

Reduced body weight improves obstructive sleep apnoea



A Cambridge Weight Plan formula diet can reduce body weight and the severity of obstructive sleep apnoea and, following a weight maintenance programme, a large proportion of the effect on both weight and apnoea-hypopnoea index can be maintained for one year.

In the study, undertaken by Johansson and colleagues (2009) at the Karolinska Institute in Stockholm, 63 obese Swedish men with moderate and severe obstructive sleep apnoea (OSA) were allocated to one of two groups. Thirty men followed a seven-week Cambridge Weight Plan very low energy diet (VLED: 554kcal/d) followed by two weeks of rising dietary energy intake in preparation for a one-year maintenance programme, and 33 men (the control group) received no treatment and followed their usual diet.

In the Cambridge Weight Plan VLED treated group:

- Average weight loss was 18.7kg (average baseline weight was 113.4kg)
- There was a 3.8cm reduction in neck circumference (baseline was 45.1cm)
- Over one quarter of body fat (30.1 percent at baseline) was lost by nine weeks
- 22 out of 30 were not obese (BMI under 30) after nine weeks
- Five improved sufficiently to be classed as 'cured' of their OSA
- 26 out of 30 saw improvement in their OSA
- No one dropped out from the VLED treated group (in contrast, two subjects out of 33 dropped out from the control group)

In the control group there was a small weight gain of 1.1kg (average) and very slight increases in neck circumference and body fat. Four subjects saw improvement in their OSA, five deteriorated and 24 out of 33 stayed unchanged. The differences between the VLED group and the control group were highly significant.

This paper is important because it is the first (and only) published randomised controlled trial of VLED in moderate and severe sleep apnoea and it provides high quality evidence that a relatively short period of VLED diet can result in effective weight loss and improve OSA in a majority of patients.

After nine weeks the control subjects followed the same seven-week VLED programme followed by two weeks of 1200kcal/d diet before moving into the maintenance programme. The maintenance programme consisted of a standard behaviour modification group therapy with an option to replace one or two meals with a formula meal if weight rose by more than 2kg.

The one-year outcomes for all 63 subjects, reported by Johansson et al. (2011), showed that 44 subjects completed the full programme. At one year the average body weight was 12kg lower than baseline and the apnoea-hypopnoea index was 17 events per hour less than at baseline (AHI at baseline was 36 events/hr). Those who lost most weight or who had severe sleep apnoea at baseline gained the most benefit. These results suggest that the potential for using weight loss with a formula diet in routine practice as an adjunct to CPAP therapy in obese people with OSA ought to be considered, especially in those with severe sleep apnoea or in those in whom CPAP is not well tolerated.

Anthony R Leeds, Medical Director, Cambridge Weight Plan, March 2013

Weight loss and the benefits for obstructive sleep apnoea

George Monteith had always struggled with his weight having spent most of his life on a carbohydrate-rich diet of fried foods, bread and potatoes. George 54, was diagnosed with hypertension 15 years ago and obstructive sleep apnoea (OSA) eight years ago. Being overweight is often a risk factor for obstructive sleep apnoea as excessive body fat can increase the bulk of soft tissue in the neck, placing a strain on the throat muscles and allowing the airway to collapse and obstruct.

History	Weight (kg)	BMI	Waist circumference (cms)	Collar Size (in)
Baseline	119.0	39.6	127.0	18.5
After intervention	92.5	30.9	89.5	15.5

George decided to lose weight with Cambridge Weight Plan after seeing his two sons achieve success on the Plan. With their support, George was determined to succeed and since August 2011 he has lost 26.5kg and reduced his collar size, which is often an indicator of OSA, by three inches.

The benefits of reduced medication

Weight loss has considerably improved George's health and well-being. He no longer suffers from OSA and has no further need for his CPAP machine¹. He has also been able to stop all his blood pressure medication, which is a great result as many people who suffer the severe consequences of high blood pressure (such as a stroke) also have a history of sleep apnoea.

"I love fashionable clothes and now I can shop in high street stores, which is something I couldn't do before. I used to wear loose black clothes but now I can wear whatever I want. I don't have to worry that clothes won't fit me any more and I absolutely love it!"

Savings achieved as a result of discontinued medication and treatment

Medications and treatments discontinued	Cost of medication and treatment	Saving per year
Atenolol 50mg	£0.66 for 28 tablets	£7.92*
Bendroflumethiazide 2.5 mg	£0.71 for 28 tablets	£8.52*
CPAP (cost of machine)	£450.00 (approx.)	£450.00
Total		£466.44

*Cost reference for medications MIMS January 2013

A better quality of life

No longer suffering from OSA has made a real difference to George's life. "I used to feel so tired during the day and could fall asleep at any time, which was a real problem for me as I'm a bus driver and need to be alert for the safety of my passengers and other drivers," he explains. "Now I no longer feel tired during the day and I have more restful sleep. I used to toss and turn all night long and wake several times to go to the toilet, but this no longer happens, so my wife and I can both enjoy a night of uninterrupted sleep now!"

George began his weight loss journey at Step 1 (Option A), with four Cambridge Weight Plan products and 200ml of skimmed milk each day, and then worked his way up the Steps. "I experienced some cramps in my legs during the first few days on the Plan but once that settled I haven't looked back. My Consultant, Catherine Laurie, showed me that

it's as much about losing inches as it is about losing pounds, which really helped as I could see the inches I'd lost if my weight loss slowed."

George really appreciates the improvement in his appearance since losing weight. "I love fashionable clothes and now I can shop in high street stores, which is something I couldn't do before. I used to wear loose black clothes but now I can wear whatever I want. I don't have to worry that clothes won't fit me any more and I absolutely love it!"

Since losing weight, George has increased the amount he exercises and joined a gym. "I swim once a week and walk or run four times a week. I used to get short of breath when walking but now I prefer to walk rather than use the car, which is something I wouldn't have done before. I used to suffer from swollen legs but this has settled and I can do more of my own DIY and gardening now too."



To help him maintain his new weight, George still enjoys one Cambridge meal a day. "My quality of life is so much better now," he says. "I watch what I eat all the time and have completely reduced my carbohydrate intake. My Consultant, Catherine, has been brilliant and she's become a really good friend. I'm in better condition now than when I was in my 30s and I'm the lightest I have been for 37 years!"

¹ A continuous positive airway pressure machine is the most effective therapy for treating moderate/severe cases of OSA. The machine keeps the airways open during sleep by blowing a constant stream of air via a mask which the user breathes against.

What is obstructive sleep apnoea (OSA)?

Obstructive sleep apnoea is cessation of airflow at the mouth and nose for more than ten seconds, occurring more than 30 times in a seven-hour sleep, caused by airway obstruction. Some surveys suggest that one in four people with diabetes may have OSA, others that four out of five obese people with diabetes may be affected. There is uncertainty about the rate of OSA in the general population; perhaps one in 25 are affected, perhaps more. OSA can be a factor in causing raised blood pressure and in those who suffer one of the severe consequences of high blood pressure (stroke) as many as 75% give a history of having had sleep apnoea.

What causes OSA?

Factors linked to OSA include structural abnormalities of the upper airway, being overweight and obese and having a family history of OSA. Scientific studies have shown that in OSA the airway is narrowed and that there is more fat next to the airway in those who are overweight and obese. The muscles supporting the airway may be less efficient at holding the airway open allowing it to collapse and obstruct.

Refer to the Sleep Apnoea Trust site at:

<http://www.sleep-apnoea-trust.org/> for further information.

Weight reduction and OSA

Those who are overweight and obese and who have symptoms of sleep apnoea are advised in the first instance to consult their medical practitioner.



What is Cambridge Weight Plan?

CWP Programmes are synonymous in the minds of many healthcare practitioners with very low energy diets (VLEDs).

Developed by Dr Alan Howard as a formula VLED, this does remain the greater part of its present-day usage. However, about ten years ago it evolved into a more flexible series of dietary energy intake levels (1500, 1200, 1000, 810, 615, 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.

Very low-energy diets 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. The 2000s may well be the decade of bariatric surgery, but the 2010s could be the decade of effective diets.

Cambridge Pro800

The Cambridge product of choice for healthcare professionals

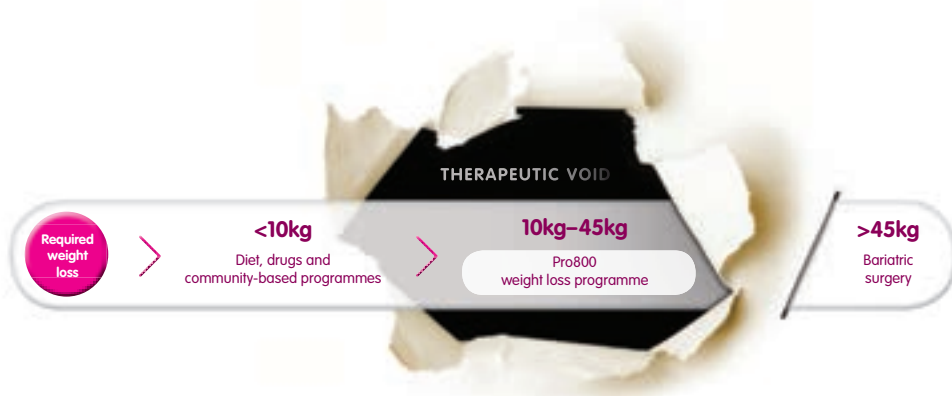
By far the greatest need for weight loss is in the 'middle ground', around 19kg overweight. However, there is a 'therapeutic void' in the middle ground where there is little to offer.

GPs offer four options for weight management: a healthy diet; a community-based diet programme; a single drug therapy; or gastric surgery. While these may work for some who are modestly overweight, heavier patients could take many years to lose the weight with conventional diet and drugs, and in most cases, it won't happen.

Yet at the other end of the scale, while the cost of surgery is proven to be recovered in three years through savings, such as diabetic drug costs, surgery cannot possibly be provided to everyone who may benefit due to resources and funding. Surgery is, quite rightly, viewed by many as a last resort.

By far the greatest need for weight loss is in the 'middle ground', around 19kg overweight. However, there is a 'therapeutic void' in the middle ground where there is little to offer. If patients could lose 10–15kg quickly, and maintain the weight loss, millions could be freed from miserable health conditions and expensive medication. And, vitally, it would halt the escalation of their obesity, which would otherwise lead to even greater problems.

Cambridge Weight Plan has now created Cambridge Pro800, exclusive to healthcare professionals, as the ideal solution for this therapeutic void. Cambridge formula diets have proven weight loss and maintenance results with sustained health benefits.



The benefits

- Proven weight loss and long-term weight management with sustained health benefits
- Targets obesity
- Research supported
- Evidence-based, flexible programmes
- Long-term commitment, training and support from trained medical staff

Cambridge Pro800 products come in six flavours:

- Banana Shake
- Chocolate Shake
- Vanilla Shake
- Summer Fruits Shake
- Vegetable Soup
- Mushroom Soup

Every product comes in single flavour cartons containing 14 sachets each, with calorie value and nutritional data clearly stated on each carton.



Cambridge[®]
Pro800

TIPPING THE BALANCE ON OBESITY IN THE UK

Flexible energy intake and flexible combinations of formula and regular foods

Formula diets for primary and secondary care

Proven benefits in obstructive sleep apnoea and osteoarthritis

The solution for patients who need to lose weight before surgery

Improved vitamin D status and maintained bone health

Low drop-out rate