

# Ten Top Tips for the management of patients post-bariatric surgery in primary care

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## Article points

1. People who undergo bariatric surgery require lifelong follow-up of their comorbidities and nutritional status.
2. Currently, such individuals are monitored by the bariatric surgery team for the first 2 years and are then discharged back into primary care.
3. The Royal College of GPs Nutrition Group has developed this set of guidelines to assist non-specialist clinicians, dietitians and nurses in the management of these patients in primary care.

## Key words

- Bariatric surgery
- Primary care
- RCGP Nutrition Group
- Shared care

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**There is a growing cohort of people undergoing bariatric surgery, and these patients require lifelong follow-up. Recent NICE guidelines recommend a shared care model for the long-term management of these individuals; therefore, GPs need guidance on how to appropriately monitor and manage them. Following a review of the current literature and discussions with experts in the field, guidance has been developed that will aid clinicians in providing high-quality shared care alongside Tier 3 or 4 specialist teams. Areas discussed include monitoring long-term associated conditions, potential nutritional deficiencies, nutritional supplements, changes to medications post-surgery, post-surgery contraception advice and criteria for re-referral to specialist services.**

In the UK, NICE recognises that bariatric surgery may be an appropriate and cost-effective treatment for obesity. Following changes to the eligibility criteria to undergo bariatric surgery in the CG189 clinical guidelines (NICE, 2014), the number of procedures being performed per year is likely to increase. People who undergo such surgery require lifelong follow-up of their comorbidities and nutritional status. Guidance has been developed by the Royal College of GPs (RCGP) Nutrition Group in conjunction with the British Obesity and Metabolic Surgery Society (BOMSS) to aid GPs in providing high-quality shared care of these patients with Tier 3 or 4 teams.

## Ten Top Tips for the management of patients post-bariatric surgery in primary care

Currently, according to the National Bariatric Surgery Registry (Welbourn et al, 2014), around 8500 procedures are performed in the UK each year. This is a complex cohort of patients, with an average

of 3.4 comorbidities pre-surgery in women and 3.7 in men. This includes four or more comorbidities in 53.9% of men and 41.4% of women. While bariatric surgery has been reported to have significant benefits with regard to the improvement and remission of these comorbidities (Puzziferri et al, 2014; Sjöström et al, 2014; Welbourn et al, 2014), it also puts patients at risk of nutritional deficiencies (Aarts et al, 2011; Mechanick et al, 2013).

People who undergo bariatric surgery require lifelong follow up of their comorbidities and monitoring of their nutritional status. CG189 suggests that after the first 2 years post-procedure, care should be carried out by primary care in a shared-care model with a named Tier 3 service or equivalent (NICE, 2014). This should include an annual review which, for many patients, will coincide with their annual comorbidity monitoring.

In 2013, the American Association of Clinical Endocrinologists, The Obesity Society and the American Society for Metabolic and Bariatric Surgery published joint guidelines for the

perioperative care of people undergoing bariatric surgery (Mechanick et al, 2013). However, currently, there are no comprehensive guidelines that focus on the long-term care of post-bariatric surgery patients within primary care. Therefore, the RCGP Nutrition Group has developed these guidelines in conjunction with BOMSS through review of the current literature and expert opinion. The guidance is specifically aimed at all non-specialist clinicians, dietitians and nurses to aid management of these people once they are discharged back to primary care, and also to aid management of any patients for whom follow-up guidance from the surgical team is not available.

It is important to note that people who have moved to a different area or who undergo a private procedure are likely to have had less specialist follow-up and may need to be managed in primary care earlier post-procedure. In addition, any new concerns should always trigger referral to a Tier 3 weight management service (if available) or the local bariatric surgery team for further advice.

### Top Tip One

#### Keep a register of bariatric surgery patients

It is important to record the type of procedure in the register, as the different procedures have different risks of nutritional deficiencies. This is also essential information to include when liaising with specialist services.

### Top Tip Two

#### Encourage patients to check their own weight regularly and to attend an annual BMI and diet review with a healthcare professional

Do not assume that all patients are eating a well-balanced diet. Some may have maladaptive eating patterns and poor nutritional intake. If BMI is increasing, consider referral to local weight management services to support and encourage lifelong weight maintenance.

### Top Tip Three

#### Symptoms of continuous vomiting, dysphagia, intestinal obstruction (gastric bypass) or severe abdominal pain require emergency admission under the local surgical team

Further details of both urgent and routine indications for referral back to specialist services

are summarised in a printable “at a glance” poster that can be found on the RCGP nutrition web pages (available at: <http://bit.ly/1Ddt6yT>).

### Top Tip Four

#### Continue to review comorbidities post-surgery, including diabetes, hypertension, hypercholesterolaemia and obstructive sleep apnoea, as well as mental health

Medication doses will need to be titrated in the postoperative period as weight loss occurs, but they may increase later if weight loss is not maintained. Studies have shown very positive results with regard to remission of diabetes post-surgery (Brethauer et al, 2013; Puzifferri et al, 2014; Sjöström et al, 2014), and people with diabetes need regular medication reviews, with treatment adjustments as required. However, longer-term studies have shown that some patients have a recurrence of diabetes (Brethauer et al, 2013; Sjöström et al, 2014). Therefore, people with diabetes should also continue to have routine diabetes follow-up (i.e. they should be kept on the Quality and Outcomes Framework diabetes register and receive annual retinopathy screening) even if their diabetes goes into remission. Whether or not weight loss occurs, cardiovascular and metabolic risk factors, such as blood pressure and cholesterol levels, must continue to be monitored, and treatments will need to be adjusted as required. Patients receiving continuous positive airway pressure should continue to use their machines until they have had a repeat sleep study performed post-surgery (Duke and Finer, 2012).

It is worth noting that there is a higher rate of mental health problems in people with severe and complex obesity compared with the general population (Vaidya, 2006; Gundersen et al, 2011), and these problems may persist even after successful bariatric surgery. Therefore, mental health should be reviewed regularly following surgery. The psychological management of these people can be complex and, therefore, there should be a low threshold for referral to specialist mental health services.

### Top Tip Five

#### Review the patient's regular medications

The formulations may need adjusting post-surgery to allow for changes in bioavailability. This is

### Page points

1. Primary care practitioners should record their post-surgery patients in a register, complete with full details of the procedure, as different procedures have different risks of nutritional deficiencies.
2. Patients should monitor their own weight and attend yearly review of their BMI and diet.
3. Severe gastrointestinal signs require emergency readmission to surgery.
4. Comorbidities such as type 2 diabetes can improve rapidly after surgery as weight loss occurs, and thus they need long-term monitoring and treatment adjustment as appropriate.
5. There is a high rate of mental health problems in people with severe and complex obesity that may persist after the surgery, and long-term psychological monitoring may be required.

**Box 1. Medication considerations post-bariatric surgery (Top Tip Five).**

- Review comorbidity medications, such as antihypertensives, diabetes medications, etc., post-surgery. Requirements are likely to fall with postoperative weight loss, but may increase later if weight loss is not maintained.
- Consider pill size – patients may need liquid formulations or syrups in the immediate postoperative period. However, usual medication formulations should be tolerated by around 6 weeks postoperatively.
- Replace extended-release formulations with immediate-release formulations.
- Psychiatric medications may need increased or divided doses.
- Use diuretics with caution due to the increased risk of hypokalaemia.
- Monitor anticoagulants carefully.
- Avoid non-steroidal anti-inflammatory drugs; if no alternative, use only with a proton pump inhibitor.
- Avoid bisphosphonates.
- Patients with gastric bands should avoid effervescent medications.

**Table 1. Recommended annual blood test monitoring (Top Tip Six).**

Blood test	Surgical procedure		
	Gastric bypass	Sleeve gastrectomy	Duodenal switch
Liver function tests	Yes	Yes	Yes
Full blood count	Yes	Yes	Yes
Ferritin	Yes	Yes	Yes
Folate	Yes	Yes	Yes
Vitamin B12	Yes*	Yes*	Yes*
Calcium	Yes	Yes	Yes
Vitamin D	Yes	Yes	Yes
Parathyroid hormone	Yes	Yes	Yes
Vitamin A	Possibly <sup>†</sup>	No	Yes
Zinc, copper	Yes	Possibly <sup>†</sup>	Yes
Selenium	No <sup>‡</sup>	No <sup>‡</sup>	No <sup>‡</sup>

\*If the patient is having 3-monthly intramuscular injections of vitamin B12, there may be no need for annual checks.

<sup>†</sup>If the patient has had a long-limb bypass or has symptoms of steatorrhoea or night blindness.

<sup>‡</sup>Measure when there are deficiency concerns (see Top Tip Seven).

particularly relevant in people who undergo gastric bypass or duodenal switch. It is crucial that medications for comorbidities are closely monitored and adjusted as discussed in Top Tip Four. Other medication considerations are shown in *Box 1* (Thomas and Taub, 2011).

**Top Tip Six**

**Bariatric surgery patients require lifelong annual blood tests, including micronutrient monitoring**

Encourage patients to attend their annual blood tests. Use patient record reminders, where available, to prompt that annual blood testing is required, depending on practice computer systems. An annual audit of patient monitoring is recommended to ensure that correct follow-up is being performed. The recommended tests are shown in *Table 1* (Heber et al, 2010; Mechanick et al, 2013; O’Kane et al, 2014a; 2014b).

Note that people who undergo gastric banding require annual full blood counts, urea and electrolyte tests, and liver function tests, but these should be carried out earlier if there are any concerns regarding the band.

**Top Tip Seven**

**Be aware of potential nutritional deficiencies that may occur and their signs and symptoms**

Liaise with the local Tier 3 or 4 specialist unit regarding any deficiencies and their treatment. In particular, patients are at risk of anaemia and vitamin D deficiency, as well as protein malnutrition and other vitamin and micronutrient deficiencies. If a patient is deficient in one nutrient they are likely to be deficient in others as well, so it is advised to screen for these. Clinicians should be aware of the potential nutritional deficiencies listed in *Table 2* (Heber et al, 2010; Mechanick et al, 2013; O’Kane et al, 2014a; 2014b).

**Top Tip Eight**

**Ensure the patient is taking the appropriate lifelong nutritional supplements as recommended by the bariatric centre**

Patients will need lifelong supplements, and guidance should have been given by the bariatric unit on discharge, as the supplementation required depends on both the procedure and the patient’s individual requirements. Examples of the usual minimal supplements are listed in *Table 3* for each type of procedure; however, see O’Kane (2014b) for full guidance. If guidance on supplements has not been given on discharge, we would advise clinicians to always liaise with the Tier 4 bariatric unit in the first instance.

**Table 2. Potential nutritional deficiencies post-bariatric surgery (Top Tip Seven).**

Nutritional deficiency	Notes
Protein malnutrition	May present as oedema several years post-surgery Needs urgent referral back to the bariatric team
Anaemia	Iron deficiency (rule out and investigate other potential causes, such as blood loss) Folate deficiency Vitamin B12 deficiency Less common deficiencies such as zinc, copper and selenium are a potential cause of unexplained anaemia Some patients may need parenteral iron or blood transfusions if oral iron does not correct the deficiency
Calcium and vitamin D deficiency	May result in secondary hyperparathyroidism (it is recommended that vitamin D should be replaced as per National Osteoporosis Society guidance [Francis et al, 2013])
Vitamin A deficiency	Suspect in patients with changes in night vision Patients with steatorrhoea or those who have had a duodenal switch are at high risk
Zinc, copper and selenium deficiency	Unexplained anaemia, poor wound healing, hair loss, neutropenia, peripheral neuropathy and cardiomyopathy are potential symptoms Ask about over-the-counter supplements and liaise with bariatric unit, as zinc supplements can induce copper deficiency and vice versa
Thiamine deficiency	Suspect in patients with poor intake, persistent regurgitation or vomiting This may be caused by anastomotic stricture in the early postoperative phase, food intolerances or an overtight band Start thiamine supplementation immediately and refer urgently to the local bariatric unit due to risk of Wernicke's encephalopathy Do not give sugary drinks as they may precipitate Wernicke's encephalopathy

**Top Ten Tips – at a glance**

1. Keep a patient register.
2. Patients should check their weight regularly and attend an annual diet review.
3. Severe gastrointestinal signs require emergency readmission to surgery.
4. Continue to monitor obesity comorbidities and mental health.
5. Review medications.
6. Lifelong annual blood tests are required.
7. Be aware of the nutritional deficiencies that can occur.
8. Ensure that patients take the appropriate nutritional supplements.
9. Discuss contraception and try to avoid pregnancy in the first 12–18 months.
10. Supplement regimens should be altered in cases of subsequent pregnancy.

**Top Tip Nine**

**Discuss contraception – ideally pregnancy should be avoided for at least 12–18 months post-surgery**

A long-acting, reversible contraceptive of the patient's choice would be appropriate. Oral contraception and Depo-Provera are not recommended because of issues with absorption and weight gain, respectively.

**Top Tip Ten**

**If a patient should plan or wish to become pregnant after bariatric surgery, alter their nutritional supplements to one suitable during pregnancy**

Additional monitoring and supplementation may be required. Inform the local bariatric unit

(ideally prior to conception) so that the patient can be reviewed by a bariatric dietitian. In addition, people who undergo gastric band surgery may need their band adjusting on becoming pregnant to allow good nutritional intake and fetal growth. The obstetric team should also be informed of the patient's history of bariatric surgery as soon as possible, as there may be a higher rate of first-trimester miscarriages in this cohort of patients (Guelinckx et al, 2009). Recommended changes to treatment before and during pregnancy are as follows (Duke and Finer, 2012; O'Kane et al, 2014a; 2014b):

- Change nutritional supplement to one that is appropriate in pregnancy, such as Pregnacare or Boots Pregnancy Support.

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**Table 3. Typical minimal supplements required after bariatric surgery (Top Tip Eight).**

Bariatric procedure	Recommendations
Gastric band	Although no supplements should be needed for this group of patients, it is still recommended that they take a comprehensive multivitamin and mineral supplement, such as Sanatogen A–Z or Forceval, once a day
Gastric bypass	Multivitamin and mineral supplement (e.g. any over-the-counter comprehensive multivitamin preparation twice daily or Forceval once daily)  Vitamin B12 injections every 3 months  Calcium and vitamin D (e.g. Adcal D3 Forte, Calceos or Calcichew-D3 Forte) plus additional vitamin D as required  Iron (start at 200 mg once daily and monitor as the dose may need to be increased), especially for women of menstruating age
Sleeve gastrectomy	Multivitamin and mineral supplement (e.g. any over-the-counter comprehensive multivitamin preparation twice daily or Forceval once daily)  Vitamin B12 injections every 3 months  Calcium and vitamin D (e.g. Adcal D3 Forte, Calceos or Calcichew-D3 Forte) plus additional vitamin D as required  Possibly iron (start at 200 mg once daily and monitor as the dose may need to be increased), especially for women of menstruating age
Duodenal switch	As for gastric bypass, but additional fat-soluble vitamins (A, D, E and K) are also needed, as well as, possibly, zinc and copper; liaise with specialist local services for advice regarding these supplements

- If a proton pump inhibitor is needed, omeprazole is recommended.
- Continue vitamin D supplementation as indicated by vitamin D levels and as per National Osteoporosis Society guidance (Francis et al, 2013).
- Continue vitamin B12 injections in those currently receiving them, or monitor levels in those not receiving them (for sleeve gastrectomy patients).
- Once-daily iron 200 mg is recommended.
- Once-daily folic acid 5 mg is recommended.

**Conclusions**

The long-term management of an increasing number of people who undergo bariatric surgery is likely to involve primary care clinicians, and guidance on how to manage these patients safely and appropriately within primary care is essential. Here, we have presented guidance for the follow-up of these people by non-specialist healthcare professionals working in primary care, and it is

hoped that this guidance from the RCGP Nutrition Group will aid the shared care of these patients. ■

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**Further information**

The printable short leaflet and extended versions of the *Ten Top Tips* guidance are available on the RCGP nutrition web pages, together with the poster outlining referral criteria for post-surgery complications.

The short leaflet is available at:

<http://bit.ly/1zzyfxp>

The extended version is available at:

<http://bit.ly/1wVfN13>

The poster outlining both urgent and routine indications for referral back to specialist services is available at:

<http://bit.ly/1Ddt6yT>

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