DERBYSHIRE JOINT AREA PRESCRIBING COMMITTEE (JAPC)

Monitoring and Medication after Bariatric Surgery

Currently there is no national agreement on biochemical monitoring and replacement of essential micronutrients post bariatric surgery. JAPC has aligned recommendations in line with Sheffield Teaching Hospitals.

The term 'bariatric surgery' covers three main procedures:

- Adjustable gastric bands (AGB)
- Sleeve gastrectomy (SG)
- Roux-en-Y gastric bypass (GBP)

Bariatric procedures affect nutritional intake and some procedures may affect the absorption of macronutrients and/or micronutrients (see appendix 1). **Long-term nutritional monitoring and follow-up are essential components of all bariatric surgical services.** Patients will be required to stay on lifelong nutritional supplements and have lifelong monitoring of their nutritional status[1] after surgery.

For the first two years after surgery, patients are actively supervised and supported by bariatric service follow-ups with some monitoring being carried out in primary care. After discharge from the bariatric service GPs will continue to follow the discharge care plan provided. See appendix 2 for specialist responsibilities.

1. Nutritional supplement

After all types of bariatric surgeries, patients will be recommended to self-care and purchase over the counter 'complete' multivitamins to take lifelong.

- These can be purchased over the counter from pharmacies, supermarkets, or local health stores.
- For bypass and sleeve gastrectomy, supplements should contain a minimum of 2mg copper/day however, most over the counter products such as Sanatogen A-Z contain only 1mg of copper, so two tablets per day will be needed[2].
- Sheffield Teaching Hospitals (STH) advises all bariatric surgery patients to take two OTC multivitamins daily.

Hydroxocobalamin (Vitamin B_{12}) intramuscular injection 1mg every 3 month is recommended following bypass & sleeve gastrectomy, and should be continued and prescribed lifelong.

2. Monitoring requirements

The bariatric surgery service will continue to follow up patients for 24 months post-op. NICE clinical guideline 189 recommends that after discharge from bariatric surgery service follow-up, all people are offered at least **annual monitoring** of nutritional status and appropriate supplementation according to need following bariatric surgery[3]

It is important to check compliance with OTC multivitamin as part of the annual monitoring.

GPs will be advised by the bariatric surgery service about which blood tests need to be done annually, usually as per BOMSS GP guidance[1] for the management of nutrition following bariatric surgery (see table 1).

In addition to below GP may be requested to carry out annual vitamin B_{12}, Glucose/HbA1c, thyroid function test, lipid profile, Zinc/Copper/Selenium monitoring as standard.

Table 1: Annual monitoring requirements

Blood test	Gastric bands	Sleeve gastrectomy	Gastric bypass
U&E	Yes	Yes	Yes
Liver function test	Yes	Yes	Yes
Full blood count	Yes	Yes	Yes
Ferritin	Yes	Yes	Yes
Folate	Yes	Yes	Yes
Vitamin B12	No	Yes unless patient is having 3 monthly IM hydroxocobalamin	Yes unless patient is having 3 monthly IM hydroxocobalamin
Calcium	Yes	Yes	Yes
Vitamin D	Yes	Yes	Yes
Parathyroid hormone	Yes	Yes	Yes
Vitamin A	No	No	Measure if concerns regarding steattorrhoea or symptoms of deficiency eg. night blindness
Zinc, copper	No	Measure when concerns eg. unexplained anaemia, hair loss, pica, neutropaenia	Yes and measure when concerns
Selenium	No	Monitor if unexplained fatigue, anaemia, metabolic bone disease, chronic diarrhoea or heart failure	Monitor if unexplained fatigue, anaemia, metabolic bone disease, chronic diarrhoea or heart failure
HbA1c	Monitor as appropriate in patients with preoperative diabetes		
Lipid profile	Monitor in those with dyslipidaemia		

3. Treatment for nutritional deficiency

Any nutritional deficiency prior to bariatric surgery should be assessed and treated by bariatric services. This section outline the standard treatment recommended when deficiencies are detected in post bariatric surgery blood monitoring.

It is essential to ensure that patient is taking appropriate OTC multivitamin supplement.
Appropriate dietary advice should always be given as first line alongside treatment/ supplementation of nutritional deficiency - see also NHS Choices website 'Vitamins and minerals'.
For maintenance treatment (following treatment for deficiency) patients should purchase over the counter (OTC) supplement.

Table 2 - treatment recommended following detection of **deficiency** (local formularies apply)

	Derby and Sheffield
Ferritin	Advise to eat iron-rich foods alongside foods high in vitamin C. See local formulary. Continue for 3 months after deficiency corrected.
Calcium	Encourage dietary sources of calcium. See local formulary
Vitamin D	See local formulary. Maintenance dose should be continued and purchased OTC. For vitamin D insufficiency encourage self-care with OTC vitamin D. JAPC positional statement
Folate	Encourage folate rich foods or self-care with OTC folic acid 400 microgram daily If plans to conceive prescribe 5mg daily
Zinc/ copper	Forceval one twice daily
Selenium	2-3 Brazil nuts per day or OTC supplement (eg. Selenium ACE)

If any nutritional blood results are abnormal, patients are likely to require a dietary assessment together with advice regarding additional/alternative nutritional supplement. Patients with micronutrient deficiencies following a gastric bypass or sleeve gastrectomy are likely to require supplementation lifelong. If deficiency continues despite compliance with additional recommended supplementation refer to bariatric dietician.

4. Other prescribed medicines

Short courses of post-operative treatments eg. analgesia will be provided in full by the hospital pharmacy. GPs may be asked to continue medications initiated post bariatric surgery for specified length of time. Follow discharge instructions.

Table 3- other prescribed medication

Derby	Sheffield
Omeprazole 20mg capsules daily for 12 months duration Ursodeoxycholic acid 500mg tablets twice daily for 6 months duration	Lansoprazole capsules for 3 months post-surgery (fastab form usually only needed for 4 weeks)

As part of the medicines optimisation process post-surgery, it is important to consider how bariatric surgery can affect the medicines a patient is taking and also the effects of that particular medicine on the patient. Bariatric surgery can cause changes in the pharmacokinetics of medicines as they go through the altered digestive system[1]. A useful resource to aid the medicines optimisation process can be found here.

5. Liquid formulations

Derby: Patients will **not** routinely be asked to change their medication from tablet to liquid form either before or after surgery. If any medicines are required in liquid form these will be supplied by the hospital and should be switched to the standard formulation at 6 weeks post-surgery (or at the time solid food can be tolerated).

Sheffield: Where possible, tablets should be changed to a liquid/dissolvable/crushable form prior to admission to hospital. This is only usually required for 4-6 weeks post-surgery.

6. Further information

Derby- The East-Midlands Bariatric & Metabolic Institute (EMBMI) page
https://www.uhdb.nhs.uk/service-bariatric-surgery-weight-loss
Discuss with bariatric service if patient is pregnant or there are any concerns about surgery or nutritional status as a result of surgery.

Sheffield Teaching Hospital Bariatric surgery page http://www.sth.nhs.uk/services/a-z-of-services?id=239
Includes patient information, referrals, and resource for health care professionals.
Specialist Dietitian: Hannah Kershaw/Clinical Nurse Specialist: Liz Govan – 0114 2269083

Reference

1. British Obesity & Metabolic Surgery Society, GP guidance: Management of nutrition following bariatric surgery; http://www.bomss.org.uk/nutritional-guidelines/ (accessed January 2016)
2. BMJ 2016; 352:i945 – Primary care management of patients after weight loss surgery (Published 10 March 2016)
3. NICE Obesity: identification, assessment and management of overweight and obesity in children, young people and adults; http://www.nice.org.uk/guidance/cg189/chapter/1-recommendations (accessed March 2015)
4. PrescQIPP bulletin 54, Bariatric surgery patients and their medicines; http://www.prescqipp.info/bariatric-patients-their-medicines/finish/226-bariatric-patients-and-their-medicines/1290-bulletin-54-bariatric-surgery-patients-and-their-medicine (accessed March 2015)

Consultees

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Document Updates	Date

Appendix 1

Impact of surgery on nutrition

Surgical procedure	Impact on nutrition
Gastric band	No impact on absorption. Over tight gastric band affects nutritional quality of diet including protein and iron
Sleeve gastrectomy	May be some impact on absorption including iron and vitamin B12
Gastric bypass	Impacts on absorption of iron, vitamin B12, calcium and vitamin D Long limb bypasses may affect absorption of protein, fat, vitamin A and trace elements in addition
Duodenal switch	Impacts on absorption of protein, fat, calcium, fat soluble vitamins A, D, E and K, zinc & trace elements

GP Guidance: Management of nutrition following bariatric surgery August 2014 http://www.bomss.org.uk/wp-content/uploads/2014/09/GP_Guidance-Final-version-1Oct141.pdf

Appendix 2

Bariatric service follow-up as per recommended in NICE CG189 Obesity [2014]

Offer people who have had bariatric surgery a follow-up care package for a minimum of 2 years within the bariatric service. This should include:

- monitoring nutritional intake (including protein and vitamins) and mineral deficiencies
- monitoring for comorbidities
- medication review
- dietary and nutritional assessment, advice and support
- physical activity advice and support
- psychological support tailored to the individual
- information about professionally-led or peer-support groups.

After discharge from bariatric surgery service follow-up, ensure that all people are offered at least annual monitoring of nutritional status and appropriate supplementation according to need following bariatric surgery, as part of a shared care model of chronic disease management.