

PUBLIC HEALTH GUIDANCE

SCOPE

1 Guidance title

Type 2 diabetes: preventing pre-diabetes among adults in high-risk groups

1.1 Short title

Type 2 diabetes: preventing pre-diabetes in adults.

2 Background

- a) The National Institute for Health and Clinical Excellence (NICE) has been asked by the Department of Health (DH) to develop public health guidance on the prevention of type 2 diabetes mellitus among high-risk groups. This referral has been divided into two separate pieces of guidance. The first will address the prevention of raised and impaired glucose levels – defined here as ‘pre-diabetes’ – among populations and communities at greatest risk through ‘upstream’ determinants of health for example, through creating an environment that is supportive of behaviour change. The second will address how to prevent the progression of pre-diabetes to type 2 diabetes at the individual level. This document is the scope for the first piece of guidance.

Raised and impaired blood glucose levels are indicated by impaired glucose tolerance (IGT) or impaired fasting glucose (IFG). Different terms are used in research, practice and by patients to refer to this condition. For the purpose of this guidance, we use the term ‘pre-diabetes’ to refer to raised and impaired blood glucose levels. We recognise that this term is not ideal, as not everyone with raised or impaired blood glucose levels will go on to develop type 2 diabetes. However, we have opted to use the term ‘pre-

diabetes' because of its widespread use and recognition by a broad range of stakeholder groups and because of the lack of consensus on a suitable alternative.

- b) NICE public health guidance supports the preventive aspects of relevant national service frameworks (NSFs), where they exist. If it is published after an NSF has been issued, the guidance effectively updates it. Specifically, in this case, the guidance will support NSFs on coronary heart disease and diabetes (DH 2000; 2001).
- c) This guidance will support a number of related policy documents including:
- 'Commissioning framework for health and well-being' (DH 2007a)
 - 'Delivering choosing health: making healthier choices easier' (DH 2005)
 - 'Health challenge England – next steps for choosing health' (DH 2006)
 - 'Healthy weight, healthy lives: a cross-government strategy for England' (DH 2008a)
 - 'National service framework for diabetes: delivery strategy' (DH 2007b)
 - 'National stroke strategy' (DH 2007c)
 - 'Putting prevention first – NHS health check: vascular risk assessment and management best practice guidance' (DH 2009)
 - 'Putting prevention first – vascular checks: risk assessment and management' (DH 2008b)
 - 'Securing good health for the whole population' (Wanless 2004)
 - 'Tackling health inequalities: 2007 status report on the programme for action' (DH 2008c).
- d) This guidance will provide recommendations for good practice to reduce the prevalence of pre-diabetes among individuals,

communities, and population groups at greatest risk. The recommendations will be based on the best available evidence of effectiveness, including cost effectiveness. It is aimed at policy makers, professionals, commissioners and managers with public health as part of their remit working within the NHS, local authorities and the wider public, private, voluntary and community sectors. It is particularly aimed at strategic health authorities, directors of public health, GPs, practice nurses, dietitians, public health nutritionists, pharmacists and those involved in delivering physical activity interventions. It will also be of interest to the general public, in particular, people at risk of developing pre-diabetes and their families and carers.

- e) The guidance will complement NICE guidance on behaviour change, obesity, cardiovascular disease, physical activity, management of type 2 diabetes, maternal and child nutrition and diabetes in pregnancy. For further details, see section 6.

This guidance will be developed using the NICE public health programme process.

3 The need for guidance

- a) Every year 100,000 people in the UK are diagnosed with type 2 diabetes and many more may have the condition (Diabetes UK 2006). It can lead to long-term complications including micro- and macrovascular diseases such as eye problems, kidney disease, foot ulcers and cardiovascular disease. Between 33% and 66% of people with pre-diabetes – raised or impaired blood glucose levels – will go on to develop type 2 diabetes over a period of 3–6 years (Diabetes Prevention Programme Research Group 2002; Lindstrom et al. 2003; Pan et al. 1997; Ramachandran et al. 2006). During that time they may also be at increased risk of coronary heart disease (Waugh 2007).

- b) An individual's risk factors for pre-diabetes include: obesity (a body mass index [BMI] of more than 30 kg/m²); a high waist circumference measurement (more than 80 cm in women and 94 cm in men); a sedentary lifestyle; a close family history of type 2 diabetes; a history of gestational diabetes in women; and being older than 40 (or older than 25 for some black and minority ethnic groups). In addition, certain groups of people are at greater overall risk of developing pre-diabetes, for example people of south Asian, African–Caribbean and black African descent. The same is true for those from lower socioeconomic groups, for example, people in social class five are three and a half times more likely than those in social class one to experience morbidity as a result of diabetic complications (DH 2002). With rates of obesity on the increase and the population becoming more sedentary (The Health and Social Care Information Centre 2009) type 2 diabetes (and pre-diabetes) is becoming more prevalent.
- c) For most people, both pre-diabetes and type 2 diabetes can be prevented by maintaining a healthy weight, improving dietary intake and being physically active. However, many people are unaware that they are at risk – and of the extent to which changes to their lifestyles can help prevent the onset of type 2 diabetes (Model Group 2007).
- d) People at high risk of developing pre-diabetes may be less likely to use health services and therefore less likely to receive early diagnosis and treatment. For example, a significant proportion of people from poorer areas who are at risk of diabetes are not recorded on GP registers (Model Group 2007).
- e) In addition to the personal cost to individuals, families and communities, diabetes is estimated to account for at least 5% of UK healthcare expenditure. Up to 10% of hospital budgets are used for the care of people with the condition – drug costs alone for people with type 2 diabetes have been estimated to account for

about 7% of the total NHS drugs budget (Waugh et al. 2007). Preventing pre-diabetes among groups at high risk of developing type 2 diabetes could help save some of these NHS resources.

- f) In 2007, 60% of primary care trusts (PCTs) had programmes in place to raise public awareness of the risk factors for diabetes and 37% were raising awareness of its signs and symptoms. Only 42% had assessed the needs of their population in relation to diabetes and less than 40% had developed a diabetes strategy (Innove 2008).

4 The guidance

Public health guidance will be developed according to NICE processes and methods. For details see section 5.

This document defines exactly what this guidance will (and will not) examine, and what the guidance developers will consider. The scope is based on a referral from the DH (see appendix A).

4.1 *Who is the focus?*

4.1.1 Population groups that will be covered

Adults (aged 18–74) with one or more of the following individual risk factors:

- family history of type 2 diabetes
- history of gestational diabetes
- BMI of 25 kg/m² or above
- high waist circumference above 80 cm (for women) or 94 cm (for men).

Groups of adults at greater risk of pre-diabetes including:

- people of south Asian, African–Caribbean or black African descent
- people from a lower socioeconomic group (as measured by education and occupation).

4.1.2 Groups that will not be covered

- People who have already been diagnosed with IFG or IGT (The second piece of NICE guidance on preventing type 2 diabetes will consider this group.)
- People with diabetes.
- Children and young people aged under 18.
- Adults older than 74.
- Pregnant women.
- Adults with other medical conditions who have been prescribed medication that may increase the risk of type 2 diabetes (for example, steroids).

The guidance will apply to all high-risk groups within the general population.

4.1.3 Activities/measures that will be covered

- a) Awareness-raising among health professionals of the increased risk of pre-diabetes faced by some groups. This may include education and training of health professionals and the use of a range of media.
- b) Methods to identify populations, communities and individuals at high risk of developing pre-diabetes. These may include training for health professionals, community-mapping (for example, building relationships, knowledge and familiarity within the local area to identify who needs what, where and when), needs assessment and proactive efforts to find people at risk. It may also include opportunistic screening in primary care.
- c) Awareness-raising among high-risk groups of the factors that can lead to pre-diabetes. This may include mass-media campaigns, advertising and social marketing. In addition, it may include community outreach work (for example, in places of worship), use of community leaders to disseminate health promotion messages

and the use of culturally appropriate educational materials. It may also include integrated health promotion programmes which could contain several or all of these activities.

- d) Methods used to ensure interventions are culturally sensitive and appropriate for groups at high risk of pre-diabetes. These would include getting these groups involved in both the planning and delivery of the intervention, as well as participating in health-promoting activities.
- e) Ways of helping high-risk groups improve their diet, increase their physical activity levels and reach or maintain a healthy weight.
- f) Population-level interventions aimed at reducing overall risks for diabetes.

4.1.4 Activities/measures that will not be covered

- a) Population-level screening to identify pre-diabetes.
- b) Diagnostic testing to identify pre-diabetes.
- c) BMI and waist circumference cut-off points used to assess risk in minority ethnic groups. (This is covered in the NICE guideline on the prevention and management of obesity [see section 6].)
- d) Interventions to prevent the progression from diagnosed pre-diabetes to type 2 diabetes. (This will be addressed by the second piece of guidance.)
- e) Treatment and management of diagnosed type 1 and type 2 diabetes. (This is the subject of previously published NICE guidance [see section 6].)

4.2 Key questions and outcomes

Below are the main questions that will be addressed along with some of the outcomes that would be considered as evidence of effectiveness:

Questions:

1. What are the most effective and cost-effective methods of raising health professionals' awareness of the groups at high risk of pre-diabetes?
2. What are the most effective and cost-effective methods of identifying communities, individuals and groups at high risk of developing pre-diabetes?
3. What are the most effective and cost effective population-level interventions to prevent the development of pre-diabetes?
4. What are the most effective and cost effective ways of raising awareness of how to prevent pre-diabetes among groups at high risk of developing it? Does this differ by age, sex, disability, faith and religion, sexual orientation, ethnicity or socioeconomic group?
5. What are the most effective and cost effective ways of ensuring interventions are culturally sensitive and appropriate for use with communities at high risk of developing pre-diabetes?
6. What factors might discourage both individuals and groups at high risk of pre-diabetes from getting involved with preventive interventions and how might these barriers be addressed? Does this differ by age, sex, disability, faith and religion, sexual orientation, ethnicity or socioeconomic group?
7. What are the most effective and cost effective methods of helping people at high risk of pre-diabetes to improve their diet, be more physically active and manage their weight? Does this differ by age, sex, disability, faith and religion, sexual orientation, ethnicity or socioeconomic group?

Expected outcomes:

These may include:

1. Changes in health professionals' knowledge and awareness of the groups at high risk of developing pre-diabetes.

2. Changes in health professionals' knowledge of how to identify communities and individuals at high risk of developing pre-diabetes.
3. Increase in knowledge and awareness among high-risk groups of the factors that can lead to pre-diabetes.
4. Changes in behaviour, such as improved diet and increased levels of physical activity among those at high risk of pre-diabetes.
5. Use of culturally appropriate and sensitive interventions that help reduce the risk of pre-diabetes, and an increase in the number of people from high-risk groups involved in them.
6. Improved weight management among those at high risk of pre-diabetes (for example, measured by weight, BMI or waist circumference).
7. Reduction in the incidence of IGT, IFG and type 2 diabetes mellitus and associated long-term diabetic complications such as eye problems and foot ulcers.
8. Reduction in other health conditions such as high blood pressure and blood cholesterol or rates of cardiovascular disease.
9. An understanding of the barriers faced by those planning and delivering lifestyle interventions (and how to overcome them) and the factors that aid practice.
10. An understanding of what prevents recipients of lifestyle interventions from changing their behaviour and how to overcome those barriers.
11. Use of health services by people at high risk of pre-diabetes.
12. Any adverse effects or unintended consequences from taking part in preventive interventions.

4.3 *Status of this document*

This is the final scope, incorporating comments from a 4 week consultation which included a stakeholder meeting on 10 June 2009.

5 Further information

The public health guidance development process and methods are described in 'The NICE public health guidance development process: An overview for stakeholders including public health practitioners, policy makers and the public (second edition, 2009)' available at www.nice.org.uk/phprocess and 'Methods for development of NICE public health guidance (second edition, 2009)' available at www.nice.org.uk/phmethods

6 Related NICE guidance

Published

Autologous pancreatic islet cell transplantation for improved glycaemic control after pancreatectomy. NICE interventional procedure guidance 274 (2008). Available from www.nice.org.uk/IPG274

Diabetes: insulin pump therapy. NICE technology appraisal guidance 151 (2008). Available from www.nice.org.uk/TA151

Type 2 diabetes: The management of type 2 diabetes (update). NICE clinical guideline 66 (2008). Available from www.nice.org.uk/CG66

Diabetes in pregnancy: management of diabetes and its complications from pre-conception to the postnatal period. NICE clinical guideline 63 (2008). Available from www.nice.org.uk/CG63

Maternal and child nutrition. NICE public health guidance 11 (2008). Available from www.nice.org.uk/PH11

Physical activity and the environment. NICE public health guidance 8 (2008). Available from www.nice.org.uk/PH8

Behaviour change. NICE public health guidance 6 (2007). Available from www.nice.org.uk/PH6

Diabetes (type 1 and 2) – inhaled insulin. NICE technology appraisal guidance 113 (2006). Available from www.nice.org.uk/TA113

Obesity: the prevention, identification, assessment and management of overweight and obesity in adults and children. NICE clinical guideline 43 (2006). Available from www.nice.org.uk/CG43

Diagnosis and management of type 1 diabetes in children, young people and adults. NICE clinical guideline 15 (2004). Available from www.nice.org.uk/CG15

Type 2 diabetes: prevention and management of foot problems. NICE clinical guideline 10 (2004). Available from www.nice.org.uk/CG10

Allogeneic pancreatic islet cell transplantation for type 1 diabetes mellitus. NICE interventional procedure guidance 257 (2003). Available from www.nice.org.uk/IPG257

Diabetes (type 1 and 2) – patient education models. NICE technology appraisal guidance 60 (2003). Available from www.nice.org.uk/TA60

Diabetes (type 1 and 2) – long acting insulin analogues. NICE technology appraisal guidance 53 (2002). Available from www.nice.org.uk/TA53

Under development

Prevention of cardiovascular disease. NICE public health guidance (publication expected March 2010)

Weight management in pregnancy. NICE public health guidance (publication expected June 2010)

Weight management after childbirth. NICE public health guidance (publication expected July 2010)

Type 2 diabetes newer agents. NICE technology appraisal guidance (publication date to be confirmed)

Preventing progression of pre-diabetes to type 2 diabetes. NICE public health guidance (publication date to be confirmed)

Appendix A Referral from the Department of Health

The Department of Health asked NICE to:

'produce public health programme guidance for the health service on the prevention of type 2 diabetes mellitus among high-risk groups'.

Appendix B Potential considerations

It is anticipated that the Programme Development Group (PDG) will consider the following issues:

- The effectiveness and cost effectiveness of different methods of raising awareness of the risk factors for pre-diabetes among both health professionals and high-risk groups.
- The effectiveness and cost effectiveness of different methods of identifying groups at risk within communities and populations, including groups that may not be in regular or formal contact with health services.
- The effectiveness and cost effectiveness of methods of getting groups at high risk involved in appropriate interventions.
- The effectiveness and cost effectiveness of different approaches to helping groups at high risk change their behaviour to reduce the risk of developing pre-diabetes. This includes factors that affect the sustainability of those changes.
- Whether interventions and approaches should be delivered at individual, community and population level.
- The differential effectiveness and cost effectiveness of different intervention modalities used individually and in combination, including educational interventions, policy measures, technologies and access to resources.
- How to identify people at high risk of pre-diabetes and how to get them involved in activities to reduce their risk. How often these activities should take place and for how long.
- Whether the effectiveness and cost effectiveness of interventions and approaches vary according to the status (or other characteristic) of the person delivering it.
- Whether interventions are transferable across different settings.

- How accessible and acceptable interventions are to groups at high risk.
- The needs of specific groups, in particular:
 - black and minority ethnic groups
 - lower socioeconomic groups
 - different age groups
 - the different needs of men and women.
- The potential impact of the guidance on health inequalities and the extent to which it promotes equality and diversity.
- The barriers and opportunities for implementing the guidance as perceived by health professionals and people at high risk of pre-diabetes.
- How any adverse effects or unintended consequences of taking part in an intervention can be minimised.

Appendix C References

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Innove (2008) Delivering performance improvement. Findings from DiabetesE third national report [online]. Available from [www.diabetes.nhs.uk/news-folder/DiabetesE%20Third%20National%20Report%20Abridged%20Version%20FINAL%20\(Feb%202008\).pdf](http://www.diabetes.nhs.uk/news-folder/DiabetesE%20Third%20National%20Report%20Abridged%20Version%20FINAL%20(Feb%202008).pdf)

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Ramachandran A, Snehalatha C, Mary S et al. (2006) The Indian diabetes prevention programme shows that lifestyle modification and metformin prevent type 2 diabetes in Asian Indian subjects with impaired glucose tolerance. *Diabetologica* 49: 289–97

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