Preventing diabetes: will NICE guidance do what it says on the tin?

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It is predicted that there will be 552 million people, or one adult in 10, diagnosed with diabetes in the world by 2030, a 93% increase almost doubling the number of those diagnosed with the condition in 2010 (285 million people, prevalence 6.6%). In England, the prevalence of people with diabetes in 2011 was 3 million. It is alarming that the prevalence in England is set to increase beyond the average world prevalence to 9.5%, i.e. 4.6 million people by 2030. Some 280 million people worldwide, or 6.5% of adults, were estimated to have impaired glucose tolerance (IGT) in 2011. By 2030, the number of people with IGT is projected to increase to 398 million, or 7.1% of the adult population.

The development of type 2 diabetes is often preceded by a variety of altered metabolic states, including impaired glucose regulation, dyslipidaemia and insulin resistance. Although not all people with such metabolic abnormalities progress to diabetes, their risk of developing the disease is significantly enhanced. However, randomised clinical trials have demonstrated that type 2 diabetes can largely be prevented through diet and lifestyle modifications.

The evidence

In the Swedish Malmo study, increased physical exercise and weight loss prevented or delayed type 2 diabetes in patients with IGT to less than half the risk in the control group, during five years of follow up. In a Chinese study, 577 individuals with IGT were randomised into one of four groups: exercise only, diet only, diet plus exercise, and a control group. The cumulative incidence of type 2 diabetes during six years was significantly lower in the three intervention groups than in the control group.

In the Finnish Diabetes Prevention Study, a 5% reduction in body weight, achieved through an intensive diet and exercise programme, was associated with a 58% reduction in the risk of developing type 2 diabetes in overweight middle-aged men and women with IGT. The reduction in the risk of progression to diabetes was directly related to the magnitude of the changes in lifestyle; none of the patients who had achieved at least four of the intervention goals by one year developed type 2 diabetes during follow up.

The US Diabetes Prevention Program (DPP), comparing active lifestyle modification or metformin to standard lifestyle advice combined with placebo, found that lifestyle modification reduced the incidence of type 2 diabetes by 58% in overweight American adults with IGT. The goal of the programme was to achieve a 7% reduction in body weight and physical activity of moderate intensity for at least 150 minutes per week. The cumulative incidence of diabetes was 4.8, 7.8 and 11.0 cases per 100 person-years in the lifestyle, metformin and control groups, respectively. This reduction in incidence equated to one case of diabetes prevented for every seven people with IGT treated for three years in the lifestyle intervention group, compared with 14 for the metformin group.

In addition, a review has also indicated that the numbers needed to treat (NNT) to prevent one case of type 2 diabetes with lifestyle intervention in people at risk of diabetes is dramatically low at 6.4 (over 1.8 to 4.6 years). Furthermore, since patients with the metabolic syndrome have an increased risk of cardiovascular disease (CVD) and mortality, lifestyle interventions in obese patients and those with evidence of hyperglycaemia are likely to be beneficial in terms of overall health and life expectancy. It has been proposed that control of LDL cholesterol and blood pressure to normal levels in patients with the metabolic syndrome, could result in preventing 81% of CVD events.

NICE guidance

In the light of these impressive results, the NICE Guidance ‘Preventing type 2 diabetes: risk identification and interventions for individuals at high risk’ was published in July 2012. This guidance focuses on identifying people at high risk of type 2 diabetes and on the provision of effective, cost-effective and appropriate interventions for them. The guidance does not advocate a national screening programme for type 2 diabetes but includes recommendations to remind practitioners that age is no barrier to being at high risk of, or developing, type 2 diabetes.

The 20 NICE recommendations can be used alongside the NHS Health Check programme; they are extensive and consider: risk assessment and encouraging people to have an assessment; two-stage risk identification; matching interventions to risk and reassessing risk; commissioning prevention services; intensive lifestyle-change programmes, weight management, dietary advice and physical activity; vulnerable groups; audit and quality assurance; training and professional development; metformin and orlistat. The recommendations can be found online at: http://guidance.nice.org.uk/PH38.

A structured and comprehensive literature review of the international evidence base was undertaken by the Programme Development Group (PDG), the NICE project team and external contractors in order to develop the guidance. Where there are gaps in current knowledge, recommendations have been made for further research. Much less is known about the progression to type 2 diabetes using glycated haemoglobin versus the oral glucose tolerance test (OGTT) as a marker, especially as the HbA1c assessment is much less sensitive to weight change. Thus, identifying which combination of risk-assessment tools and blood tests are the most cost effective and effective at assessing the risk of type 2 diabetes is recommended. Other recommendations for further research include determining: the demographic characteristics and rates of
progression to type 2 diabetes among people with a high risk score but with normal blood glucose levels; the most cost-effective and effective methods of increasing uptake of risk assessments; the components of an intensive lifestyle-change programme that contribute most to the effectiveness and cost effectiveness of diabetes prevention interventions; the effectiveness of different types of dietary and physical activity regimens; and the most effective and cost-effective methods for identifying, assessing and managing the risk among high-risk vulnerable groups.

Further considerations...
The PDG considered and made provision for the fact that type 2 diabetes affects people of South Asian, African-Caribbean, Chinese or black African descent up to a decade or more earlier than white Europeans. Although it is unclear what the prevalence of impaired glucose regulation and undiagnosed type 2 diabetes is among black, Asian and minority ethnic people aged 25–39 years in the UK, they have recommended that risk assessments should be carried out in this age-specific sub-group and that health professionals provide advice and monitor according to each person’s particular risk profile.

People identified as being at high risk of developing type 2 diabetes in the international diabetes prevention trials were identified by blood glucose tests, not by risk score. The guidance acknowledges that it may not be effective to intervene with all people identified as being at high risk using a risk assessment tool as only a small proportion of people may have impaired glucose regulation. It has therefore issued two stages of risk identification. Stage 1 acknowledges that while the risk scores can identify those at high risk and those who may have undiagnosed type 2 diabetes, they cannot be used to give a diagnosis of type 2 diabetes. If people refuse a blood test, they should be offered brief advice and/or a place on an intensive lifestyle-change programme instead.

The PDG considered that people over age 74 from all ethnic groups might benefit from type 2 diabetes risk assessment and prevention as the risk increases with age. However, it recognised that many of the risk-assessment tools are not validated for this age group and that comorbidities may prevent participation in lifestyle programmes. Nevertheless, there is evidence that older people can benefit from being more physically active and improving their diet, and the recommendations advise that people should not be excluded on the basis of age.

The recommendations acknowledge that not all people identified as being at high risk will develop diabetes. However, informing them of the risk will not harm them and may even have a beneficial effect on their lifestyle. Frequency of follow up is identified and included in the recommendations for low, moderate and high-risk individuals. This will assist practitioners in providing good quality, structured care.

...and challenges
There has also been consideration of people from lower socioeconomic groups who may be less likely to attend for a risk assessment or a blood test. This has led to a recommendation that prevention services do not have to be carried out by GPs or in GP surgeries but can be offered in a range of settings, such as community pharmacies, occupational health departments, community and faith-based centres where these people are more likely to visit regularly. However, this raises a communication challenge to ensure that the data are passed securely to the person’s GP and that the person is monitored and followed up regularly.

A possible further limitation is the recommendation that a variety of practitioners and organisations be involved in the diabetes prevention services. While this may assist in raising awareness and improving the standard and continuity of care for all risk groups, it may also cause problems as no single organisation or service may take the lead. This could result in unnecessary duplication, unstructured care or the service being omitted altogether.

Another communication challenge for practitioners considering an individual’s level of risk could be in the limitations of the health care computer systems. These have Read codes for recording impaired fasting plasma glucose and OGTT but there is none for impaired HbA1c, nor for recording that someone has had a risk assessment, what their level of risk is, and whether they have been referred to an intensive lifestyle-change programme. Also,
although the waist circumference clinical indicator is a very important type 2 diabetes risk factor, it is not taken into account in the NHS Health Check programme. Therefore there is a need to raise awareness and train staff to measure waist circumference as an initial step in identifying risk.

Unfortunately, there are no recommendations for reducing type 2 diabetes in children and young adults although the prevalence of type 2 diabetes in this age group is increasing.

The guidance states that further research is required to identify effective dietary regimens in the prevention of type 2 diabetes. However, the literature did not include nutritional epidemiology research already undertaken which has been summarised in a diabetes prevention educator’s manual.\(^1\)

The X-PERT Prevention of Diabetes (X-POD) Programme is an evidence-based, quality-assured intensive lifestyle-change programme that fully meets NICE guidance. It involves the delivery of person-centred, empowering lifestyle education initially over six consecutive weekly sessions with follow up at three to six months, 12 months and thereafter every year by trained educators. An overview of the content of the programme is summarised in Table 1.

Conclusion
The NICE guidance for preventing type 2 diabetes is a much-needed and ambitious strategy to combat the rising prevalence of type 2 diabetes. Will it achieve what it recommends or will it be largely ignored and gather dust in the fight for competing resources? Only time will tell. If organisations were monitored and held accountable for implementing the guidance, it is likely to have much more impact. In the meantime, it is hoped that commissioners, managers and practitioners will see the huge opportunity to prevent the diabetes pandemic by implementing simple and cost-effective interventions.

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Declaration of interests
The author is Chief Executive of the charitable not-for-profit organisation, X-PERT Health.

References