, Zhang P, Barker, L et al; Cost-effectiveness of intervention to prevent and control diabetes mellitus: a systematic review. *Diabetes Care*. 2010;33(8) 1872-1894.
13. The Diabetes Control and Complications Trial Research Group. The effect of intensive treatment of diabetes on the development and progression of long- term complications in insulin-dependent diabetes mellitus. *New Engl J Med*. 1993;329: 977-986.
14. Nathan DM, Cleary PA, Backlund JY,et al; Diabetes Control and Complications Trial/ Epidemiology of Diabetes Interventions and Complications (DCCT/ EDIC) Study Research Group. Intensive diabetes treatment and cardiovascular disease in patient with type 1 diabetes. *N Engl J Med*. 2005;353:2643-2653.
15. UK Prospective Diabetes Study (UKPDS) Group. Intensive blood glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in type 2 diabetes (UKPDS 33). *Lancet*. 1998;352:837-853.
16. Collins R, Armitage J, Parish S, et al. MRC/BHF Heart Protection Study of cholesterol-lowering with simvastatin in 5963 people with diabetes: a randomised placebo controlled trial: Heart Protection Study Collaborative Group. *Lancet* 2003;361:2005-16.
17. Colhoun HM, Betteridge DJ, Durrington PN, et al. Primary prevention of cardiovascular disease with atorvastatin in type 2 diabetes in the Collaborative Atorvastatin Diabetes Study (CARDS): multicentre randomised placebo-controlled trial. *Lancet*. 2004;364: 685-96
18. Care Continuum Alliance (2013) *Care Continuum Alliance (CCA) Definition of Disease Management*. Retrieved November, 2013 at [http://www.carecontinuumalliance.org/dm\\_definition.asp](http://www.carecontinuumalliance.org/dm_definition.asp)
19. Pimouguet C, LeGoff M, Thiebaut R et al; Effectiveness of disease-management programs for improving diabetes care: a meta-analysis. *Canadian Medical Association Journal*. 2011; 183 (2):E115-E127.
20. Canadian Diabetes Association *Diabetes Charter for Canada*. Available at [www.mydiabetescharter.ca](http://www.mydiabetescharter.ca) April, 2014.





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