

# Long-term effects of a lifestyle change support programme for people with impaired glucose tolerance

**Authors:** Betzlbacher, A<sup>1</sup>, Cotterill, S<sup>2</sup>, Summers, LKM<sup>3</sup>

**Affiliations:** 1) NIHR CLAHRC for Greater Manchester, Salford Royal NHS Foundation Trust, 2) Centre for Biostatistics, University of Manchester, 3) Department of Endocrinology, Salford Royal NHS Foundation Trust.

## About the CLAHRC for Greater Manchester

The CLAHRC for Greater Manchester is a collaboration between the University of Manchester and NHS Trusts across Greater Manchester. Their five year mission is to improve healthcare, reduce inequalities in health and support self-management for people with cardiovascular conditions. This poster describes the results of the CLAHRC diabetes prevention project which was undertaken in collaboration with NHS Bolton to offer diabetes prevention for people at increased risk of developing type 2 diabetes in primary care.

## The evidence

Randomised controlled trials have shown that relatively modest lifestyle changes delay or prevent the onset of type 2 diabetes in people with impaired glucose tolerance (IGT)<sup>1,2</sup>. Lifestyle interventions have also been shown to be cost-effective, particularly when targeting those people with IGT who are at highest risk of developing type 2 diabetes<sup>3</sup>. However, the evidence from translational studies is still scarce.

## The challenge

The CLAHRC worked in partnership with NHS Bolton and NHS Salford to improve quality of care for people with IGT. This was achieved by implementing evidence-based preventative lifestyle services, translating intensive programmes used in randomised controlled trials into primary care-based, real-world settings. Educational support, offered through a series of structured goal setting and action planning, provides people with an enhanced understanding of their condition, empowering them to make choices about how they can make and sustain lifestyle changes that will reduce their risk of developing type 2 diabetes.

## Our approach

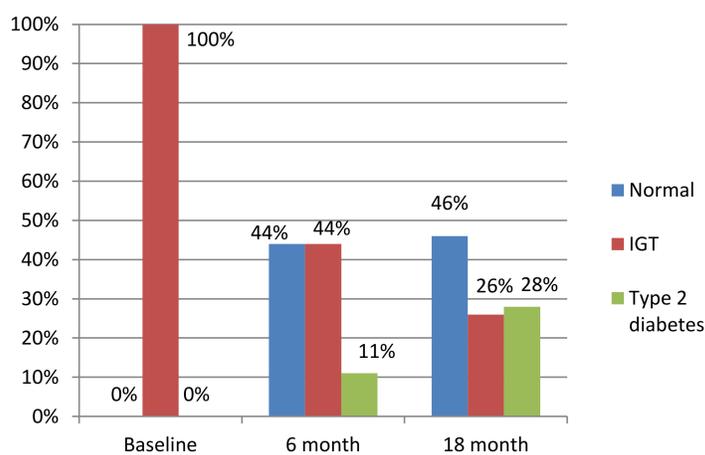
The model of lifestyle support was tailored to Bolton's local context and existing community services. The existing Health Trainer service was chosen which is an evidence based programme<sup>4</sup> offering individualized, face to face behaviour change support, including the development of a personal health plan to identify risky health behaviours and target those changes that can be achieved over the six month intervention period. Weight, BMI and waist circumference were measured at baseline and on completion of the 6 month intervention. 2 hour oral glucose tolerance test (OGTT) results were collected at baseline, at the end of the intervention and 18 months after enrolment.

## The results

A total of 134 participants were included in the initial evaluation. However, we only report here on 83 participants with a confirmed IGT diagnosis with a recent 2hour OGTT between 7.8 and 11mmol/l; A description of the sample, its baseline characteristics and result data for after the intervention (6 months) and the 18 months follow-up can be found below. No follow-up data was available for 22 participants which are therefore not reported in Graph 1. Additional complication in reporting the data was given through the change from OGTT to using HbA1c in primary care which meant that not all follow-up data was through OGTTs.

Sample Description (n=83)	
Age: mean (SD)	65.6 (11.8)
Sex: % female	41.0
Ethnicity:	
% White	85.5
% Asian	14.5
% Black	0.0
% Other	0.0
BMI (kg/m <sup>2</sup> ): mean (SD)	31.0 (6.0)
Weight (kg): mean (SD)	87.0 (18.5)

Table1: Sample description (n=83)



Graph1: Changes in glycaemic states (n=61)

	Baseline	6 months follow-up	Difference (to baseline)	12 months follow-up	Difference (to baseline)
<b>BMI (kg/m<sup>2</sup>): mean (SD)</b>	31.0 (6.0)	29.7 (5.5) n=80	-1.1 (1.5) P<0.001	/	/
<b>Weight (kg): mean (SD)</b>	87.0 (18.5)	84.0 (17.0) n=80	-2.9 (4.5) P<0.001	/	/
<b>Waist circumference (cm): mean (SD)</b>	105.3 (13.2) n=65	102.2 (12.4) n=65	-3.1 (4.8) P<0.001	/	/
<b>OGTT 2-h plasma glucose (mmol/l): mean (SD)</b>	9.1 (0.9)	8.4 (3.2)	-0.7 (3.2) P=0.058	8.8 (2.6) n=40	-0.3 (2.3)

Table2: Outcome data (n=83)

## Conclusion

Outcome data suggest that the Health Trainer service is effective in helping people at risk of developing type 2 diabetes to make and maintain healthier lifestyle choices. Changes in weight and waist circumference at six months are comparable to published studies. And follow-up data at 18 month after enrolment indicates that the number of participants remaining in the normal glycaemic range stayed stable. There has been an increase in people who developed type 2 diabetes within the 12 month follow-up period.

However, there are limitations to this data. Not being a randomised controlled trial we relied on routinely collected data in primary care which meant we were unable to collect follow-up data regarding weight and waist circumference as this data was not available. It also meant that not all follow-up data regarding the 2h OGTT was available; in the meantime GP surgeries had changed to HbA1c for diagnosis of IGT and for some participants only random glucose readings were available. In the absence of a control group who did not receive a lifestyle intervention, it is not possible to determine with certainty that our interventions caused the improvements seen.

Nonetheless, this diabetes prevention programme is an effective and sustainable mode of service delivery: **since the project started in 2009 over 2500 people with IGT have seen a Health Trainer.** We will look into analysing this larger data set in future. It also is possible to spread this model to other areas as currently being done in NHS Ashton, Leigh and Wigan. However, not every health economy will have Health Trainers available so the model of delivery is best chosen taking into account local and contextual factors, e.g. currently available primary care services; demographic characteristics of the local IGT population and operating service location and service users' needs.

**References:** Ratner (2006) An update on the Diabetes Prevention Program, Endocrine Practice, 12 (Suppl 1): 20; 2) Lindstrom et al (2006) Sustained reduction in the incidence of type 2 diabetes by lifestyle intervention: follow-up of the Diabetes Prevention Study, Lancet, 368: 1673; 3) Gillies et al (2007) Pharmacological and lifestyle intervention to prevent or delay type 2 diabetes in people with Impaired Glucose Tolerance: systematic review and meta-analysis, BMJ, 334: 299; 4) Department of Health. Improving health: changing behaviour - NHS Health Trainer handbook. London: Department of Health; 2008.

