Early identification of people with, and at high risk of Type 2 diabetes and interventions for those at high risk.

Key points
Diabetes UK

- supports the recommendations of the UK Expert Committee that those with an HbA1c of 42-47mmol/mol (6.0-6.4 per cent) should be considered high risk, even if asymptomatic
- currently uses the term “at high risk of Type 2 diabetes” for those with Impaired Glucose Regulation. Although the terms prediabetes has become more common in the lay press, in general Diabetes UK won’t use that term because of the lack of clarity over what is meant by prediabetes (ADA or WHO cut off points are different). The term “borderline diabetes” may also be more acceptable to a lay audience.
- supports the NICE guidelines and NHS health checks programme in England and calls for them to be fully implemented along with further calls to action, especially in the other nations of the UK who are looking at targeted risk assessment.
- would also support international action to agree and harmonise the HbA1c cut point for identifying individuals at high risk of Type 2 diabetes

There is a need to identify people with and at high risk of Type 2 diabetes and offer interventions for those at high risk because:

- It is estimated that 633,600 people have undiagnosed Type 2 diabetes in the UK. This is because the signs and symptoms may not be obvious and it can take many years before the condition is diagnosed.
- Up to 50 per cent of people may already have complications when they are diagnosed with Type 2 diabetes.
- Up to 11.5 million people in the UK are at high risk of developing Type 2 diabetes.
- There is clear evidence that interventions for people at high risk can delay or prevent Type 2 diabetes.

Introduction
There are currently 3.2 million people who have been diagnosed with diabetes in the UK and the prevalence is rising. It is estimated that 633,600 people in the UK have Type 2 diabetes but do not know it. This is because the signs and symptoms may not be obvious and it can take many years before the condition is diagnosed.

Diabetes is a serious condition and, when not well managed, people are at increased risk of complications including heart disease, stroke, blindness, kidney disease and amputations. The life expectancy of someone with Type 2 diabetes is about 6 years less than someone without diabetes. Up to 50 per cent of people with Type 2 diabetes may already show signs of complications by the time they are diagnosed, though this number may be decreasing as people are being more routinely screened for Type 2 diabetes.
Preventing or delaying diabetes complications can not only improve a person’s quality of life but it can also help save the NHS money. Taking steps to identify those with undiagnosed Type 2 diabetes can help people reduce their risk of complications\textsuperscript{iv}. Before people develop Type 2 diabetes, they almost always have impaired glucose regulation and would be considered high risk.

There is a lack of awareness of the signs, symptoms and risk factors of Type 2 diabetes. A survey of Diabetes UK members diagnosed with Type 2 diabetes in a 12 month period (2009), found only 18 per cent were diagnosed as a result of a routine test offered by the GP or practice nurse and 37 per cent were diagnosed as a result of having a test for another condition or problem. 56 per cent were “highly unaware” or “unaware” of the symptoms. Only 16 per cent were diagnosed because they asked their doctor for a test or went to the GP because they had symptoms of diabetes\textsuperscript{vii}.

**Current situation**

**Numbers involved:**
Older studies have found that 15 per cent of the population have impaired glucose regulation and the evidence for prevention in this group is unequivocal\textsuperscript{viii,ix}

A recent study suggested that up to 35 per cent of the English population could have ‘prediabetes’ using the American Diabetes Association HbA\textsubscript{1c} cut off point of 39mmol/mol (5.7 per cent)\textsuperscript{x}. However, Diabetes UK feels that this cut-off is probably too low. It could over medicalise people by giving them a diagnosis of an unrecognised medical condition when their risk of diabetes is relatively low. This is not to say that people in this range may not still be at risk of Type 2 diabetes. Diabetes UK supports the recommendations of the UK Expert Committee that those with an HbA\textsubscript{1c} of 42-47mmol/mol (6.0-6.4 per cent) should be considered high risk, even if asymptomatic\textsuperscript{i}.

Without further research it is impossible to establish exactly how many people in the UK are at high risk of developing Type 2 diabetes. However we know that the percentage of the population of the UK who are overweight or obese has risen by 10 per cent in the past 20 years\textsuperscript{xii}. We have also seen the prevalence of diagnosed diabetes double in the last 10 years\textsuperscript{ii,xi}. It is therefore likely that the numbers who would now fall in to the high risk category, using the 42 mmol/mol cut off point would be somewhere between 15–35 per cent. Diabetes UK therefore estimate that 25 per cent of the population would now fall into the high risk category, which would mean a high risk population of about 11.5 million in the UK\textsuperscript{xiii}.

**Terminology:**
Accepted terminology of people most likely to be at high risk of Type 2 diabetes is either those with Impaired Glucose Regulation (IGR) or non-diabetic hyperglycaemia. There are also two linked conditions (impaired glucose tolerance [IGT] and impaired fasting glucose [IFG]) which can be detected by specific blood glucose tests (fasting and Oral Glucose
Tolerance). In terms of this position, regardless of nomenclature, all people in these categories are seen as at high risk of developing Type 2 diabetes in the future.

For lay people, two terms have been used – borderline diabetes and prediabetes. Both medicalise a condition which is not currently recognised by WHO. Both terminologies can falsely suggest that a diagnosis of Type 2 diabetes is inevitable, which it is not and, rather than inspiring individuals to take action to reduce their risk, may in fact make them more resigned to the condition.

A study in Merseyside\textsuperscript{xiv} explored the use of these terminologies with people at risk of Type 2 diabetes. This found that:

- Prediabetes was interpreted as a medical condition suggesting medication and GP supervision. Critically, people understood prediabetes to mean that they would go on to develop Type 2 diabetes and it was a particularly difficult concept to understand for BAME groups.
- People understood from the term “borderline diabetes” that there was a chance of preventing the onset of Type 2 diabetes. It was seen as less medical in connotation, though was still a difficult concept for BAME groups.
- High risk of Type 2 diabetes was clearly understood, but differences in opinion emerged. It was either seen as motivating (medical, dangerous and potentially fast moving) or it could be dismissed as a generic statement.

In light of this, Diabetes UK will generally refer to high risk of Type 2 diabetes, though may use “borderline diabetes” as a terminology in certain communications to lay people. We will not generally use the term prediabetes as it is not clearly understood by lay audiences, and may cause confusion with professional audiences because of the different diagnostic levels suggested by the ADA and others.

**What are the current methods of early identification?**

In order to identify people with Type 2 diabetes and those at high risk, NICE guidance\textsuperscript{iv} recommends encouraging the following to have a risk assessment using a validated risk assessment tool, such as the Diabetes UK Risk Score\textsuperscript{xv}:

- All non-pregnant adults aged 40 and above
- People aged 25-39 of South Asian and Chinese, African-Caribbean, black African and other high-risk black and minority ethnic groups
- People with conditions that increase the risk of Type 2 diabetes

Then, for those with a high risk score, to conduct a blood test (HbA\textsubscript{1c} or fasting plasma glucose).

Diabetes UK believes that HbA\textsubscript{1c} should be the test of choice, unless the individual is likely to give a low HbA\textsubscript{1c} reading because of factors laid out in WHO diagnostic guidelines, such as genetic, haematologic and illness-related factors that influence HbA\textsubscript{1c} and its measurement\textsuperscript{xvi}.
NICE also makes recommendations about encouraging health professionals and others to communicate the risk of Type 2 diabetes and the benefits of prevention. The guidance stresses that everyone being assessed should be given advice about their risk and about how to reduce their risk.

The NICE Guidance makes recommendations about how often someone should be reassessed depending on level of risk. Those at high risk should be reassessed at least once a year.

In England, for those between 40 and 74 years this guidance can be implemented through the NHS Health Check programme which is already in place but, despite widespread political support for the Health Checks Programme, implementation so far has been patchy and, in some places, poor. Every year, 20 per cent of the eligible population should be offered a check, so that the entire population is screened over five years. Only 92.3 per cent of that target population was offered a NHS Health Check in 2013–14 with only a 49 per cent take up, which means that only 45.2 per cent of Health Checks were delivered in that year xvii.

In Wales the Government has run short-term pharmacy campaigns that have screened 17,500 people in a two week period. Considered a success, NHS Wales is now exploring how to translate this work into a regular or sustained campaign in the future. The Government has also integrated the Diabetes UK risk score into its ‘Add to Your Life’ initiative which is an online and community delivered health check for all over 50s in Wales.

In Scotland there are targeted campaigns offering health checks and risk assessment. The Keep Well project runs in each health board and its vision is ‘to increase the rate of health improvement in deprived communities by enhancing primary care services to deliver anticipatory care xviii’. It targets communities that have the risk factors associated with long term conditions such as cardiovascular disease.

We would ask that risk assessment for diabetes is built in as a key component and that people identified as high risk have a clearly defined pathway to follow as a result. The NHS 24 Health Check programme ‘Life begins at 40’ was cancelled earlier this year. This work will be folded into the Healthy Working Lives programme xix. There is no national approach or agreement on what approach to take to identify at high risk and undiagnosed. The last Diabetes Action Plan [2010-2013] included an action [2.2] on screening:

“The Scottish Public Health Network recommendations on screening will be considered through further discussions with:

- Scottish Government Health Directorates
- NHS Boards
- Key stake holders such as the clinical biochemistry community
- Scottish Government Health Department
- Directors of Public Health
So far there has been no progress on this specific action.

In Northern Ireland there is currently no structured programme of risk assessment or early diagnosis.

The Diabetes UK risk score\textsuperscript{xv}
The Diabetes UK risk score, produced in collaboration with Leicester University, can be used by individuals to identify their risk of developing Type 2 diabetes and encourages those at moderate to high risk to go to their GP to get tested for diabetes. The risk score tool is recommended because use of fasting plasma glucose (or random plasma glucose) alone is not as effective at identifying people with impaired glucose regulation\textsuperscript{xx}. This type of targeted screening to high risk groups has been shown to be more efficient, and results in higher positive diagnostic yield than testing the whole population\textsuperscript{xxi,xxii,xxiii,xxiv}.

The diabetes risk score is promoted via various routes; some of the most successful ways include the availability of the risk score on line and via Diabetes UK roadshows. Healthcare professionals also can request it separately to use in their practice.

Community Champions
Diabetes UK Community Champions have been trained to undertake the Diabetes UK risk assessments to raise awareness through outreach programmes within Black, Asian and Minority Ethnic communities.

Interventions for those at high risk of Type 2 diabetes
NICE Guidance recommends the commissioning and delivery of evidence based and quality assured intensive lifestyle change programmes. It sets out detailed components for these programmes drawing on the evidence base.

Recommendations
Diabetes UK supports the NICE guidelines: Preventing Type 2 Diabetes: Risk Identification and Interventions for Individuals at High Risk, and calls for these to be implemented in full at both national and local level through NHS and local authority commissioning.

There needs to be a systematic approach to identifying people with Type 2 diabetes early which identifies and targets high risk groups no matter where someone lives within the UK.

An NHS Health Check or equivalent should be equally accessible to everyone who is eligible. There should be targeted action to reduce geographical variation and effective action to ensure those in high risk groups receive an NHS Health Check.
The Welsh Government have agreed to explore how to deliver continual assessment/screening in pharmacies in the future. Diabetes UK Cymru will monitor how effectively this is delivered.

In Scotland, Diabetes UK are calling for the findings of the Scottish Needs Assessment Programme to be acted on as soon as possible, in order to make progress towards the introduction of a vascular risk management programme\textsuperscript{xv}.

A suitable risk assessment programme should be considered for Northern Ireland. Diabetes UK will push for screening of high risk people to be included in the Northern Ireland Diabetes Action Plan.

There should be effective signposting to organisations providing information and advice to support people to adopt healthier lifestyles and reduce their risk of Type 2 diabetes. People should be encouraged to use the free Diabetes UK online risk score. Healthcare professionals can request the risk score to use within their practice, clinics, health events or other community settings.

GPs should be incentivised to keep a register of those at high risk of developing diabetes and delivery of management of people at high risk by inclusion of this in the Quality Outcomes Framework (QOF).

Diabetes UK welcomes PHE's commitment to rolling out the NHS Health Check across England. However, greater efforts are required by NHS England, PHE, local authorities and the Department of Health to increase uptake, raise awareness and ensure delivery of interventions to help people reduce their risk including:

- PHE, NHS England and local authorities should work together to improve the entire pathway, ensuring that people are encouraged to attend an NHS Health Check, that they receive a quality check and that they are followed up appropriately.
- The public health outcomes framework should include indicators on the:
  - "prevalence of impaired glucose regulation"
  - "percentage of people receiving lifestyle intervention support to reduce their risk of developing Type 2 diabetes" (those with impaired glucose regulation).

Health and Wellbeing Boards should ensure that the uptake of NHS Health Checks locally is improving towards the target of 75 per cent coverage of the eligible population and that people are being followed up appropriately.

PHE and NHS England should establish clarity about where responsibility lies for commissioning intensive lifestyle behaviour change programmes.

Diabetes UK welcomes the ring fence for local authority public health functions in England, which helps to ensure that the funding for NHS Health Checks is available. The
Department of Health should maintain and guarantee this going forward in order for the gains of the NHS Health Check programme to be sustained.

Further research is needed in to the benefits of early identification on long term outcomes of Type 2 diabetes.

A WHO working group should be convened to identify and harmonise the different cut off points for high risk of Type 2 diabetes, based on the latest evidence.

**Conclusion**

There is clear guidance from NICE on identifying people at risk of Type 2 diabetes and the preventative interventions to be implemented. There is also a clear steer from the Government about the role of NHS Health Checks in identifying people with, and at high risk of, Type 2 diabetes in England. Diabetes UK calls for full implementation of both the NICE guidance and the NHS Health Checks programme and for similar guidance and programmes to be delivered in the other nations.

### Last reviewed
8 September 2014

### Due for review
8 September 2015

**References:**


2. This figure was worked out using the diagnosed figure from the 2012/3 Quality and Outcomes Framework and the AHPO diabetes prevalence model. A figure for Northern Ireland was not predicted by the AHPO model, so undiagnosed prevalence for Northern Ireland was extrapolated on the % undiagnosed figure for Scotland.

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3. Spijkerman AMW et al. Microvascular Complications at Time of Diagnosis of Type 2 Diabetes Are Similar Among Diabetic Patients Detected by Targeted Screening and Patients Newly Diagnosed in General Practice (2003) Diabetes Care 26 (9) 2604-8


Diabetes UK: State of Diabetes Care report 2009


Gillies CL et al, Pharmacological and lifestyle interventions to prevent or delay type 2 diabetes in people with impaired glucose tolerance: systematic review and meta-analysis. BMJ 2007; 334:299-302


Diabetes UK: Diabetes in the UK 2004

Based on 2013 ONS data that predicts a UK wide population of people over the age of 19 as 48.9 million, minus the 3.2 million already diagnosed with diabetes: 25% = 11.4 million: http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-322718


http://riskscore.diabetes.org.uk/2013


http://www.healthscotland.com/keep-well.aspx

http://www.healthyworkinglives.com/


