# Preventing type 2 diabetes: Making the case for prevention in practice

Andrew Hartland

**Citation:** Hartland A (2013) Preventing type 2 diabetes: Making the case for prevention in practice. *Diabetes & Primary Care* **15**: 184–8

## Article points

1. NICE guidance aimed at preventing type 2 diabetes has recently been published.
2. The evidence base for intensive lifestyle-change intervention programmes form the basis of most Level 3 specialist multi-disciplinary medical weight management programmes.
3. These programmes could not meet the demand for these services if used primarily for diabetes prevention.
4. This article outlines the challenges facing the implementation of these guidance and outlines a NICE pilot project aimed at upskilling and utilising existing Level 2 weight management services to deliver these programmes.

## Key words

- Diabetes prevention
- Level 2 and 3 weight management
- NICE guidance

## Author

Andrew Hartland is a Consultant Bariatric Physician, Walsall Healthcare NHS Trust and a Fellow (2013–15 – Diabetes Prevention) NICE.

**In July 2012, NICE published its guidance on preventing type 2 diabetes, concentrating specifically on identifying those individuals at high risk for the development of type 2 diabetes and offering these individuals intensive lifestyle-change intervention programmes. The evidence base for these programmes comes from diabetes prevention programmes that have been successful in the US, Scandinavia, India and China and that form the basis of most UK Level 3 multi-disciplinary medical weight management programmes. In this article, the author looks at the challenges in implementing this new NICE guidance and outlines a NICE Fellowship project aimed at utilising existing services to deliver the implementation.**

In July 2012, NICE published its latest guidance on preventing type 2 diabetes, concentrating specifically on identifying those individuals at high risk for the development of type 2 diabetes and specifying interventions to be offered to this at-risk group (NICE, 2012). Its implementation could present a challenge to commissioners, but the solution may lie in existing services and the evidence base underpinning this area.

NICE Public Health Guidance 38, titled "Prevention of type 2 diabetes – risk identification and interventions for individuals at high risk" (NICE, 2012), builds on existing work – including previous NICE guidance (NICE, 2011) as well as the NHS Health Check Programme (Department of Health, 2009) – and recognises the increased predisposition to developing diabetes of certain ethnicities (e.g. South Asian, Chinese). Following initial screening, confirmation of risk is via blood test – either fasting plasma glucose (FPG) or $HbA_{1c}$. The inclusion of $HbA_{1c}$ as a screening tool is particularly advantageous when seeking to provide this service to individuals or groups who typically do not present to traditional healthcare providers (including vulnerable groups such as homeless people, those with severe mental illness, learning or physical disabilities, prisoners, refugees, recent migrant groups and members of the travelling community), where a one-stop screening service is made possible by removing the necessity for a fasting blood sample.

## Targeting the high-risk group

Blood tests differentiate screened individuals into one of three categories: low risk, high risk or diagnosed with diabetes. The success of this guidance in delivering primary prevention of type 2 diabetes will depend directly on the success of interventions targeted towards those identified at high risk (FPG of 5.5–6.9 mmol/L or $HbA_{1c}$ of 42–47 mmol/mol [6.0–6.5%]). For these individuals, NICE recommends an intensive lifestyle-change programme and details the specifications for such a service. These programmes should:

- Be delivered to groups of 10–15 people (this can include both individual and group sessions).

**Page points**

1. Intensive lifestyle-change programmes are adapted from diabetes prevention programmes that have been successful to a certain degree at preventing type 2 diabetes in populations as diverse as those of the US, Scandinavia, China and India.
2. While diabetes prevention programmes have been successful in carefully controlled clinic trials, data for similar results being achieved when transplanted to real grassroots medical practice are scant.
3. However, there is a feeling that the data which are available support the view that these programmes can be successful when translated into routine clinical practice.

- Be delivered by practitioners with relevant knowledge and skills who have received externally accredited training.
- Be delivered to groups that meet at least eight times over a period of 9–18 months (participants should have at least 16 hours of contact time [within a group, one-to-one or a combination of both approaches]).
- Encourage participants to increase their physical activity (to a standard of at least 150 minutes' moderate activity per week).
- Provide advice to help participants achieve and maintain weight loss.
- Provide advice on diet to increase dietary fibre and reduce fat intake (particularly saturated fat).
- Offer follow-up sessions at regular intervals (e.g. every 3 months) for at least 2 years.

## The evidence base

If these specifications appear prescriptive, they have their basis in sound evidence-based medicine. These intensive lifestyle-change programmes are adapted from diabetes prevention programmes that have been successful to a certain degree at preventing type 2 diabetes in populations as diverse as those of the US (Diabetes Prevention Program Research Group, 2002), Scandinavia (Tuomilehto et al, 2001), China (Pan et al, 1997) and India (Ramachandran et al, 2006). However, it may be that the implementation of this strategy into the UK could be faced with difficulties.

While diabetes prevention programmes have been successful in carefully controlled clinic trials, data for similar results being achieved when transplanted to real grass-roots medical practice are scant. Indeed, this very point was made in an editorial in the journal *Diabesity in Practice* last year (Rajeswaran and Srinivasan, 2012). However, from the discussion I have had with peers, there is a feeling that the data which are available support the view that these programmes can be successful when translated into routine clinical practice.

For example, my colleagues and I have been running a directly analogous multi-disciplinary specialist medical weight management (SMWM) service in Walsall since 2009. Our published annual audited outcome figures give an average weight loss at least equivalent to that of the US-based Diabetes Prevention Program (Kalmus et al, 2013). This could translate, if targeted specifically towards diabetes prevention, into a number-needed to treat (NNT) to prevent one new case of diabetes in 2 years of seven.

But herein lies a further problem.

*The author estimates that in the population he and his colleagues serve (approximately 200 000), there are between 30 000 and 40 000 individuals at high risk for diabetes (as defined by NICE guidance) who would be eligible for an intensive lifestyle-change programme.*

## Practical barriers

SMWM clinics are, by their nature, reliant on a group of highly trained healthcare professionals working as a multi-disciplinary team. As such, they are relatively expensive in terms of staffing costs and are limited in the number of patients that they can serve per annum, if clinic workload is to remain manageable and patients are to be provided with worthwhile clinical encounters. In addition, my experience suggests that there is a nationwide shortage of healthcare professional with appropriate training in bariatric medicine. All of these factors limit the capacity of these services.

Again using Walsall as an example, our SMWM service has a capacity of approximately 300–350 new patients per annum. We estimate that in the population we serve (approximately 200 000), there are between 30 000 and 40 000 individuals at high risk for diabetes (as defined by NICE guidance) who would be eligible for an intensive lifestyle-change programme. Hence, existing SMWM clinics can provide only a small part of the solution to the problem of delivering diabetes prevention.

If diabetes prevention programmes are to have a real impact, they must be delivered at five- to 10-fold the capacity of existing SMWM clinics. They must also do so in a current economic and commissioning environment where, realistically, there are no substantial amounts of new money for the development of novel services, no matter how clinically or cost-effective they may be.

## The role of the NICE Fellowship programme

Against this background, the NICE Fellowship programme is attempting to address these problems by championing a pilot programme in which diabetes prevention is provided by the better targeting of existing commissioned Level 2 weight management services.

Most primary care trusts, before their demise, developed weight management strategies for the populations they served in line with models for chronic disease management, usually with four tiers of delivery ranging from Level 1 (which comprises public health measures including public education campaigns) to Level 4 (bariatric surgery).

Much of the practical service delivery is at Level 2, namely community-delivered programmes for large numbers of people, usually utilising a combination of deliverers including commercial organisations such as Slimming World and Weight Watchers®, as well as the Health Trainer Service and GP- and practice nurse-based programmes. These have recently been subject to clinical trial evaluation, with the commercial programmes being found to be particularly effective (Jolly et al, 2011).

These services remain largely commissioned, in the transition to local authority. However, the eligibility criteria for these services are broad and are not directed towards any specific clinical outcomes. The NICE Fellowship programme's proposal is to better target these services by ensuring that eligibility criteria specifically include those people identified as being at high risk for developing diabetes. Although these services may not be as clinically effective in terms of diabetes prevention as the more highly specialised SMWM programmes, they have a considerably

## Page points

1. Although weight loss is the primary effective treatment modality of diabetes prevention programmes, it is recognised that a diabetes prevention programme and a Level 2 weight management programme are not synonymous.
2. An effective diabetes prevention programme must provide more that just weight management and weight loss. It must provide advice on physical activity, healthy eating, and behavioural approaches to help develop and maintain the lifestyle changes achieved, as well as education about diabetes risk and the importance of diabetes prevention.

lower unit cost, are accessible to large numbers of people, have a sound evidence base and have a projected NNT to prevent one new case of diabetes in 2 years of 10–14 (Kalmus et al, 2013). This could make them extremely cost-effective. In addition, as these services are currently already commissioned and funded, there would be no significant additional financial investment required.

Where investment is required is in training. Although weight loss is the primary effective treatment modality of diabetes prevention programmes (Hamman et al, 2006), it is recognised that a diabetes prevention programme and a Level 2 weight management programme are not synonymous. An effective diabetes prevention programme must provide more that just weight management and weight loss. It must provide advice on physical activity, healthy eating, and behavioural approaches to help develop and maintain the lifestyle changes achieved, as well as education about diabetes risk and the importance of diabetes prevention. Therefore, there is a skill gap which needs to be bridged and it is worth remembering that much of Level 2 weight management is currently delivered by non-healthcare professionals. However, it is important not to make this skill gap an obstacle. There is already work underway with current providers to map where training is needed and to provide appropriate accredited training that meets these needs.

***"It is hoped that pilot schemes as outlined in this article will be fully operational within the next 12 months. They could provide a model for the evidence-based, cost-effective implementation of diabetes prevention that could be replicated nationwide."***

## Concluding remark

It is hoped that pilot schemes as outlined in this article will be fully operational within the next 12 months. They could provide a model for the evidence-based, cost-effective implementation of diabetes prevention that, importantly, could be replicated nationwide. ■


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