MELBOURNE CENTRE
FOR BARIATRIC SURGERY
EXPERIENCE . EXPERTISE . EMPATHY

SUPPLEMENTS

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CHOOSING A BARIATRIC PROCEDURE

SAFEST	Orbera Balloon	Temporary, no surgical cuts
↑	Gastric Band	No cutting the stomach, easily reversible
	Sleeve Gastrectomy	Reliable weight loss, reasonable safety profile
↓	Gastric Bypass	More complex, anti-reflux
MOST EFFECTIVE	SADI* procedure	Best weight loss, newer option

The three most important factors in choosing a bariatric procedure are your **weight**, **BMI*** *and associated* **medical conditions.** *Note that most patients looking at invasive weight loss procedures will have a BMI above 35 (with a few exceptions).*

KEY POINTS

- The **sleeve gastrectomy** can be considered a good default procedure for most patients as it combines reliable weight loss with a reasonably good safety profile
- Patients with **BMI over 50** are at risk of a less satisfactory outcomes with sleeve surgery, particularly in the long term. **Gastric bypass** or **SADI**** may give better long term weight loss outcomes in this group.
- **Diabetics** with high BMI are also at risk of failing to achieve desired outcomes with a conventional sleeve and may consider the bypass or SADI. Insulin injecting diabetics will usually get a better result with these procedures compared to conventional sleeve.
- **Reflux** symptoms: Patients with severe reflux symptoms (e.g. intractable heartburn, acid in the mouth at night) should consider **gastric bypass surgery** which has anti-reflux properties.
- **Low BMI**: Patients with BMI in the 30s and particularly low 30s may find the gastric band is a safe and relatively gentle alternative for more modest weight loss. Outcomes are not as predictable as sleeve however and more clinic contact is required.
- **Age considerations**: young patients (e.g. less than 30 years) should consider the long term implications of any procedure undertaken. The irreversible nature of the sleeve may put some younger patients off this option and older patients (e.g. over 60) may consider the more complex procedures as unnecessary for their needs.

Note that **private health insurance** is typically required for more complex or high risk options. Currently gastric bypass and SADI surgery and most revisional operations are not available through MCBS without private insurance. Comprehensive information and multimedia describing the operations in detail can be found at www.anthonyclough.com.au

**BMI = Body Mass Index. Calculate by dividing your weight (kg) by the square of your height (in metres). Example: 120kg / (1.66m)2 = 43.5 kg/m2*

***SADI, also known as SIPS, refers to the loop duodenal switch procedure*

REVISIONAL SURGERY OVERVIEW

CHOICES FOR REVISIONAL SURGERY

Revisional surgery may be required for

1. Weight loss rescue after poor outcomes from previous bariatric operation
2. Resolving adverse symptoms or complications from previous bariatric operation

The most common scenarios

1. Poor weight loss outcome from gastric band
2. Weight regain or poor outcome from sleeve gastrectomy
3. Severe reflux symptoms relating to sleeve operati¬¬on or banding (or stomach stapling)
4. Others/misc

Poor weight loss outcome from gastric band

If a gastric band has failed to produce significant and sustained weight loss, my preference is conversion to gastric bypass in appropriate patients. Sleeve gastrectomy is another option however in this context probably has a similar risk profile to gastric bypass but bypass has been studied in much more detail after banding than sleeve and may be more durable in the long term.

Weight regain or poor outcome after sleeve surgery

The approach to this may depend on current anatomy and whether you have debilitating reflux symptoms. Gastric bypass may be most appropriate if reflux is a problem. For weight loss rescue my preference is to add a second stage procedure (loop duodenal switch or SADI) to the sleeve which may give better outcomes than bypass in terms of weight reduction. Whether or not the sleeve itself should be redone depends on how enlarged/stretched it is from baseline and your restrictive sensation.

Severe reflux symptoms

Pretty much any operation where reflux is a problem leads to a discussion about conversion to gastric bypass surgery. This can be done after sleeve, banding and stomach stapling procedures.

In general revisional surgery carries with it increased risks compared to first-up procedures due to scar tissue/adhesions from the initial surgery and anatomy which may be distorted or unclear. Hence there should be a clearly thought out rationale to proceed down this track.

DIET - LIQUID ALTERNATIVES

ALTERNATIVE CHOICES FOR LIQUID PHASE

High protein Fluids include:

- Very low calorie diet shakes (VLCD's) such as Optifast™, Optislim™, Formulite™, Kickstart™
- Low calorie diet shakes (LCD's) such as Tony Ferguson™, Man shakes™ Aldi Slim and Trim™
- Nutritional supplements such as Sustagen™, Resource™, Ensure™, Fortisip™
- Commercial smoothies/shakes such as Aussie Bodies™, Rokeby Farm™, Up & Go Energize™
- Commercial protein powders such as whey based, soy based, pea based supplements, such as Boomers™, Natures Own™, Planet Food™, Beneprotein™
- High protein drinking yoghurts such as the Yo pro drinking yoghurt™
- High protein milk
- High protein waters such as Bodiez™, Tasteless protein flavoured™, Protein Perfection™
- Collagen protein such as Peptipro™ and Tasteless protein™
-

Other fluids that do not contribute as much protein but help meet your hydration needs include:

- Juice(no added sugar)
- Broth/ strained or vitamised soup
- Low fat/skim milk / skinny Latte / Up and Go / Soy milk / Almond milk
- Water / Herbal teas / diet cordial
- Tea/coffee
- Water, sparkling water, soda water

Plain water can be difficult initially after the surgery and you may need to experiment with the temperature of the water or add something to it to make is easier to drink such as diet cordial, flavoured protein sachets, protein water and herbal infusions.

Soft drink is poorly tolerated and non-nutritious and is not recommended post-surgery.

Protein Counter

Aim for at least 60g per day.

Food item	Serve size	Protein (grams)
Beef, Lamb, Pork, Veal	30 grams	8
Chicken, No skin	30 grams	8
Fish	30 grams	8
Prawns	5 pieces	7
Lobster, Crab	30 grams	5
Egg	1	6
Baked Beans, Kidney beans, Chick peas	½ cup	7
Milk	1cup (250mls)	8
Yoghurt – vary widely, look for high protein options such as Chabani™ and Yopro™	Approx. 200g	5 – 22g pending brand
Cheese, tasty	1 slice (approx.21g)	5
Cheese, Parmesan grated	¼ cup (approx. 25g)	8
Cheese, Cottage/ Ricotta	100g	12
Soybeans	50g	8
Tofu	100g	8
Soy milk, plain	250mls	8
Nuts, peanuts / cashews	30g	6

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PROTEIN OPTIONS POST BARIATRIC SURGERY

I require _____ grams protein and _____ litres fluid per day

VLCD / LCD's or High Protein nutritional supplements - Nutritionally complete or contain good complement of vitamins/minerals as well as high protein. **You need to include at least 2 of these in your post-op recovery period.**

PRODUCT		Available:	Protein content	Other
Optifast™, Optislim™, Tony Ferguson™, Sustagen™ (flavoured or neutral) Resource™ **Formulite™** **Feel Good shake™** **BN slim shake™**		Pharmacies, Supermarkets https://formulite.com.au + HealthSmart pharmacy Box Hill public hospital www.costpricesupplements.com.au https://www.bnhealthy.com.au	Approx. 20g – 30g per serve pending product chosen	Range of flavours but only Sustagen comes in a neutral (ie. no flavour) version
Whey based neutral flavoured protein powders – excellent source of good quality protein. Neutral/unflavoured are best as can be made into smoothies or added to soups, muffins, egg dishes or mash. NB do not contain all the vitamins/minerals of above so needs to be added to other foods that give variety and nutrition.				
Beneprotein™		www.greatideas.com.au Or pharmacies can order it in	6g per 1.5 TBS of powder	Can add to liquids, pureed and mashed foods

Boomers™ whey protein concentrate		www.wheyprotein.com.au	30g powder = 24g protein	Neutral flavour. Mixes really well.
Planet Food™		Supermarkets	30g powder = 25g protein	Neutral flavoured
Coles whey protein concentrate		Coles	30g powder = 22.7g protein	Many flavours including neutral
Skim milk Powder		Supermarkets	1/3rd cup added to 250mls of low fat milk = 18.5g protein	CHEAP! Can be added to other foods/fluids to increase protein content.
High protein milk		Supermarkets	12.8g per 250mls	Use in coffee, tea, on cereal and in cooking.

Whey based protein waters – these are excellent sources of good quality protein that is provided in a clear liquid form. This makes them ideal to be consumed in between meals. Some contain electrolytes which is beneficial especially early on in recovery or before/after or during exercise.

Bodiez™ protein water		Supermarkets Chemist Warehouse	475ml bottle = 30g whey protein	Ready to drink or powder sachets Flavoured options or clear, unflavoured option
Myprotein™clear whey protein		https://au.myprotein.com	1 scoop = 20.2g protein	Many flavours including Mojito!
Whey based readymade drinks – convenient and readily available				
Up and Go Energize ™ **Rokeby Farm™ breakfast Smoothies™** **Aussie Bodies™ protein smoothie** **YoPro™ drinking yoghurt™**		Supermarkets	16 – 30g protein pending product	Pre-packaged
Plant based protein powders – soy based contains the best protein profile but if these are not tolerated, pea and brown rice are an option.				
Natures Way™ Pea protein **And Soy protein**		Supermarkets and Pharmacies	35g serve of soy formula= 26g soy protein 30g of pea formula = 22g plant protein	Vegan / vegetarian Soy variety has a neutral and vanilla flavour option.

Boomers		www.wheyprotein.com.au	40g serve brown rice = 34.6g protein	vegan/vegetarian
High Protein Soups – some people find things taste sweeter after the surgery and therefore soups can be well tolerated. **These may need vitamised (pending brand and flavour) initially to be made into a liquid in the early post-op diet phase.**				
Optifast VLCD soup		Pharmacies	20g per serve	
Formulite™ lupin soup		https://formulite.com.au		
Heinz plant proteinz™ creamy coconut, pumpkin and chickpea		Woolworths	17g per 330ml serve	
Collagen protein – clear and easy to consume protein. Collagen is not as a complete source of protein as animal or soy protein so best to be used to 'top up' your protein intake rather than be the major source.				
Protein perfection™ **Protein water**		www.greatideas.com.au www.costpricesupplements.com.au	2 scoops (40g) = 15g protein	Powder made up with water. Range of flavours. Also have a Jelly (20g protein per serve)

Gelpro Peptipro™ collagen powder NB. Can be added to other products to increase protein content		Go Vita health Food stores or www.gelatinaustralia.com.au www.costpricesupplements.com.au	15g powder = 15g protein	Flavourless and can be mixed into any fluid hot or cold
Feel Good™ Tasteless protein powder NB. Can be added to other products to increase protein content		www.costpricesupplements.com.au	15g powder = 15g protein	Flavourless and can be mixed into any fluid hot or cold Also has flavoured sachets (7.5g protein per sachet)
Formulite™ recovery protein		https://formulite.com.au + HealthSmart pharmacy Box Hill Public Hospital	15.4g protein per serve	Flavoured and unflavoured sachets Also contains BCAA's and electrolytes

Bariatric Vitamin and Mineral supplements

After having bariatric surgery, you will need to take vitamins and minerals for the rest of your life.

The following supplements are designed specifically for the needs of patients who have had bariatric surgery

NAME	Supplement type	Dose /day	Where to purchase	Other information
BN multi 	Chews or capsules	2	www.bnmulti.com	Australian company and Provides good information and after sales service to their customers *Range also includes a calcium chewable and an iron supplement*
Fitforme Opti 	Chews or capsules	1	www.fitforme.com.au	Chews have the iron (tiny additional tablet) separated to improve tolerance. Specifically designed for sleeves/bands
Fitforme Forte 	Chews or capsules	1	www.fitforme.com.au	Chews have the iron (tiny additional tablet) separated to improve tolerance. Specifically designed for bypass
BariLife 	Tablet or powder (made into a drink)	1 tablet or 2 scoops powder per day	www.barilife.com.au	Vanilla flavoured tablet for better tolerance. Powder - Lemonade or watermelon flavour *Range also includes a probiotic, calcium chews and a hair, skin and nails formula*

Nutrichew 	chew	2	https://www.nutrichew.com.au	Australian company
Nutrifuel 	Powder (make into a drink)	5g scoop included. Once per day	https://www.nutrichew.com.au	Australian Company.
Barinutrics Essential Multivitamin 	Powder (made into a drink)	7g scoop included Once/day	https://barinutrics.com.au	*Range also includes calcium chews*

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Calcium Citrate Options (do not need to be taken with food)

Always separate your calcium supplement from your multivitamin by a minimum of 2 hours and separate the calcium supplements from each other (if taking more than one)

Brand		Calcium Per tablet/chew	Vitamin D Per tablet/chew	Availability	Dose needed per day
Barinutrics™ calcium chewy bites		500mg	500IU	www.barinutrics.com.au Pineapple/Mango Raspberry and Chocolate flavour available	1 – 2
Fitforme soft calcium chew		500mg	500IU	www.fitforme.com.au lemon and raspberry flavour	1 - 2
BariLife BariBursts		500mg	1000 IU	www.barilife.com.au Watermelon flavour	1 - 2
BN ™ Chocolate		500mg	500IU	www.bnmulti.com Chocolate balls	1 - 2
Citrical™ + vitamin D™		315mg	500 IU	Retail	2 – 3
Swisse ™ Calcium + vitamin D		333mg	333IU	Retail	2 – 3
Wagner™ Calcium + Vitamin D + K		333mg	332IU (Also contains 266mcg Vit K)	Retail	2 – 3

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Calcium Carbonate options (must be taken with food)

Always separate your calcium supplement from your multivitamin by a minimum of 2 hours and separate the calcium supplements from each other (if taking more than one)

Brand		**Calcium Per tablet/chew**	**Vitamin D Per tablet/chew**	**Availability**	**Dose needed per day**
Ostelin™ chewable calcium + vitamin D		600mg	500IU	Retail Lemon flavour	1 -2
Caltrate™ chocolate chews		600mg	800IU	Retail Chocolate flavour	1 -2
Ostelin™ Calcium + Vitamin D		600mg	500IU	Retail	1 -2
Caltrate™ Bone Health		600mg	500IU	Retail	1 -2

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PRE-SURGERY VLCD GUIDELINES

You are required to follow a Very Low Calorie Diet (VLCD) before your surgery to help make the operation safer by shrinking the liver thus allowing better access to the stomach. *Please note that Low calorie Diets (LCD's) are not suitable during this phase.*

A VLCD works by making you mildly ketotic (a process that allows the use of fat for energy) and this reduces your hunger and allows you to stay on the diet. Eating sugars or carbohydrates will prevent ketosis from happening and you will feel hungry again.

There are many VLCD's available such as Optifast™, Optifast high protein™, Optislim™, Optislim Platimum™, Kickstart™, Formulite™ and BN Slim™ and Feel Good Shake™. Some are available over the counter at the Pharmacy but others will need to be purchased on-line. What product you choose will depend on your protein requirements (as products vary from 17 – 30g protein per serve) and your individual taste preference. Some products, such as Optifast™ and Optislim™ and Formulite™ also include a range of bars, soups and desserts that can be interchanged with the shakes to improve variety whilst on the diet. Please ensure that these are also VLCD's before including in your pre-operative program.

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With any VLCD option you choose:-

- Read the instructions on the box carefully before starting (as these can vary according to brand and may include adding water or skim milk or the addition of 1 -2 carbohydrate serves per day).
- Follow the "Intensive phase" instructions, replacing each meal with one VLCD product, three times per day.
- In addition to the VLCD, an unlimited amount of vegetables or salad from the list provided can be included throughout the day. These can be flavoured with the condiments listed.
- In the first 48 hours on the program, if you are extremely hungry, you can have a small amount of pure protein (meat, fish, chicken or egg). Try to keep this to a minimum (eg. One boiled egg or slice of ham). After 48 hours, hunger should be manageable.
- If you are eating out socially and will be missing the VLCD for that meal, choose meat, fish or chicken with salad or vegetables but do not have any carbohydrates (bread/potato/rice or pasta) with the meal.
- Do not drink any sugary drinks (soft drink/juice/cordial). Coffee or tea can be taken in small quantities with low fat milk and sweeteners – no sugar.
- All fruit (except strawberries/blueberries) are high in carbohydrates so need to be avoided but limit these berries to 1 cup per day.
- If your BMI or height requires, you may require more protein than three VLCD products per day. This will be discussed with you by your Dietitian.

Additional requirements (if required) = _____ serve/s per day

[ ] 100g of cooked lean meat (eg steak), chicken without skin or fish (20 – 25g protein)
[ ] 2 eggs (12g protein)
[ ] 95g tin tuna/salmon (in brine or water) (16g protein)

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Use the following lists as a guide:

FOODS TO INCLUDE

Vegetables

Alfalfa sprouts

Asparagus
Beans
Bok choy
Broccoli
Brussel sprouts

Carrots
Celery

Cabbage
Capsicum
Cauliflower
Cucumber
Eggplant
Garlic
Lettuce
Mushrooms
Onion (all types)
Radish
Silverbeet
Snow peas
Spinach
Squash
Tomato
Watercress
Zucchini

FOODS TO INCLUDE

Fruit

Strawberries/blueberries
(limit to one cup per day)

Fluids

Water
Tea & coffee
(with small amount of milk)
Diet soft drink and cordial
Mineral water

Soda water
Water

Sauces & Condiments

Lemon juice
Vinegar
Worcestershire sauce
Soy sauce (in moderation)
Mustard
Tomato paste
Stock cubes
Bonox (in moderation)
Herbs /Spices

You can also have

Salsa / low fat tzatziki
Artificial sweeteners,
sugar free gum & sweets
Diet jelly

FOODS TO AVOID

Vegetables

Corn

Green Peas
Legumes
Lentils
Potato
Pumpkin

Sweet Potato
All fruit (except strawberries)

Fluids

Fruit juice
Regular soft drink
Regular cordial
Alcohol
Milk drinks

"When you have that first drink, it is literally like sticking a needle of alcohol in your vein."

Know your risks.

Alcohol will affect you very differently after certain types of bariatric surgery and there is an increased risk for alcohol problems, even in people who never had this problem before. There may also be risks related to pain medications or other drugs after bariatric surgery.

Get informed.

Be safe.

"I respond very differently to pills now. It used to take half an hour to feel the effects. Now I feel the effects within ten or fifteen minutes. The effects are more intense but they don't last as long, so you have to take more to get that euphoria."

If you have any questions, please contact your bariatric center.

Produced by MeSSAGe:
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Alcohol and Your Health After Bariatric (Weight Loss) Surgery

What You Need to Know.

Know your risks.

Get informed.

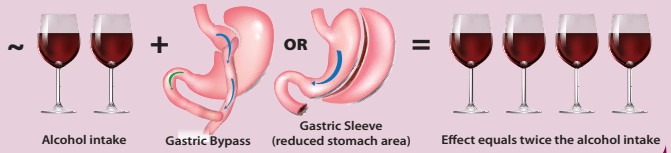
Be safe.

Yale

IFSO Yale

Alcohol will affect you very differently.

- Many people who have had bariatric surgery find alcohol hits them much harder and much faster than it did before surgery.
- Even if you do not feel a difference in the effects of alcohol, your blood alcohol level will be much higher, and rise much faster, than it did before surgery.
- Consequences could include impaired driving, arrests for driving while intoxicated, serious injuries (e.g., from falls), legal problems, etc.
- One drink will have the effect of two or more, and will affect you much more quickly.
- **Even if you feel sober**, your blood alcohol level may still be over the legal driving limit.



Recommendations:

"After the first drink, I felt like I was under the table."

- Follow the guidelines from your surgical team about drinking alcohol after surgery.
- Once you have had surgery, be very cautious when drinking alcohol:
  - Even one drink may put you over the legal limit for driving.
  - Always arrange for a designated driver if you will be drinking alcohol.

Increased risk for alcohol problems.

- Some people who rarely or never drank before surgery begin to drink after surgery.
- Some people may even develop an addiction to alcohol after surgery.
- Alcohol problems may develop years after surgery.
- People continue to be at risk for developing alcohol problems for more than a decade after surgery.

"I don't regret getting the surgery, I regret becoming an alcoholic."

Recommendations:

- Remain watchful of your alcohol use in the long-term after surgery, paying attention to potential "red flags", including:
  - Drinking alcohol more often than you used to before surgery.
  - Drinking larger amounts of alcohol than you used to before surgery (or drinking the same amount even though the alcohol is affecting you more intensely).
  - Feeling more drunk than you used to before surgery.
  - Experiencing cravings for alcohol.
  - Experiencing "blackouts" or memory loss when drinking alcohol.
- Remember that these problems may develop more than a decade after surgery.
- If you or anyone else has concerns about your drinking, talk to a healthcare professional about your alcohol use.

"I was up to a fifth a day, really out of hand. I was keeping half-pints in my truck so I could drink at 6am on the way to work, because you can't buy alcohol before 7am.

Risk of increased use of pain medications.

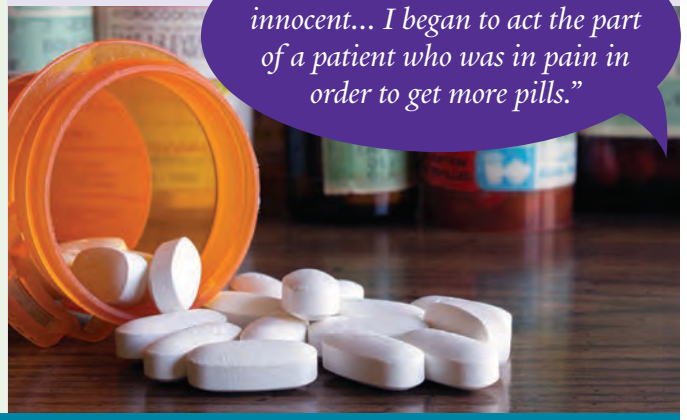
"I could never take enough, it escalated way out of control. Pain was distorted because of opiates."

- Even though most people find that their pain conditions improve after bariatric surgery, the use of pain medications actually tends to increase over time after surgery.
- Studies have found that some people become extremely frequent users of pain medications in the long term after bariatric surgery.
- The risk of increased or excessive use of pain medications after bariatric surgery is higher for people who were sometimes using these medications before surgery.

Recommendations:

- Always share your history of use of pain medications and other drugs with all of your medical providers.
- If you have a history of using more of your pain medication than prescribed, or any other substance, than you or your doctor intended, it is very important to let your bariatric team know about this. They will help you make a plan for pain management and help to keep problems from re-occurring after surgery.
- If you have already had bariatric surgery, be mindful of the risk for excessive or unsafe use of pain medicines. Be on the lookout for increased use of these medicines over time.

"Pain pills seemed safe and innocent... I began to act the part of a patient who was in pain in order to get more pills."



CLINICAL PRACTICE GUIDELINE

Pregnancy Post-Bariatric Surgery - Dietary Management

This document should be read in conjunction with the Disclaimer

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

Topic	Management
Past medical history	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.

Medications and supplements	Chronic use of certain medications can exacerbate:
	• Nutrient deficiencies with examples as follows:
	  ○ Proton-pump inhibitors: Vitamin B12, Vitamin C, Calcium, Iron and Magnesium.
	  ○ Anticonvulsants: Calcium and Vitamin D.
	  ○ Metformin: Folate and Vitamin B12.
	  ○ Colchicine (treatment of gout): Vitamin B12
	  ○ Neomycin (antibiotic): Vitamin B12
	• Constipation with examples as follows:
	  ○ Antacids (e.g. Rennie, Mylanta)
	  ○ Doxylamine (e.g. Restavit for N&V)
	  ○ Opioids
	  ○ Calcium and Iron Supplements
	  ○ Diuretics

Diet history	• Food and fluid intake • Aversions and intolerances • Nutrition and health awareness • Food availability • Psychosocial and economic issues impacting nutrition therapy and co-morbidities

Topic	Management
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):
	  ○ Iron studies.
	  ○ Folate (RBC folic acid optional).
	  ○ B12
	  ○ Vitamin D.
	  ○ Vitamins A and E.
	  ○ Thiamine.
	  ○ 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

Topic	Management
Weight management	• 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. • 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).
Diet education	• Diet and lifestyle strategies to optimise diet, minimise nutrition impact symptoms, support healthy gestational weight and fetal growth with provision of relevant written resources. • 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'. • 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. • Ensure adequate hydration and fibre, as per NRVs(7). • As required, discuss postnatal dietary management to support nutrient sufficiency (including during lactation) and healthy weight (8, 9).
Supplements	• Standard pregnancy-approved multivitamin (ideally containing beta carotene)(4)

Topic	Management
	• 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):
	  ○ Early dumping occurs within 1 hour of eating. Management includes small frequent meals, drink liquids between meals.
	  ○ 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.
	  ○ **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/m^2
    - Pre-pregnancy BMI >25kg/m^2

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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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