Evaluation of the National Health Service Diabetes Prevention Programme Demonstrator Site in Salford

Report 3: Retention of people referred to the diabetes prevention programmes in Salford

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Section 1 – Introduction

1.1 Type 2 diabetes mellitus as a health concern

Non-diabetic hyperglycaemia (NDH) is a term which covers terms previously used to describe the decreased ability of the body to regulate glucose effectively, such as impaired glucose regulation (IGR), impaired glucose tolerance (IGT) and impaired fasting glucose (IFG). It accounts for conditions where blood glucose levels are above the normal range but are not high enough for a diagnosis of type 2 diabetes mellitus (T2DM). People with NDH often have no symptoms, but every year 5-10% of those with NDH will go on to develop T2DM if left untreated[1].

The health implications of T2DM are serious, with poor control (i.e. high blood pressure / low medication adherence) resulting in loss of vision; low mood, depression and anxiety; neuropathy (pain, altered sensation such as burning, 'pins and needles' [paraesthesia], lack of sensitivity), and in severe cases, lower limb amputation. Further, T2DM carries with it a high risk of developing other cardiovascular health complications[2]. In addition to implications for individuals, T2DM is thought to cost the NHS £10 billion per year, around nine per cent of the total NHS budget[3]. These figures highlight the importance of diabetes prevention as a national public health concern.

The main factors that influence NDH are age, genetics, weight and ethnicity[4,5]. In the UK the risk of T2DM rises with age, is slightly higher in men than women, and is substantially higher among people from South Asian and black communities. Deprivation is strongly associated with obesity, inactivity, poor diet, smoking and poorly controlled blood pressure, all of which are linked to T2DM risk[3]. Making changes to lifestyle behaviours which reduce weight, such as increasing physical activity, can decrease the risk of NDH developing into T2DM by 50%[4,5]. However, the asymptomatic nature of NDH means opportunities to diagnose and treat people are often missed, and the risk of developing T2DM remains.

1.2 Healthier You: The NHS Diabetes Prevention Programme (NHS DPP)

In 2015, NHS England, Public Health England (PHE) and Diabetes UK initiated a nationwide programme aimed at T2DM prevention, the *Healthier You: The National Health Service Diabetes Prevention Programme* (NHS DPP). Deployment started with an initial seven demonstrator sites, including one in Salford. These sites were commissioned to test innovative approaches to programme delivery, with the expectation that learning from their implementation would shape future roll-out of the national programme.

The England-wide roll-out of the NHS DPP commenced during 2016 with a first wave of 27 areas covering 26 million people, half the population of England. This coverage made up to 20,000 places available for people to receive tailored, personalised help to reduce their risk of T2DM; including education on healthy eating and lifestyle, help to lose weight and bespoke physical exercise programmes. A second wave of the roll-out will spread the NHS DPP to the whole country by 2020 with a target of 100,000 places available in the NHS DPP each year after.

1.3 Description of the demonstrator site in Salford

The model in Salford comprises two diabetes prevention services: (1) a nine-month *Salford IGR Care Call* (Care Call) telephone service delivered by staff at Salford Royal NHS Foundation Trust; and (2) an eight-week *Exercise for IGR programme* delivered by Salford Community Leisure (SCL). People could choose to attend one or both of these services[5]. Salford partners developed a multi-agency approach to identifying people at risk of diabetes and referring them to the diabetes prevention services, through a blend of community and primary care referral routes.

The community route, provided by Unique Improvements (UI) and the Health Improvement Service (HIS), identified people in community settings who were at moderate or high risk using the Leicester Diabetes Risk Score and offered a finger prick point-of-care HbA1c blood test. If the blood test indicated a score within the NDH risk range (42-47 mmol/l), people were offered referral into either or both of the Salford diabetes prevention services.

The enhanced GP referral route included a nurse facilitator who visited practices, searched the electronic records for suitable patients, arranged appointments with patients to discuss their T2DM risk, and referred suitable people into prevention services. This was in addition to incentives offered to GPs as part of a locally commissioned service for long-term conditions. All GP practices were part of the locally commissioned service, but only some of them took up the offer of additional support from the nurse facilitator[6].

1.4 What will be reported here?

The National Institute for Health Research Collaboration for Leadership in Applied Health Research and Care Greater Manchester (NIHR CLAHRC GM) was commissioned to undertake an evaluation of the Salford demonstrator site. The evaluation was split into three reports. This report is the final part of that evaluation. The first two reports:

- Described the Salford IGR Care Call service model and evidence that underpins it – with analysis of how closely the Care Call model aligns with the underpinning evidence and the NHS DPP specification for demonstrator sites[7]. (Completed June 2016)
- Identified the roles of community and enhanced GP referral services in the recruitment of people to diabetes prevention programmes in Salford[6]. (Completed December 2016)

This final part of the evaluation details how patients engaged with the NHS DPPs in Salford once referred. This report uses datasets supplied by the service leads at the two Salford DPP services, containing information on patients who were referred to the DPP between 5th May 2015 and 31st March 2016. We have analysed these datasets to produce a report on a) take up of DPP services, b) baseline personal and health characteristics, c) sources of the referrals, and d) attendance and completion of the DPP.

1.5 A note regarding terminology in this report

For the purpose of clarity, the following abbreviations will be used:

- the 'Salford IGR Care Call' service will be described as 'Care Call',
- the 'Exercise for IGR programme' provided by SCL will be referred to as 'Exercise',

- the ‘enhanced GP referral route’ is called ‘enhanced primary’, and
- the term NDH has been used except where IGR/IGT/IFG forms part of a service name.

Section 2 – Research objectives and methods

2.1 Research objectives

The research objectives for this report described in the research evaluation plan were to:

1) Identify what role a community referral service can play in recruitment **and retention** to lifestyle support services for people at risk of diabetes.
2) Identify what role an enhanced primary referral service can play in recruitment **and retention** to lifestyle support services for people at risk of diabetes.

The recruitment figures have been reported previously[7]. This report will focus on the retention rates of patients within the two Salford DPP intervention services.

2.2 Research question

To complete research objectives 1 and 2, the following research question was considered in the quantitative evaluation design:

> Of those people referred to either Care Call or Exercise (or both) via the community or enhanced primary referral routes up to 31st March 2016, how many people:
>
> i. were accepted as a suitable referral,
> ii. enrolled at Care Call/Exercise/both,
> iii. had reasons recorded for non-enrolment in the service(s),
> iv. had baseline HbA1c and weight (kilos) data recorded,
> v. engaged in all elements of the service(s), or were otherwise regarded as completing the service(s),
> vi. had reasons recorded for non-completion of the service(s), and
> vii. were signposted from Care Call to Exercise?

2.3 Methods

To answer the research question, data were supplied in April-May 2017 by the service leads at Care Call and Exercise to supplement the data provided for completion of the second report of this evaluation[6].

The data supplied covers referrals into either of the local services for the period up to and including 31st March 2016 – providing sufficient time for those patients referred to have been triaged, enrolled and to have completed their choice of service(s) before data was collected.

Data has been presented by intervention option rather than referral source for two reasons. Firstly, the two services did not both report on all of the same measures, and they reported some of the same measures in slightly different ways – reducing the comparability of the data. Secondly, the number of patients referred into Care Call from the community referral route was too small to allow meaningful conclusions to be drawn. The report details how patients have engaged with the DPP services on offer in Salford by reporting on attendance and completion rates of patients.

Section 3 – Retention and attendance figures for patients referred to Care Call up to 31st March 2016

3.1 Data

The Care Call data for the second report[6] was compiled by a manager at SRFT, using data provided from the Diabetes Team on patients who were referred to Care Call after an Action Planning Call (APC). The APC is now conducted by Care Call. The data for this third report was compiled by the Care Call manager using Care Call service data and written records from the Diabetes Team. There is no way of matching the two datasets.

We understand that after their APC, 200 patients joined the Comparison of Active Treatments for Impaired Glucose Regulation (CATFISH) trial[8]. Those patients were not included in the dataset supplied for this analysis, as they form part of another evaluation. The current Care Call dataset included 339 patients. We have excluded five patients who had an APC prior to 5th May 2015. The remaining 334 patients have been included in the analysis: they all had APCs between 5th May 2015 and 4th October 2016. The referral date is not included in the dataset, but we understand that all the referrals were made before 31st March 2016, with the delay in APCs being due to service capacity at that time.

3.2 Referrals to Care Call

The second report of this evaluation series[6] provided data on the number of referrals that the Diabetes Team had received from the HIS and GP practices between 5th May 2015 and 31st March 2016, and the outcome of those referrals. This is detailed in Table 1. We described in the second report that 893 patients were referred to the Diabetes Team, of which 556 (62%) took up the service, by which we mean that they had engaged in an APC call or planned to do so. The 893 referred patients were made up of 37 (4%) referred by the HIS and 856 (96%) referred by GP practices. The rate of engagement in the APC was higher among the GP referrals (63%) than the HIS referrals (35%).

3.3 Numbers starting with Care Call

Based on information from the second report, using the earlier dataset, 893 people were referred to the Diabetes Team during the evaluation period (Table 1). Using data from the current dataset, 334 patients were engaged in the Care Call service through completion of an APC. Combining the two groups of patients referred to Care Call (200 CATFISH, plus 334 in the current dataset) indicates that 534 patients completed an APC and started with Care Call during the study period. We estimate that the conversion rate of patients from referral to the Diabetes Team to starting with Care Call is 534/893 (59.8%).

Table 1: Care Call – outcome of referral, by source of referral (presented as Table 8 in second report)[6]

Source of referral	Number of referrals to Care Call (% of all referrals)	Referral outcome		'Action Planning Call' arranged or planned (% of referrals)
HIS (Community) referrals	37 (4%)	Accepted Inappropriate referral Opt out	16 (43%) 2 (5%) 19 (51%)	13 (35%)
Enhanced primary referrals	856 (96%)	Accepted Inappropriate referral Opt out	550 (64%) 28 (3%) 278 (32%)	543 (63%)
All referrals	**893**	**Accepted** **Inappropriate referral** **Opt out**	**566 (64%)** **30 (3%)** **297 (33%)**	**556 (62%)**

3.4 Source of patients who started with Care Call

As described in the second report within this evaluation series[6], referrals to the DPP were made by the HIS and by GP practices. Some GP practices took up the offer of additional support from a nurse facilitator (NF). NF support included (i) completing searches of GP records to identify patients at risk of diabetes (16 practices); and (ii) searches plus clinics at the surgery to see patients, complete a more detailed risk assessment and refer them into the DPP if they met referral criteria (13 practices). Table 2 reports the number of people starting at Care Call by the referral source. It is not clear from the recorded data what specific activity led to each referral (i.e. whether it came directly from the NF or the practice following up on patients highlighted as at-risk by the NF).

Of the 334 patients who accepted a place in the Care Call service, 326 (97.6%) were referred through the enhanced primary route and eight (2.4%) were referred by the HIS. The highest number of starts (231 patients, 69.2%) was from GP practices that received the full NF service (searches and clinics), followed by GPs that received NF searches only (57 patients, 17.1%). GPs that received no NF support referred 38 patients (11.4%). This suggests that the most productive route was in practices where the NF conducted both searches and clinics – most likely to be attributed to the fact that these practices had a dedicated extra resource with the capacity to focus solely on completing this work.

Table 2: Source of patients starting with Care Call

Source of referral	Number of patients who started with Care Call	%
GPs without NF support	38	11.4
GPs with NF searches only	57	17.1
GPs with NF searches and clinics	231	69.2
HIS	8	2.4
	n=334	

3.5 Demographics of patients who started with Care Call

Gender

There was a broadly even split of the gender of patients who joined Care Call: 177 (53.0%) were female and 157 (47.0%) were male (Table 3).

Table 3: Gender of patients starting with Care Call

Female	177	53.0%
Male	157	47.0%
	n=334	

Age

The age of patients who started with Care Call varied widely between 26 and 92 years. Engagement was predominantly with older patients, with a mean age of just under 67 years (Table 4).

Table 4: Age of patients starting with Care Call

Age (years) n=334	Mean	66.9
	Median	69
	Range	26 - 92

Ethnicity

Ethnicity data was recorded for 331 (99.1%) of patients (Table 5). A high proportion of the patients starting with Care Call were white British (92.8%) or white other (0.9%). The proportion of patients that were non-white was 6.3%, which is lower than the proportion of the adult (over 30 years) population in Salford that is non-white (10%).

Table 5: Ethnicity coding of patients starting with Care Call

White British	307	92.8%
White other	3	0.9%
Asian or Asian British	8	2.4%
Black or black British	11	3.3%
Other	2	0.6%
	n=331	

Deprivation

Information on the wards where patients lived was not available in the Care Call dataset.

3.6 Baseline health measures of patients starting with Care Call

A body mass index (BMI) value was recorded at baseline for 316 patients (94.6%) (Table 6). NICE guidelines on obesity provide a breakdown for interpreting BMI values in adults to gauge whether they represent a healthy weight or are regarded as overweight[9]:

- 18.5 – 24.9 kg/m^2 = healthy weight
- 25 – 29.9 kg/m^2 = overweight
- 30 – 39.9 kg/m^2 = obese
- 40 kg/m^2 or above = severely obese.

Among the patients who started with Care Call, 108 (34.2%) were overweight, 134 (42.4%) were obese and 25 (7.9%) were severely obese. Only 49 (15.5%) were a healthy weight for their height. The mean BMI was 31 kg/m^2 (range 19.9 to 81.6 kg/m^2) and the mean weight was 85.1 kg (range 51 to 196 kg/m^2).

Table 6: Baseline BMI and weight measurements for patients starting with Care Call

BMI - kg/m^2 (n=316)		
Healthy	49	15.5%
Overweight	108	34.2%
Obese	134	42.4%
Severely obese	25	7.9%
Mean	31.0	
Median	30.0	
Range	19.9 - 81.6	

Weight - kilograms (n=316)[i,ii]	
Mean	85.1
Median	83.0
Range	51 - 196

HbA1c values were recorded for 327 (97.9%) patients at baseline. The results of these tests indicated that of the patients with recorded values:

- 323 (98.8%) patients were within the NDH range (42-47 mmol/l),
- 3 (0.9%) were in the normal range, and
- 1 (0.3%) may have T2DM.

The mean HbA1c value was 44.0 mmol/l, and the readings ranged between 32 and 48 mmol/l.

One of the reported readings was over a year old at the point the patient started with Care Call, and six took place after the APC. The Care Call service model was designed around patients having had a HbA1c value dated within six months prior to the referral[7].

[i] Any weight value under 40kg was changed to 'missing' (1 case)
[ii] 10 of the weight measures were more than a year old at baseline; four were recorded after the APC occurred

3.7 Engagement, completion and drop-out

Of the 334 patients who had taken up the offer of an APC, 332 have been discharged from Care Call and two were still in service at the time of writing.

After an APC, patients were then eligible for six, monthly telephone calls over a six month period, plus a final seventh call at nine months. Table 7 summarises the number of people completing each telephone call. Among the 334 patients who completed the APC, eight (2.4%) people did not take any further calls from Care Call and 42 (12.7%) dropped out after the first call. Where patients remained beyond the first call, the drop-out rate was fairly low, with around 2-3% of people dropping out at each call, up to the sixth call.

Completion of Care Call is defined as receipt of six or more telephone calls: 243 of the 332 patients who started with Care Call (73.2%) achieved completion by this measure. The mean number of calls per person was 5.5.

After the sixth call there is a gap of three months before the follow-up call: 221 out of 332 (66.6%) patients completed this final call.

Table 7: Number of calls received from Care Call per patient

No. of calls	Number in category	%
0	8	2.4
1	42	12.7
2	13	3.9
3	11	3.3
4	9	2.7
5	6	1.8
6	22	6.6
7	220	66.3
8	1	0.3
	n=332	

A third of people (102 out of 332) dropped out from the service at some stage. The most frequent reasons for dropping out of the service were ‘patient choice’ (48 patients), non-response to telephone calls (35 patients) or ill health (nine patients) (Table 8).

Table 8: Reason for discharge from the Care Call service

Reason for drop out	Number	%
Completed[iii]	231	69.6
Patient choice	48	14.5
DNA	35	10.5
Ill	9	2.7
Died	4	1.2
Moved	2	0.6
Diagnosed T2DM	2	0.6
No longer NDH	1	0.3
Total	*332*	

3.8 Time engaged in the service

Among the 334 patients, the average length of time engaged in the service was 34 weeks. However, the length of service was very variable, ranging from 0 to 62 weeks. The expected engagement period with Care Call is nine months (39 weeks).

Note: one person had a negative length of time recorded in the service (-32 days), and received no calls. The end date for this patient was changed to match the start date.

3.9 Referral to Exercise

Of the 334 patients who engaged with Care Call, 81 (24.3%) were also referred to Exercise.

[iii] The number marked as 'completed' in the Care Call database (shown in this table) is different from the number (243) who we have counted as completed above on pg.12, i.e. who completed six phone calls.

Section 4 – Retention and attendance figures for patients referred to Salford Community Leisure (Exercise) up to 31st March 2016

4.1 Data

The dataset used in this report is an updated version of the data used for the second report. It was compiled by a manager in the Exercise service, based on their service records. The Exercise dataset includes 165 patients. We have excluded 26 patients who were referred during April 2016, because they fall outside of the evaluation timeline. The remaining 139 patients have been included in the analysis. They were referred between 12th June 2015 and 31st March 2016, and their start dates with Exercise all fall between 6th July 2015 and 24th August 2016.

4.2 Referrals to Exercise

Table 9: Exercise - outcome of referral, by source of referral (presented as Table 10 in second report[6])

Source of the referral	Referrals to Exercise (% of all referrals)	Referral outcome (% of those referred)	
HIS	22 (16%)	Started Exercise Opted out Pending	11 (50%) 10 (45%) 1 (5%)
Enhanced primary	27 (20%)	Started Exercise Opted out Pending	20 (74%) 4 (15%) 3 (11%)
Care Call	84 (60%)	Started Exercise Opted out Pending	56 (67%) 26 (31%) 2 (2%)
Diabetes Team	6 (4%)	Started Exercise Opted out Pending	6 (100%) 0 0
All referrals	**139**	**Started Exercise** **Opted out** **Pending**	**93 (67%)** **40 (29%)** **6 (4%)**

The second report of this evaluation series[6] provided data on the number of referrals that Exercise had received from the HIS and the enhanced primary referral routes between 12th June 2015 and 31st March 2016, and the outcome of those referrals. This is detailed in Table 9. We described in the

second report that 139 patients were referred to Exercise, made up of 22 (16%) referred by HIS, 27 (20%) referred from primary care, 84 (60%) referred by Care Call and six (4%) referred by the Diabetes Team.

4.3 Numbers starting with Exercise

The number of people who took up the offer of the Exercise service is 95. 2 patients were still 'pending' at the time of writing. The conversion rate of patients starting with the Exercise service after referral is 95 out of 139 (68.3%).

4.4 Source of patients who started with Exercise

Referrals to Exercise were made by the HIS or through the enhanced primary routes. Some GP practices took up the offer of additional support from a NF (see Section 3.4 for details). Referrals were also received from Care Call and the Diabetes Team.

Of the 95 patients who started with Exercise, most were referred from the Care Call team (57 patients, 60.0%) or the Diabetes Team (six patients, 6.3%) because Exercise was set up as a new service and initially it was only available to people already attending Care Call. Soon referrals were encouraged from other sources, and 20 of those starting with Exercise (21.1%) were referred through the enhanced primary route and 12 (12.6%) from the HIS (Table 10).

The numbers dropping out between referral and starting does not vary much by referral source, although the rate of drop-out appears slightly higher in those referred by the HIS.

Table 10: Sources of referral into Exercise

Source of referral	Number referred	% of all referrals	Number started	% of all starters
Care Call	84[iv]	60.4	57	60.0
Enhanced primary	27	19.4	20	21.1
Health Improvement Service	22	15.8	12	12.6
Diabetes specialist nurse	6	4.3	6	6.3
	n=139		n=95	

As with the patients referred into Care Call from the enhanced primary route, patients starting with Exercise came from GP practices with varying levels of support provided by the NF. Of the 20 patients starting with Exercise who had been referred from the GP practices, 17 (85.0%) are coded as coming from practices where NF support was provided. Of those 17, all were referred from practices where the NF provided support by both interrogating GP records and holding clinics to see at-risk patients (Table 11).

[iv] Note – this differs slightly from the 81 patients reported by Care Call as having being referred onto Exercise (as presented above in Section 3.7)

Table 11: Breakdown of primary care referral sources

Source of referral – GPs	Number referred	% of all referrals	Number started	% of all starters
GPs without NF support	3	11.1%	3	15.0%
GPs with NF searches only	1	3.7%	0	0.0%
GPs with NF searches and clinics	23	85.2%	17	85.0%
	n=27		n= 20	

4.5 Demographics of patients who started with Exercise

Gender

The patients who engaged with Exercise were predominantly female. Table 12 shows that the number of female patients starting with Exercise was 62 (65.3% of referrals), almost double the number of males (33) (34.7% of referrals). There is little difference in gender breakdown between referral (65.5% female) and starting (65.3% female).

This is markedly different to the demographic breakdown of the Care Call patient group, which was almost evenly split between male and female.

Table 12: Gender of patients who started with Exercise

Gender	Number referred	% of all referrals	Number started	% of all starters
Female	91	65.5%	62	65.3%
Male	48	34.5%	33	34.7%
	n=139		n= 95	

Age

The mean age of patients engaged in Exercise was 59.8 years, just under seven years younger than that of the Care Call patient group (Table 13). The age range of patients was from 29 to 82 years. There is little difference in the mean age between referral (60.1 years) and starting (59.8 years)

Table 13: Age of patients starting with Exercise

		Referred	Started
Age (years) n=139	Mean	60.1	59.8
	Median	63	63
	Age range	29 - 95	29 - 82

Ethnicity

Ethnicity data was recorded for 82 (86.3%) of patients (Table 14). A high proportion of those starting with Exercise were white British (95.1%). The proportion that was non-white was 4.9%, which is lower than the proportion of the Salford adult population that is non-white (10%) and lower than the proportion attending Care Call (6.3%).

Table 14: Ethnicity coding of patients starting with Exercise

Ethnic group	Number referred	% of all referrals	Number started	% of all starters
White British	118	96.7%	78	95.1%
Black or black British	3	2.5%	3	3.7%
Other	1	0.8%	1	1.2%
	n=122		n=82	

Deprivation

The Exercise dataset included a record of the neighbourhoods where the referred patients lived. We have attempted to match the neighbourhoods to local authority wards (Table 15). However, this was not possible in all cases. A large proportion of patients starting with Exercise (30.5%) lived in the Swinton area, which sits in the middle of the deprivation rankings for Salford, slightly towards the least deprived end of the spectrum. There is representation from both the most and least deprived parts of Salford – and referrals came from wards throughout the range. Among those who started, nine (9.5%) were referred from East Salford, which didn't have a clear translation to a ward name, and so it was hard to gauge in which wards these patients lived; five (5.3%) lived outside of the Salford local authority boundary.

The conversion rate from referral to starting seems to be slightly higher in Walkden/Little Hulton and Eccles; and slightly lower in Worsley/Boothstown.

Table 15: Referral by ward area and deprivation ranking

Locality listed in database	Ward & IMD[v] rank (between 1 – 20)[10]	Number referred	% of all referrals	Number started	% of all starters
Swinton	Swinton North (12); Swinton South (14)	43	30.9	29	30.5%
Walkden/Little Hulton	Walkden North (7); Walkden South (17); Little Hulton (3)	16	11.5	13	13.7%
Eccles	Eccles (15)	15	10.8	12	12.6%
East Salford	No match	14	10.1	9	9.5%
Ordsall/Langworthy	Ordsall (10); Langworthy (1)	14	10.1	9	9.5%
Claremont/Weaste	Claremont (18); Weaste & Seedley (8)	12	8.6	8	8.4%
Irlam/Cadishead	Irlam (13); Cadishead (16)	9	6.5	6	6.3%
Worsley/Boothstown	Worsley (20); Boothstown & Ellenbrook (19)	8	5.8	4	4.2%
Outside Salford	No match	8	5.8	5	5.3%
Total		**139**		**95**	

[v] Index of Multiple Deprivation. All 20 Salford wards are scored from 1 to 20, with 1 indicating most deprived and 20 least deprived.

4.6 Baseline health measures of patients starting with Exercise

A body mass index (BMI) value was recorded at baseline for 89 (93.7%) of the 95 patients attending Exercise (Table 16). See Section 3.6 for a breakdown of the NICE guidelines on interpreting BMI values in adults.

Among the patients who started with Exercise, 22 (24.7%) were overweight, 40 (44.9%) were obese, and 17 (19.1%) were severely obese. Only ten (11.2%) were a healthy weight for their height. The mean BMI was 33.6 kg/m^2 (range 21.3 to 65.4) and the mean weight was 90.1kg. There is little difference in the mean BMI or weight between referral and starting (although the data collection is lower among those who did not start with the service).

BMI and weight were similar to those in the patient cohort reported by Care Call.

Table 16: Baseline BMI and weight measurements for patients starting with Exercise

BMI – kg/m^2	Number referred (n = 95)	% of all referrals	Number started (n = 89)	% of all starters
Healthy	11	11.6%	10	11.2%
Overweight	24	25.3%	22	24.7%
Obese	43	45.3%	40	44.9%
Severely obese	17	17.9%	17	19.1%
Mean	33.3		33.6	
Median	31.7		31.7	
Range	21.3 - 65.4		21.3 - 65.4	
Weight - kilograms	**Referred**		**Started**	
Mean	89.5		90.1	
Median	86.0		86.4	
Range	57 - 181		57 - 181	

HbA1c values were not collected at baseline. However, we understand that Exercise now collect this data routinely for patients engaging with their service.

4.7 Engagement, completion and drop-out

The standard length of the Exercise programme is eight weeks. The Exercise team were able to record all gym visits that patients made during their engagement period where a membership card was used to gain entry. However, if patients attended gym exercise classes, or activities based in other facilities, these visits would often not be recorded. Completion of the Exercise service was based on the judgement of the Exercise team on whether patients had attended for eight weeks.

Of the 95 patients who started the Exercise service, 80 (84.2%) completed the eight week engagement period. 80 patients completing equates to a 57.5% conversion rate from the initial pool of 139 referred patients. The conversion rate by source of referral was:

- Care Call / Diabetes Team – 61.1%
- Enhanced primary – 59.3%
- Health Improvement Service – 40.1%.

The Exercise team recorded the reasons that the 42 patients provided for opting out of joining the service after referral but before starting with Exercise (Table 17). The most frequent of these was that 22 (52.4%) people could not be contacted by the Exercise team after they had been referred; nine (21.4%) were not interested, and seven (16.7%) chose an alternative course of exercise to reduce their risk of developing T2DM. Data was not available on the reasons for drop-out among the 15 people who started with Exercise but did not complete the eight weeks.

Table 17: Reasons provided for opting out of the Exercise service

Reason for drop out	Number	%
Cannot contact	22	52.4
Not interested	9	21.4
Exercises elsewhere	7	16.7
Illness in family	1	2.4
Lack of childcare	1	2.4
Too much on at home	1	2.4
No reason	1	2.4
	n=42	

Section 5 – Key findings

5.1 Care Call

The number of patients referred to Care Call was 893, and of these 534 patients completed an APC and started with Care Call during the study period (200 recruited to the CATFISH trial[8] plus 334 in the current dataset), a conversion rate 59.8%. The CATFISH cohort was not analysed here.

Of the 334 patients who accepted a place on the Care Call programme, 326 (97.6%) were referred through the enhanced primary route and eight (2.4%) were referred by the HIS. The proportion coming from the HIS to Care Call, at 2.4% is lower than the proportion coming from HIS to Exercise (15.8%), even though direct referral from HIS to Exercise started later, and we do not know why that should be the case.

The highest number of starts (231 patients, 69.2%) was from GP practices that received the full NF service (searches and clinics), followed by GPs that received NF searches only (57 patients, 17.1%). GPs that received no NF support referred 38 patients (11.4%). This suggests that the most productive route was in practices where the NF conducted both searches and clinics.

The 334 patients were broadly balanced in terms of gender (53% female) and the average age was 67 years. The proportion that was non-white was 6.3%, which is lower than the proportion that is non-white in the Salford population (10%). The mean BMI was 31 kg/m^2, with 84.5% being overweight, obese or severely obese. The mean HbA1c value was 44.0 mmol/l and 98.8% of patients were within the NDH range (42-47 mmol/l).

Retention of people in Care Call was fairly high: 243 (73.2%) of the patients who started with Care Call completed six telephone calls and 221 (66.9%) completed all seven calls.

5.2 Exercise

Of the 139 patients referred to Exercise, 95 took up the offer and started on the Exercise programme, a conversion rate of 68.3). Most of those who started with Exercise had been referred by the Care Call team (57 patients, 60.0%) or the Diabetes Team (six patients, 6.3%) because Exercise was set up as a new service and initially it was only available to people already attending Care Call. Soon referrals were encouraged from other sources, and 20 starters (21.1%) were referred through the enhanced primary route and 12 (12.6%) by the HIS.

Among patients in the Exercise programme, 65.3% were female (higher than in Care Call) and the average age was 59.8 years. The proportion that was non-white was 4.9%, lower than the proportion of the non-white population in Salford (10%). The mean BMI was 33.6 kg/m^2, with 88.8% being overweight, obese or severely obese.

Retention of people in Exercise was fairly high: 80 (84.2%) of the 95 people who started with Exercise completed the eight week engagement period.

Section 6 – References

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