

Cambridge®

# Weight Matters

A regular digest of obesity related news for health professionals

## Transforming lives

Cambridge Weight Plan can dramatically change the lives of those who achieve weight reduction and maintenance as shown in two recently published case reports.

Achieving weight reduction was shown by Johansson and colleagues (2009) to improve 26 out of 30 people with severe or moderate sleep apnoea treated with a Cambridge Weight Plan very low-energy diet for seven weeks followed by two weeks of a 1200kcal/d diet (preparation for a maintenance programme). Of the 26 people that improved, five were so improved as to be deemed 'cured'. However, such improvements need to be maintained and all participants (30 in the treatment group and 33 in the control 'waiting list' group who were then given the same nine-week diet programme) were entered into a year-long weight maintenance programme. This consisted of monthly group nutrition education and behavioural therapy sessions, and weight monitoring. If more than 2kg in weight was gained, one or two meals were replaced with Cambridge Weight Plan formula product each day until the weight gained had been lost again.

Of the sixty-three participants the experience of two of them has recently been described by Johansson et al (2011). The first individual, a man aged 43 years, gave a characteristic story of being very fit and active as a young man, but on ceasing to play football and becoming desk-bound he gained weight and developed features of the metabolic syndrome and severe sleep apnoea (his apnoea-hypopnea index — AHI index — was more than 30 per hour). Before he lost weight he was using CPAP (continuous positive airway pressure), but at the baseline sleep study recorded snoring at >50dB for 36% of the time, 37 AHI episodes per hour and a blood oxygen nadir of 83%. His blood pressure was 155/90 mmHg and his total blood cholesterol was 6.5mmol/l; LDL cholesterol was 4.0mmol/l and triglycerides 2.0mmol/l. After the VLED programme, during which he lost 30kg, his AHI index dropped to 12 episodes per

## with weight maintenance and sustained health benefit

hour (mild sleep apnoea: his snoring time was down to 19% and his blood pressure was normal, 120/70 mmHg) and his blood lipids were improved. His insulin sensitivity had improved, as reflected in his reduced fasting glucose and insulin levels.

During the weight maintenance programme he increased his physical activity levels by running regularly and lost a further 3kg in weight. He noted that he was a much happier man and that his wife was pleased that his snoring had been reduced. He attributed his maintained weight loss and improvement in his sleep apnoea to the initial and very impressive weight loss; the new knowledge he had gained from the education component of the programme; the continued access to formula product to limit his energy intake if his weight started to rise; and his physical activity programme.

The second individual, a 54-year-old obese man who had gained weight after stopping smoking eleven years previously, had severe sleep apnoea at baseline (56 AHI events per hour). He lost 14kg from a baseline weight of 87kg (BMI 32) during the nine-week weight loss programme but regained 5.5kg over the maintenance period. Nevertheless, his improved sleep apnoea was maintained (reduced to 21 AHI events per hour after weight loss and 19 AHI events at the end of one year). In contrast to the first individual, in whom there were no adverse events, the second man showed a transient rise of liver enzymes during the initial weight loss and had an acute episode of cholecystitis during the maintenance phase.



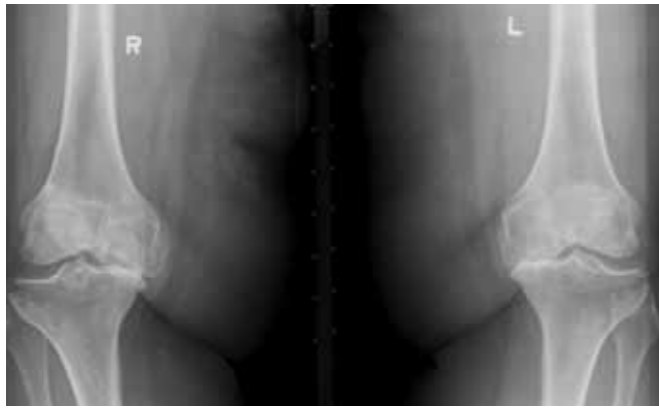


Figure 1: x-ray showing severe knee osteoarthritis

He noted that although the gallstone problem was very painful, he would go through it again to achieve the benefit to the quality of life that weight loss had given him. These two cases illustrate that while obesity is an important factor in sleep apnoea, weight loss does not necessarily eliminate sleep apnoea which has several causes. The amount of benefit in improvement in sleep is not necessarily related to the amount of weight loss. These two individuals also illustrate how adverse events are not related to the amount of weight lost since, as would be expected, predisposition to each adverse outcome is determined by other factors.

Reporting a case of severe obesity in a 60-year-old woman with severe knee osteoarthritis (see figure 1) who was housebound and virtually immobilised by her condition, Christensen P and colleagues (2011) showed how use of a Cambridge Weight Plan very low-energy formula diet had reduced weight by 14kg over eight weeks and by a further 3kg over a subsequent eight-week 1200kcal/d diet (see figure 2). A further year of a maintenance programme with group education and access to formula product resulted in a further weight loss of 13kg (her overall BMI changed from 48 to 35).

While still obese, she was much more mobile at both 16 weeks and one year later. Her very poor lipid profile (total cholesterol 8.0mmol/l and triglycerides 3mmol/l) was improved at one year to 6.1mmol/l and 1.7mmol/l respectively. Her lean body mass change, from a baseline value of 45.6kg at baseline to 43.1kg at 16 weeks and to 44.7kg at 68 weeks, demonstrated the metabolic benefit of weight loss and how increased mobility preserved lean tissue. This patient's severity of knee osteoarthritis would have rendered her eligible for knee arthroplasty but her weight and state of health barred her from receiving this (a common occurrence in practice). This Cambridge

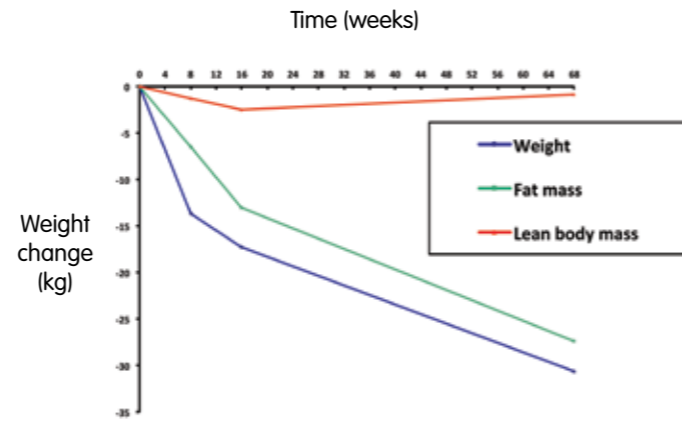


Figure 2: Body weight, fat mass and lean body mass changes

Weight Plan dietary management programme transformed the patient into a much happier, more socially integrated person. The 16-week results of the clinical trial, in which this individual participated, have now been published (Riecke et al 2010, and Christensen P et al 2011B) and the one-year results have been presented in preliminary form (Christensen R et al 2011).

#### Anthony R Leeds

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## Research challenges in obesity management

A few months before the United Kingdom general election in May 2010 an opposition member of parliament told me that in the NHS of the future 'Treatments must be evidence based and affordable and payment will be by results'.

Applying this to the challenging problem of obesity management means that in each specific clinical context where obesity plays a causative role there is a need for clinical trials, feasibility studies in the community and in primary care (where most people, most of the time will be treated), and independent health economics analyses.

Since resources are limited, for both clinical research and provision of treatment, there is a need to select priorities. A fair principle would be to offer services when there is proof of efficacy, adequate safety and cost-effectiveness, and perhaps not when there is an absence of benefit over a timescale that would make a difference to clinical outcomes and treatment costs. There is, perhaps, a need to answer some straight-forward questions for each context:

- Does this problem require a short- or long-term weight reduction?
- In quantitative terms: how much weight loss is needed?
- Is there evidence for measurable health-benefit following the weight loss achieved?
- Is there a provable cost saving in treatment in the short and long term?

If these questions are applied to a common clinical problem, such as knee osteoarthritis, the answers depend on the stage of the disease and the intentions for treatment of the individual. The obese individual who has developed advanced disease-limiting mobility may be suitable for knee arthroplasty, yet facing the prospect of

having to achieve weight loss before his or her surgeon is prepared to operate. Sometimes, the surgeon may operate despite the absence of pre-operative weight loss knowing that the evidence suggests a less good outcome in heavier obese people than in lighter individuals.

Evidence from individual cases suggests that where a good pre-operative weight loss of 15–20kg has been achieved, the patient goes into surgery much more fit from a cardiovascular perspective. They are much more mobile and probably have stronger muscles around the major weight-bearing joints (and are therefore much more likely to mobilise rapidly after surgery). This probably represents less of a challenge to the anaesthetist, results in less respiratory support in recovery and less time occupying bed-space. There is little good quality clinical trial evidence confirming these suspicions. I'm pleased to note that a trial is now underway, based at the University of Aarhus and Sønderborg hospital in Jutland, Denmark to investigate these issues in detail. An important question is: will body weight and measures of mobility be improved more and maintained better in those who lose weight effectively before surgery compared to those who don't?

The obese individual with knee osteoarthritis, which may not yet merit surgical intervention or in whom other medical conditions render them unsuitable for surgery, requires not just a short-term weight reduction but reduction followed by effective weight maintenance. The long-term clinical trial underway at the Parker Institute, Frederiksberg Hospital, Copenhagen is destined to determine whether and to what degree weight loss and maintenance can be achieved in older obese people with knee osteoarthritis over at least four years, along with the effect of this on cartilage degeneration (will effective weight maintenance slow or halt cartilage degradation?). Thus far the results appear very promising.

In clinical practice, we've not been very good at defining how much weight loss is needed for particular purposes, except perhaps the 5–6kg weight loss needed to delay the onset of diabetes. However, the evidence that is available suggests that amounts of 15–20kg are needed to achieve clinical benefits, such as a reversal of metabolic state in type 2 diabetes (Lean 2011), and appreciable benefit in sleep apnoea. Conventional dietary interventions may only rarely deliver this amount of weight loss and except where bariatric surgery can be undertaken, the only current option is to use a formula very low-calorie diet or formula low-calorie diet.

Where measurable health-benefit can be defined in a relationship between disease severity, weight loss and clinical outcome, it may be possible to begin to select sub-groups to target proven weight loss approaches. For example, in severe and moderate sleep apnoea the evidence suggests that it may be the individuals who are most severely affected by sleep apnoea who benefit most from an effective weight loss with a very low-calorie formula diet (Hemmingsson 2011).

To achieve the greatest potential treatment cost savings it would seem wise to look at some of the most expensive medical regimens. The obese person with type 2 diabetes who has just commenced

insulin therapy may cost at least £55 (in the UK) per month for drugs, let alone the costs of consultation time. Individual case studies show that drug treatment costs could fall to £3 per month in people in whom effective weight loss of 15–20kg has been achieved with a formula low-calorie diet. Clinical trials and health economics analyses are needed in this ever increasing area.

Other expensive groups include those who utilise disproportionate consultation and nursing time. The obese (usually morbidly obese) individual with oedematous legs with or without lymphoedema who requires frequent dressings because of fluid leakage through the skin and/or courses of antibiotics to treat cellulitis may well be moved to a state with less frequent or no such dressings and fewer courses of antibiotics following a weight loss of 15kg or 20kg. This comment based on individual cases needs to be examined under proper clinical trial conditions.

When there is sufficient evidence that weight loss can be maintained by medical means (following a solid educational programme with behaviour therapy where appropriate) utilising a continuing physical activity programme with adequate support and monitoring and partial use of formula diet when needed, a further question may become important. In maintaining some of the benefits

of weight loss, is long-term under-consumption of dietary energy more important than maintaining a reduced fat mass and does this matter more in some individuals than others? This may be important in conditions where inflammatory signalling plays a significant role. A study currently underway at Gentofte hospital in Denmark on psoriasis activity following weight loss and weight maintenance (with measurement of some blood inflammatory markers) may give some clues in this area.

As healthcare providers around the world adapt to a world of limited resources, cost-effectiveness and proven efficacy will become ever more important.

Some serious planning is now needed, nationally in the United Kingdom and elsewhere in the world, to set priorities for clinical research, education of healthcare

professionals, and provision of services in an integrated manner. This has to be done to ensure that the resources are applied where they will be effective, that the methods applied are evidence-based and that the recipient achieves maximum sustained improved quality of life for the spending incurred.

**Anthony R Leeds**  
Medical Director, Cambridge Weight Plan, 2011

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## Contact us ...

If you would like to know more about Cambridge Weight Plan, please contact Teresa Collier, Medical Sales Manager, on **07584 503527**.





## What is Cambridge Weight Plan?

Cambridge Weight Plan is a nutritionally balanced formula food available as shakes, soups, bars and porridges. Trained Independent Cambridge Consultants in the UK can work in partnership with healthcare professionals to deliver effective weight-loss and maintenance. Until the beginning of 2010, the Plan was referred to as 'The Cambridge Diet'.

The term 'Cambridge Diet' is synonymous in the minds of many healthcare practitioners with very low-energy diets (VLEDs). It was developed by Dr Alan Howard as a formula VLED and indeed this remains the greater part of its present day usage.

However, about twelve years ago it evolved into a more flexible series of dietary energy intake levels (1500, 1200, 1000, 810, 615 and 415kcal/d), allowing titration of energy intake against the client or patient's response.

This is interesting historically because in the late nineteenth century a step-wise titration upwards of dietary energy was offered to people with diabetes following a fast to clear the urine of reducing sugars.

Now, this remarkably precise titration process (precise because it includes formula food products rather than non-formula foods alone) can be applied with a step-wise reduction or increase of energy intake according to need. VLEDs give the most effective weight losses but sometimes a

part formula and part food diet can achieve remarkable weight loss. Dietary adherence tends to be less good at the higher energy intake levels and patients tend to be more hungry but, nevertheless, energy intake levels above 800kcal/d can give good results.

The gradually accumulating scientific literature on the efficacy of VLEDs indicates that it is highly likely that the potential applications of VLEDs and part-food, part-formula food low-energy diets (LEDs above 800kcal/d) will be more widely appreciated.

## Effective Weight Loss in Clinical Practice Downing College, Cambridge on 29 July 2011: A one day component within the IASO, SCOPE summer school

### Programme:

- Commissioning obesity care and weight management services Dr David Haslam, National Obesity Forum
- How do you judge the quality of evidence? **TBC**
- Weight reduction in osteoarthritis: Evidence from trials – Body composition changes and clinical outcomes Professor Henning Bliddal (Denmark)
- Biomechanics of weight loss: Walking quality and functional implications Dr Marius Henriksen (Denmark)
- Case presentations: Osteoarthritis Ms Pia Christensen (research dietitian) (Denmark)
- Weight reduction in diabetes Professor Mike Lean (UK)
- Sleep apnoea: Health implications and management **TBC**
- Weight reduction in the obese with sleep apnoea Professor Stephan Rossner (Sweden)
- Case presentations: Sleep apnoea Ms Kari Johansson (research scientist) (Sweden)
- When is surgical treatment for obesity appropriate? Professor Arya Sharma (Canada)
- Case presentations: Weight loss before bariatric surgery Ms Lucy Jones (bariatric dietitian) (UK)
- The challenges of weight management in primary care practice Dr Charles Capper GP (UK)
- Round table discussion Chair: Arya Sharma
- Topics: Body composition changes and adverse effects, Health economics of weight loss, Nutritional status before, during and after weight loss Professor Arne Astrup/ Professor Stephan Rossner/Professor Arya Sharma/ Professor Henning Bliddal
- How will healthcare providers deliver high quality obesity care in the next five to ten years? Dr Carel le Roux (UK)

Followed by a short musical concert and a gala dinner with after-dinner speaker: Professor George Bray — Milestones in obesity management.

Accommodation is at Clare College (10 minutes walk from Downing).

Meeting co-sponsored by Cambridge Weight Plan and organised by IASO.  
For further information, please contact: [teresacollier@cambridgeweightplan.co.uk](mailto:teresacollier@cambridgeweightplan.co.uk)