## Diabetes guidelines

The recommendation from the Canadian Task Force on Preventive Health Care that screening for type 2 diabetes is not recommended, except in very high-risk patient groups, is certainly interesting.[1] The suggestion that the CANRISK type 2 diabetes risk screening model be used prior to screening blood work is also interesting. Four of the 10 questions within this screening questionnaire demand knowledge of blood sugar levels. Understanding how one would operationalize this screening model without having already screened for the presence of elevated blood sugars is difficult.

Furthermore, when population demographics suggest that 50% of Canadians are either overweight or obese, that the vast majority of these people have substantial abdominal adiposity and that less than 5% of this population is physically active, the utility of screening only extremely high-risk populations does not seem to speak very well to the fundamental concept of prevention. If 100% of the population we are screening has the disease we are screening for, how does this constitute prevention?

Also, the document as published contains only very limited conflict of interest or duality of interest statements. The guideline developers have failed to acknowledge the inherent conflict of interest between guideline developers and those who pay for their time to develop guidelines. Is this an oversight?

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We reviewed the Canadian Task Force on Preventive Health Care's (CTFPHC) guidelines,[1] in which the authors recommend Canadian adults undergo preliminary screening for type 2 diabetes using a standardized risk calculator, followed by risk stratification to hemoglobin A1C testing. We have several concerns regarding this approach to screening.

Consider that a 20-year-old obese First Nations female who does not consume fruits or vegetables, does not exercise, does not take antihypertensives, has no documented dysglycemia, but has 1 parent with type 2 diabetes would have a cumulative score of 14 using the CTFPHC's recommended risk calculator. A score of 14, as per the guidelines, does not support screening for type 2 diabetes. Our clinical experience in Manitoba and northwestern Ontario has shown us that based on her clinical characteristics, including her ethnicity, this woman is at high risk for developing type 2 diabetes and should be screened.

In Manitoba, the incidence of type 2 diabetes in children under 19 years of age is the highest in Canada,[2,3] surpassing the provincial pediatric incidence of type 1 diabetes.[4] The Canadian Diabetes Association recommends annual screening in children 10 years of age and older who have high-risk characteristics, including Aboriginal heritage.[5] The current screening recommendations have the potential to create confusion among health professionals and to send mixed messages to patients, families and communities. Most important the recommendations could delay diagnosis of type 2 diabetes in high-risk populations. We feel it necessary to challenge the recommendations and to urge the CTFPHC to consider screening protocols more generalizable to the diverse ethnic groups and changing demographics of type 2 diabetes in younger populations in Canada.

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As researchers involved in developing the CANRISK risk scoring questionnaire, we feel compelled to respond to the proposed guidelines.[1] Unlike simple lists of diabetes risk factors, risk scoring questionnaires (i.e., Framingham for cardiovascular disease) can help physicians quantify the patient's personal risk of diabetes based on statistical coefficients derived from scientific cohort studies. An organized triaged approach involving CANRISK for initial risk assessment would likely increase both the efficiency and effectiveness of diabetes screening efforts. The authors do recommend a sensible triaged approach to diabetes screening using risk scoring questionnaires.

However, we disagree that Finland's FINDRISC should be preferred over CANRISK as the risk-scoring tool of choice for Canada. Last year's peer-reviewed validation article[2] showed that CANRISK is significantly more accurate. The ROC analysis found an area under curve for CANRISK of 0.75 compared with 0.66 for FINDRISC — where 0.5 indicates no discrimination, like a random coin toss. This reflects that CANRISK includes certain key variables that were excluded from FINDRISC such as ethnicity, gender and markers of previous gestational diabetes. CANRISK was tailored to address Canada's multi-ethnic population. The Task Force is confusing FINDRISC's broader international usage with validation in the intended screening target groups (e.g., First Nations).

The Task Force also recommends A1C as the first-line blood test for diagnosing diabetes and it argues that the 3 possible diagnostic tests (A1C, FPG and 2hrGTT) are essentially interchangeable. Although the equivalence of prognosis is debatable, there are clear differences regarding case detection. Each test has its own set of unique diabetes cases. The CANRISK study[2] found that FPG would miss over 50% of diabetes otherwise detected by 2hrGTT. Similarly, A1C would detect only about 40% of diabetes detected by either FPG and/or 2hrGTT. These discordant case detection findings have also been found in other international studies.[3,4]

Because A1C does not have a prediabetes target group (unlike FPG or 2hrGTT), these guidelines also amount to an important missed opportunity for diabetes prevention. Major studies[5] have shown that lifestyle interventions among prediabetics can reduce diabetes by more than 50%. The guidelines[1] therefore effectively undermine any new provincial diabetes prevention programs targeting prediabetes through lifestyle intervention. This "disease-focused" A1C screening is analogous to screening for lung cancer using chest x-rays, while ignoring cigarette smoking.

We believe the Task Force should consult other organizations, and revise its current guidelines toward a more effective integrated approach to diabetes screening and prevention, involving CANRISK and organized teams of health professionals.

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## The authors respond

Robinson and Sohal[1] criticize our guideline[2] for not giving sufficient weight to the CANRISK instrument, which he and his colleagues developed, whereas Stone[3] criticizes our guideline for recommending that CANRISK be used. Finally, Ball[4] and colleagues prefer an alternative instrument (FINDRISC) to CANRISK, and suggest that our guideline (which clearly states that it applies to only adults) should be "challenged" — in part because it may not adequately reflect the high burden of risk for diabetes in Aboriginal children.

First, our guideline states that both FINDRISC and CANRISK are acceptable risk prediction instruments. Like Robinson and Sohal,[1] we believe that using validated instruments to identify people who should be screened is superior to risk stratification based primarily on age. Not all older people are at high risk of diabetes, and conversely not all young people are at low risk. Although it is understandable that Robinson is partial to the instrument that he helped to design, we stand by our assessment of the relative merits and limitations of CANRISK, which we think will be an important aid to practitioners who are trying to decide which patients should be screened for diabetes.

Second, we agree with Ball and colleagues[4] that the burden of diabetes is high in certain groups of children and young adults. We believe that validated instruments are preferable to "clinical experience" for identifying adults at high risk of diabetes. However, we agree that available instruments are imperfect. As stated in our guideline, the weak recommendation against routine screening in adults at low or moderate risk of diabetes means that screening is valid and appropriate in those who place a high value on the uncertain benefit of screening, including those from high prevalence populations. We hope that this reassures Ball and colleagues that our guideline does not preclude the use of clinical judgment.

Third, we agree with Robinson and colleagues[1] that all available screening tests for diabetes have both advantages and disadvantages, and that A1C is more expensive than fasting glucose measurements. As stated in the guideline, we placed a higher value on convenience for patients than on cost when selecting A1C as the preferred screening test.

Fourth, Stone[3] states that 4 questions in CANRISK require knowledge of blood glucose levels, and indicates that it is difficult to understand how this information would be available in the absence of screening. His comment may reflect a failure to differentiate between screening (measuring A1C or blood glucose in asymptomatic people) and case-finding (e.g., routine use of oral glucose tolerance tests in pregnant women) or clinically indicated testing (e.g., measuring blood glucose in an obese adult with blurred vision and polydipsia). Our guideline refers to screening only. So, that asymptomatic adults could have a history of abnormal A1C or fasting glucose values (previously obtained for clinical indications or for case-finding) is clear, even if they have never been screened for diabetes. Stone[3] also states that the Task Force has "failed to acknowledge the inherent conflict of interest between guideline developers and those who pay for their time to develop guidelines." We can reassure Stone that Task Force members are volunteers who are not paid for their service.

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