Healthy Change

Evaluation Report

2011/2012

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Manager, October 2012

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1 Introduction

NHS Nottingham City have commissioned a range of services provided by the public, private and voluntary sectors which aim to support adults in reducing risk their of developing cardiovascular disease (CVD) and other long term conditions (LTC) through improving lifestyle risk factors.

Evaluating health improvement services is important to help improve service delivery and inform future commissioning decisions where the evidence base is not strong.

This report describes the findings of the outcome, equity, cost effectiveness, and quantitative process evaluation of the *Healthy Change* Lifestyle Referral Service provided by NHS Direct during 2011-2012. This evaluation is based upon the evaluation framework for the service[1]. Other parts of the evaluation framework have been conducted by MEL Research which is reported elsewhere[2].

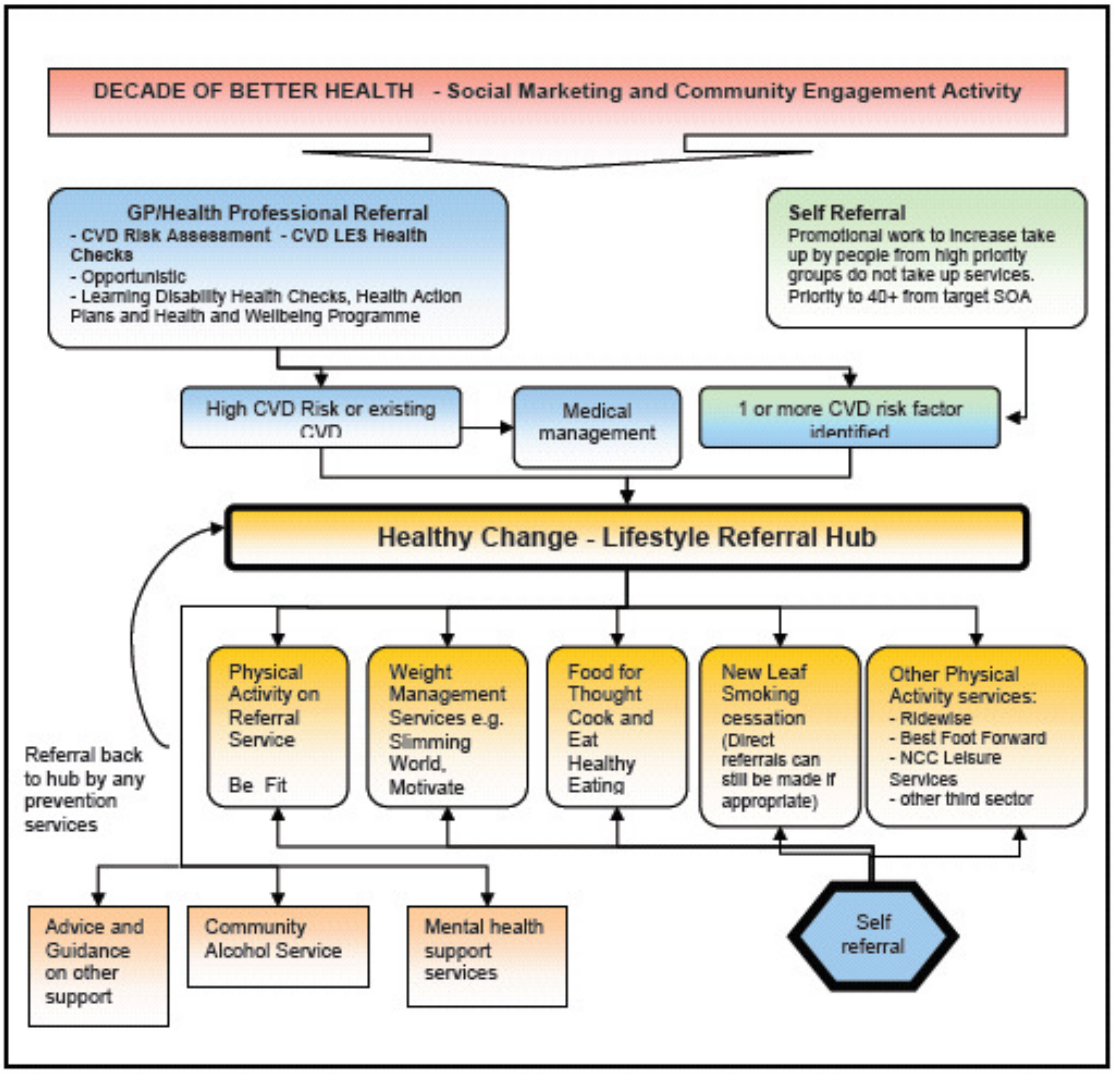
1.1. Service Description

The *Healthy Change* Lifestyle Referral Service acts as a central component of Nottingham's CVD/LTC prevention pathway (figure 1). It provides a single referral point for patients aged 18 years and over with one or more lifestyle risk factors, and a pathway into other commissioned services and community-based support to help clients change behaviour. Clients can be referred by primary care, hospital and community services, and can access the service through self referral.

Within Healthy Change, Health Trainers assess the individual needs and readiness to change of clients and support them to achieving behaviour change goals to reduce CVD, including stopping smoking, improving their diet and increasing physical activity. They then support clients to access other lifestyle services and provide motivational support to encourage maintenance of behaviour change and a healthier lifestyle.

[1] Wilcox, J. (2011) Healthy Change: Lifestyle Referral Service Evaluation Framework 2011/12.
[2] MEL Research (2012). Evaluation of Physical Activity Referral Services within the CVD Prevention Pathway. NHS Nottingham City. Final Report. September 2012.

Figure 1. Nottingham City CVD/LTC prevention pathway



1.2. Evaluation Aims and Objectives and Questions

1.2.1. Aims

To understand the extent to which Healthy Change supports clients to change behaviour to improve lifestyle risk factors.

To understand the processes within the service that contribute to the effectiveness of the service.

1.2.2. Objectives and Questions

The evaluation framework sets out evaluation objectives are divided into 4 themes. It then sets associated evaluation questions. Below are the objectives with the specific evaluation questions from the framework that this report covers:

Evaluation theme 4: Process evaluation

- To determine how clients were referred to the service.

P1	How do participants access the service and how does this compare with the national programme?

- To understand the experience of service users of using the service.

P3	Which health behaviours do clients focus upon within the service and how does this compare with previous Nottingham Health Trainers and the national programme?

- To determine which prevention services clients were referred to and the attendance rate.

P4	Which services and initiatives were clients signposted to and what as the attendance rate?

Evaluation theme 1: Outcome evaluation

- To determine the achievement of behaviour change goals for different CVD risk factors.

O1	What proportion of clients set and achieved their personal health plan goals, and how did this compare to the national Health Trainer programme?

- To determine the proportion of change in CVD risk factors.

O2	What was the change in all CVD risk factors/ health related behaviour for all clients that set a personal health plan?

- To compare achievement of behaviour change goals and improvement in CVD risk factors with the average for all Health Trainer services.

O3	How did the change in CVD risk factors/ health related behaviour for all Healthy Change clients compared with the national Health Trainer programme?

- To compare weight loss outcomes from Slimming World from referral from the Healthy Change service with those directly from GP practices.

O7	How does weight loss and attendance at Slimming World compare with outcomes prior to Healthy Change?

- To determine maintenance of behaviour change at 6 and 12 months.

O8	How had clients maintained behaviour change at six and 12 months?

Evaluation theme 2: Equity evaluation

- To determine if access to the service and behaviour change outcomes were in proportion to need.

E1	Was access to the service equitable in terms of need in relation to factors such as deprivation, MOSIAC group, age, gender, ethnicity and medical conditions?

Evaluation theme 3:Economic evaluation

- To estimate the cost effectiveness of the service.
- To estimate the cost saving to the NHS and local authority from the service.

V1	What is the estimated net cost per health gain of the service and how does this compare with the previous health trainer service?
V2	What is the estimated cost savings to the NHS and local authority from the health gain derived from the service?[3]

2 Methods

2.1 Data Collection and Reporting System (DCRS)

The Healthy Change Service uses the Data Collection and Reporting System (DCRS) developed for the National Health Trainer programme developed by the Birmingham Primary Care Shared Services Agency (BPCSSA). The BPCSSA now provide this system to over 100 Health Trainer services in England.

The DCRS has a web-based interface which allows registered users to generate various reports and MS Excel extracts of data from the service to which they are linked. Reports can also be generated from all registered Health Trainer Services which use the DCRS. This functionality was used to obtain activity and outcome data in relation to the evaluation questions for the period 1st May 2011 to 22nd August 2012.

[3] Expressed as cost per quality adjusted life year (£/QUALY)

The DCRS contains data collected as part of client assessment of the health-related behaviour/CVD risk factors which the National Health Trainer programme focused upon. This includes self reported data on:

- Number of 30 minute sessions of moderate exercise per week
- Body weight
- Body mass index
- Number of fruit and vegetable portions eaten per day
- Number of alcohol units consumed a week
- Self efficacy score
- General health score
- WHO-5 mental wellbeing score

The methods within the DCRS are described more fully in the Evaluation Framework document.

2.2 Slimming World on Referral data

Slimming World record the attendance and outcomes of clients in the Nottingham Slimming World on Referral scheme. This includes the period prior to Healthy Change where clients were referred directly by GP practices. Therefore this enabled a comparison of outcomes before and after Healthy Change was in operation.

2.3 Cost effectiveness

This evaluation used version 2 of the Portsmouth Ready Reckoner, a value for money estimation tool commissioned by Portsmouth PCT for the National Health Trainer programme in 2009. The tool was developed by the health economist Professor Graham Lister and was updated in 2011 to bring in more in line with the value for money tools he also worked on with the Department of Health and the National Social Marketing Centre[4].

[4] Portsmouth Ready Reckoner 2.0 briefing note: http://www.champspublichealth.com/writedir/1c8bThe%20Portsmouth%20Ready%20Reckoner%202.docx

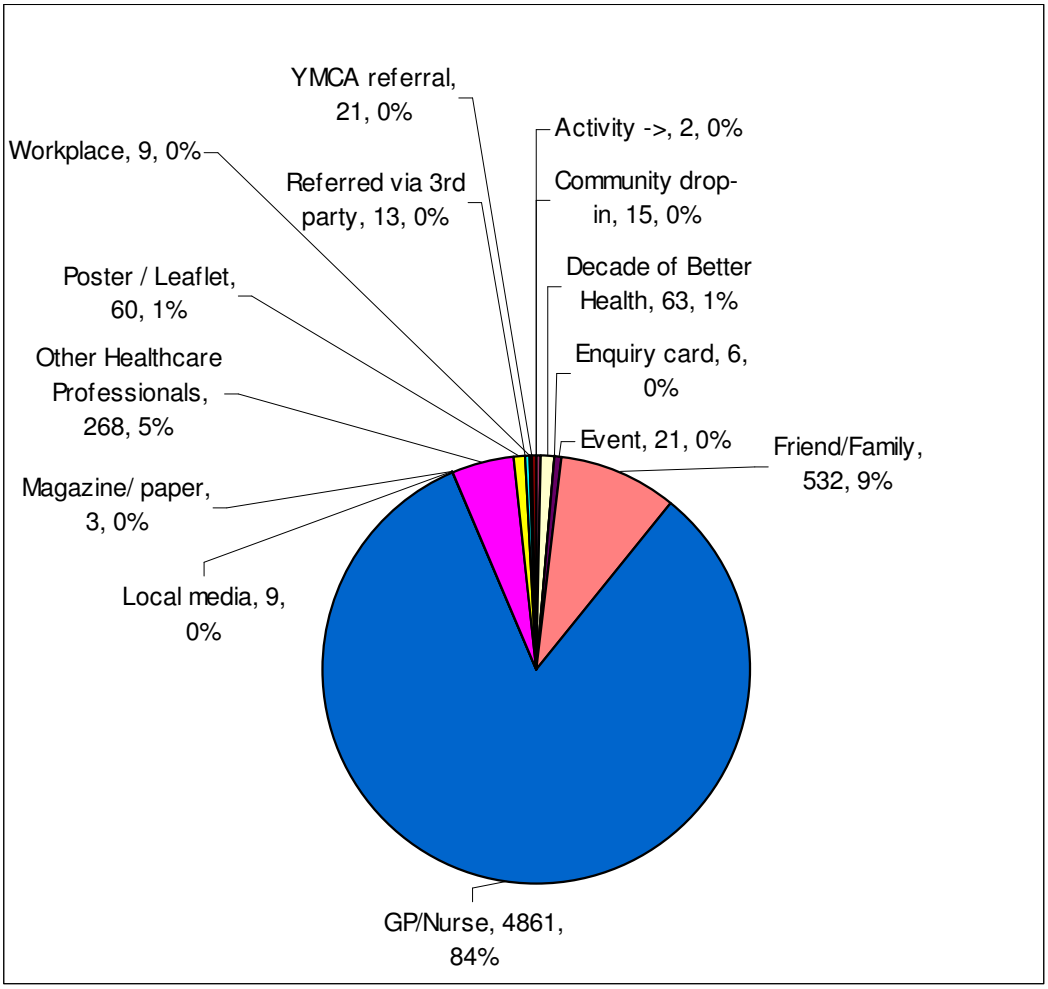
3 Results

3.1 P1: How do participants access the service and how does this compare with the national programme?

3.1.1 Referral Source

The pie chart below illustrates that by far, the majority of referrals to the Healthy Change service were from GP practices, with recommendation from family and friends and referral by other health professionals the second and third largest source of referrals (figure 5).

Figure 2 Referral Sources for Healthy Change (1.5.11-22.08.12)



The Healthy Change data records that 2374 or 48.8% of the GP referrals were from an NHS Health Check referral during this period. However this number of referrals doesn't correspondence well with the number of recorded referrals for CVD prevention services within GP practices for a similar period (01/3/11-31/8/12) where 658 referrals were recorded on the NHS Health Checks reporting system.

3.1.2 GP Referrals

There was large variation in the number and rate of referrals between GP practices in the city (figures 3 & 4). During the evaluation period 26 of the city practices referred less than 10 patients, with 17 practices referring only 1 patient. The number of referrals ranged from 1 patient to 296, with 4 practices referring over 200 patients.

P1: How do participants access the service and how does this compare with the national programme?
Key learning points

- 8 out of 10 clients are from GP practices.
- Healthy Change data shows 48% of GP referrals were from NHS Health Checks but the Health Check data indicates this was lower.
- 1% of referrals were from DOBH pledges.
- There is large variation in the referral rate between GP practices.
- Nearly half of the city's practices referred less than 10 patients during the evaluation period.

3.2 P3: Which health behaviours do clients focus upon within the service and how does this compare with the national programme?

76% of Healthy Change clients had their primary issue recorded compared with 56% of the national programme. Amongst those with their primary issue recorded the most popular issue was by far diet/obesity (figure 5). In the DCRS, it is not possible to distinguish purely healthy eating from addressing obesity, but it can be assumed that for the majority of these clients addressing overweight in the most popular primary issue to be addressed.

The Nottingham service has a similar profile to the Health Trainer services in the most deprived fifth of England (figure 5). However a greater percentage focused of weight loss and a lower proportion focused on a local issue or smoking.

Figure 3 Primary Issue clients wished to address in Healthy Change and the National Health Trainer Programme (1.5.11-22.08.12)

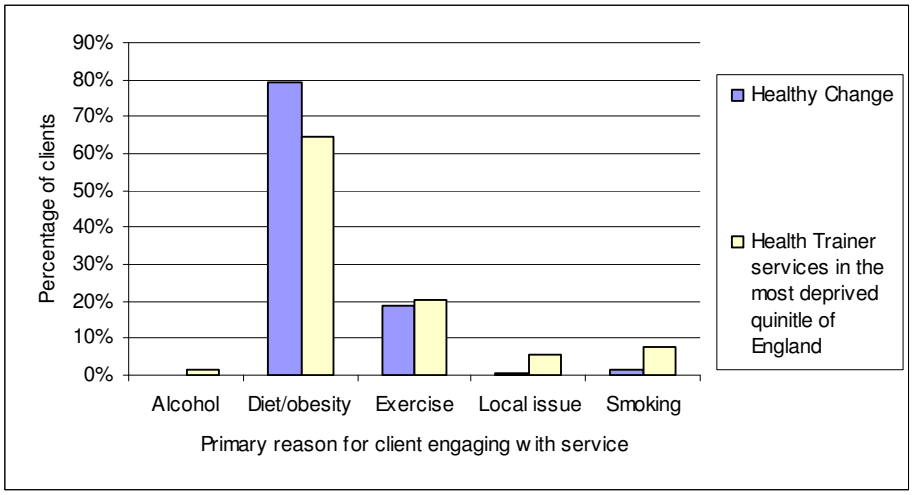


Figure 4. Number of referrals by GP practices to Healthy Change (1.5.11-22.08.11)

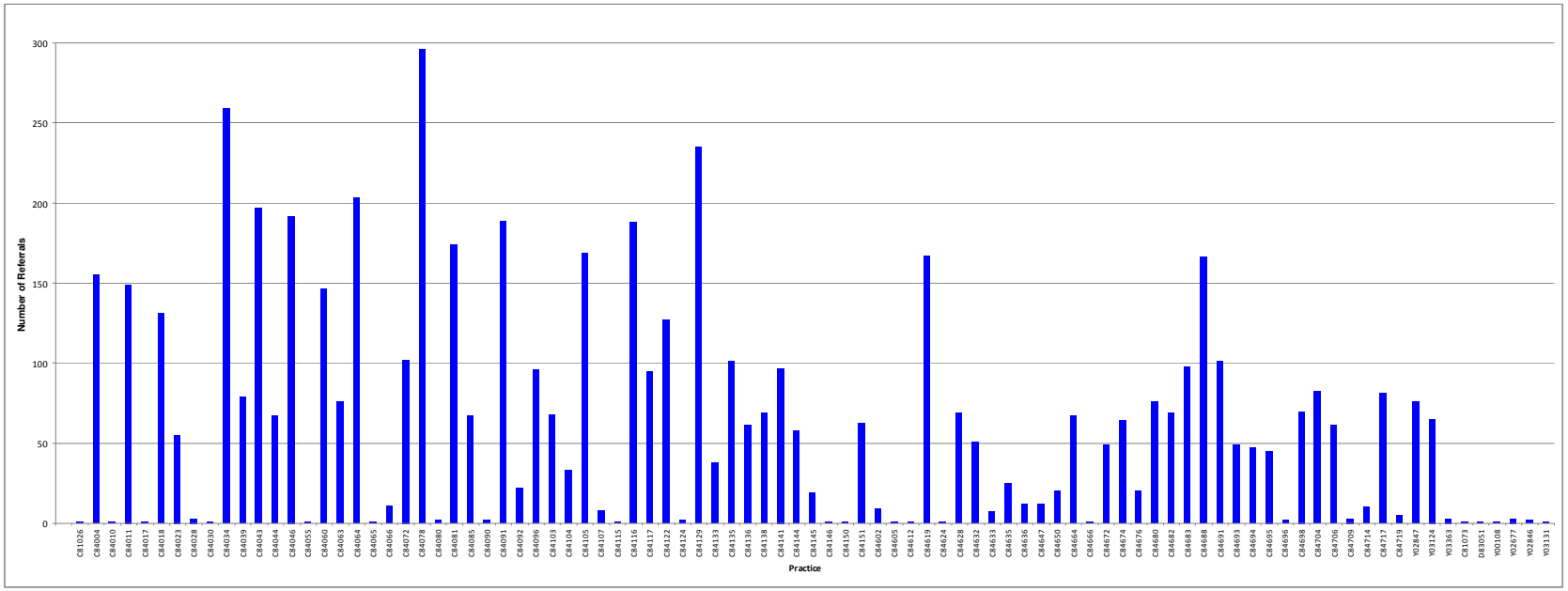
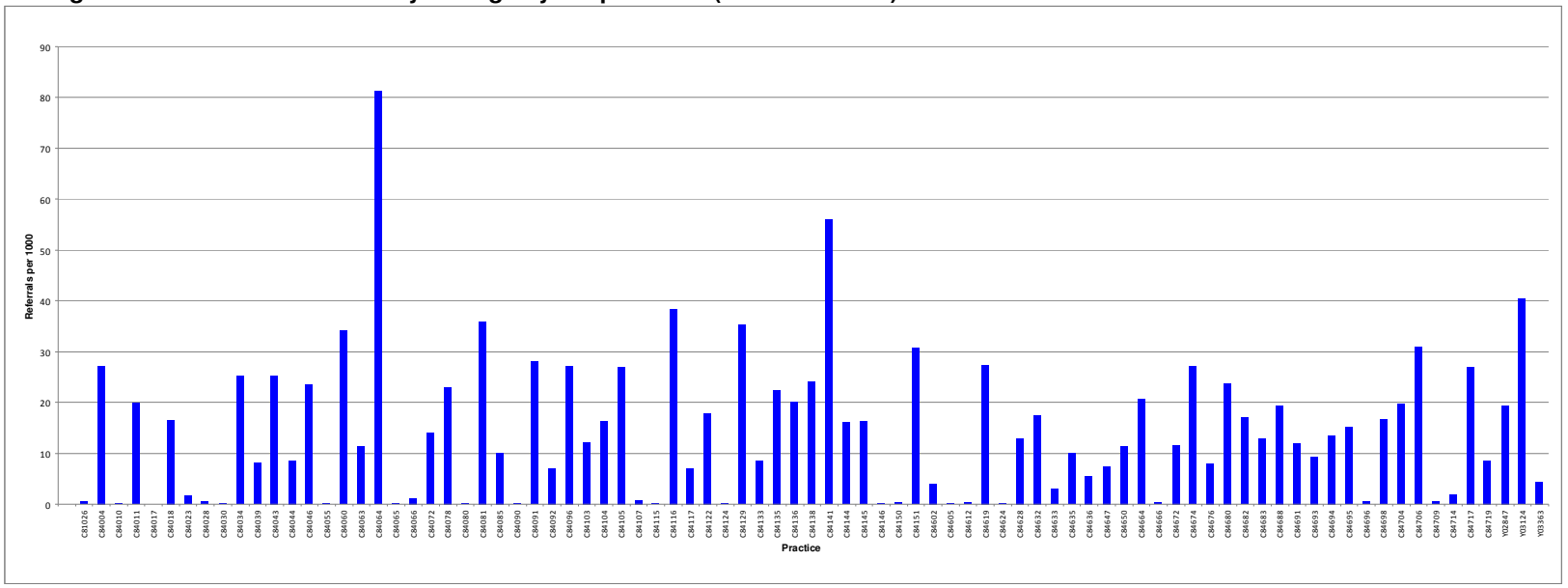


Figure 5. Referral rate to Healthy Change by GP practices (1.5.11-22.08.12)



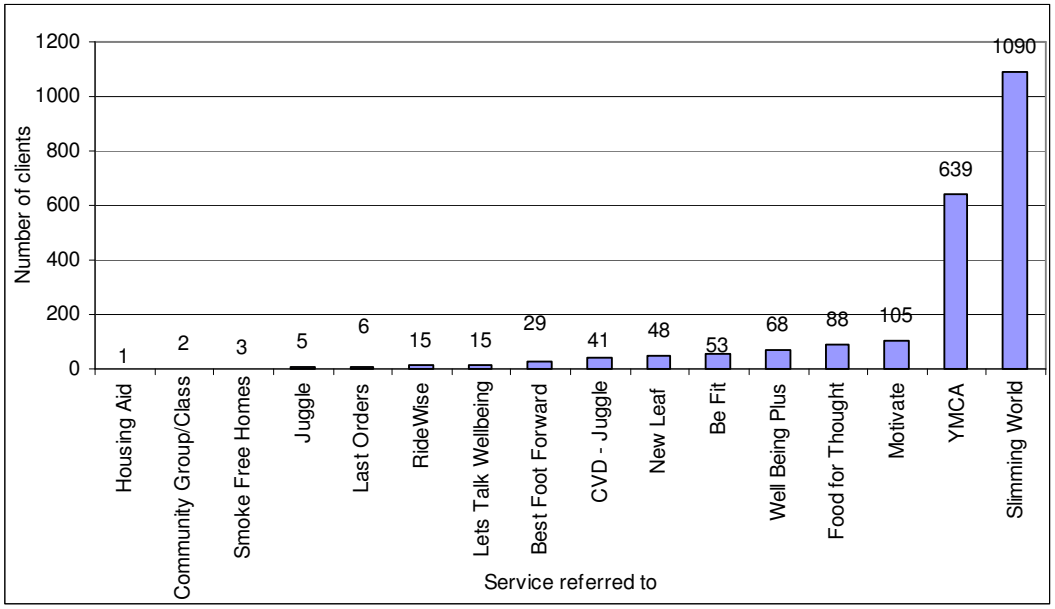
P3: Which health behaviours do clients focus upon within the service and how does this compare with the national programme?
Key learning points

- The majority of Healthy Change clients focused upon obesity, with physical activity the second most popular.
- This was similar to Health Trainers services in the most deprived fifth of England, except fewer Nottingham clients focused upon smoking as their primary issue.
- Less that 5% of clients identified smoking cessation as their primary issue.

3.2 P4. Which services and initiatives were clients signposted to?

Amongst clients that were referred onto other services from Healthy Change during the evaluation period, the service with the highest number of referrals was Slimming World on Referral (49.3%) followed by the YMCA Active for Life physical activity scheme (28.9%). Motivate which is the weight management service aimed at men, had the third highest number of referrals, despite only starting in 2012. All other services had less than 100 referrals. Onwards referral was not recorded for 43.1% (n=1673) of clients. These will be clients who set goals only.

Figure 6.Number of referrals to other Services recoded by Healthy Change (01/05/11-22/08/12)



P4. Which services and initiatives were clients signposted to?
Key learning points

- 57% of clients were referred onto other services during the evaluation period.
- Nearly 50% of these were referred to Slimming World.
- All other services except the YMCA Physical Activity on Referral Scheme and Motivate Weight Management service had less than 100 clients referred.

3.3 O1: What Proportion of Clients set and achieved their Personal Health Plan Goals, and how did this compare to the National Health Trainer Programme?

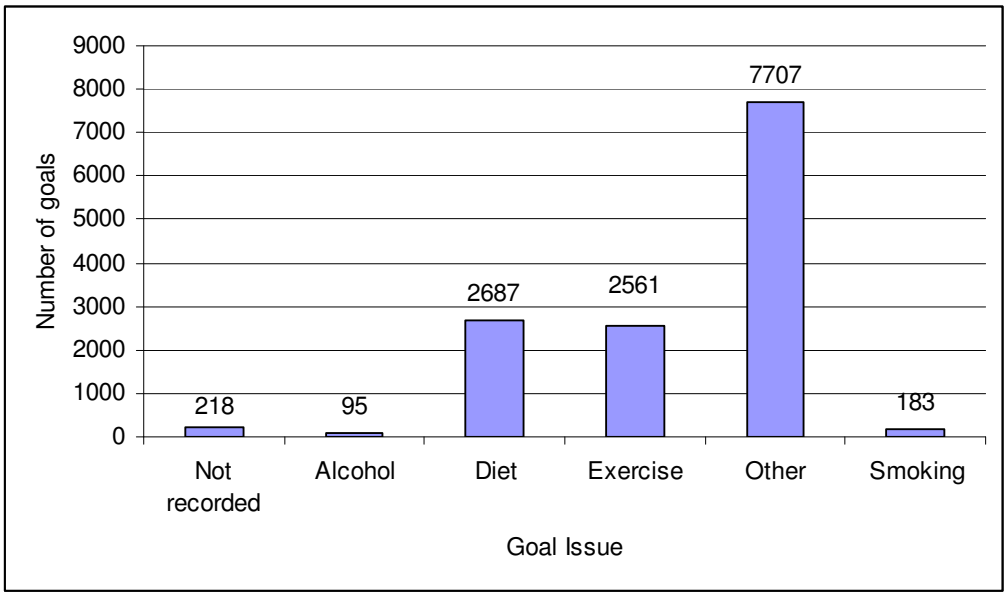
Healthy Change had a higher proportion of clients who set a PHP compared to the Health Trainer services in the most deprived quintile of England (table 1).

Table 1 Proportion of Clients that Set a Personal Health Plan in Healthy Change and the National Programme (1.5.11-22.08.12)

Healthy Change		Health Trainer Services in the most Deprived Quintile of England	
n	%	n	%
3572	60.71%	42491	57.73%

Within Healthy Change there were 13451 goals set during the evaluation period. The majority were coded as other, followed by diet and then exercise. (figure 5). Other are goals relating to referral onto a service.

Figure 7. Number of goals by type in Healthy Change 1/5/11-22/08/12



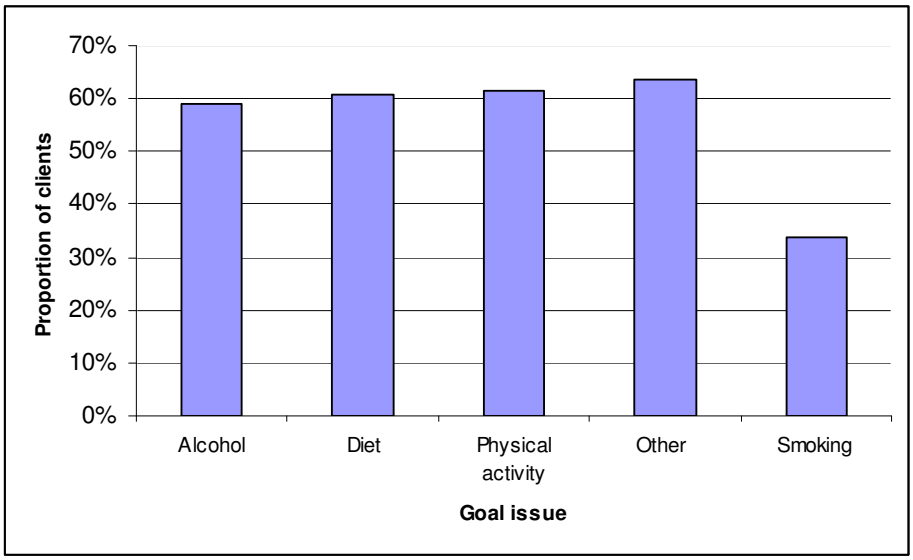
The achievement status for Healthy Change clients that set a Personal Health Plan (PHP) was recorded on the DCRS for 3572 clients. Table 2 shows that over 77% of clients achieved their PHP, which was higher than Health Trainer services in the most deprived quintile.

Table 2 Achievement of Personal Health Plan in Healthy change and the National health Trainer Programme

PHP Outcome	Healthy Change		England most deprived quintile	
ACHIEVED	2763	77.35%	24099	56.72%
NOT ACHIEVED	320	8.96%	14989	35.28%
PART ACHIEVED	489	13.69%	3403	8.01%
Total	**3572**	**100.00%**	**42491**	**100.00%**

Around 60% of clients achieved goals for alcohol, diet and physical activity, but achievement of goals was around 50% lower for the 62 clients that set smoking related goals during the evaluation period (figure 9).

Figure 8. Proportion of clients achieving goals for each risk factor



O1: What Proportion of Clients set and achieved their Personal Health Plan Goals, and how did this compare to the National Health Trainer Programme?

Key learning points

- 60% of Healthy Change clients set a PHP of which 77% achieved their goals. This was higher than for the Health Trainer services in the most deprived quintile.
- Other, diet and physical activity were the most popular goals respectively, with around 60% of clients achieving these goals.
- Smoking cessation was the least prevalent goal type and only a third of clients setting these goals achieved them.

3.4 O2: What was the change in risk factors for all clients that set a personal health plan?

Data was collected at the end of the coaching period for clients that set a PHP. The average duration of the coaching period was 120 days (around 4 months). The number of clients with available before/after data available varies, presumably because not all clients could be contacted for a telephone assessment at the end of the coaching period, and because of the clients that could be contacted, they did all not provide data to all of the questions (table 3).

Table 3. Proportion of clients that set a PHP who provided before/after data on risk factors (1/5/11-22.08.12)

Risk Factor	n	Proportion of clients that set a PHP (n=3572)
BMI (kg/m^2)	2273	63.6%
Moderate Physical Activity (days/week)	976	27.3%
Fruit and vegetable (portions/day)	2896	81.1%
Alcohol (units/week)	650	18.2%
Smokers	512	14.3%

Amongst the clients that did provide before/after data there were statistically significant improvements in CVD risk factors: a mean reduction in BMI, an increase in physical activity, decrease in fruit and vegetable consumption and alcohol consumption. There was also a decrease in the number of smokers (table 4). However, the mean improvement was relatively small except for BMI.

Table 4. Change in risk factor of Healthy Change clients between the between the first and last assessment (1.5.11 to 22.08.12)

Risk Factor	n	Start of Coaching Period (mean & 95% CI)	End of Coaching period (mean & 95% CI)	Mean Difference	P value*
BMI (kg/m^2)	2273	35.9 (35.7-36.2)	33.5 (33.2-33.8)	2.4	p<0.01
Moderate Physical Activity (days/week)	976	2.9 (2.7-3.0)	3.2 (3.0-3.4)	0.3	p<0.01
Fruit and vegetable (portions/day)	2896	3.8 (3.7-3.9)	4.76 (4.7-4.9)	0.9	P<0.01
Alcohol (units/week)	650	8.2 (7.1-9.3)	7.4 (6.3-8.5)	0.8	P<0.01
Smokers	512	512	479	33	p<0.01

*paired t-test for continuous data/ chi-squared test for smoking.

The results in table 5 show the changes in the general health score and WHO five wellbeing score for clients with matched data during the coaching period. There was a statistically significant improvement in these indicators.

Table 5.Change in wellbeing and general health of Healthy Change clients between the between the start and end of the coaching period (1.5.11 to 22.08.12)

Wellbeing measure	n	Start of Coaching Period	End of Coaching period	Mean Difference	P value*
WHO five wellbeing (score)	1195	53.4	62.5	9.1	p<0.01
General Health score	1190	57.2	67.6	10.4	p<0.01

3.5 Q3 How did the change in CVD risk factors/ health related behaviour for Healthy Change clients compare with the national Health Trainer Programme?

The reduction in BMI was slight higher than the most deprived quintile, and the increase in fruit and vegetable intake similar (table 7). The increase in physical activity, and decrease in alcohol and smoking consumption was less ion Healthy Change than the national programme. Some of this difference in improvement can be accounted by the fact that Healthy Change recorded before and after results for a greater proportion of clients than all scheme combined.

Table 6. Change in BMI and Physical Activity in Healthy Change and National Health Trainer Programme (1.5.11-22.08.12)

Service/Programme	Start of Coaching Period	End of Coaching period	Mean diff
BMI (kg/m^2)			
Healthy Change (n=2273)	36.0	34.8	1.3
England Most deprived quintile (n=13553)	34.4	33.3	1.1
Moderate Physical Activity (days/week)			
Healthy Change (n=976)	3.2	5.1	1.5
England Most deprived quintile (n=10895)	3.1	5.2	2.1
Fruit and Vegetable (portions/day)			
Healthy Change (n=1443)	4.2	5.9	1.6
England Most deprived quintile (n=13553)	2.7	4.3	1.6
Alcohol			
Healthy Change (n=176)	8.6	6.6	2.0
England Most deprived quintile (n=4756)	10.7	6.4	4.3
Smoking (cigarettes/day)			
Healthy Change (n=1013)	2.7	2.1	0.6
England Most deprived quintile (n=11041)	4.8	2.4	2.4

The change in the wellbeing indicators was smaller than in the national health trainer programme and most deprived quintile (table 7). Again, some of this difference in improvement can be accounted by the fact that Healthy Change recorded before and after results for a greater proportion of clients than all scheme combined.

Table 7. Change in Wellbeing and self efficacy in Health Change and the National Health Trainer Programme (1.5.11-22.08.12)

Service/Programme	Start of Coaching Period	End of Coaching period	Mean diff
WHO wellbeing score			
Healthy Change (n=1279)	53.2	62.29	9.1
England Most deprived quintile (n=3357)	43.05	60.59	17.5

Q3 How did the change in risk factors/ health related behaviour for Healthy Change clients compare with the national Health Trainer Programme?
Key learning points

- When compared to the Health Trainer services in the most deprived quintile of England for the same period there was a greater mean reduction in BMI and a comparable increase in fruit and vegetable consumption, but less of a mean improvement in physical activity, alcohol consumption and wellbeing score.
- Some of this difference can be accounted by the difference in the delivery mechanism of the ser vice and the better data quality in Health Change.

3.6 O7: How does weight loss and attendance at Slimming World compare with outcomes prior to Healthy Change?

3.6.1 Methods

Outcomes of clients accessing the Slimming World on Referral Scheme was compared for the following period:

Slimming World Referrals where the GP practice gave referral vouchers/slips directly to clients: March 2009-September 2012 (n=844 started Slimming World on Referral after May 2012 when Healthy Change started).

Slimming World Referrals where clients were posted referral vouchers/slips to clients from Healthy Change: May 2012-September 2012.

It was possible for Slimming World to identify which clients were referred directly via GP practices and which via Healthy Change as each voucher/referral slips for a 12 week course has a unique reference number.

The data were analysed for two subgroups:

- Finishers – clients who had time to attend 12 weeks at Slimming World
- Completers - clients who had time to attend 12 weeks at Slimming World and completed at least 10 out of 12 sessions

3.6.2 Results

The results in table 14 show that the clients in the GP practice and the Healthy Change referral cohorts were of similar age and had a similar proportion of male and female clients. Reporting of ethnicity was much improved for the referral via Healthy Change and so is not directly comparable. The mean starting BMI was 0.9 kg/m^2 lower in the two GP Practice Direct Referral Groups than in the Healthy Change Groups.

Within both cohorts, Completers had greater mean weight change and a larger proportion achieving at least 5% weight loss than all Finishes who attended fewer sessions. The mean BMI change and weight change was significantly higher (P<0.01) amongst the Healthy Change cohort for both the Finishers and Completers.

Table 8.Referral and Outcomes for Slimming World on Referral. GP practice Direct Referrals vs. Healthy Change Referrals

	GP practice Direct Referrals 'Finishes n=4091)	Healthy Change 'Finishes' (n=3009)	P value (unpaired t-test)	GP practice Direct Referrals 'Completers (n=2293, 56% of all clients)	Healthy Change 'Completers' Client attended (n=1987, 66% of all clients)	P value (unpaired t-test)
Baseline Characteristics						
Age (years) (mean (range))	47.1 (18-88)	46.6 (18-86)		49.1 (18-86)	48.2 (18-86)	
% female	90.9%	89.1%		90.6%	88.4%	
% White British	57.5%	71.8%		64.1%	76.3%	
% BME	17.0%	21.7%		7.9%	19.0%	
% Ethnicity not recorded	25.5%	6.5%		28.04%	4.7%	
Mean Start BMI (kg/m2)	37.2	36.3		37.2	36.3	
Outcomes						
Mean attendance (weeks)	8.6	11.4	P<0.01	9.5	11.5	P<0.01
Mean BMI Change (kg/m2)	1.1	1.3	P<0.01	1.6	1.8	P<0.01
Mean Weight change (kg)	-3.1	-3.7	P<0.01	-4.4	-4.8	P<0.01
Mean Percentage achieving 5% weight in 12 weeks	26%	33%		41%	45%	

O7: How does weight loss and attendance at Slimming World compare with outcomes prior to Healthy Change?
Key learning points

- The average number of sessions attended and weight loss outcomes were greater for clients referred by Healthy Change compared to those directly referred by GP practices.

3.7 O8 How had clients maintained behaviour change at six and 12 months?

The data was taken from a DCRS review extract for the period 1.5.11 to 22.08.12 .Data was filtered to include only clients data who had a review 182 days or greater after they were signed off from the service. Data was available for 201 clients who had been contacted for a review at least 6 months after their final coaching call.

The results in table 9 indicated that amongst the clients that were contacted there was an improvement in BMI, weight, physical activity and fruit and vegetable consumption, but a decline in smoking and alcohol consumption.

Table 9 Maintenance of behaviour change for Healthy Change clients at 6 month or longer after final coaching call (1.5.11-22.08.12)

Risk Factor	Final coaching call	Review at 6 months or later	Mean difference
BMI (kg/m^2)	29.6	24.4	5.2
Weight (kg)	87.8	67.2	20.6
Moderate Physical Activity (days/week)	3.0	3.4	0.4
Fruit and vegetable (portions/day)	3.7	4.2	0.5
Alcohol (units/week)	1.3	3.4	2.1
Cigarettes (day)	1.1	1.4	0.3

O8 How had clients maintained behaviour change at six and 12 months?
Key Learning Points

- Matched data was available for 201 clients.
- There was an improvement in BMI, weight, physical activity and fruit and vegetable consumption, but a decline in smoking and alcohol consumption.

3.8 E1: Was access to the service equitable?

3.8.1 Gender, ethnicity and disability

There was a much greater proportion of female than male client in the service which was not in proportion to the ratio in the city. The proportion of clients that were female in the Nottingham Healthy Change Service was over 10% percentage points higher than the national programme and the programme in the most deprived fifth of the country (table 10).

Healthy Change had a higher proportion of ethnicity recording than the national programme or the most deprived quintile nationally. The majority of Healthy Change clients were White British, but the proportion was lower than the proportion in the city, and slightly higher than the most deprived national quintile. This was mainly attributable to the higher proportion of clients from the Black or Black British–Caribbean group in the Nottingham service (table 10). Asian Indian was the only ethnic group that was unrepresented.

Healthy Change had lower access by disabled clients than the national programmes and (table10).

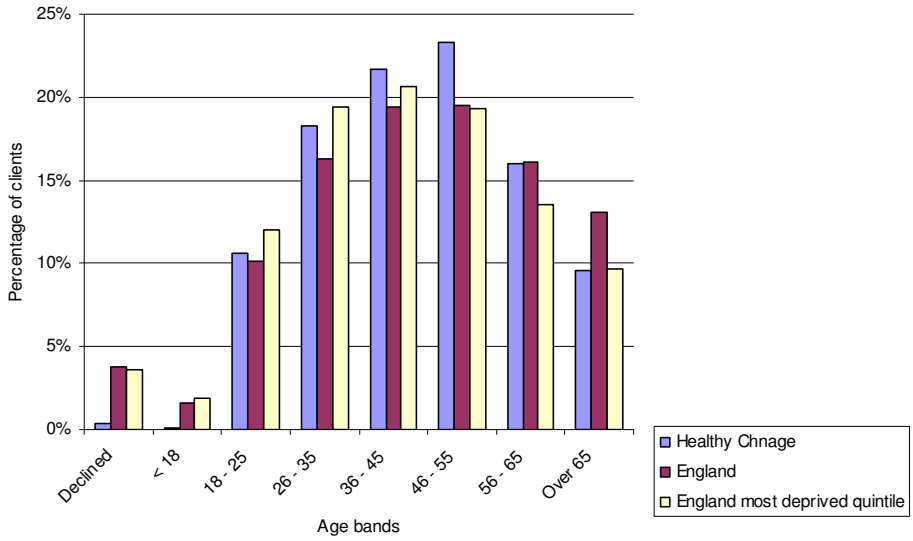
Table 10. Gender, Ethnicity and Disability status of Healthy Change and National Health Trainer Clients (1.5.11-22.08.12)

Sub-group	Healthy Change		Nottingham	England most deprived quintile	
Gender					
Female	4608	78.33%	49.8%*	48292	65.61%
Male	1265	21.50%	50.2%*	25217	34.26%
Other	10	0.17%		92	0.12%
Total	5883	100.0%		73601	44.17%
Ethnicity			**		
A: White - British	3827	**65.05%**	75.5%	46051	62.57%
B: White - Irish	43	0.73%	1.1%	550	0.75%
C: Other White Background	132	2.24%	3.7%	1287	1.75%
D: Mixed - White and Black Caribbean	113	1.92%	1.0%	634	0.86%
E: Mixed - White and Black African	19	0.32%	0.2%	254	0.35%
F: Mixed - White and Asian	18	0.31%	0.6%	205	0.28%
G: Mixed - Any Other Mixed Background	46	0.78%	0.5%	230	0.31%
H: Asian or Asian British - Indian	133	**2.26%**	4.7%	2623	3.56%
I: Asian or Asian British - Pakistani	249	4.23%	3.0%	4217	5.73%
J: Asian or Asian British - Bangladeshi	14	0.24%	0.6%	3542	4.81%
K: Any Other Asian Background	42	0.71%	0.8%	495	0.67%
L: Black or Black British - Caribbean	416	7.07%	2.5%	1660	2.26%
M: Black or Black British - African	164	2.79%	1.9%	1747	2.37%
N: Any Other Black Background	25	0.42%	0.3%	334	0.45%
O: Chinese	9	**0.15%**	1.9%	167	0.23%
P: Any Other Ethnic Group	84	1.43%	1.7%	1285	1.75%
Z: Not Stated	549	9.33%		8320	11.30%
Total	5883	100.0%		73601	44.17%
Disability					
Not recorded	3239	55.06%		37852	51.43%
Disabled	394	6.70%		5869	7.97%
Not disabled	2250	38.25%		29880	40.60%
Total	5883	100.0%		73601	44.17%

*Census 2011 statistics (age 20 and 0ver). **ONS 2009 mid year estimates [JSNA demography chapter] (age 16 and over).

Figure 10 shows that the overall age profile of the Healthy Change clients is similar to the national programme. Notable differences are the higher proportion of clients in the 26-55 years age bands, a lower proportion of clients in the over 65 group than the national programme, similar to the most deprived fifth of England. Healthy Change also has the highest proportion of clients with age recorded.

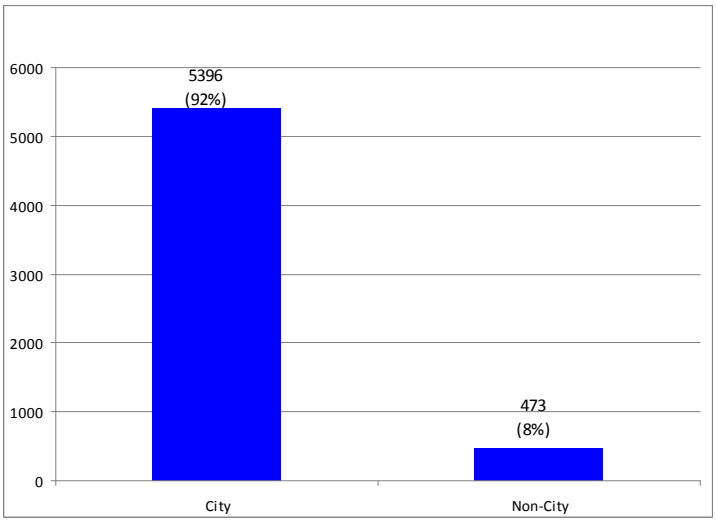
Figure 9 Distribution of age in Healthy Change and England Healthy Trainer Programmes



3.8.2 Socioeconomic status of Healthy Change Clients

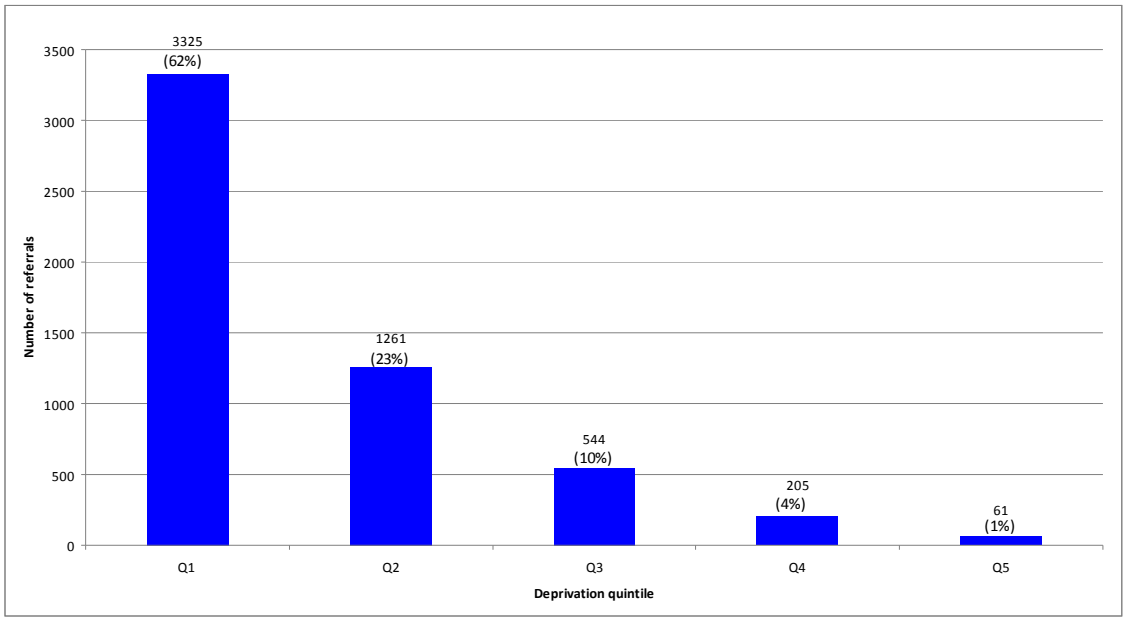
By far the majority of Healthy Change clients were residents of Nottingham City, with 8% being resident outside the city, but with a GP within the city boundary (figure 11).

Figure 10. Residence of Healthy Change clients (0.1.05.2011-22.08.12)



Amongst city residents 85% lived within the most deprived 40% of the city (figure 12).

Figure 11. Residence of City Healthy Change clients by local IMD deprivation quintile (0.1.05.2011-22.08.12)



Nearly 60% of clients that accessed were from the most deprived fifth of England which is a greater proportion that than the national profile (table 11).

Table 11. Distribution of clients by IMD

Sub-group	Healthy Change		England	
No fixed abode	11	0.19%	421	0.25%
Not recognised	8	0.14%	2595	1.56%
Q1 - Most deprived	3374	57.35%	73601	44.17%
Q2	1343	22.83%	36429	21.86%
Q3	622	10.57%	23755	14.26%
Q4	353	6.00%	16616	9.97%
Q5 - Least deprived	167	2.84%	10257	6.16%
Unknown	5	0.08%	2951	1.77%
Total	**5883**	**100.00%**	**166625**	**100.00%**

Healthy Change had a higher proportion of clients with employment status recorded than the National programme (76.8% vs. 62%) (table 12). Amongst with employment status recorded there was a higher proportion of clients who employed in Healthy Change than the national programme and for the most deprived quintile. It could be the employed group who have the most unrecorded employment status in the national programme. Healthy Change has a higher proportion of clients who are permanently sick or disabled and unemployed clients than the national programme, but lower than the most deprived quintile group.

Table 12. Employment status of Healthy Change and National Health Trainer Clients

Sub-group	Healthy Change		England		England most deprived quintile	
Employed full-time	957	25.31%	18844	23.54%	6641	19.00%
Employed part-time	623	16.48%	8156	10.19%	3162	9.04%
Full time carer	63	1.67%	1442	1.80%	652	1.87%
Looking after home or family full time	263	6.96%	7277	9.09%	4102	11.73%
N/A - Offender health	2	0.05%	2375	2.97%	1447	4.14%
Other	62	1.64%	1827	2.28%	871	2.49%
Permanently Sick / Disabled	352	9.31%	7000	8.74%	3534	10.11%
Response declined	1	0.03%	451	0.56%	151	0.43%
Retired	623	16.48%	15387	19.22%	4963	14.20%
Self-employed	52	1.38%	1252	1.56%	403	1.15%
Student	100	2.64%	2491	3.11%	1217	3.48%
Unemployed	662	17.51%	12995	16.23%	7558	21.62%
Volunteer	21	0.56%	556	0.69%	258	0.74%
Total	3781	100.00%	80053	100.00%	34959	100.00%

3.8.3 Mosaic Analysis

For Mosaic analysis the access index for each mosaic group is calculated by:

$$\text{Access index} = \frac{\%\ \text{accessing the scheme}}{\%\ \text{Nottingham Population}} \times 100$$

This method has previously been used in a local health equity audit of the New Leaf smoking cessation service, Health In Mind mental wellbeing service, and Slimming World on Referral service. As the service ultimately aims to reduce risk of CVD, the mosaic grand index score for hospital admissions for CVD was used as the measure of need.

Table 13 shows that groups M, L and B have CVD index score 20 points or more above the England average. Groups M and L are composed of older people which is the main reason for their high CVD index score. Table 13 shows that Group M makes up 5.4% of the city populations and that access to Healthy Change in equitable in relation to the proportion of the group in the city.

Groups K, O, I and G are the 4 mosaics groups which have at least 10% of the Nottingham population within the group. Amongst these groups, group G, which comprises young people has a very low CVD index score and the access index is also low. The access index for groups K, O, and I is above 100 and in proportion to need.

It could be interpreted that groups J and F have a high level of access above the need.

Table 13. Equity of Access to Healthy Change by Mosaic Group (01.05.11-22.08.12)

Mosaic Group	Mosaic Grand Index CVD admission score	Proportion of Nottingham Population from Mosaic Groups	Number Accessing the Service	Proportion of Healthy Change Clients from Mosaic Groups	Access index
M Elderly people reliant on state support	276	5.4%	333	5.7%	106
L Active elderly people living in pleasant retirement locations	206	1.2%	50	0.9%	72
B Residents of small and mid-sized towns with strong local roots	122	2.7%	171	2.9%	109
A Residents of isolated rural communities	110	0.0%	1	0.0%	100
K Residents with sufficient incomes in right-to-buy social housing	105	**10.9%**	816	14.0%	129
J Owner occupiers in older-style housing in ex-industrial areas	104	5.0%	420	7.2%	145
O Families in low-rise social housing with high levels of benefit need	101	**16.5%**	1411	24.3%	147
D Successful professionals living in suburban or semi-rural homes	93	1.9%	95	1.6%	86
N Young people renting flats in high density social housing	86	8.2%	569	9.8%	119
I Lower income workers in urban terraces in often diverse areas	85	**11.3%**	716	12.3%	109
E Middle income families living in moderate suburban semis	85	5.3%	389	6.7%	126
C Wealthy people living in the most sought after neighbourhoods	78	1.0%	24	0.4%	41
G Young, well-educated city dwellers	59	**26.7%**	570	9.8%	37
H Couples and young singles in small modern starter homes	54	3.3%	189	3.3%	99
F Couples with young children in comfortable modern housing	53	0.5%	58	1.0%	200

E1: Was access to the service equitable?
Key Learning Points

- **There was a low proportion of men accessing the service.**
- **Access was equitable for people from black and minority ethnic groups, from more deprived areas.**
- **Access was equitable in relation to the Mosaic groups most prevalent in the city and groups with highest hospital admission for CVD.**

3.9 V1 – What is the estimated net cost per health gain of the service?

V2 What is the estimated cost saving to the NHS and local authority from the health gain derived from the service?

3.9.1 Methods

The Health Trainer Portsmouth Ready Reckoner described in the Introduction section assumes that:

- 85% of those setting a goal will maintain behaviour by 3 months.
- 15% of those setting a goal will maintain that behaviour after 5 years.
- Propensity to make a behaviour change without an intervention is 5%.
- The behaviour change goal that a client chooses to address will also impact on emotional wellbeing by 25% (apart from if the client chooses to address emotional wellbeing were the benefit will be 100%).
- Behaviour change goals that are part achieved account for 50% of the full healthy improvement benefit.

These assumptions have not been amended for this analysis.

The analysis used data from the period 1st May 2011 to 22nd August 2012 in with the other parts of the evaluation. The financial costs entered were for 2011/12 plus 3 months.

3.9.2 Results

The data entered for the Healthy Change Service produced a value for money of

- -£7476 per Disability adjusted Life Years (DALY)
- -£5637 per Quality Adjusted Life Year (QALY)

To put this into perspective NICE considers an intervention that cost less than £20,000-30,000 per QALY to be cost effective. The below Health England Leading Priorities table[5] highlights the cost per QALY[6] of other interventions related to CVD prevention which suggests Healthy Change compares favourably (table14).

[5] Adapted from the table on page 5 of the **Health England Report No 5 'Prioritising investments in preventative health'.** September 2009.

[6] QALYs are comparable to DALYs.

Table 14 Cost per QALY of CVD of prevention interventions (Health England)

Category	Type of Intervention	Priority Score	Cost / QALY
Smoking	Brief Intervention in GP practices	8.98 %	-£1,799
Alcohol	Brief Intervention in GP practices	8.70 %	-£750
Diet, activity, obesity	Brief Intervention in GP practices	8.63 %	-£2,151
Smoking	Nicotine Replacement Therapy	8.25 %	-£563
Statins	Use for primary prevention	4.26 %	£9,858

The tool estimates that the estimated health gain would result in a cost saving of:

- £2,238,418 to the NHS
- £231, 264 to the Local Authority

V1 – What is the estimated net cost per health gain of the service?

V2 What is the estimated cost saving to the NHS and local authority from the health gain derived from the service?

- **Using the Health Trainer Ready Reckoner tool with the standard assumptions indicates that the Healthy Change service is likely to offer good value for money.**

4 Conclusions

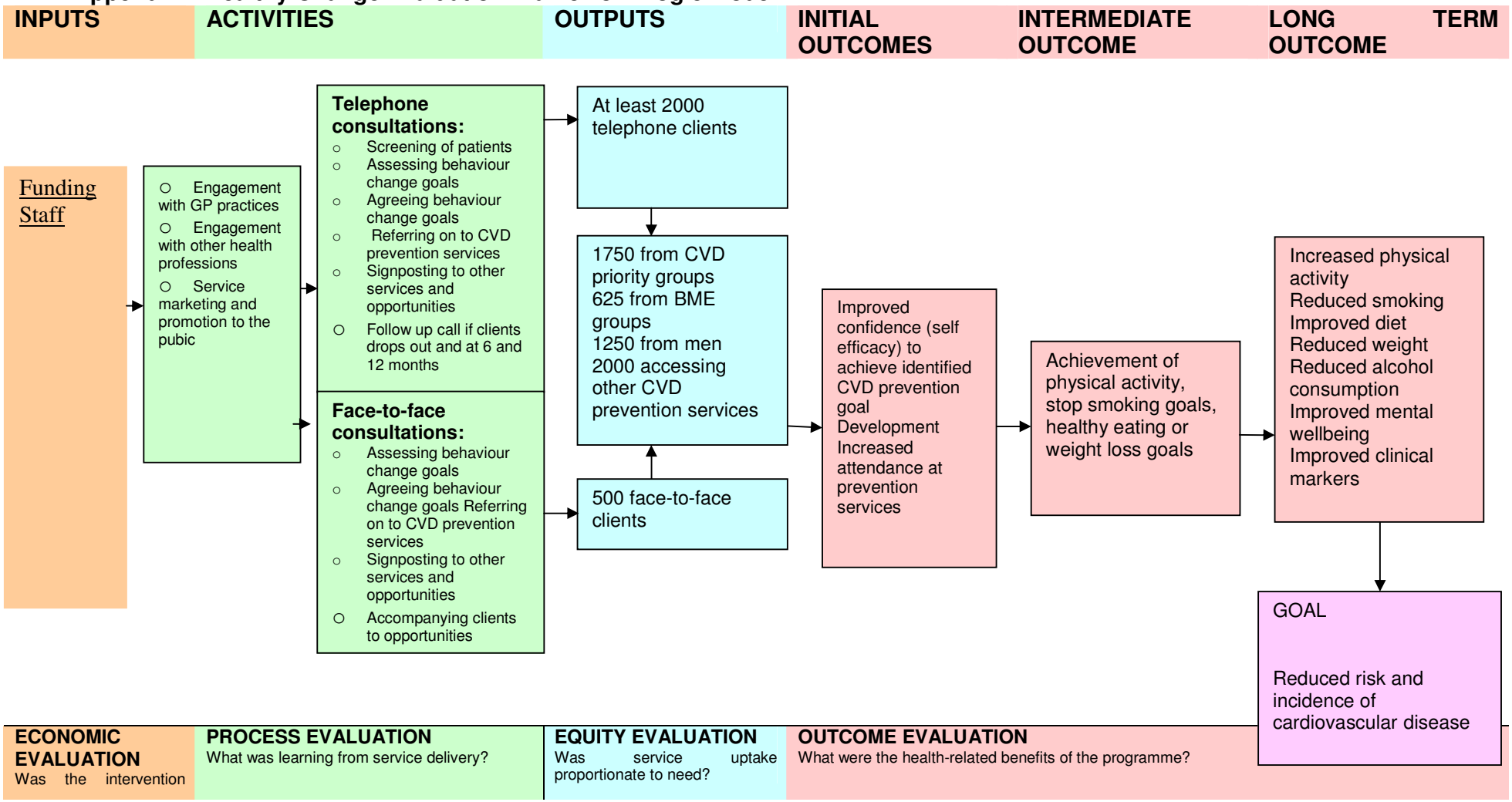
- The service has successfully engaged GP practices with over 4800 referrals during the evaluation period. However other referral mechanisms were less effective.
- Nearly 80% of referrals were client who identified excess weight as their primary issue indicating the demand for services for weight management.
- The low number of referrals to the other services needs to be considered in relation to their impact on population health.
- There was an improvement in CVD risk factors, however some of the effect sizes were small. Some were smaller than the likely precision of the tools (questions) used to measure self reported behaviour change them. However data on their precision is not available as they were never fully validated through the National Health Trainer Programme.
- A major confounding factor is that for clients that were referred onto other services, some of this improvement is due to the effect of the other service.
- Healthy Change has a high proportion of clients with before and after data from the coaching period than the average for all Health Trainer services. Therefore the poorer performance for certain indicators may be attributable to Health Change having data from a wider range of participants in relation to behaviour change outcomes.
- The is a positive indication from the data that these is some maintenance of behaviour change amongst clients, although data was only available for a small proportion of the total clients.
- It was possible to compare the weight loss outcomes of clients referred to Slimming World directly from GP practices and those referred via Healthy Change. The data indicates that outcomes are improved when clients are referred by Healthy Change.
- The improved weight loss outcomes may be attributable to more consistent implementation of motivational support for clients referred to Slimming World than across the city's GP practices.
- Access to the service was lower for men than women. As men have significantly higher rates of CVD mortality developing ways to engage men should continue to be a priority for the service.
- The service is equitable in relation to Mosaic groups that are most prevalent in the city and with a higher rate of admission to hospital for CVD.
- It is estimated that the service is cost effective and offers value for money in the longer term to the NHS and local authority. It is recognised that this estimate has limitations with regard to the assumptions entered into the value for money tool.

5 Recommendations

- Continue to build on the success of the GP referrals to the services by prioritising work with low referring GP practices.
- Work with the Clinical Commissioning Group to determine who the service can be better utilised to in the management and secondary prevention of long term conditions by supporting clients in addressing CVD risk factors.
- There is a need to develop other approaches to engage clients into the service, especially men, who may be less likely to access via GP practices.
- Plans should be developed to determine the appropriate mix of services if the service is to be scaled up as half of the referrals are to Slimming World.
- Referrals to goals to address smoking are a low proportion of the work of the service. There should be further work to determine is the role of the service in smoking cessation and relapse prevention can be improved.
- The service should continue utilising the DCRS as it provides a valuable method of collecting evaluation data.

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Appendix 1 Healthy Change Evaluation Framework Logic Model



value for money?			