Aim
The aim of this guideline is to provide an overview of the key points of medical nutrition therapy (MNT) for the dietary management of: Pregnancy post-bariatric surgery, consistent with best practice and current evidence.

Background
Pregnant and postpartum women post-bariatric surgery are at risk of nutrient deficiencies due to increased nutrient needs, surgery-induced changes to intake, absorption, and metabolism of nutrients(1).

Royal Australian and New Zealand College of Obstetricians (RANZCOG) recommends referral of all patients in pregnancy post-bariatric surgery to a dietitian for assessment and monitoring since additional nutrient supplementation may be required during pregnancy(2).
Management Goals
Dietetic management of pregnancy post-bariatric surgery aims to:

- Early Referral to Dietitian.
- Assess the patient’s current nutritional status and detection and prevention of nutritional deficiencies.
- Promote a diet which is nutritionally adequate for pregnancy and lactation.
- Promote healthy gestational weight gain (GWG) based on pre-pregnancy body mass index (BMI) consistent with the Institute of Medicine (IOM)(3) and RANZCOG guidelines(2).
- Promote regular safe exercise.
- Avoid ketonuria/ ketonemia.

Medical Nutrition Therapy
Medical nutrition therapy for pregnancy post-bariatric surgery should include the following:

Nutrition Assessment

<table>
<thead>
<tr>
<th>Topic</th>
<th>Management</th>
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<tbody>
<tr>
<td>Past medical history</td>
<td>Timing and type of surgery (note: if less than 12-18 months post-op be particularly alert of nutritional deficiencies). Complications and co-morbidities. History of deficiency and compliance with post-surgery supplementation.</td>
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<tr>
<td>Medications and supplements</td>
<td>Chronic use of certain medications can exacerbate:</td>
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<td>- Nutrient deficiencies with examples as follows:</td>
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<td>o Proton-pump inhibitors: Vitamin B12, Vitamin C, Calcium, Iron and Magnesium.</td>
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<td>o Anticonvulsants: Calcium and Vitamin D.</td>
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<td>o Metformin: Folate and Vitamin B12.</td>
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<td>o Colchicine (treatment of gout): Vitamin B12</td>
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<td>o Neomycin (antibiotic): Vitamin B12</td>
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<td>- Constipation with examples as follows:</td>
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<td>o Antacids (e.g. Rennie, Mylanta)</td>
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<td>o Doxylamine (e.g. Restavit for N&amp;V)</td>
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<td>o Opioids</td>
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<td></td>
<td>o Calcium and Iron Supplements</td>
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<td>o Diuretics</td>
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<td>Diet history</td>
<td>- Food and fluid intake</td>
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<td>- Aversions and intolerances</td>
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<td>- Nutrition and health awareness</td>
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<td>- Food availability</td>
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<td>- Psychosocial and economic issues impacting nutrition therapy and co-morbidities</td>
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| **Weight history**            | • Height, pre-pregnancy weight, pre-pregnancy BMI, current weight.  
• Assess gestational weight status in context of pre-pregnancy BMI and fetal growth scans.  
• Determine duration of weight stability post-bariatric surgery - if experiencing active weight loss be alert of nutritional insufficiency. |
| **Nutrient deficiency**       | • For **all** women at the beginning of pregnancy, or as soon as possible, screen for the nutrients listed below(4):  
  o Iron studies.  
  o Folate (RBC folic acid optional).  
  o B12  
  o Vitamin D₄  
  o Vitamins A and E.  
  o Thiamine.  
  o Optional:  
    ▪ Copper (i.e. In persistent iron deficiency or zinc supplementation).  
    ▪ Zinc and Selenium if deficiency is suspected (i.e. gastric bypass surgery).  
    ▪ Vitamin K using INR  
• **Re-conduct** blood tests every trimester for gastric bypass patients and for all other patients as clinically indicated needed (5). |
| **Diabetes screening**        | Assess likelihood of tolerating oral glucose tolerance test. Liaise with team to organise alternative screening (e.g. FBGL or HbA1c) as required:  
• Lap/gastric band: Most women tolerate the OGTT well.  
• Gastric Sleeve: OGTT normally well tolerated when more than 12-18 months since surgery although consider potential for reactive hypoglycaemia.  
• Roux-en-Y Bypass: Most women can NOT tolerate the OGTT.  
   Refer Diabetes in Pregnancy for OGTT policy for patients post-bariatric surgery. |
| **Gastrointestinal symptoms** | Assess any gastrointestinal symptoms of:  
• GORD  
• Dumping syndrome  
• Vomiting – recurrent vomiting  
• Decreased appetite/early satiety  
• Regurgitation  
• Constipation/Diarrhoea  
• Steatorrhea (i.e. post-gastric bypass surgery)  
• Abdominal pain/bloating |
Nutrition Diagnosis
- Based on the assessment the Dietitian makes an initial nutrition diagnosis using Nutrition Care Process Terminology (NCPT), which could include, but is not limited to:
  - Obesity (class I, II, or III).
  - Swallowing difficulty.
  - Altered gastrointestinal (GI) function.
  - Growth rate below/above expected.
  - Unintended weight loss
  - Inadequate protein intake.
  - Limited adherence to nutrition-related recommendations.
  - Food and nutrition related knowledge deficit.
  - Undesirable food choices.
  - Excessive oral intake.
  - Excessive energy intake.
  - Inadequate oral intake.
  - Inadequate energy intake.
  - Inadequate vitamin intake (specified) / predicted suboptimal vitamin intake.

Nutrition Intervention

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<tr>
<td>Weight management</td>
<td>- Discuss GWG goals based on pre-pregnancy BMI(2, 3), current gestational weight status, timing of surgery and duration of weight stability, and fetal growth scans.</td>
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<td>- Encourage up-to-date Physician or Surgeon review of fluid in gastric bands with the aim of achieving optimal nutritional intake, hydration, and normal fetal growth(6).</td>
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<td>Diet education</td>
<td>- Diet and lifestyle strategies to optimise diet, minimise nutrition impact symptoms, support healthy gestational weight and fetal growth with provision of relevant written resources.</td>
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<td>- An energy restricted diet (=1600 Cal) is recommended for women who continue to have obesity in pregnancy: See ‘Better Lifestyles and Obstetric Outcomes for Mothers (BLOOM) Program’.</td>
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<td>- When GWG is inadequate and/or there are increased protein/energy requirements discuss dietary methods to improve intake +/- prescribe additional oral nutritional supplements as indicated. Check for ketones if there is any concern with carbohydrate restriction.</td>
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<td>- Ensure adequate hydration and fibre, as per NRVs(7).</td>
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<td>- As required, discuss postnatal dietary management to support nutrient sufficiency (including during lactation) and healthy weight (8, 9).</td>
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<tr>
<td>Supplements</td>
<td>- Standard pregnancy-approved multivitamin (ideally containing beta carotene)(4)</td>
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### Topic | Management
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- **For high risk pregnancies, including all obese women**, a mega dose of **5.0 mg** folic acid/daily is recommended three months prior to conception, and throughout the first trimester (refer [Folic Acid Supplementation](#)). For all other women supplement with **0.5 mg** folic acid/daily.  
- Additional supplementation as required to meet deficiencies. Pls refer to appendix [Appendix 1 and 2](#).

#### Gastrointestinal symptom management

- **First-line treatment of gastrointestinal symptoms** is dietary management where possible.  
- **Where pharmacotherapy may be indicated** (e.g. pancreatic enzymes to assist in digestion), discuss with team consultant.  
- **Constipation** is common – 1. **Lifestyle intervention**: ensure adequate hydration 6-8 glasses fluid/day, dietary fibre (25-35g/day) and physical activity. 2. **May recommend bulk-forming laxative**: e.g. Benefibre/wheat dextrin, Metamucil/psyllium husk, Fybogel/ispaghula husk. 3. **Other aperients as appropriate** (see [Bowel Care guideline](#)).  
- **Regurgitation** is usually from eating too fast or too large a quantity at any one time, otherwise the issue may need further investigation by a specialist.

- **Dumping Syndrome - recommended dietary management** (10):  
  o Early dumping occurs within 1 hour of eating. Management includes small frequent meals, drink liquids between meals.  
  o Late dumping syndrome occurs 1-3 hours after eating and results in post-prandial reactive hypoglycaemia. Recommend a diet of low glycaemic index (GI) carbohydrate combined with protein and fat.  
  o **Treatment of Post-prandial Reactive Hypoglycaemia**: [LOW GI](#) carbohydrate (e.g. wholegrain crackers) with a source of protein and fat (e.g. peanut paste or cheese).  

- **NB**: Be suspicious of abdominal symptoms (e.g. epigastric pain, distension/bloating) as intestinal obstruction during pregnancy is possible following abdominal surgery. Band slippage may cause severe vomiting. Discuss with team consultant(8).

#### Physical Activity

Encourage 30 minutes of planned physical activity/day as tolerated.
Monitoring and Evaluation

- Dietitians plan ongoing monitoring and evaluation of women who are pregnant post-bariatric surgery based on their progress, gestational weight gain/fetal growth, comorbidities and measurement and evaluation of the outcomes from the prescribed nutrition intervention.

- Frequency of follow-up:
  - Gastric Bypass (e.g. BPD or RYGB): Initial consult and a minimum of one (1) review each trimester based on clinical need.
  - Gastric sleeve or gastric band: Initial consult. Ongoing review as needed.

Resources

The following resources could be considered for women with obesity in pregnancy or pregnancy after bariatric surgery:

- **KEMH BLOOM Diet Plan** and supplementary resources – menu plans, tips for exercise, common diet strategies, menu planning, budgeting, shopping lists;
- **RANZCOG Weight Management in Pregnancy patient handout, 2015** (not available online);
- **Queensland Clinical Guidelines Patient Information Sheet – Weight Management in Pregnancy**;
- **Nutrition Education Materials Online (NEMO). Weight gain during pregnancy chart for tracking GWG**:
  - **Pre-pregnancy BMI <25 kg/m²**
  - **Pre-pregnancy BMI >25kg/m²**

References


Related policies
RANZCOG Management of Obesity in Pregnancy, 2017

Related WNHS policies, procedures and guidelines
Anaemia and iron deficiency: Management in pregnancy and postpartum
Bowel Care
Dietitian Referral
Increased Body Mass Index - Management of a woman with
Diabetes in Pregnancy
Vitamin B12 Deficiency during Pregnancy
Vitamin D Deficiency in Pregnancy
Folic Acid Supplementation

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