Diabetes Prevention Strategy

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<th>Date:</th>
<th>November 8, 2011</th>
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<td>To:</td>
<td>Board of Health</td>
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<td>From:</td>
<td>Medical Officer of Health</td>
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### SUMMARY

Type 2 diabetes is a major public health challenge and one of the fastest growing diseases in Toronto and Canada. Over the coming decades diabetes rates may grow, due to the aging population and increasing rates of obesity. The estimated prevalence rate of diabetes for adults over the age of 20 is 9.4% for Toronto as compared to 7.9% for the rest of Ontario (Ontario Ministry of Health and Long-Term Care, 2010).

This report provides an update on the implementation of the Toronto Public Health Diabetes Prevention Strategy (DPS) and an overview of the preliminary evaluation results. In 2009, with 100% funding from the Ministry of Health Promotion and Sport (MHPS), Toronto Public Health (TPH) embarked on a DPS pilot project in two high-risk communities within the City of Toronto with increased risk factors for type 2 diabetes. Over the last two and a half years, TPH staff have worked with community health centres and community-based agencies to raise awareness of the risk factors for type 2 diabetes and provide culturally appropriate programs to priority populations, including South and East Asian, African, Caribbean, Latin American, Aboriginal, and low-income groups.

Preliminary evaluation results point to the effectiveness of DPS interventions in increasing knowledge of the risk factors for type 2 diabetes and participants reporting significant behaviour changes. Full evaluation results should be available by mid 2012. Current project funding ends as of March 31, 2012 and TPH has not been advised of the status of future funding from the provincial government.
RECOMMENDATIONS

The Medical Officer of Health recommends that:

1. the Board of Health request continued funding after March 31, 2012 from the Ministry of Health and Long Term Care for diabetes prevention activities that focus on high risk groups in the City of Toronto.

2. the Board of Health request the Medical Officer of Health to report on evaluation results and lessons learned upon completion of the pilot in 2012.

Financial Impact
There are no financial impacts of these recommendations.

DECISION HISTORY
In April 2009, the Board of Health approved an increase in the Toronto Public Health’s Operating Budget to reflect confirmed one-time funding from the Ministry of Health Promotion and Sport for the implementation of a Diabetes Prevention Strategy.

ISSUE BACKGROUND
Type 2 diabetes is a serious chronic disease. Type 2 diabetes occurs when the body cannot produce enough insulin or cannot use insulin properly. It usually occurs over the age of 40 and when people are overweight. The increased body fat makes it harder for the body to use insulin. As a result, high levels of sugar (glucose) in the blood damage blood vessels and result in poor blood flow. Early symptoms include frequent infections, blurred vision, high blood pressure, pain and numbness in hands and feet, and erectile dysfunction. Over time, the condition can lead to blindness, heart disease, loss of limbs, and kidney failure.

In Toronto, the estimated prevalence rate of diabetes for adults over the age of 20 is 9.4% as compared to 7.9% for the rest of Ontario (Ontario Ministry of Health and Long-Term Care, 2010). Research shows that where a person lives within Toronto can impact their risk of developing type 2 diabetes. Toronto is one of the most multicultural cities in the world, and is home to some of the lowest-income neighbourhoods in the country. Evidence shows that people living in poverty and immigrants from South Asia, East Asia, Latin America Africa, the Caribbean and Canadian Aboriginals are at a higher risk of developing type 2 diabetes.

COMMENTS
The Toronto Public Health Diabetes Prevention Strategy (DPS) is a three year pilot project developed to raise awareness of the risk factors of type 2 diabetes and to provide culturally appropriate programs to help prevent the disease among high-risk community groups. The project has undertaken numerous activities, including health education/skill
building, creating supportive environments and strengthening community action, to promote behaviour change within two pilot communities.

The intent of the pilot project was to plan, implement and evaluate a comprehensive, multi-strategy, primary prevention pilot program in community settings to reduce individual risk of developing type 2 diabetes. A comprehensive and integrated approach to diabetes prevention was taken because the risk factors and the social and environmental changes that need to be addressed serve to prevent not only diabetes, but many other chronic diseases.

The DPS has allowed TPH to make new advances in diabetes prevention in Toronto by implementing culturally relevant programs in settings where many socioeconomic and environmental challenges exist (e.g. lack of access to healthy foods and spaces to be physically active). Participants in DPS programs are more likely to struggle with access to health/social resources and services which puts them at increased risk of developing the disease. The inclusion of community outreach workers, traditional practices (e.g. aboriginal drumming circles) and the use of metaphors and stories in a number of the interventions are examples of genuine community involvement and application of cultural knowledge to health practices.

**DIABETES PREVENTION STRATEGY ACTIVITIES**

1. **Early Project Interventions and Community Selection**
   Early project administration included hiring project staff (i.e. project coordinator, project evaluator, public health nurse, etc.) and determining project roles and responsibilities.

   The intent of the funding from the Ministry of Health Promotion and Sport was to pilot test a diabetes prevention project in two high-risk communities in Toronto. A comprehensive selection process was undertaken to select the pilot communities. Data from 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” (known as the Diabetes Atlas) was reviewed and Dr. Richard Glazier, lead editor of the Diabetes Atlas, was consulted along with TPH staff to inform the selection of the pilot communities.

   In February, 2009 Jamestown - West Humber-Clairville (referred to “Rexdale” for the purposes of the project) and Malvern were selected as the neighbourhoods for the pilot phase of the Diabetes Prevention Strategy.

   A literature review was completed to examine community-based diabetes interventions and tools used to screen for risk of type 2 diabetes. The project team decided to undertake a community-based approach to diabetes prevention which used low-cost screening tools to assess community members' risk for developing diabetes. It was believed that this approach had the potential to reach the largest proportion of the population, especially those who live in poorer neighbourhoods, many of whom are at increased risk of developing diabetes.
2. **Community Mobilization and Partnership Development**

In the initial stages of the project, TPH partnered with a community health centre (CHC) in each of the selected communities (Rexdale Community Health Centre, in the Rexdale/Clairville/Jamestown neighbourhoods and TAIBU Community Health Centre in Malvern). It was important for TPH to partner with CHCs, as they were able to accept referrals for community residents who were identified at high risk of type 2 diabetes and/or in need of primary health care.

By partnering with the community health centres, TPH gained access to ethno-cultural community groups at risk of developing type 2 diabetes. In addition, the partnership has helped avoid duplication of diabetes prevention services and has build linkages between programs within the community.

3. **Community Outreach Workers**

Four community outreach workers were hired through the CHCs to work with high-risk community groups at risk for developing type 2 diabetes. They are trusted members of the community and had a close understanding of the community being served. This trusting relationship has enabled the outreach workers to serve as liaisons, links, and intermediaries between health/social services and the community and to facilitate access to the DPS services while improving the quality and cultural competence of service delivery.

The outreach workers are uniquely qualified as connectors (to the community) because they live in the community where they work, most are fluent in a second language, and understand the social context of community members’ lives. In addition, outreach workers are able to educate public health staff about the community’s health needs and the cultural appropriateness of the interventions.

The CHCs were responsible for the administration and supervision of the outreach workers. The outreach workers have assisted with the promotion and implementation of interventions and work closely with TPH staff to ensure that the community is represented in all aspects of program planning and community assessment.

To date, the outreach workers have directly reached over 7000 residents in the Rexdale and Malvern communities. Under the guidance of TPH staff, they have also provided direct education to community members at risk for developing type 2 diabetes.

4. **Education and Skill Building**

Three types of education and skill building activities have been implemented. They include:

- Education sessions to increase residents' awareness of the risk factors of type 2 diabetes (Prevent Diabetes Now Session);
- 8-week healthy eating/food skill programs and;
• 9-week physical activity interventions.

As part of the Prevent Diabetes Now Session, participants assessed their own risk of developing type 2 diabetes by completing the Canadian Diabetes Risk Assessment (CANRISK) Questionnaire. To date over 1,100 community residents have completed the questionnaire. Results collected show that participants have a higher than average score compared to the general Canadian population. The average CANRISK score collected from both communities is 10.98. This compares to an average score of 7.47 for the Canadian population and 7.46 for the Ontario population, respectively (Public Health Agency of Canada, 2010). From these results it is clear the program has been successful in reaching those most at risk of developing type 2 diabetes within the community.

Upon completing the questionnaire, participants were referred to the CHC for follow up if they were concerned about their score or wanted to know more about their individual risk of developing type 2 diabetes.

TPH partnered with City of Toronto Parks, Forestry and Recreation (PFR) to implement a culturally appropriate 9-week diabetes prevention physical activity program. During each session a public health nurse provided participants with education and a PFR fitness instructor would lead participants through a variety of exercises (e.g. walking with pedometers, exercise with dynabands, yoga, Reggaerobics). Project funds allowed for the fitness instructor to be hired and PFR provided TPH with in-kind support (e.g. space, custodian, building supervision).

Preliminary results of a pre/post survey collected at the physical activity interventions showed increased levels of vigorous physical activity as well as a decrease in sedentary behaviour (TABLE 1).

**TABLE 1: Preliminary Results from Intensive Diabetes Prevention Physical Activity Program**

<table>
<thead>
<tr>
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<th>Pre Physical Activity Program</th>
<th>Post Physical Activity Program</th>
<th>Reported Change</th>
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<tr>
<td>Weekly minutes of</td>
<td>236.6 minutes</td>
<td>292.6 minutes</td>
<td>↑ 57 minutes/week</td>
</tr>
<tr>
<td>moderate physical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>activity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekly minutes of</td>
<td>108.96 minutes</td>
<td>149.7 minutes</td>
<td>↑ 40.7 minutes</td>
</tr>
<tr>
<td>vigorous physical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>activity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekly minutes of</td>
<td>233.3 minutes</td>
<td>327.8 minutes</td>
<td>↑ 94.5 minutes</td>
</tr>
<tr>
<td>walking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time spent sitting in</td>
<td>250.17 minutes</td>
<td>229.54 minutes</td>
<td>↓ 20.6 minutes</td>
</tr>
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<td>the last 7 days</td>
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The pre/post increase in minutes walking is significant (p =0.05)

The healthy eating/food skills program promoted the development of skills and knowledge regarding healthy eating through knowledge transfer, culturally-based educational activities and food preparation. The program included goal setting activities to help participants create realistic goals to help them make healthier food choices.
Accompanying activities and food preparation helped participants practice their new skills and use their new knowledge. The program encouraged health behaviour change one step at a time, taking the time to recognize accomplishments and the incorporation of healthy eating habits, physical activity and the achievement of a healthy weight.

Participants have reported an increase in choosing whole grains and leaner meats more often. They have also reported reducing salt in cooking and limiting added fats.

Participants of DPS initiatives were provided with transportation (TTC tokens), child minding, healthy snacks and promotional incentives (e.g. grocery bags). Interpretation services were available for all sessions and many diabetes materials have been translated into nine or more languages (Somali, Tamil, Hindi, Gujuarti, Arabic, etc.). These actions have led to excellent participant feedback and a 95% retention rate of participants from the start to the end of the programs.

5. 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, work and play facilitate them to do so. Much of the DPS has focused on building supportive environments around healthy eating and physical activity.

In September 2010, Rexdale Community Health Centre held a tomato canning & preservation workshop. Participants discussed the canning process while cleaning, boiling, peeling and pureeing bushels of local tomatoes. The session also included education by registered dietitians on the health benefits of canning and the importance of sterilization and proper jarring.

TPH and Rexdale Women's Centre worked together to encourage graduates of the healthy eating/food skills program to continue preparing food in a healthier way by engaging them in a community kitchen where they prepare food for themselves and for a congregate dining program. Staff from Rexdale Women's Centre were trained in safe food handling (this was done in partnership with the Toronto Food Strategy) and nutrition and food preparation skills to help facilitate and supervise the community kitchen. The community kitchen is now running every Tuesday afternoon.

TAIBU Community Health Centre has integrated the DPS food skills programming within its framework for programs and services. A Food Program Coordinator was hired and is responsible for supporting the start up and ongoing food projects such as: Good Food Market and Good Food Box, in order to increase access to fresh, healthy food within Malvern as well as Scarborough.

TPH and Action for Neighbourhood Change facilitated a container gardening event in the spring of 2011. Residents of a high-rise building in Malvern were given materials and lessons on how to manage a successful balcony garden.
On June 18, 2011, over 300 community residents participated in the launch of the Malvern 10 Million Steps Program. The program is geared at creating a fitness health movement in Malvern through the consolidation of existing and new fitness initiatives. Malvern 10 Million Steps focuses on the collection and documentation of the number of physical fitness initiatives and the number of steps achieved at an individual, program and community level within a year.

6. Social Marketing
Increasing community members' knowledge of the risk factors of type 2 diabetes has been a key focus of the overall strategy. To accomplish this, three local media campaigns have been implemented. The DPS media campaigns have a unique characteristic as the advertisements were built and created with the input from ethno/racial community groups through focus groups.

The focus of the campaign was to direct the public to the TPH website for more information and to assess their risk of developing diabetes (an online version of the CANRISK questionnaire can be found on the diabetes website). A webtrends report provided by the City of Toronto shows a marked and significant increase in the visits to www.toronto.ca/health/diabetes during the April and October 2011 media campaign.

7. Project Evaluation
The project has been successful at reaching those most at risk and in need of diabetes prevention programs and services in the two pilot communities. Results from the CANRISK questionnaire show that nearly half of the respondents have a much higher risk of developing type 2 diabetes, than a sample from the general Canadian population. This highlights the need for more diabetes prevention activities across the City of Toronto for high-risk groups.

Preliminary findings of a 12-month follow-up survey have shown that diabetes prevention interventions have led to participants reporting behaviour change. Over 350 participants of DPS education interventions (e.g. CANRISK, food skills and physical activity) were mailed the survey. Themes from the follow-up survey included respondents reporting changing the kinds of food they eat and/or the way they prepare their food. The most frequent changes reported were increasing consumption of fruit and vegetables, consuming less oil and/or fats and lowering or eliminating sugar from their diet. Respondents also stated that diabetes prevention interventions had led them to visit their doctor or a health professional in the past 12 months.

NEXT STEPS
A key component of the DPS in 2011-2012 is the launch of a Peer Leadership Program. TPH will be partnering with community agencies to plan, implement and evaluate programs that use peer leaders to provide culturally appropriate and accessible health information programs that focus on type 2 diabetes prevention. The agencies that will be implementing the Peer Leadership programs are listed in Attachment 1. Throughout the course of the program TPH staff will train over 110 peer leaders. This will allow the DPS to expand into new communities and reach more high-risk community groups.
CONCLUSION
Diabetes is a serious disease and one of the most pressing public health challenges affecting Torontonians. Diabetes is also a complex disease that requires an approach that is multifaceted and comprehensive in nature. By using a determinants of health approach that focuses on intensive interventions, the DPS has been able to reach populations who experience significant health inequities. Continued funding and resources are needed to build on the early successes of the Diabetes Prevention Strategy.

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SIGNATURE

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Dr. David McKeown  
Medical Officer of Health

ATTACHMENTS
Attachment 1 – Peer Leadership Program – List of Agencies

REFERENCES
