MEAL REPLACEMENTS IN OBESITY MANAGEMENT

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The aim of this article is to examine the evidence behind low calorie dietary approaches to the management of obesity, such as Meal Replacement and Total Diet Replacement programmes for weight loss and weight loss maintenance.

The prevalence of obesity has increased steadily over the past 40 years. The rise in the number of obese persons in the UK who have a BMI >30kg/m^2 and <40kg/m^2 appears to have slowed down over the past 15 years. There is, however, a continuing rise in the prevalence of persons with a BMI ≥40kg/m^2.[1] Many programmes of weight management realistically aim for losses of 5-10% which result in clinically significant health benefits.[2,3] It is recommended that those with a BMI ≥35kg/m^2 with an obesity-related disease, or BMI>40 kg/m^2, should aim to lose at least 15kg or 15% body weight for both improved clinical outcomes and quality of life.[2]

Weight reduction requires adherence to an energy deficit diet over time. The larger the energy deficit the greater the weight loss. For those persons who have more weight to lose, resorting to more intense programmes of weight management can be tempting.

The European Commission Directive 1996 set down the compositional and labelling requirements of foods intended for use in energy restricted diets for weight reduction (Table 1). There is a new regulation on Food for Specific Groups to cover foods for weight reduction from July 2016.[4] Products intended for use in weight management are categorised into Very Low Calorie Diets (VLCD) and Low Calorie Diets (LCD) which can be offered in the form of Meal Replacement (MR) or Total Diet Replacement (TDR) products.

VERY LOW CALORIE DIETS (VLCD)

VLCDs contain less than 800kcal per day. Earlier versions of these diets were associated with a number of fatalities due to the low biological value of the protein used. The quality of protein now used has improved significantly. However, it is recommended that VLCDs should not be freely available to the general public for weight reduction.[4] Commercially prepared products providing less than 800kcal per day should only be available for the medically supervised treatment of severe obesity.[4] Research suggests that adherence to VLCDs is a problem with little difference in 12-month weight change outcomes between VLCDs and LCDs.[5]

LOW CALORIE DIETS (LCD)

These contain between 800 and 1,200kcal. It is recognised that low calorie diets within these energy restrictions are likely to be nutritionally deficient.[3] Commercially prepared nutritionally

Table 1: EU Regulation on food for specific groups and foods for weight reduction 2016[4]

- Sets general compositional and labelling rules for Total Diet Replacement products for weight control.
- Requires the commission to adopt specific compositional and labelling rules for Total Diet Replacement products for weight control.
- Establishes rules on the use of statements on Meal Replacement products (between 200 and 400kcal); they should be regulated solely under regulation EC 1924/2006 on Nutrition and Health Claims to ensure legal certainty.

Table 2: Compositional standards of products intended for use in weight control diets

Energy	TDR: 800-1200kcals daily MR: 275-400kcals per meal
Protein	TDR 50g or 20% energy MR: 17g or no more than 50% energy
Lipids	TDR and MR: content should not exceed 30% of dietary energy
Carbohydrate and sugars	The remaining % energy to come from carbohydrates
Fibre	TDR: 10-30g daily MR: if product less than 10g fibre, it should be clearly labelled and fibre encouraged from other sources
Vitamins and minerals	TDR: Meet UK RDAs MR: Meet at least 30% of UK RDA per meal

complete products are very attractive options for meals and there is a wide range available to consumers, from full formula shakes and soups, with MR and TDR products designed to replace only one or two meals daily. The European commission has set a minimum supply of protein, vitamins and minerals that must be specified to ensure that energy is the only nutrient that is deficient (Table 2).

TOTAL DIET REPLACEMENT PRODUCTS (TDR)

The regulation on food for specific groups states that TDR products are presented as a replacement for the whole of the daily diet.[4] There is increasing evidence for the use of nutritionally complete low calorie formula diets used as a TDR to achieve and maintain at least 15kg weight loss at 12 months.[6,7] Patients and clinicians need to consider the pros and cons of a TDR programme to ascertain suitability and commitment. TDR programmes allow patients to attain larger energy deficits for longer, therefore, allowing the weight loss expectations of both patient and clinician to be achieved for both clinical and quality-of-life outcomes.

Initial rapid weight losses that can be achieved on a low calorie TDR programme have been shown to improve patient retention and long-term results.[8] The TDR programme is nutritionally complete, apart from energy, and allows patients to have a break from food which may allow them to focus on other aspects of their lives and behaviours that initially resulted in weight gain. Many patients, however, may struggle with adherence to a low calorie TDR due to the social challenges they may face while on the programme. This needs to be discussed with patients to ensure they understand the impact that being on a TDR programme may have on families and friends and socially.

Products are not available in the healthcare setting and the cost of purchasing these products must be discussed. For many, this cost is offset by savings made by not buying food.

Lean et al conducted a feasibility study based in primary care, involving 91 patients with a mean BMI of 48kg/m^2. A TDR programme containing 810kcals over 12 weeks was recommended, followed by a stepped programme of food reintroduction and proactive weight loss maintenance. The mean weight change at 12 months was -12.4kg and 44% of completers went on the lose ≥15kg body weight at 12 months.[7]

MEAL REPLACEMENT PRODUCTS (MR)

MRs are specifically formulated foods for use on an energy restricted diet for weight reduction which, when used as instructed by the manufacturer, replace part of the daily diet.[4] Products intended to replace only one or two meals must be clearly labelled. It is envisaged that many of these products are commercially available without support and manufacturers are encouraged to indicate to consumers how other meals might be balanced.[4] This enables people to attain an adequate intake while maintaining overall energy intake between 800 and 1,200kcals.These products should provide energy in the range of 275kcals to 400kcals per meal (Table 2) and aim to provide between 800 and 1,200cal daily

MR programmes allow people to consistently achieve a nutrient complete low calorie diet with less meal planning and preparation required. Focus can be spent on just one meal. In contrast to the TDR, MR programmes also allow for family meals with less impact on social occasions. This, however, means the weight losses will be lower, as the daily energy deficit will also be lower.

The cost implications must be considered, especially if meals are still being prepared for other members of the family.

The use of MRs appears to improve adherence to low calorie dietary plans. Systematic reviews of RCTs indicate that energy deficit diets which incorporate MRs achieve a greater weight loss in overweight and obese adults compared with general dietary advice of similar energy content. In one review, the MR group lost 7-8% body weight compared to 3-7% weight loss in the conventional reduced calorie group. Further analysis of completers showed greater weight loss in the MR group with an extra 2.54kg and 2.63kg loss at three months and one year as compared to the conventional dietary group.[9]

DISCUSSION

There is a balance to be struck between the risks of someone being overweight or obese and the risks of the weight management treatment, together with the long-term efficacy of the treatment. If a person has a BMI <35kg/m^2 with no obesity related comorbidity, clinically significant 5-10% weight losses can be achieved using conventional dietary approaches. MRs have been shown to be a welcome addition to these plans. For those with a BMI ≥35kg/m^2, weight losses of at least 15kg are recommended. Only 1.7% of patients with a BMI >30 kg/m^2 lost ≥15kg when supported in a successful weight management programme aimed at losing 5-10% weight in the primary care setting.[7] Low calorie TDR programmes are the most effective non-surgical weight management solution for these patients.[7]

The Counterweight plus programme has shown that low calorie liquid diets using TDR with an effective 12-month weight maintenance programme is acceptable to clinicians and morbidly obese patients within routine primary care.[7]

TDR programmes are gradually being introduced into the NHS as part of the Tier 3 weight management services offered to patients. They are not, however, routinely available. Dietitians are ideally placed to offer these options within their weight management pathways for those patients with higher BMIs. The calorie deficit created by MR and TDR programmes is just one element of long-term success in weight management. Health professionals can ensure that these weight management programmes can be delivered in a safe, structured and efficacious manner. They should incorporate behaviour change strategies known to promote long-term success with weight management, including social support, self-monitoring, stimulus control, goal setting, slowing rate of eating, problem solving, CBT cognitive restructuring and relapse prevention.

WEIGHT LOSS MAINTENANCE

Popular belief is that most people will fail to maintain a lower weight and will experience a weight regain. A structured programme of food reintroduction and weight loss maintenance is key to long-term success. A meta-analysis of studies involving 20 papers and 3,017 patients was undertaken to examine the effectiveness of different approaches in weight loss maintenance after a period of weight loss using a VLCD or LCD. The mean weight change was -12.3kg. Anti-obesity drugs, meal replacements and high protein diets were associated with improved weight loss maintenance outcomes.[10] This concords with research by Richelson et al indicating that significant numbers of patients who have been guided through LCDs can maintain ≥15kg weight loss 18-36 months after the initial weight loss phase using structured food reintroduction programmes and anti-obesity medications.[6]

CONCLUSION

Meal Replacements and TDR programmes can be recommended in weight management guidelines for patients with BMI ≥35kg/m^2. They enable patients with higher BMIs to achieve and maintain clinically significant and often life-changing weight losses. When used appropriately with support in the right conditions and with a carefully planned programme of food reintroduction and weight loss maintenance, these can be a tool for many patients and dietitians.