Evaluation of the Counterweight Programme for obesity management in primary care:
a starting point for continuous improvement

Counterweight Project Team

ABSTRACT

Background
Evaluation for obesity management in primary care is limited, and successful outcomes are from intensive clinical trials in hospital settings.

Aim
To determine to what extent measures of success seen in intensive clinical trials can be achieved in routine primary care. Primary outcome measures were weight change and percentage of patients achieving ≥5% loss at 12 and 24 months.

Design of study
Prospective evaluation of a new continuous improvement model for weight management in primary care.

Setting
Primary care, UK.

Method
Primary care practice nurses from 65 UK general practices delivered interventions to 1906 patients with body mass index (BMI) ≥30 kg/m^2 or ≥28 kg/m^2 with obesity-related comorbidities.

Results
Mean baseline weight was 101.2 kg (BMI 37.1 kg/m^2); 25% of patients had BMI ≥40 kg/m^2 and 74% had ≥1 major obesity-related comorbidity. At final data capture 1419 patients were in the programme for ≥12 months, and 825 for ≥24 months. Mean weight change in those who attended and had data at 12 months (*n* = 642) was –3.0 kg (95% CI = –3.5 to –2.4 kg) and at 24 months (*n* = 357) was –2.3 kg (95% CI = –3.2 to –1.4 kg). Among attenders at specific time-points, 30.7% had maintained weight loss of ≥5% at 12 months, and 31.9% at 24 months. A total of 761 (54%) of all 1419 patients who had been enrolled in the programme for >12 months provided data at or beyond 12 months.

Conclusion
This intervention achieves and maintains clinically valuable weight loss within routine primary care.

Keywords
continuous improvement; lifestyle intervention; primary care; weight loss maintenance; weight management.

INTRODUCTION

Obesity is a major public health risk, presenting a burden of obesity-related disease,[1] impaired quality of life,[2] and implications for medical care expenditure.[3] Obese populations attend general practice frequently,[4] incurring increased prescribing costs.[5] Almost one-quarter of all UK adults are now obese,[6,7] and obese people with no intervention will steadily gain further weight over time.[8]

Lifestyle intervention with modest weight loss of 5–10% reduces progression to diabetes by up to 58% over 4 years.[9,10] Multiple clinical benefits result, including reductions in risk of cardiovascular disease.[11,12]

Despite clinical guidelines for obesity management[11,13] and related disease,[14] there is little evidence from primary care. Lack of evidence, time, and training are barriers to addressing weight in primary care.[15] Isolated weight management training for practitioners does not result in patient weight loss.[16]

This paper presents final outcomes from a 5-year evaluation phase of the Counterweight Programme for obesity management in routine general practice. Programme methodology and preliminary outcomes have been published previously.[17,18]

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METHOD

Design

The Counterweight Programme was a prospective, evidence- and theory-based intervention for weight management, evaluated in 65 general practices from seven UK regions. Counterweight is a model of continuous improvement. The programme was conducted in a in a naturalistic, primary care setting which is close to the patient's own environment,[19,20] with 'closed-loop' audit of outcomes allowing programme refinement.

Practices that reflected UK profiles, varying in size, location, and category of social deprivation, were invited to participate. When Counterweight was established there was no evaluated model for weight management in primary care. A cluster randomisation model including a deferred intervention would have had limitations, because data collection could have an intervention effect. A within-practice experimental design with a control group was not possible, as Counterweight works with the whole practice team.

Practice intervention

Weight management advisers, all registered dietitians with specialist postgraduate training and experience in obesity management, led and facilitated implementation of the programme. They offered expertise in obesity management and provided protocols and training materials for practice staff and patient education materials.[17] One-hour of training was provided for GPs, which included review of Counterweight screening and treatment pathways, importance of raising the issue of weight with patients, and review of the benefits of a 5–10% weight loss for patients with obesity.

An 8-hour training programme was provided for practice nurses. Practice nurses incorporated the programme into appointments which were usually spent managing comorbid conditions. Practices were not asked to set up additional clinics for weight management, although some did.

Peer support in the practice was provided once or twice each month by the weight management adviser until practice nurses achieved competency[17] and confidence. Mentoring usually took 6 months. Subsequent visits by weight management advisers were to assist with auditing outcomes, provision of materials (for example, information leaflets), and training of new staff members.

The practice nurse role was to deliver patient education through discussion about weight management, communication of information, and the transfer of behaviour change skills and strategies during weight-management sessions. In several practices healthcare assistants took on this role. Weight management advisers conducted patient

> ## How this fits in
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> The personal, societal, and healthcare costs of obesity are of widespread concern. Despite evidence-based clinical guidelines for components of obesity management, translation to general practice has lacked evaluation. This study demonstrates that if practice nurses are given training on a structured programme, are mentored within clinical practice, and results are continuously audited, they can achieve and maintain clinically beneficial weight loss in their patients with obesity.

consultations only during training of practice nurses. The unique feature of this programme was the mentoring provided by the weight management advisers in routine clinical settings.

Patient intervention

Patients were identified for the Counterweight Programme by GPs and practice nurses during normal appointments. Practice nurses targeted patients aged

Table 1. Baseline characteristics for eligible patients enrolled in the Counterweight Programme at time of analysis.

	All	Eligible for 12-month follow-up	Eligible for 24-month follow-up
Patients enrolled, n	1906	1419	825
Age in years, mean (SD)	49.4 (13.5)	49.9 (13.6)	50.4 (13.7)
Females, n (%)	1468 (77.0)	1070 (75.4)	616 (74.7)
Males, n (%)	438 (23.0)	349 (24.6)	209 (25.3)
BMI kg/m², mean (SD)	37.1 (6.0)	37.0 (6.1)	37.1 (5.6)
BMI ≥40 kg/m², n (%)	485 (25.4)	355 (25.0)	213 (25.8)
Diabetes present, n (%)	258 (13.5)	202 (14.2)	127 (15.4)
Impaired fasting glucose[a], n (%)	119/1205 (9.9)	97/891 (10.9)	59/536 (11.0)
Cardiovascular disease[b], n (%)	152 (8.0)	117 (8.2)	71 (8.6)
Hypertension, n (%)	612 (32.1)	469 (33.1)	265 (32.1)
Hypertension or raised blood pressure[c], n (%)	1153 (60.5)	873 (61.5)	512 (62.1)
Hyperlipidaemia, n (%)	239 (12.5)	187 (13.2)	120 (14.5)
Hyperlipidaemia or raised total cholesterol[d], n (%)	958 (50.3)	725 (51.1)	436 (52.8)
Comorbidity[e] ≥1, n (%)	1408 (73.9)	1069 (75.3)	628 (76.1)
Comorbidity[e] ≥2, n (%)	916 (48.1)	711 (50.1)	413 (50.1)
Comorbidity[e] ≥3, n (%)	533 (28.0)	415 (29.2)	240 (29.1)
Ex-smoker, n (%)	575/1852 (30.2)	453/1380 (31.9)	253/804 (31.5)
Practice in affluent area[f], n (%)	651 (34.2)	477 (33.6)	267 (32.4)
Practice in intermediate deprivation area[f], n (%)	562 (29.5)	425 (30.0)	265 (32.1)
Practice in deprived area[f], n (%)	693 (36.4)	517 (36.4)	293 (35.5)

[a]International Diabetes Federation definition 6.1–6.9 mmol/L. [b]Inclusive of myocardial infarction (MI), angina, congestive cardiac failure, transient ischaemic attack (TIA)/stroke. [c]Hypertension as marked on practice record, or systolic blood pressure (BP) ≥140mmHg or diastolic BP ≥90mmHg (≥130 or ≥80 for diabetes). [d]Hyperlipidaemia as marked on record or total cholesterol >5. [e]Diabetes, angina, hypertension, hyperlipidaemia, MI, congestive cardiac failure, TIA/cardiovascular disease/stroke, oedema, arthritis, depression, breathlessness, back pain, hypothyroidism, sleep apnoea, polycystic ovary syndrome. [f]Affluent = E8–10, S1–2; Intermediate = E4–7, S3–5; Deprived = E1–3, S6–7 (E = England, S = Scotland).[22, 23] BMI = Body Mass Index.

	Pre Appointment 1	Pre Week 0

Screen for readiness to lose weight

Ready (contemplative or action stages of change) Getting Started – are you ready? Thinking About Weight Loss?	Not ready Thinking about weight loss?

Appointment 1 — Week 1

Assessment/collection of baseline data. Weight, blood pressure, waist (fasting blood glucose, cholesterol if required), patient record card

Determine and discuss 5–10% weight loss goal. Establish baseline dietary habits
Daily Living Diary, Health Eating Quiz
Explain the two diffrent options available

Goal setting plan Establish 2 patient-agreed goals for lifestyle change Goals to Help you Lose Weight and Eat Healthily	Energy deficit plan Determine energy requirements with ≥500 Kcal deficit. Prescribe specific number of food group servings My Personal Weight Loss Plan

Appointment 2 — Week 3

Balance of good health. Record weight and waist
Explain a balanced diet
Balance of Good Health, Getting the Balance Right, Snack Attack Review Quiz

Goal setting Review goals, set 2 more if previous acheived Review diary if needed to modify goals	Energy Deficit Plan Review diary to check adherence to plan

Appointment 3 — Week 5

Label reading and meal planning. Record weight and waist
Discuss label reading, shopping, cooking, and eating out
Confused about Food Labels, Cooking Tips for the Whole Family, Eating Out

Goal setting Review goals, set 2 more if previous acheived Review diary if needed to modify goals	Energy Deficit Plan Review diary to check adherence to plan

Appointment 4 — Week 7

Physical activity. Record weight and waist
Discuss physical activity recommendations and walking programme
Offer GP Exercise referral scheme if appropriate and available
Ask patients to complete triggers to eating
Physical Activity, Eating Behaviour Workbooks

Goal setting Review goals, set 2 more if previous acheived Review diary if needed to modify goals	Energy Deficit Plan Review diary to check adherence to plan

Appointment 5 — Week 9

Behaviour management. Record weight and waist
Discuss emotional eating, social pressures to eat, and lapse management
Eating Behaviour Workbooks, Social Pressures to Eat

Goal setting Review goals, set 2 more if previous acheived Review diary if needed to modify goals	Energy Deficit Plan Review diary to check adherence to plan

Appointment 6 — Week 11

Maintenance. Record weight and waist
Discuss relapse prevention and reshaping negative thoughts
Encourage patient to complete maintenance plan
Maintaining Change

Goal setting Review goals, set 2 more if previous acheived Review diary if needed to modify goals	Energy Deficit Plan Review diary to check adherence to plan

Appointment 7–11 — Months 3–24

Review appointments at 3, 6, 9, 12, 24 months.
Record weight, blood pressure, and waist (fasting blood glucose and cholesterol if appropriate)
Has patient achieved or maintained ≥5% weight loss?

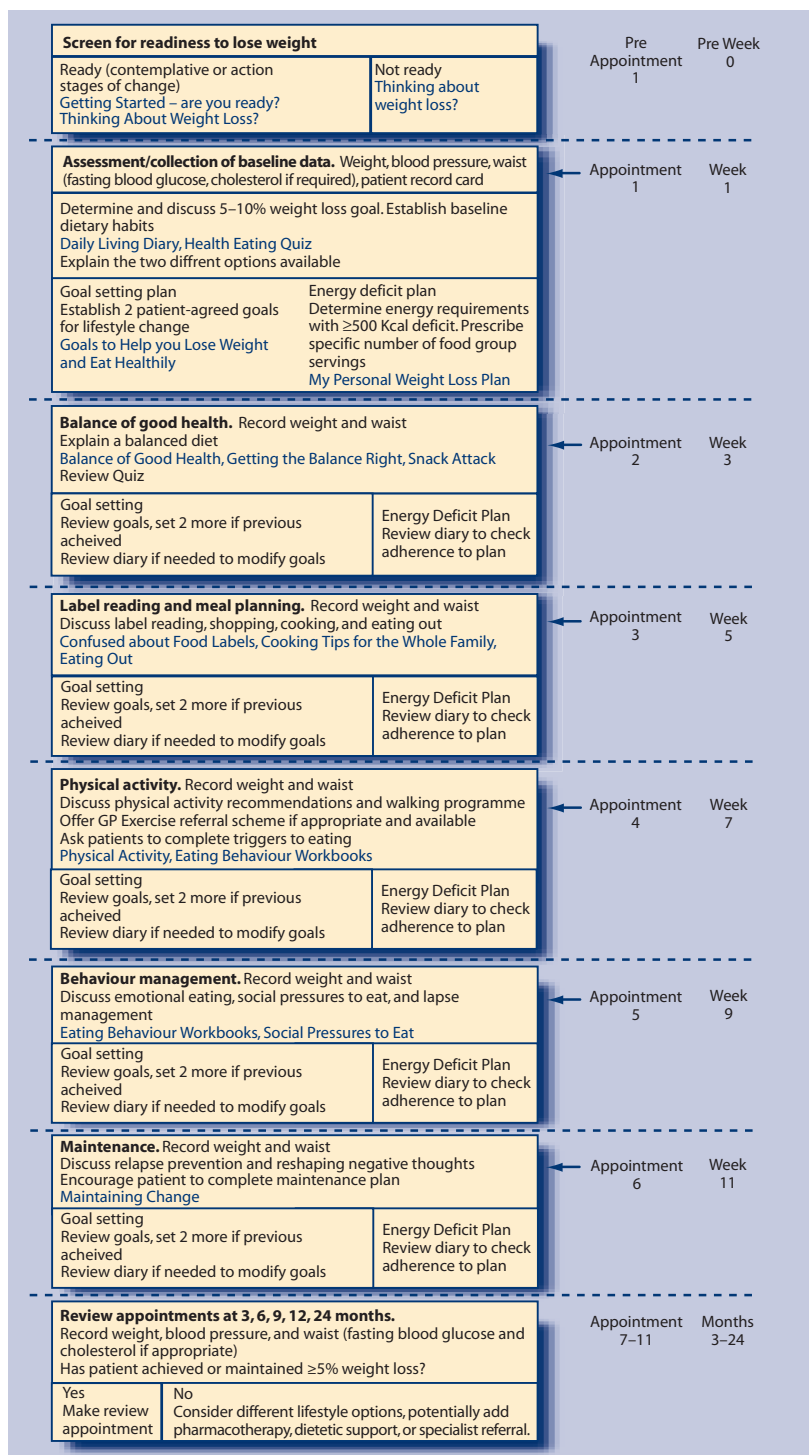| Yes Make review appointment	No Consider different lifestyle options, potentially add pharmacotherapy, dietetic support, or specialist referral.

Figure 1. Counterweight Programme intervention. Patient education booklets are shown in blue (two other patient booklets are available: Advice for Patients taking Orlistat, *and* Advice for Patients taking Sibutramine*).*

Obesity-related cardiovascular disease risk factors were assessed, and comorbidities were recorded from primary care records.

First-line interventions were a prescribed-eating plan, a goal-setting approach, or a group intervention (exclusively based on goal setting). These were all aimed at achieving an energy deficit of ≥500 kcal/day. Practice nurse feedback suggested that their knowledge, skills, and confidence influenced whether they offered group intervention, as did availability of a suitable venue.

As patients progressed through the Counterweight Programme, emphasis was increasingly placed on weight maintenance and prevention of regain. Patients were asked to commit to nine appointments in 12 months after initial screening. This included six individual appointments (10–30 minutes each) or six group sessions (1 hour each) over a 3-month period, and then follow-up at 6, 9, 12, 24 months (Figure 1) . A 3-month review was generally included in session 6 of the intervention, but could take place outside this appointment.

Patients were eligible to be considered for pharmacotherapy if they did not achieve ≥5% weight loss at 3 months. Letters and flags on the practice computer system (onscreen alerts of when patients were due an appointment with Counterweight) were used to assist patient recall at 12 and 24 months. Recruitment was continuous and data capture for the evaluation presented in this paper was from 1 January 2001 to 31 December 2004.

Outcome data were recorded on a dedicated Counterweight patient record card and transferred to a central database for analysis. Primary outcome measures were weight change at 12 and 24 months and percentage of patients achieving and maintaining ≥5% loss at these time points. Secondary outcomes were changes at 12 months in blood pressure, total cholesterol, high-density lipoprotein cholesterol, and blood glucose and glycated haemoglobin (HbA1; diabetic patients only). The aim of collecting secondary outcome data was to assess whether data followed expected well-documented trends in line with associated weight management,[10,11] rather than to assess the impact of weight change. A data set of investigations related to secondary consequences of obesity was recommended and collected in line with local guidelines and policies. Counterweight aimed to improve identification and management of secondary diseases, such as diabetes and hypertension, including the use of appropriate medications.

Category of social deprivation was measured according to practice location by using the Carstairs Index (Scotland),[22] and the Jarman Index (England).[23] It was recognised that this would not necessarily reflect individual patient status but was expected to reflect the

18–75 years with body mass index (BMI) ≥30 kg/m² or ≥28 kg/m² with obesity-related comorbidities (Table 1).

In line with the transtheoretical model of behaviour change, patients were offered interventions tailored to their stage of change.[21] Individuals in the contemplative or action stages of change were offered the Counterweight Programme (Figure 1), and those considered not ready to change were provided with information about the benefits of 5–10% weight loss and encouraged to consider assistance in the future.

practice profile very broadly. In England (E) affluence is split into 10 categories, with category one being the most deprived; while in Scotland (S) there are seven categories, with seven being the most deprived. As scales and bandings differ the following aggregates were used: affluent = E8–10, S1–2, intermediate = E4–7,S3–5, and deprived = E1–3, S6–7.

Various data were reported to practices biannually for numbers enrolled and attending for follow-up of weight, BMI, and risk-factor changes; this information was compared to other anonymised practices, regionally and nationally. No additional incentive (other than reporting outcomes back to practices) was offered to practices for data measurement and recording.

Statistical analysis
Mean weight change from baseline was compared using paired *t*-tests. Confidence intervals (CIs) for patient proportions who lost ≥5% of initial weight were calculated using Confidence Interval Analysis software (version 2.1.2). All other statistical package analyses were performed using SPSS (version 15.0).

RESULTS
Of 65 practices agreeing to participate in the Counterweight Programme, 56 participated. Nine practices did not enrol patients due to nurses leaving their positions, maternity leave, and competing practice priorities. In the 56 practices, activity patterns varied: 34 practices were continuing to enrol new patients into the programme 12 months after the programme had started; 10 practices enrolled ≥60 patients over 12 months; 17 practices enrolled ≥40 patients over 12 months; and the remaining 29 practices enrolled <40 patients over 12 months. Twenty-two practices from deprived areas, 22 from intermediately-deprived areas, and 12 practices from affluent areas contributed 36.4%, 29.5%, and 34.2% of patients respectively.

The 56 practices identified 2095 patients, of which 1906 satisfied eligibility criteria. At data-set closure, 1419 patients had reached ≥12 months, and 825 had reached 24 months. Data were available for 642 of

Table 2. Change in weight and body mass index (BMI) from baseline in 1419 patients enrolled for at least 12 months.

Follow-up attendance (months)	Attenders, n	Mean (SD) weight change, kg	95% CI	Mean (SD) BMI change, kg/m²	95% CI
0	1419	–	–	–	–
3	775	–3.34 (3.53)	–3.59 to –3.09	–1.22 (1.28)	–1.32 to –1.13
6	548	–4.24 (5.19)	–4.68 to –3.80	–1.55 (1.88)	–1.71 to –1.39
12	642	–2.96 (6.64)	–3.47 to –2.44	–1.08 (2.41)	–1.27 to –0.89

1419 patients at 12 months, and for 357 of 825 at 24 months; the remainder did not reach these data-collection time-points. Baseline data are presented for all 1906 enrolled patients, together with results at 3, 6, 12, and 24 months. As some patients missed one or more appointments or dropped out, mean weight changes reflect a patient sub-group of those who attended, comprising different individuals at different time-points.

Patient characteristics
Mean age for 1906 patients at baseline was 49.4 years (SD 13.5 years, range 18.1–76.0 years); 77% were female; and, of those enrolled in the programme, obesity was severe (mean weight 101.1 kg, BMI 37.1 kg/m²). Nearly three-quarters of patients had ≥1, nearly half ≥2, and over a quarter ≥3 obesity-related comorbidities (Table 1).

Weight changes
Weight changes at 12 months ranged from +17.5 kg to –34.9 kg. Of patients attending at 12 months (*n* = 642), mean weight change was approximately –3.0 kg (95% CI = –3.5 to –2.4; Table 2). Mean change in BMI at 12 months was –1.1 kg/m² (95% CI = –1.3 to –0.9), with 30.7% of 12-month attenders (13.9% of all patients) maintaining ≥5% weight loss (Tables 2 and 3). Of patients attending at 24 months, mean weight change was –2.3 kg (95% CI = –3.2 to 1.4, *n* = 357/825) with 31.9% of 24-month attenders (13.8% of all 825 patients) known to have lost ≥5% of their initial weight.

A further 119 patients who missed the 12-month time-point returned at 24 months when they had a

Table 3. Data from attenders at the 12-month time-point, as a proportion of attenders and as a proportion of all 1419 patients who had been enrolled for at least 12 months, who had lost ≥5% of their initial weight.

		Proportion of attenders at specific time-points		Proportion of all patients who were enrolled for at least 12 months		
Months	Attenders, n	Lost ≥5%: %, 95% CI (n)	Not lost ≥5%: % (n)	Lost ≥5%: %, 95% CI (n)	Not lost ≥5%: %	Not known % (n)
0	1419	–	–	–	–	–
3	775	26.1, 23.1 to 29.3 (202)	73.9 (573)	14.2, 12.5 to 16.2 (202)	40.4	45.4 (644)
6	548	38.0, 34.0 to 42.1 (208)	62.0 (340)	14.7, 12.9 to 16.6 (209)	24.0	61.4 (871)
12	642	30.7, 27.2 to 34.4 (197)	69.3 (445)	13.9, 12.2 to 15.8 (197)	31.4	54.8 (777)

Not included above are a further 119 patients who missed the 12-month time-point but returned at 24 months when they had a mean weight change of –1.4 kg.

Table 4. Factors affecting weight loss in patients who attended for data collection at 12 months (*n* = 642).[a]

	n	Mean (SD) weight change, kg	95% CI
Age, years			
<25	21	–1.69 (6.93)	–4.84 to –1.47
25–34	55	–2.25 (8.07)	–4.43 to –0.07
35–44	121	–4.18 (8.69)	–5.75 to –2.62
45–54	139	–2.82 (6.45)	–3.90 to –1.74
55–64	173	–2.79 (5.87)	–3.67 to –1.91
≥65	133	–2.71 (4.58)	–3.50 to –1.92
Sex			
Male	171	–3.40 (7.31)	–4.50 to –2.30
Female	471	–2.80 (6.38)	–3.38 to –2.22
Baseline BMI, kg/m²			
28 to <30	28	–1.87 (4.96)	–3.80 to –0.05
30 to <35	244	–2.02 (4.89)	–2.64 to –1.41
35 to <40	210	–2.94 (6.42)	–3.81 to –2.06
≥40	160	–4.60 (8.86)	–5.98 to –3.22
Diabetes			
Not present	510	–3.30 (6.98)	–3.91 to –2.70
Present	132	–1.63 (4.91)	–2.47 to –0.78
Arthritis			
Not present	482	–3.07 (6.86)	–3.68 to –2.46
Present	160	–2.62 (5.94)	–3.55 to –1.70
Visits in 12 months			
0–5	212	–0.65 (5.37)	–1.38 to –0.07
6–9	200	–2.60 (6.06)	–3.45 to –1.76
10–15	148	–4.67 (6.13)	–5.66 to –3.67
16–20	49	–5.95 (6.74)	–7.88 to –4.01
>21	33	–7.82 (11.62)	–11.94 to –3.70

[a]*Stratum-specific mean weight losses. Patients in each stratum (as with the whole group) on average lost weight. No confidence intervals included the null value of 0 kg. BMI = body mass index.*

mean weight change of –1.4 kg. Patients known to remain in Counterweight for ≥12 months (642 + 119 = 761) accounted for 54% of 1419 enrolled.

Weight change data reflect outcomes from a variety of specific treatments.[17] Seventy per cent of patients attending at 12 months received individual lifestyle interventions (prescribed eating plan or goal setting), 34% attended a group intervention (some patients had individual and group intervention), and 19% received anti-obesity drugs at some point. Some patients received a combination of interventions at the same time. Patients attending session 6 of the intervention programme received specific weight loss maintenance advice; 13% of those attending at 12 months were recorded as having received specific weight-loss maintenance advice as well as weight-loss advice.

Factors associated with weight change
Some factors were associated with greater mean weight loss at 12 months (Table 4). Males lost an average of 3.4 kg whereas females lost an average of 2.8 kg. Their 95% CIs overlap, suggesting that the

observed difference did not reach statistical significance. The number of visits for Counterweight appeared to be associated with greater mean weight loss. Ages 35–44 years, higher baseline BMI, and absence of diabetes or arthritis were also associated with increased mean weight loss (Table 4).

Secondary endpoints
Mean secondary endpoint changes in all patients with 12-month data were: total-cholesterol –0.29 mmol/L (*n* = 303, *P*<0.001); low-density lipoprotein cholesterol –0.35 mmol/L (*n* = 172, *P*<0.001); HDL-cholesterol +0.03 mmol/L (*n* = 234, *P* = 0.08); systolic blood pressure –2.03 mmHg (*n* = 580, *P* = 0.01); diastolic blood pressure –1.15 mmHg (*n* = 580, *P* = 0.01), and (in patients with diabetes only) HbA1c –0.19% (*n* = 93, *P* = 0.17); and fasting glucose +0.08 mmol/L (*n* = 28, non-significant).

DISCUSSION
Summary of main findings
This study presents, for the first time, prospective evidence of an effective model of weight management for primary care. Of the practices that initially agreed to implement Counterweight, 86% became active, and weight change data compare favourably with those achieved in specialist research settings.[9] Despite no extra practice funding, more than two-thirds of practices enrolled new patients beyond 12 months, allocating time previously spent managing obesity somewhat haphazardly. Almost half of all patients attended 12-month follow-up. The most favourable results were seen in high attenders, suggesting that processes to optimise attendance and retention are worthy of further investigation.

Strengths and limitations of the study
Key features of the Counterweight Programme include its naturalistic setting within routine primary care, its realistic evaluation on outcomes and process, and its scope for 'closed-loop audit'. Continuous improvement methodology, using various experimental, observational, and qualitative research methods, is increasingly recognised as potentially providing cheaper, quicker, tailored improvements to services than randomised trials.

Practice nurses valued the opportunity to be trained to practise more effectively in an area which affects so much of their day-to-day work. At a wider practice level, provision of feedback data on practice performance was appreciated and provided an incentive to continue implementing the programme. Introduction of a new contract for general practice with few points linked to obesity management led some practices to withdraw from the programme. This may threaten practice-based weight management in the future.

Having no control group prevents exact quantification of the Counterweight Programme achievement, but a mean weight loss of 2–3 kg in patients similar to those who underwent the programme is improbable without intervention.[8] Outside a formal, heavily-funded research setting it was not considered feasible to make detailed evaluations of obesity-related disease markers or risk factors, again preventing documentation of the exact impact of Counterweight on secondary outcomes.

Evaluating attrition rates is difficult in weight management because patients often attend and adhere intermittently. The attrition rate in Counterweight is consistent with another evaluation of lifestyle intervention.[11] Apparently high drop-out rates at specific time-points can exaggerate patient programme losses.

Less than one-quarter of patients was male, despite practice nurses often working within comorbidity clinics where more males might be expected. Females are more likely than males to have weight ever recorded on practice computer systems,[24] and females attend primary care more frequently than males. Sex differences in BMI screening may influence recommendations for intervention. In view of risk from comorbidities, strategies need to be developed to engage males to participate in weight management, perhaps targeting them through local advertising, well-men clinics, and opportunistically at unrelated appointments.

Comparison with existing literature

Counterweight was a large intervention in general practice, with results that compare favourably with lifestyle arms of heavily-resourced, randomised, controlled, weight-loss trials in specialist clinical settings. The US National Institutes of Health review found a net mean weight change at 12 months of –3.3 kg in 29 randomised controlled trials.[11] The diet and exercise arm of the trial by the Diabetes Prevention Program Research Group achieved >5% weight loss for 58% of participants.[9]

Counterweight programme has been used for patients identified with obesity-related conditions. Not all changes in risk factors can be attributed to weight change. Patients in Counterweight may have had improved identification and optimised treatment of co-existing cardiovascular risk factors as part of their care, in keeping with guidelines for overall aims of improving weight management.[11]

Expectations and aspirations of both patients and practitioners in obesity treatment are often unrealistic, impacting on perceived success at individual and service levels: 5–10% weight loss carries major medical benefits.[9,25] Against usual patterns of ~1 kg/year weight-gain,[8] a maintained weight loss of ~5% is associated with substantial intra-abdominal fat loss,[26] and significant prevention or amelioration of comorbidities, particularly cardiovascular and metabolic risks. Counterweight training emphasises the medical benefits of a 5–10% weight loss and maintenance, and encourages better alignment of patient expectations with this success criterion.

Implications for clinical practice

This study suggests that practice nurses can achieve and maintain clinically beneficial patient weight loss. Adopting this model of continuous improvement within primary care will provide the best evidence-based programme, and provide frameworks to develop and evaluate new or refined methods for weight management. Health economic analysis using the obesity model of the National Institute for Health and Clinical Excellence[27] suggests the programme is cost-effective,[28] and dominant (cost-saving) compared with no intervention.[29]

After completion of the 5-year evaluation programme, materials were reviewed, revised, and more clearly linked; lapse management has been moved from session 5 to session 1, and more structured systems have been introduced to assist patient recall. An additional nurse training session focuses on consolidation of learning and weight-loss maintenance. Local dietitians are now trained by Counterweight weight-management advisers to enable long-term sustainability.

Competing interests
MM,[3] JB,[1–5] RAL,[3] JPDR,[1,3–5] PAN,[3] SK,[1–3] ELMcC,[3] MEJL,[1–5] GFL,[3] GSF,[5] MFQ,[3] JHB,[1–4] SMH,[3] NF,[1–5] DWH,[1–4] HMR,[3,6] DJH,[5] SR,[5] DSM,[5] BS[5] declare potential competing interests: [1]Have acted as consultants. [2]Have received lecture honoraria. [3]Have attended national/international meetings as guests of Roche Products Ltd. [4]Involvement as above with other pharmaceutical companies with an interest in obesity. [5]Research grant. [6]HMR was employed by Roche Products Ltd 2000–2007 but reported and was responsible to the Chair of the Counterweight Project Team. HMR was

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