Role of Partial Meal Replacement in Obesity Management

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Disclosures - Sarah Chapelsky

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Relationships with commercial interests
- Speakers Bureau/Honoraria: Novo Nordisk, Valeant
- Consulting Fees: FEMME HOMME Medical
Disclosures - Sherry Waroway

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- Registered Dietitian, Edmonton Adult Bariatric Specialty Clinic

No relevant financial or nonfinancial relationships to disclose.
1. Describe the difference between a formulated liquid diet, meal replacement, and nutritional supplement.

2. Differentiate the role of partial vs full meal replacement strategies in weight management.

3. Review the outcomes of adding a partial meal replacement strategy to a hypocaloric diet.

4. Discuss the clinical approach to initiating a PMR strategy.

Learning Objectives
Treatment of Obesity

Behavior Modification

Medication

Surgery
# Meal Replacement Strategies

<table>
<thead>
<tr>
<th>Full Meal Replacement (FMR)</th>
<th>Partial Meal Replacement (PMR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• used for weight loss</td>
<td>• used for weight loss or weight loss maintenance</td>
</tr>
<tr>
<td>• acute weight loss</td>
<td>• part of a low calorie diet with food</td>
</tr>
<tr>
<td>• combined with a multidisciplinary lifestyle program to support weight maintenance</td>
<td>• replaces 1 - 2 meals or snacks per day</td>
</tr>
<tr>
<td>• patients must be medically monitored</td>
<td>• typically 1200-1500 kcal/day</td>
</tr>
<tr>
<td>• needs to meet Health Canada regulations</td>
<td></td>
</tr>
<tr>
<td>• 900 kcal/day</td>
<td></td>
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</tbody>
</table>
Rationale for Meal Replacements

- Portion and calorie control
- Structured eating
- Improved nutrition
- Stimulus narrowing: avoid contact with certain food
- Stimulus control: avoid contact with problem foods or triggers
- High protein

PMR Improves Low-Calorie Diet Outcomes

- Greater weight loss\textsuperscript{1}
- Better preservation of lean mass\textsuperscript{2}
- Better nutritional outcomes\textsuperscript{2}

PMR Improves Weight Loss Outcomes

Meta-analysis of 6 studies. 487 patients. Mean age: 46.1 years; mean BMI 31 kg/m².

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>Dropout at 1 year</th>
<th>Mean weight loss at 1 year</th>
<th>≥5% weight loss at 1 year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-calorie diet</td>
<td>64%</td>
<td>4%</td>
<td>33%</td>
</tr>
<tr>
<td>Low-calorie diet + PMR</td>
<td>47%</td>
<td>7%</td>
<td>74%</td>
</tr>
</tbody>
</table>

**PMR Improves Lean Mass Preservation**

RCT of 117 patients. Mean age: 70 years; mean BMI 40 kg/m². All groups received an exercise intervention. Study duration of 4 months.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Dietary advice</th>
<th>Hypocaloric diet (-500 kcal/day)</th>
<th>2-3 MR + 1 meal per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean weight loss</td>
<td>3.7%</td>
<td>5.1%</td>
<td>11.1%</td>
</tr>
<tr>
<td>Fat mass loss</td>
<td>5.7%</td>
<td>6.1%</td>
<td>16.8%</td>
</tr>
<tr>
<td>Lean mass loss</td>
<td>1.7%</td>
<td>2.8%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Fat mass to lean mass loss (kg)</td>
<td>1 : 0.33</td>
<td>1 : 0.5</td>
<td>1 : 0.32</td>
</tr>
</tbody>
</table>

PMR Improves Nutrition Outcomes

RCT of 117 patients. Mean age: 70 years; mean BMI 40 kg/m². All groups received an exercise intervention. Study duration of 4 months.

- 37% increase in vitamin D levels
- 19% increase in vitamin B12 levels
- 11% increase in ferritin

Partial Meal Replacements—Indications for use in Weight Loss

1) Weight loss: in an energy restricted diet as part of treatment plan for obesity.

2) Other medically supervised treatment plans:
   - Before bariatric surgery, for a fixed length of time to facilitate weight loss, reduce liver volume and decrease surgical risk.
   - Before non-bariatric surgery, for a fixed length of time, where lower body weight would decrease surgical risk and improve recovery.
There appear to be no absolute contraindications.

There appear to be no relative contraindications.

The contraindication occurs when weight loss is not appropriate (pregnancy, early post partum, lactation, active eating disorder, substance abuse disorder).

- However, these products could be used (under Registered Dietitian supervision) to supplement a diet to support improved nutrition.
FDR (Food and Drug Regulations) provides requirements for products that are “Foods for Special Dietary Use.”

1) Formulated Liquid Diets (FLD):
Nutritionally complete. Considered full nutrition (Oral or Tube feeds).

2) Meal Replacements (MR):
Nutritionally complete. Meets requirements for calories, (min. 225 kcal), macronutrients, vitamins and minerals to replace a meal (or all meals) in energy restricted diets.

3) Nutritional Supplements (NS):
Not nutritionally complete. Supplement a diet. Meets different requirements for calories (min of 150 kcal), macronutrients, vitamins and minerals. Not all NS products (drinks, shakes, bars) are appropriate for weight loss.

What is a Meal Replacement?

Food and Drug Regulations: http://laws-lois.justice.gc.ca/eng/regulations/C.R.C.,_c_.870
## Products available

<table>
<thead>
<tr>
<th>Formulated Liquid Diet</th>
<th>Meal Replacement</th>
<th>Nutrition Supplement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure Protein Max (Enlive)</td>
<td>Boost High Protein</td>
<td>Ensure scFOS Fibre</td>
</tr>
<tr>
<td>Ensure Compact</td>
<td>Ensure High Protein</td>
<td>Ensure Regular</td>
</tr>
<tr>
<td>Tube Feed Products</td>
<td>Glucerna Nutritional Drink</td>
<td>Carnation Instant Breakfast</td>
</tr>
<tr>
<td></td>
<td>Optifast ® 900</td>
<td>Boost Fruit Beverage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Boost Diabetic</td>
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</tbody>
</table>
### Other Products

<table>
<thead>
<tr>
<th>Frozen Meals</th>
<th>Bars</th>
<th>Protein Shakes/Drinks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Choice Steamers</td>
<td>Premier Protein Bar</td>
<td>Premier Protein</td>
</tr>
<tr>
<td>Healthy Choice Power Bowl</td>
<td>Pure Protein Bar</td>
<td>Muscle Milk Protein Shake</td>
</tr>
<tr>
<td>Blue Menu</td>
<td>Cliff Bar</td>
<td>Equate Pro Meal Replacement</td>
</tr>
<tr>
<td>Lean Cuisine</td>
<td>Lara Bar</td>
<td>Ultra Shake PC</td>
</tr>
<tr>
<td>Smart Meals</td>
<td>Slim Fast Bar</td>
<td>Kirkland Meal Replacement</td>
</tr>
<tr>
<td>Stouffers Fit Bowls</td>
<td>Kirkland Protein Bar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quest Bar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Detour Simple Bar</td>
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</table>

- Often marketed as “meal replacements.”
- Do not meet nutrition requirements to be used as a Meal Replacement.
- Often do not meet nutrition requirements to be used as a Nutrition Supplement.
- May be used for calorie reduction, in combination with a well balanced diet, to meet a client’s daily needs (under Registered Dietitian supervision).
Things to Consider- Product Selection

- Allergies and Intolerances.
- Cost/Access.
- Client is on Vitamins and Minerals.
- Client is using other Health related products (supplements).
- Other medical conditions (diabetes, kidney stones, renal disease, bariatric surgery).
- Nutrition knowledge, beliefs and attitudes, behaviors, adherence, taste preferences, taste fatigue, over reliance on products...
You and your client have decided to target weight loss with energy reduction.

- In the absence of a Registered Dietitian.
- Awaiting to see a Registered Dietitian.
- Awaiting Initial Assessment at the Edmonton Adult Bariatric Specialty Clinic.
- Awaiting assessment at another specialty clinic for treatment.
Getting Started

1) Review diet history
   - “Walk me through a typical day.”
   - “Tell me about your breakfast, lunch and supper regime.”
   - “Tell me about your morning, afternoon and evening snack regime.”

2) Which meal is the biggest barrier?

3) You and the client decide which meal to replace
   - Fits the best with their lifestyle (work schedule, family dynamics, QOL)
   - Has the biggest caloric reduction

4) Select a product

5) Start the proposed intervention and start food journaling

6) Follow up and assess progress

Remember: By adding a meal replacement, you are adding calories. Without adjusting the total calorie intake, this can increase your caloric intake and can result in weight gain.
When to Refer to a Dietitian

1) If you have access to an RD in your practice.
2) If wanting or needing to use more than 1 meal replacement/day.
3) Considerations are extensive, and the patient requires further assessment, intervention and follow up.

- Allergies and Intolerances
- Cost/Access
- Client is on Vitamins and Minerals
- Client is using other Health related products (supplements)
- Other medical conditions (diabetes, kidney stones, renal disease, bariatric surgery)
- Nutrition knowledge, beliefs and attitudes, behaviors, adherence, taste preferences, taste fatigue, over reliance on products...
Referring to a Dietitian

Please refer to:

Nutrition II: Long Term Post-op Care
Case Study #1

Eats out Lunch Daily at Work
Case Study #3

Meal skipper
Case Study #2

High BMI: Needs Aggressive Weight Loss Now
Case Study #4

Struggling to Meet Protein Requirements