

Key Findings & Policy Options

In this section we have taken two different approaches to make the Atlas more useful and accessible to you the reader. First, the editorial team has identified what we see to be important Atlas findings coupled with our spin on potential policy options. These are not necessarily the “final word” on what policy implications can be taken from the extensive research findings of the Atlas, yet they are a beginning, and we will look forward to working with policy makers to develop others to help deal with the serious and growing health problem of DM in Ontario.

While our insiders’ perspective on the Atlas findings puts us in a unique position to identify the key findings and their policy implications, we felt it might also be helpful to our readers to hear excerpts of outsiders’ perspectives from a range of relevant stakeholders. Accordingly, we asked a number of leaders in the diabetes field to discuss the potential implications of the Atlas, providing critical perspectives on key findings and their implications particularly as relevant for the stakeholder groups they represented.

Finding: The incidence and prevalence of diabetes is increasing in the population as a whole, with a particularly high prevalence in the elderly.

Policy Option: Institute an intensive public education and lifestyle modification program to decrease the risk factors for developing diabetes, most importantly obesity and physical inactivity. This program should be designed with awareness of the cultural, educational and economic factors that are unique to various segments of the Ontario population.

Finding: Smoking, obesity, physical inactivity, high blood pressure, and high cholesterol markedly increase the chance that persons with diabetes will develop vascular complications such as heart attacks and strokes. These risk factors are common among Ontarians with diabetes.

Policy Option: Aggressively implement strategies to promote lifestyle modification (smoking cessation, increased physical activity and a healthy diet) and appropriate medication use (to control blood sugar, blood pressure and cholesterol).

Finding: In persons with diabetes, the rate of admissions for high or low blood sugar has decreased during the last 5 years, as have the rates of myocardial infarction, heart failure, stroke and lower extremity amputation.

Interpretation: This suggests that health professionals and patients recognize the importance of good management of blood sugar levels and other risk factors (e.g. high blood pressure) in persons with diabetes, and they have started to manage them more aggressively.

Finding: Despite the foregoing, persons with diabetes continue to have a markedly increased chance of having a heart attack or stroke, requiring dialysis, or undergoing an amputation, compared to people without diabetes. The likelihood of developing these complications can be considerably decreased with more aggressive use of medications to manage blood sugar, high blood pressure, high cholesterol, and protein in the urine. Although the frequency of such medication use is increasing in Ontario, it still lags behind recommended practice.

Policy Option 1: Aggressively disseminate guidelines about ideal medication use in persons with diabetes to physicians (especially family physicians) and patients.

Policy Option 2: Establish risk factor modification clinics throughout the province aimed at persons with diabetes. These need not be run by specialists, but could be coordinated by appropriately trained teams of nurse practitioners, family physicians, and general internists.

Policy Option 3: Review cost barriers (e.g. co-payments) to the use of drugs and testing agents aimed at blood sugar control and risk factor modification, given that persons with diabetes are often on many of these medications at the same time.

Finding: About 75% of persons with diabetes are managed by their family physician, and do not see a diabetes specialist. As the prevalence of diabetes increases, it is likely that an even greater portion of persons with diabetes will be managed without involvement of medical specialists.

Policy Option: Tailor educational efforts and guideline dissemination to the needs of busy family practitioners. Risk factor modification clinics (see above) should be locally available, as should educators and other health professionals involved in diabetes care.

Finding: Continuity of care with a family physician is generally good in Ontario. Those individuals who do not see their physician regularly are more likely to be admitted with both acute and chronic complications of diabetes.

Policy Option 1: Ensure that there are sufficient family physicians and appropriately trained nurse practitioners in Ontario to provide good continuity of care to persons with diabetes.

Policy Option 2: Ensure that alternative physician reimbursement schemes adequately account for the intensity of service utilization required by persons with diabetes.

Finding: Individuals with lower incomes are, in general, more likely to suffer complications from their diabetes than those with higher incomes, and are less likely to regularly see a physician.

Policy Option: Target areas of lower socioeconomic status for intensive educational efforts, making sure that these efforts are culturally and literacy-level appropriate. Ensure that individuals of lower income levels are able to afford the necessary medications and blood sugar monitoring devices, and have access to the appropriate health professionals.

Finding: Despite excellent evidence that eye screening for diabetic eye disease leads to a decrease in blindness, the frequency of eye examination in Ontario is much lower than suggested by guidelines. Indeed, there has recently been a slight decrease in the proportion of persons with diabetes undergoing screening eye examinations, possibly related to a change in the OHIP fee schedule related to eye examinations.

Policy Option 1: Increase awareness of the need for regular eye examinations by disseminating guidelines to both patients and physicians.

Policy Option 2: Re-evaluate the OHIP fee schedule to see if it has had any unintended consequences.

Policy Option 3: Ensure that there are an adequate number of eye care professionals highly trained to examine the eyes of persons with diabetes. Consider greater use of mobile units that take high quality retinal photographs, with subsequent central reading in areas where access to eye care professionals is reduced.

Finding: Persons with diabetes living in rural or remote communities have higher rates of hospitalization for acute and chronic complications of diabetes.

Policy Option: Ensure an adequate supply of family physicians and access to diabetes services in all regions of the province.

Finding: Pregnant women with diabetes are more likely to have a number of complications of pregnancy such as pre-eclampsia, high blood pressure, obstructed birth and stillbirth. The frequency of these complications appears to be higher in Ontario than in some other countries. Although pregnant women with diabetes make more use of specialist prenatal and obstetrical care than pregnant women without diabetes, an important proportion do not appear to do so.

Policy Option: Determine why some pregnant women with diabetes are not receiving specialist prenatal and obstetrical care, and ensure that such care is made available to all of them.

Finding: Despite a decrease in the rate of complications associated with diabetes (e.g. heart attacks, end stage kidney disease) between 1995 and 1999, the actual number of persons with such complications is increasing (because of the increasing prevalence of diabetes). This trend is likely to continue for the foreseeable future, and will place increasing pressures upon the hospital sector.

Policy Option: Regularly monitor the trend in the number of such complications over time, and use this information to plan for services in the future, such as dialysis and specialized cardiac procedures.

Finding: There is no reliable information about the availability of nurse practitioners or diabetes clinics caring for persons with diabetes in Ontario.

Policy Option: Information about the number, location, workload and outcomes associated with these health care professionals needs to be collected on a regular basis. These groups should be networked with each other, to facilitate sharing of best practices.

Finding: Aboriginal people have a high prevalence of diabetes and its associated complications.

Policy Option 1: Target culturally appropriate preventive and therapeutic interventions to the aboriginal communities, making sure that they have access to the full range of services needed.

Policy Option 2: Work with First Nations Health Directors to evaluate the impact of diabetes in the full aboriginal population in Ontario and to develop programs of ongoing surveillance.



**Diane T. Finegood, PhD,
Scientific Director,
Canadian Institutes
of Health Research
commented:**

“ The ICES Practice Atlas *“Diabetes in Ontario”* is an extremely important resource for a diverse range of stakeholders including policymakers, researchers and people afflicted with diabetes. There is a wealth of evidence in this document on which policymakers can base key decisions that will not only affect the health of Canadians, but will also help us to sustain our health care system in the face of an increasing incidence and prevalence of diabetes.

This document is an important resource for researchers and research funding agencies such as the Canadian Institutes of Health Research, as it highlights areas where more research will be essential to effectively tackle the problems identified. The authors clearly demonstrate that factors such as smoking, obesity, physical inactivity, high blood pressure and high cholesterol markedly increase the chance that persons with diabetes will develop vascular complications. They suggest that this points to the need to aggressively implement strategies to promote lifestyle modification including a healthy diet and increased physical activity. Yet we know little about what strategies are effective in modifying behaviour. This lack of information suggests that focusing research funding and effort in this area will be essential to reducing morbidity associated with vascular complications. Many other research questions arise from the evidence provided in the atlas. Questions such as: why so many pregnant women with diabetes do not make use of specialist prenatal and obstetrical care when they are at greater risk of complications of pregnancy, or how can we effectively overcome the increased rates of hospitalization for acute and chronic complications of diabetes in people living in remote and rural communities, will help to focus researchers on the most important problems.

In summary, while the ICES Practice Atlas provides an excellent foundation of information about diabetes in Ontario, it also serves to highlight the many important gaps that need to be filled. Filling these gaps will take the cooperation and collaboration of governments, nongovernmental organizations and health researchers from across Canada.

”

Alwyn Moyer, Chair Diabetes Nursing Interest Group (DNIG), Registered Nurses Association of Ontario (RNAO) provided:



The atlas graphically describes the burden of diabetes in the province and its impact on individuals, families, communities and the health care system. There is consistent effort to identify the determinants of health and opportunities for health promotion and prevention.

DM makes a significant contribution to the burden of illness in Ontario. There are inequities in the distribution of this burden across the province, which should be addressed. Persons living in the Northern Ontario, low income neighbourhoods, Aboriginal people and people of South East Asian origin bear a disproportionate amount of the burden compared with other Ontarians.

Team approach to diabetes care

The CDA practice guidelines recommend an interdisciplinary team approach to diabetes management based on Grade D consensus (Canadian Diabetes Association, 1998). The family physician is identified as the most appropriate team leader with diabetes educators—nurses and dietitians—as part of the core team. Unfortunately, only physician care, which can be measured using administrative data, is addressed in the ICES report. We lack information on the distribution of specialized nursing resources and on nurses' contribution to care. The nursing profession can endorse the need to determine the contribution of non-physician specialists to quality care of persons with DM identified in the report.

A significant proportion of people with diabetes fail to access diabetes health services. The report found more than one in twenty persons with DM did not see any physician for diabetes care. People who were older, male, or poor were all less likely to see a DM specialist. Given the increased prevalence of diabetes, especially in older adults, and the availability of registered nurses, the role of the registered nurse in diabetes care should be explored. Registered nurses are the most diversified workers in health care and have been shown to be those most linked to holistic and non-fragmented client care.



Kue Young, MD DPhil, Professor, Department of Public Health Sciences, University of Toronto wrote:



The ICES Diabetes Atlas continues the high standards of previous practice atlases – authoritative, informative, and visually appealing. It will be of use to administrators, clinicians, epidemiologists, and planners. It will be a great teaching tool for graduate students and research trainees. The text is succinct, while the maps and graphs bring to life the rich compendium of data. The technical appendices are particularly helpful, as they provide much needed background to evaluate the quality of the data and the rigour of the analyses.

In terms of a comparison publication, Diabetes in America, published in the US by the National Institutes of Health, immediately comes to mind. Indeed, the publication of Diabetes in Ontario brings up the somewhat embarrassing question, “why isn’t there a Diabetes in Canada Atlas?” It is perhaps a sad commentary on the state of diabetes surveillance in this country that only a handful of provinces are capable of generating the type of data that this atlas has produced. ICES has therefore taken the lead in demonstrating what can be done with administrative data. One certainly hopes that the much heralded National Diabetes Surveillance System will come to fruition. Until such time, one simply has to assume what’s true for Ontarians must be true for Canadians! At least this is a major step forward from the practice of taking US data and dividing everything by 10.



**Michael M. Engelgau, MD, MS, Chief, Epidemiology and Statistics Branch
Division of Diabetes Translation Centers for Disease Control and
Prevention Atlanta, Georgia USA
observed:**

“ *Diabetes in Ontario* is a comprehensive atlas of the diabetic burden in Ontario, Canada. Descriptions of incidence and prevalence show only one dimension of the diabetes burden. However, the 14 chapters in this atlas show several dimensions: data on acute complications such as hypoglycemia and hyperglycemia, and chronic complications such as heart disease, stroke, eye disease, kidney disease, and lower extremity disease give a much broader picture of the true diabetes burden. The atlas also examines some of the major challenges to health care delivery and the excess use of medications and medical care services. The authors also discuss special populations who experience an excess burden of diabetes. These included the indigenous First Nations People, children, and women with diabetes during pregnancy. Altogether, a detailed picture of the effect of diabetes on the population of Ontario emerges.

Bad news

The prevalence of diabetes increased from 1995 to 1999 by about 31% while the incidence remained unchanged. From the health care delivery and health policy perspectives, the absolute number of affected persons is the “true” burden that needs attention. This number is more useful for planning. Prevalence rates are of limited value in that they do not reflect the size of the affected population. As noted on a number of occasions in the atlas, even if rates decline or remain stable, as the general population and number of persons with diabetes increases, the absolute number of cases or events could continue to increase. Hence, unadjusted rates, and absolute numbers of the people affected give a picture of true burden being experienced.

Good news

In the midst of the bad news, there is some good news. Hospital admissions for both elevated and low blood sugar and emergency room visits declined during the study period. In addition, amputation rates have declined. Taking advantage of preventive care to address these high-risk situations in a timely fashion appears to be yielding short-term benefits.

Areas for Improvement

The atlas shows that most people with diabetes receive their care from family physicians. This is likely to continue and may be an opportunity. Although specialty care may seem to be a desired goal, the growing number of people with diabetes and limited resources for any care make specialty care unlikely for most people in the future. The opportunity is 1) to equip family practitioners with the skills needed to provide quality diabetes care and 2) to establish a health care system that can provide the services needed to reduce the risk of bad outcomes. This opportunity is highlighted by data on eye care. Only half of the people with diabetes are getting an annual eye examination. This need not be the case. Health care providers, the health care system, and empowered patients can improve this trend.

Summary

Diabetes in Ontario provides a deep look into the multiple dimensions of diabetes and the burden it imposes in Ontario. Although some trends are troubling, there are also a number of encouraging trends. Many highly effective interventions now exist and the opportunity to slow or stop this epidemic is at hand and should be pursued.

”

The editors respond:



The goal of the ICES Atlas series is to examine patterns of health care delivery (the “is”) in the context of the best evidence regarding effective practice (the “ought”). In defining the current patterns of diabetes care in the province, we have found heartening signs of evidence-based care leading to improving outcomes. At the same time, we have pinpointed significant gaps between the “is” and the “ought” in the delivery of diabetes care in the province.

We are grateful to our external commentators, for their affirmation of the value of the data we have assembled and their insights regarding the importance of various aspects of the work. Finegood sees a role for the Atlas in asking questions about diabetes—as a tool for scientists advancing the diabetes research agenda in the country. Others note the clear mandate it provides for intervention on the clinical front to address gaps between current practice and best evidence. Young notes that the Atlas represents both the promise of what a national diabetes surveillance program could provide, and a challenge to those developing such a program.

While acknowledging the rich data resource that the Atlas represents, the commentators defined gaps between the data presented and the information needs of the stakeholder audiences they represent. Engelgau reminds us that while we have taken a standard epidemiologic approach in reporting rates of disease, it is the numbers of people affected that provides the true metric of disease burden. The good news of the falling complication rates we have reported obscures the alarming trend of growing numbers of persons experiencing those complications and the consequent demand on resources. Our inability to examine the vital care delivered by non-physician providers was noted by Moyer. She argues that nurses in particular have skill sets which will be needed in the provision of preventive care to a growing diabetes population.

We close by inviting the readers of this atlas—the diabetes community most broadly defined—to work with us to continue the task of interpreting and disseminating these findings. Use these data to answer questions but, just as importantly, to stimulate more questions. We invite you to respond to us with comments, suggestions and opportunities for collaboration as we move this work forward.



The editors

Janet E Hux • Gillian L Booth • Pamela M Slaughter • Andreas Laupacis