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Collaboration for Leadership in Applied Health Research and Care (CLAHRC) for Greater Manchester

IGT Care Call
12 month follow up data following completion of project
Summary Report

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Executive Summary:

Eighteen month results provide statistically significant evidence to suggest that Care Call is effective in delivering a tailored intervention to people with IGT, promoting positive lifestyle changes which could delay the onset of type 2 diabetes.

Six month results were statistically significant demonstrating improvements in fasting blood glucose, OGTT, weight, BMI and diabetes risk score (FINDRISC). Eighteen month results demonstrate statistically significant, sustained reductions in fasting blood glucose, weight and BMI.

The total number of participants in the IGT Care Call project was 55.

Based on the 40 participants with fasting blood glucose results available at baseline, six months and 18 months:

- At six months mean fasting blood glucose reduced from 6.2mmol/l to 5.8mmol/l, a fall of 0.4mmol/l (6.5%) (CI 0.21-0.59, p=0.0002). 67.5% (n=27) of participants reduced their fasting blood glucose.
- At 18 months mean fasting blood glucose reduced from 6.2mmol/l to 5.9mmol/l, a fall of 0.29mmol/l (4.9%) (CI 0.07-0.51, p=0.01). 62.5% (n=25) of participants reduced their fasting blood glucose.

Based on the 38 participants with a recorded weight available at baseline, six months and 18 months:

- At six months mean weight changed from 91kg to 88.11kg, a mean weight loss of 2.85kg (3.1% body weight) (CI 1.47-4.22, p=0.0002). 73% (n=28) of participants had a confirmed weight loss. In this group the average weight loss was 4.6kg (5.1% body weight) per person.
- Weight loss was sustained at 18 months as mean weight changed from 91kg to 88.15kg, a mean weight loss of 2.81kg (3.1% body weight) (CI 1.20-4.42, p=0.001). 68% (n=26) of participants had a confirmed weight loss. In this group the average weight loss was 5.1kg (5.7% body weight) per person.

Results suggest that the Care Call service, initially set up to deliver personalised lifestyle education and support to people with type 2 diabetes appears transferable, with some adaptation, to people with impaired glucose tolerance.

Since completion of the initial six month programme, NICE public health guidance on preventing type 2 diabetes (PH38) has been published.[1] This guidance recommends that people at risk of developing type 2 diabetes are referred to intensive lifestyle change programmes to help prevent or delay onset of the condition and calls for commissioners and providers of local public services to heighten awareness and prevention of type 2 diabetes. The IGT Care Call project was cited in PH38 as an example of 'see this guidance in practice'.[1]

An initial project was undertaken by the Collaboration for Leadership in Applied Health Research and Care (CLAHRC) for Greater Manchester and NHS Salford between 2010 and 2011. The aim of the project was to design, deliver and evaluate a telephone service that provided a six month lifestyle education programme to people diagnosed with impaired glucose tolerance (IGT) who are at risk of developing type 2 diabetes to prevent them developing the condition.

The evaluation report concluded the IGT Care Call project was a success in achieving its aims and results were presented to NHS Salford's Diabetes Commissioning Strategy Group and Hundred's Health Clinical Commissioning Board. Whilst they acknowledged both qualitative and quantitative results were very encouraging on completion of the six month programme, they requested that project participants be followed up one year following discharge from the service (18 months post enrolment) to ascertain whether behaviour changes and clinical outcomes could be maintained in the long term. This report summarises these findings.

Purpose of Report:

This report summarises available results at 18 months (12 months following discharge from IGT Care Call) to determine if lifestyle changes in people with IGT have been maintained longer term. The full evaluation report of IGT Care Call, which was conducted at the end of the initial six month project, can be found on the GM CLAHRC website.[2]

Project Rationale:

Diabetes is an increasing public health concern worldwide and affects more than 4% of the UK population.[3] It is predicted that by 2020 an estimated 3.8 million or 8.5% of the adult UK population will have diabetes, the majority of which will be type 2 diabetes. Treating type 2 diabetes and its complications costs the NHS £8.8 billion each year in the UK.[4] Diabetes prevention studies and more recently translational research studies confirm the transition from being at risk of type 2 diabetes to developing the condition can be delayed or prevented.[5] One in seven adults has either impaired fasting glucose (IFG) or impaired glucose tolerance (IGT), which makes them at high risk of progression to type 2 diabetes.[6] Both NICE[1] and SIGN [7] diabetes guidance emphasise that people at risk of diabetes are also at increased risk of cardiovascular disease. The term impaired glucose regulation (IGR) encompasses both IFG and/or IGT.[8]

In Salford it is estimated that 6942 people have impaired glucose tolerance.[2] This could increase Salford's diabetes register by 3471 within 10 years, as without any intervention, 50% of those with impaired glucose tolerance will develop type 2 diabetes over a 5 - 10 year period.[9]

Background:

The IGT Care Call project commenced in 2010 with seven GP practices in Salford participating. Fifty five individuals diagnosed with IGT enrolled on the project. Socio demographic information, age, gender and ethnicity were provided from GP practice data as part of the referral. Initial clinical measurements were undertaken in general practice and included fasting and 2 hour oral glucose tolerance test (OGTT), weight, body mass index (BMI) and diabetes risk score assessment (FINDRISC). On receipt of the referral, each participant received an introductory telephone call to outline the service, following which a patient information pack which included personal blood results was posted. The next telephone appointment was an 'action planning' call with a health care professional where the patient discussed their own diagnosis and risk factors for developing type 2 diabetes before exploring their current lifestyle. Discussions around current diet and activity resulted in the person identifying possible areas they could change to help prevent the onset of type 2 diabetes. Following the action planning call the person received five further monthly telephone appointments with their personal health advisor. Health advisors tailored the service to the individual, providing key education messages and used motivational interviewing and behaviour change techniques to set lifestyle goals. On completion of the six month programme the person was referred back to general practice where repeat clinical measurements were undertaken. The person then reverted to usual practice protocol for management of IGT.

Data Collection:

The scope of the initial IGT Care Call project did not include plans to follow up participant's longer term. As such, 18 month results have been collected from iSOFT and SIR using data that was entered at the general practice when the patient attended their annual recall.

Biomedical outcomes collected at 18 months were fasting blood glucose (FBG), oral glucose tolerance test, weight and BMI. Since commencement of the project, new guidance around diagnosis of diabetes has resulted in many practice staff opting to undertake a fasting blood glucose and HbA1c blood test rather than the OGTT and so, where available, HbA1c has also been collected to assist in evaluating whether the person has a diagnosis of diabetes or not.[10]

The diabetes risk assessment tool (FINDRISC) was used to assist evaluation of the initial six month programme. As it is not routinely used in general practice no results are available for this at 18 months follow up.

To enable comparison of results at six and 18 months, only participants with results at all three points (baseline, six months, 18 months) have been included in the statistical analysis which was undertaken using Stats Direct. All significant tests are two-tailed.

Results:

Fifty five patients (n=55) participated in the IGT Care-Call project.

Table 1: Baseline Characteristics of all 55 participants recruited to IGT Care Call.

Demographics	Baseline
n =	55
Age: mean (SD)	65.3 (12.6)
Sex: % female	43.6
Ethnicity:	
% White	91.9
% Asian	5.5
% Black	1.8
% Other	1.8

Changes in fasting blood glucose:

Table 2: Changes in fasting blood glucose at baseline and six months (n=40)

	Baseline	6 months	*Difference*	*P*	*95% CI*
Fasting blood glucose (mmol/l) mean (SD) (n=40)	6.2 (0.44)	5.8 (0.59)	0.4 (0.60)	<0.0002	0.21-0.59

At baseline, participants had a mean fasting blood glucose of 6.2mmol/l. At the end of the six month programme fasting blood glucose across all 40 participants had fallen by an average of 0.4mmol/l to 5.8mmol/l. This 6.5% reduction is statistically significant.

Of the 67.5% (n=27) participants who reduced their fasting blood glucose an average of 0.71mmol/l per person was achieved. This equates to 11.2% improvement per person in this group.

Table 3: Changes in fasting blood glucose at baseline and 18 months (n=40)

	Baseline	18 months	*Difference*	*P*	*95% CI*
Fasting blood glucose (mmol/l) mean (SD) (n=40)	6.2 (0.44)	5.9 (0.62)	0.29 (0.69)	0.01	0.07- 0.51

At 18 months (12 months following discharge from Care Call), mean fasting blood glucose fell by 0.29mmol/l from 6.2mmol/l at baseline to 5.9mmol/l across all 40 participants. This 4.9% reduction is statistically significant.

Of the 62.5% (n=25) participants who reduced their fasting blood glucose an average of 0.70mmol/l per person was achieved. This equates to an 11% improvement per person in this group.

Results suggest that the impact of Care Call on fasting blood glucose has been sustained over time, although the effect is slightly diminished.

Due to the recent changes in guidance for diagnosing diabetes it has proved difficult to compare an actual 'like for like' analysis of six month and 18 month data. Table 4 summarises diagnoses at six and 18 months. All six month results were based on an OGTT. All 18 month results were based on GP choice of test which included FBG, OGTT and HbA1c.

Table 4: Diagnoses at six and 18 months (n=40)

Total	**Baseline**	6 month	18 month	Diagnosis
Normal (fasting and 2hr OGTT)	0	23 (57.5%)	4 (10%)	Normal
Normal fasting glucose	0	n/a	22 (55%)	
Impaired fasting glucose	0	4 (10%)	8 (20%)	IGR
Impaired glucose tolerance	40 (100%)	12 (30%)	4 (10%)	
Type 2 diabetes	0	1 (2.5%)	2 (5%)	T2D
Total	**40**	**40**	**40**	

Two people were diagnosed with type 2 diabetes between baseline and 18 months. One patient was diagnosed between baseline and six months, the other between six and 18 months.

Changes in weight:

Table 5: Changes in weight between baseline and six months (n=38)

Category	Baseline	Six months	*Difference*	*P*	*95% CI*
Weight (kg): mean (SD) (n=38)	91 (14.41)	88.11 (14.93)	2.85 (4.19)	0.0002	1.47-4.22

At baseline mean weight was 91kg. At the end of the six month programme this fell to 88.11kg which was statistically significant. Across all 38 participants this equated to 2.85kg (3.1% body weight).

Of the 73% (n=28) of participants who lost weight the average was 4.6kg (5.1% body weight) per person. Further analysis demonstrates 57% (n=16) of this group achieved a weight loss of ≥ 4% body weight.

Table 6: Changes in weight between baseline and 18 months (n=38)

Category	Baseline	18 Months	*Difference*	*P*	*95% CI*
Weight (kg): mean (SD) (n=38)	91 (14.41)	88.15 (15.76)	2.81 (4.89)	<0.001	1.20 - 4.42

At 18 months (12 months following discharge from Care Call), mean weight loss fell from 91kg at baseline to 88.15kg which was statistically significant. Across all 38 participants this equated to 2.81kg (3.1% body weight).

Of the 68% (n=26) of participants who lost weight the average was 5.1kg (5.7% body weight) per person. Further analysis of this group demonstrates that 68% (n=17) achieved a weight loss of ≥ 4% body weight.

Results suggest the impact of Care Call on weight is sustained over time. Participants who lost weight during the six month programme maintained that loss and some continued to lose further weight.

Changes in BMI:

Table 7: Changes in BMI at baseline and six months (n=38)

Category	Baseline	Six months	*Difference*	*P*	*95% CI*
BMI (kg/m^2): mean (SD) (n=38)	32.02 (5.15)	30.99 (5.34)	1.02 (1.46)	<0.0001	0.54-1.50

The mean BMI across all 38 participants at baseline was 32.02. This reduced to 30.99 after completion of the six months programme, giving a mean reduction of 1.02kg/m^2 per person.

Of the 73% (n=28) participants who reduced their BMI, the average loss was 1.6 kg/m^2 per person.

Table 8: Changes in BMI at baseline and 18 months (n=38)

Category	Baseline	18 Months	*Difference*	*P*	*95% CI*
BMI (kg/m^2): mean (SD) (n=38)	32.02 (5.15)	30.96 (5.29)	1.06 (1.74)	0.0006	0.49 - 1.63

At 18 months (12 months following discharge from Care Call) mean BMI reduced from 32.02 at baseline to 30.96, a reduction of 1.06kg/m^2 per person.

Of the 68% (n=26) participants who reduced their BMI, the average loss was 1.87 kg/m^2 per person.

Results suggest the impact of Care Call on BMI reduction is sustained over time.

Discussion and Conclusion:

At 18 months (12 months following discharge from Care Call) participants who completed the six month programme of telephone education and support have shown sustained reductions in fasting blood glucose, weight and BMI.

The Salford diabetes team has an appropriate skill mix that provides high quality education with consistency of care for individuals at risk of type 2 diabetes. This telephone delivered service may additionally offer the opportunity to engage with 'hard to reach' individuals or those who are unable to attend group education sessions also offered by the diabetes team.

NICE evidence reviews suggest that the more sessions on diet, activity and counselling attended, the better the outcome for people at risk of developing type 2 diabetes.[1] Focus group and questionnaire evaluation from the initial project supports this, with individuals describing how 'drip feeding' of information over the six month programme consolidated learning and personalised goal setting at each appointment facilitated their behaviour change. Improvements in clinical outcomes 12 months following completion of the programme suggest this approach has been successful in maintaining these behaviour changes in the longer term. NICE consider that more intensive lifestyle change programmes are estimated to be more cost effective than less intensive programmes.[1] Cost benefit analysis of the initial six month project identified potential cost savings and benefits.[2] Additional work on this will be undertaken on the next phase of the project – a full roll out across Salford - which is currently underway.

The success of IGT Care Call in achieving weight loss suggests that this approach could be utilised in development of local care pathways for other services, e.g. weight management.[11] Evidence from NICE guidance on behaviour change also supports provision of lifestyle interventions to prevent obesity.[12]

At present, there is no mandatory requirement for public health guidance to be funded, nor to refer people to lifestyle change programmes. However, NICE is considering the introduction of a new public health domain in the Quality Outcome Framework (QOF) by introducing 150 points for preventing disease and tackling healthcare inequalities. These new domains are currently being negotiated by NHS employers and the General Practitioners Committee for introduction in April 2013.[13]

The development of commissioning by GP consortia over the coming months could provide the opportunity to redesign high-quality services by looking at new ways of working that meet the needs of those at risk of developing diabetes that could improve outcomes for this group of patients.

Accolades:

- Winner: Quality in Care Diabetes Award 'Best Type 2 Prevention Initiative'. 2011
- Highly Commended: HSJ and Nursing Times Care Integration Awards (Diabetes). 2012.
- Shortlisted: HSJ and Nursing Times Patient Safety Awards (Primary Care). 2012.
- NICE (PH38) guidance cited the project as an example of 'see this guidance in practice'. 2012.
- Featured on national BBC news in response to a Diabetes UK report. 2012.

Presentations:

- The Kings Fund: 2nd Annual International Congress on Telehealth and Telecare. London. 2012.
- Health Services Research Network Symposium: Delivering better health services. Manchester. 2012.
- HSJ and Nursing Times: Telehealth Conference. London 2012.
- Diabetes Research Network: North West Diabetes Research Study Day. Manchester 2012.
- Salford Research Day: Celebrating Salford Success. Salford Royal Foundation Trust. 2012.

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