

Diabetes in Toronto

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To:	Board of Health
From:	Medical Officer of Health
Wards:	All
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SUMMARY

Diabetes is a major public health challenge and is one of the fastest growing diseases in Canada and around the world. Over two million Canadians are currently living with diabetes and that number is expected to reach three million by 2010¹. People from disadvantaged communities are disproportionately affected. Evidence shows that people living in poverty have higher levels of obesity, physical inactivity, poor nutrition and higher rates of smoking. All of these factors are linked to the risk of diabetes and other chronic diseases.

This report describes the current status of diabetes, its risk factors and those most affected in Toronto. It highlights the integrated approach of Toronto Public Health (TPH) programs and services in addressing these risk factors in order to prevent diabetes and other chronic diseases. Toronto Public Health delivers Chronic Disease Prevention programs through a variety of settings including schools, workplaces and the community, often in partnership with community organizations, City divisions and other orders of government. These programs are aimed at influencing the risk factors for type 2 diabetes and other chronic diseases.

Toronto Public Health has been actively participating in Provincial discussions to address prevention of childhood obesity and Type 2 diabetes in relation to recent provincial funding announcements.

Financial Impact

There are no financial implications arising from this report.

DECISION HISTORY

At its December 4, 2007 meeting the Board of Health requested that the Medical Officer of Health report on:

- the current status of diabetes and its risk factors in Toronto
- current public health programs and services which address these risk factors
- further opportunities for prevention of diabetes.

ISSUE BACKGROUND

There are two types of diabetes. In Type 1 diabetes the body is unable to produce enough of a hormone called insulin that moves glucose, a simple sugar, from the bloodstream into the body's cells. This is important because high blood glucose levels are toxic and cells that do not get glucose lack the fuel they need. Type 1 diabetes most commonly develops in childhood or in young adulthood and accounts for about 10% of all diabetics. Type 2 diabetes occurs when insulin is being produced but the body is unable to use it effectively. This type of diabetes accounts for about 90% of cases and tends to develop in middle age or older adults and is often linked to being overweight or physically inactive. Type 2 diabetes may be prevented or the onset delayed by modifying risk factors.

Over two million Canadians are currently living with diabetes and that number is expected to reach three million by 2010¹. Diabetes shares common risk factors with other chronic diseases and is itself a risk factor for the development of other chronic diseases. Diabetes is a major cause of heart disease and is also the biggest cause of blindness and kidney failure in adults. By reducing these risk factors, the onset of type 2 diabetes and other chronic diseases can be prevented.

COMMENTS

A Picture of Diabetes in Toronto

There is no disease registry or other program which directly measures the prevalence of diabetes in Toronto. Prevalence estimates from different data sources vary. One type of estimate can be made from surveys such as the Canadian Community Health Survey and the Ontario Health Survey. The rates reported through these surveys are based on self reporting by respondents and may therefore underestimate the true prevalence in the population.

According to survey estimates, there has been a significant increase in the prevalence of self-reported diabetes in Toronto adults 20 years and older, from 3.2% in 1990 to 5.5 % in 2003^{2,3}. By comparison, for the rest of Ontario there has been an increase in prevalence of self-reported diabetes in the same age group from 2.8% in 1990 to 5.2% in 2003^{2,3}. TPH will use the data from the soon to be released 2007 Canadian Community Health Survey to continue to monitor the status of diabetes and its risk factors in the Toronto population.

The Institute for Clinical Evaluative Studies (ICES) and St. Michael's Hospital's 2007 report *Neighbourhood Environments and Resources for Healthy Living – A Focus on Diabetes in Toronto*⁴ (known as the Diabetes Atlas) cites 1998/99 data based on hospitalization and physician billings. The estimated Toronto prevalence rate from this source was 7.6% compared to 6.2% for the rest of Ontario.

There were 690 deaths of Toronto residents directly due to diabetes in 2004. In addition, there were 2,165 hospitalizations of Toronto residents directly due to diabetes in 2006. Both of these statistics do not take into account deaths and hospitalizations that are indirectly related to diabetes and thus are conservative estimates.

Risk Factors, Social Determinants and Ethnicity

The risk of developing diabetes is shaped by a complex interaction between genetic, social and behavioural factors. Diabetes shares common risk factors with other chronic diseases. These are described below.

Physical Activity

Physical inactivity increases the risk of obesity and Type 2 diabetes. There was a significant decline in the percentage of Toronto adults (20 years and older) that reported being inactive from 65.6% in 2001 to 52.8% in 2005. These levels were however significantly higher than in the rest of Ontario (54.2% in 2001 and 49.1% in 2005)³. Despite this improvement in physical activity, over half of Toronto adults reported being physically inactive.

Studies have shown that just 30 minutes of moderate exercise, five days a week, will promote good health and reduce the risk of developing type 2 diabetes⁵. Findings in cross sectional studies appear to be consistent across examined ethnic groups⁶.

Diet

Eating a balanced diet, limiting salt and fat intake (particularly saturated fats) and choosing wholegrain products, legumes, vegetables and fruits more often may prevent the onset of Type 2 diabetes⁷.

There was a significant increase in the percentage of Toronto adults 20 years and older who reported eating vegetables or fruits five or more times per day from 38.3% in 2001 to 44.1% in 2005³. This trend is similar for the rest of Ontario. Despite the increase in fruit and vegetable consumption, this eating pattern still requires improvement to decrease the risk of developing diabetes and other chronic diseases including cardiovascular disease and cancer.

Body Weight

It is estimated that well over half of all cases of Type 2 diabetes could be avoided if excessive weight gain in adults could be prevented⁸. In 2005, approximately 40% of Toronto adults 20 years and older reported being overweight or obese³. For the rest of Ontario the percentage of those who reported being overweight or obese in the same age group was significantly higher than in Toronto (53.1% in 2005)³.

Tobacco Use

Recent studies seem to indicate an association between heavy smoking and the development of Type 2 diabetes⁹. In addition, both smoking and diabetes increase the risk of cardiovascular disease.

In 2005, 12.8% of Toronto adults (20 years and older) reported that they were daily smokers³, down significantly from 17.7% in 2001³. For the rest of Ontario, 22.5 % of adults reported that they were daily smokers in 2001 dropping to 18.5% in 2005³.

Social Determinants

The Diabetes Atlas described neighbourhood characteristics and the prevalence of diabetes in 140 Toronto neighbourhoods. Diabetes rates were highest in the north-east and north-west areas of Toronto, areas that have lower income, higher unemployment, a higher proportion of racial minorities and more newcomers. These were also areas where there was less access to healthy sources of food (such as fresh vegetable and fruit stores), fewer services within walking distance, and poorer access to public transit resulting in greater dependence on cars and less physical activity. Access to primary care physicians and diabetes education programs was also poor.

By comparison, in the south-central core of Toronto, residents had lower than expected rates of diabetes, despite social disadvantage. Neighbourhoods in the south central core of Toronto were largely built in the pre-war era and were characterized as densely populated, mixed residential and commercial land use, with dense road and public transit networks, lower rates of car ownership, and a relatively high number of bicycle lanes. Residents in these areas reported more walking, bicycling and transit trips per day compared with residents in outlying areas and also had better access to fresh fruits and vegetables.

In the 1998/99 National Population Health Survey, 21.4% of individuals with diabetes reported low income, and 42.7% had not completed secondary school. In the general population, the proportions were 12.8% and 22.5% respectively⁴.

Ethnicity

Some ethnic groups such as South and Southeast Asians, and people of African descent experience higher rates of Type 2 diabetes. The highest rate of diabetes worldwide has been reported in Aboriginal populations¹⁰.

Strategies to Prevent Type 2 Diabetes and other Chronic Diseases

The growing prevalence of diabetes places an enormous health and social burden on individuals, families, communities, and society - and a disparate burden on some population groups. Chronic disease prevention is a crucial public health concern because it offers such significant short and long-term benefits for individuals and society as a whole. Diabetes, cardiovascular diseases, cancer and respiratory illness are the four main clusters of chronic diseases in Canada reflecting over two-thirds of total deaths¹¹.

Chronic diseases share common modifiable risk factors, and the most significant of these are unhealthy diet, tobacco use and physical inactivity.

The World Health Organization (WHO) has identified that the sheer scale of the diabetes epidemic requires that action be taken at a population level, as well as by individuals. Approaches based only on education to promote individual behaviour change are unlikely to succeed in environments where there are many inducements to engage in unhealthy behaviours and many barriers to change. Personal education must be supported by appropriate population based changes both to the social and physical environment such as changes to transportation and urban design in order to increase physical activity and access to healthy foods. These population based changes require multi-sectoral collaboration in order to engage a number of partners and make system changes to address the underlying determinants of health.

Toronto Public Health Programs, Services and Partnerships

Toronto Public Health mobilizes and engages partners within and across jurisdictions to maximize the impact of collective effort to improve the health of Torontonians. While TPH's focus is primary prevention, these activities can also support the management of diabetes and other chronic diseases and contribute to strengthening services along the health service continuum from primary prevention to primary care. Toronto Public Health works with a number of key stakeholders such as the Canadian Diabetes Association, the Heart and Stroke Foundation, Cancer Care Ontario and the Local Health Integration Networks (LHINs).

The Draft Ontario Public Health Standards mandate Toronto Public Health to address the common set of risk factors and conditions for major chronic diseases through primary prevention and population health approaches. The programs span individual level approaches that focus on personal education for behaviour change, to population level approaches that address social and physical environmental factors. Highlighted in this report are a sample of the programs and services provided by Toronto Public Health.

Behavioural Change

Toronto Public Health implements a variety of public education and communication initiatives that increase awareness of the health benefits of physical activity, healthy eating, smoke free living and the steps people can take to adopt these practices throughout their lives.

A growing body of research suggests a connection between infant feeding practices and the risk of chronic diseases affecting childhood and adolescence. Through counselling, home visits, parenting classes and information campaigns, Toronto Public Health works to increase awareness, knowledge and skills related to breastfeeding.

Rainbow Fun is a resource developed for childcare providers, educators and parents to help them engage children ages three to six years in activities which promote physical activity, healthy eating and self-esteem. In 2007, 375 childcare providers and supervisors from 262 Childcare centres were trained on the resource. An in-depth evaluation showed

that childcare providers reported using the resource and many parents reported trying the activities at home.

The *Peer Nutrition Program* is a program for parents and caregivers from ethnically and culturally diverse communities in Toronto. The goal of the program is to improve the nutritional status of children between the ages of six months and six years by reaching parents who may not readily access other supports and services. In partnership with community agencies, the program offers nutrition workshops and support groups or drop-in sessions in over 30 languages at 70 sites throughout the city.

Youth engagement is a key strategy that has been implemented in several community mobilization projects. For example, *Girls Unlimited* is a youth leadership project that works to reduce barriers to physical activity for marginalized females aged 13-17 years of age in Toronto. *T-DOT* (Tobacco Don't Own Toronto) is a youth engagement initiative, whereby young people, many of whom live in priority neighbourhoods, create local multi-media projects with tobacco prevention/cessation and protection messages.

There are also specific activities aimed at adults that are delivered in priority neighbourhoods and are designed to increase vegetable and fruit consumption. Programs such as *Colour It Up* provide women with hands on food skills and experience which serve to increase the variety and amount of vegetable and fruit they buy, prepare, eat and serve to their families. Social networks are also developed among the women attending these group sessions.

Social and Environmental Support

Creating social and environmental supports for adopting healthy lifestyle practices is essential for diabetes and chronic disease prevention. People are more likely to adopt healthy lifestyle changes if the environments in which they live, go to school, work and play facilitate them to do so.

As part of Toronto Public Health's *Eat Smart!* Program, TPH staff are currently working with 38 schools, post-secondary institutions and workplaces to meet food safety standards and offer a variety of healthy food choices. In addition, TPH staff are working with these organizations to develop healthy eating guidelines, vending machine guidelines, point of purchase prompts and price incentives. All of this serves to create environments that support healthy eating.

Building Physically Active Communities Project is a collaborative program with Toronto Public Library, Parks Forestry and Recreation and the school boards intended to support walking - the most accessible form of physical activity. This project provides access to culturally appropriate resources for initiating walking. For example, the pedometer lending program available in 18 libraries across the city, including each of the priority neighbourhoods, helps motivate individuals to start and increase walking. The program also works with existing community groups to establish walking groups in neighbourhoods.

Toronto Public Health will also be collaborating with transportation and planning to develop and implement the Toronto Walking Strategy. Activities include “walk-ability audits” to identify changes required in the built environment to support walking in neighbourhoods, walk to school programs such as Active and Safe Routes to School, and developing maps for walking routes and trails.

Advocacy and Supportive Policy Development

Activities that build healthy public policies within organizations and across sectors that address key determinants of health such as employment, income, education, behaviour and environment have the highest potential impact on health, including diabetes and other chronic diseases.

Toronto Public Health advocates for smoke-free homes and is currently working on an advocacy initiative to address drifting second-hand smoke in multi-unit dwellings. Toronto Public Health also monitors the cost of healthy eating in the City of Toronto through the annual *Nutritious Food Basket* survey, reports the results to the Board of Health and shares this information with community agencies. This has resulted in policy recommendations and initiatives that support community food security and income adequacy in Toronto.

Toronto Public Health advocates with various city-run facilities and school boards to improve access to healthier foods in City operated and supported facilities such as childcare centres, recreation centres, community centres, parks, arenas as well as school cafeterias. Toronto Public Health collaborates with other community organizations such as the Heart and Stroke Foundation to advocate with other levels of government to implement changes to reduce chronic disease risk factors.

Toronto Public Health is now working with Parks Forestry and Recreation to promote healthy eating including trans fat free vending and healthy food choices in Toronto-run facilities.

Toronto Public Health also provides staff support to the Toronto Cancer Prevention Coalition. This coalition, representing over 150 members from 60 agencies, advocates for prevention policy, education and action at all levels of government and bridges initiatives on cancer prevention with work being done on prevention of other chronic diseases.

Community Mobilization and Collaborative Program Development

Toronto Public Health works in partnership with many communities to help them build capacity to take action, set priorities, make decisions, plan and implement strategies to meet their identified health needs.

A key example is Toronto Partners for Student Nutrition. This is Toronto Public Health’s largest community partnership and investment program. Subsidies are provided to nearly 500 breakfast, lunch and snack programs serving elementary school age children and youth. Student Nutrition Programs reach one in three elementary school age children.

Youth nutrition programs are experiencing rapid growth with 147 programs funded in 2007/2008.

Toronto Public Health also collaborates with community agencies throughout the City to establish and run community gardening projects. This service builds and nurtures community capacity to improve nutrition and physical activity and enhance community food security for those communities most in need.

The Need for Sustained Prevention Efforts

Toronto Public Health takes a comprehensive and integrated approach to diabetes prevention because the required risk factor, social and environmental changes that need to be addressed serve to prevent diabetes as well as many other chronic diseases. This is consistent with Toronto Public Health's Strategic Plan that aims to reduce health disparities and improve the health of the City's diverse population by addressing determinants of health.

Toronto Public Health works closely with partners and multiple sectors using a variety of health promotion strategies and there have been improvements in physical activity levels and eating patterns in Toronto's adult population. However, because of the scope and complexity of these problems, long term sustained effort is required to achieve results.

Toronto Public Health will continue to collaborate with other city divisions, such as Transportation and Planning, in identifying strategies to address the built environment and its impact on health behaviours. This will include exploring opportunities to work with TTC and neighbourhood supermarkets to provide more accessible transportation to supermarkets and fitness facilities with particular emphasis on the North-East and North-West neighbourhoods.

Toronto Public Health will intensify work in those neighbourhoods identified in the Diabetes Atlas as experiencing high prevalence rates of diabetes to address environmental factors and provide programming to lessen the burden of diabetes. TPH will concentrate programming efforts and ensure programs and services are accessible and culturally appropriate. TPH will partner with other divisions within the City of Toronto, community partners, other levels of government and relevant non-governmental organizations to increase opportunities for physical activity and healthy food choices and influence environmental factors identified in the Diabetes Atlas. Toronto Public Health will also continue to collaborate with other city divisions and external partners regarding poverty reduction strategies.

In the 2008 Ontario Budget under the government's agenda for "Promoting Health and Preventing Illness" there was an announcement of "\$10 million annually in a childhood obesity strategy to encourage children to eat healthy and be physically active". In addition, on July 22, 2008 the Ontario Government announced \$741 million in new funding for a comprehensive diabetes strategy over four years to prevent, manage and treat diabetes. Toronto Public Health has been actively participating in Provincial

discussions to address prevention of childhood obesity and Type 2 diabetes in relation to the announcement of these strategies.

CONCLUSION

Type 2 diabetes is the most common form of diabetes. Over two million Canadians are currently living with this chronic disease and it is becoming more common because so many Torontonians are overweight and inactive. Strategies that address the risk factors and social and environmental conditions contributing to diabetes will also reduce the incidence of other chronic diseases. Collaborative approaches that involve all levels of government and community organizations, and address the physical and social environment, are required to reduce the incidence of diabetes in Toronto, including those who are disproportionately affected.

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