

# South East London Integrated Medicines Committee (SEL IMOC) Guidelines for Medicines Optimisation in Bariatric and Metabolic Surgery

Guidelines for medication management in bariatric patients during the perioperative period

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**Approval date:** July 2024

**Review date:** July 2026 (or sooner if evidence or practice changes)

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## Guidelines for medication management in bariatric patients during the perioperative period

### 1. Introduction and scope

This guidance is to support both primary & secondary care in the management of patients undergoing bariatric surgery. Information that is considered by the specialist team is included in this document to provide background on decision-making and support continued patient management by either secondary or primary care teams.

#### Roles of primary care

- Annual surveillance blood tests to detect haematinics, minerals and vitamin deficiencies
- For patients with known diabetes in remission post bariatric surgery, to continue HbA1c monitoring annually
- For patients with established diabetes complications, continue annual surveillance.
- To prescribe post-operative Vitamin & mineral supplementation two weeks post operation (see Appendix 1)
- To continue post discharge medication (see Appendix 1)

Patients admitted for bariatric surgery are often receiving medication for the management of acute or chronic conditions. Bariatric surgery can affect specific sites involved in drug absorption and metabolism, potentially affecting pharmacological management of individuals who have undergone surgery<sup>1</sup>. Reduced absorption of medications can lead to withdrawal symptoms, adverse effects or worsen disease; increasing the risk of poor surgical outcomes.

Physiological changes post op	Type of surgery			Implications
	Band	Gastrectomy	Bypass	
Reduction in surface area of stomach	x	✓	✓	<ul style="list-style-type: none"> <li>• Drugs administered in aqueous solution more rapidly absorbed than oily solutions, suspensions, or solids.</li> <li>• Particular caution with drugs with narrow therapeutic index and sustained/modified release preparations e.g. Warfarin</li> <li>• Only limited number of drugs are absorbed through the stomach wall</li> </ul>
Reduced gastric volume	✓	✓	✓	<ul style="list-style-type: none"> <li>• Solid oral medicines may get stuck in outlet (outlet only 1cm) and remain undissolved in gastric pouch e.g large capsules</li> <li>• Consider volumes of liquid medicines (volume of stomach reduced to 30-50ml)</li> <li>• Increased potential of damage to gastric mucosa e.g. Bisphosphonates, NSAIDs</li> </ul>
Bypass of main area of drug absorption	x	x	✓	<ul style="list-style-type: none"> <li>• For drugs absorbed throughout GIT: reduced time for absorption e.g. digoxin, amiodarone</li> <li>• Bypass of main drug absorption areas (duodenum and proximal jejunum) e.g. Pregabalin</li> <li>• Disrupted enterohepatic circulation may result in unpredictable reductions in bioavailability e.g. antibiotics</li> <li>• Decreased bioavailability of drugs with long absorptive phases</li> </ul>

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				<ul style="list-style-type: none"> <li>• Bypassing the upper small intestine reduces the mixing of drugs with bile salts thus lipophilic drugs will have decreased absorption</li> </ul>
pH changes	x	✓	✓	<ul style="list-style-type: none"> <li>• May affect bioavailability of drugs/formulations whose absorption is pH-dependent. (New pH &gt;4 stomach)</li> <li>• This increase in pH means increased solubility of more basic (higher pH) drugs and decreased solubility of acidic (lower pH) drugs. This in turn affects absorption. Higher pH can also alter the disintegration of some solid formulations (increase or reduce) e.g. warfarin</li> </ul>
Resultant weight loss	✓	✓	✓	<ul style="list-style-type: none"> <li>• Drugs that are highly lipid-soluble will have an altered volume of distribution.</li> <li>• Close monitoring essential for drugs with a narrow therapeutic index</li> <li>• Dose adjustment may be needed e.g. Beta-blockers</li> </ul>

In addition to this drug handling will also be affected by the following and should be considered

- Age
- Concurrent disease
- Gastrointestinal contents
- Drug physiochemical properties e.g. solubility, stability, particle size
- Renal function
- Liver function

**This guideline is not intended to give specific advice on every individual drug.**

Specific drug information may be sourced from the manufacturer's Summary of Product Characteristics (SPC) at: [www.medicines.org.uk/emc](http://www.medicines.org.uk/emc) the current BNF at: [www.medicinescomplete.com/mc/bnf/current/](http://www.medicinescomplete.com/mc/bnf/current/) or via Pharmacy.

Most drugs are safe and appropriate to continue, however some should be reviewed pre and/or post-operatively and adjusted or reintroduced once any risk of adverse effect has subsided. Individual specialties may have specific guidance for their area (e.g. Cardiology, neurology, HIV, Haematology). Please refer to these teams or pharmacy where appropriate.

It is assumed that all medicines referred to are being given for licensed indications and patients are on maintenance doses which are being monitored on a regular basis.

If not addressed in this guideline, advice may be sought from the ward clinical pharmacist for alternative methods of administration and any equivalences which may need considering when switching between routes/presentations.

The supplementation recommendations in the guideline are **NOT intended for pregnant patients**. Patients that are pregnant or planning pregnancy should have their supplementation regimen reviewed with a bariatric dietician.

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## 2. Pre-assessment of patients

A comprehensive review of a patient's current medication is essential at pre-assessment clinic, to identify any possible interactions or complications which may prevent planned surgery from taking place.

Advice may be sought from the surgical pharmacy team regarding individual medications or regimens as needed. **Patients identified with complex drug regimens should be referred to pharmacy prior to admission, wherever possible.**

Early involvement of specialist teams will allow medication related problems to be identified and managed safely before and after surgery (e.g. switches, dose adjustments and any additional monitoring).

All information regarding managing medications must be given to the patient to ensure compliance.

Information about medication changes should be communicated to the patients GP as appropriate.

Patients may be advised of post-operative supplementation regimen, but these do not need to start until 2 weeks post operation date.

## 3. Pre-operative medication management

Pre-operative assessors should refer to individual acute trust guidelines.

- Diabetic medications - refer to Diabetic team on admission (see separate acute trust guideline)

## 4. Post-operative medication considerations

If unsure, please contact surgical team, pharmacist, or relevant speciality for advice.

Please note crushing tablets or opening capsules would be an 'off label' use of the medication.

Post op considerations	Action to be taken and rationale	Re-start considerations
<b>Solid dosage forms</b>	<p>Modified release and enteric coated drugs should be avoided.</p> <p>Patients might require that their tablets are crushed or switched to dispersible, chewable or soluble tablets or to a liquid form (to assist tolerability and absorption in the immediate post-operative period and liquid diet stage.)</p> <p>It may be preferable to use liquids/soluble preps: but consider total volumes - dose may need to be staggered</p> <p>Care with sugar content of liquids: risk of Gastric Dumping. Use sugar free where possible.</p> <p>Wait for fizzing to subside before giving soluble preps: risk of gas build-up. High sodium content, avoid in hypertensive patients.</p> <p>If no suitable licensed formulation is available then consideration must be given to either prescribing an alternative medicine, temporarily suspending the prescription or to prescribing an unlicensed liquid formulation. If an unlicensed liquid formulation is prescribed the patient's need for it should be reviewed regularly with the aim of reverting to a licensed preparation as soon as possible.</p>	<p>Larger tablets (&gt;10mm) may need to be crushed or split.</p> <p>Capsules may be opened. Check with pharmacy.</p> <p>Patient consultation</p> <p>Communicate changes with GP, including review dates.</p>

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<p><b>Nil by mouth period</b></p>	<p>Further information on management of medicines in the peri-procedure period: see individual acute trust guidelines.</p> <p>Patients may remain NBM post op until a Gastrograffin and/or methylene blue test has been carried out to detect any leaks.</p>	<p>Patients can have medication with sips of water, after consideration of formulation and route.</p>
<p><b>Diabetes medication</b> e.g. <i>Insulins, Metformin, Sulphonylureas, SGLT-2 Inhibitors (-flozins), GLP-1 Agonists (-enatide/-glutide)/DDP4 inhibitors</i></p>	<p><b>Insulin should never be discontinued in patients with Type 1 diabetes.</b> Please refer to the Diabetes team on admission.</p> <p>All patients with diabetes are reviewed during admission with endocrinology advice, and post-operative medication review undertaken.</p>	<p>Metformin tablets can be split but are difficult to crush. Absorption is also erratic post op.</p> <p>Monitor capillary blood glucose.</p>
<p><b>Gastrointestinal protection</b></p>	<p>All patients should be prescribed proton pump inhibitors (PPI) post op to reduce the risk of mucosal ulceration.</p> <p>Avoid drugs that potentially damage gut mucosa, e.g. non-steroidal anti-inflammatory drugs (NSAIDs), bisphosphonates and aspirin.</p>	<p>-PPI can start immediately post op as per protocol (appendix 1). Continue for 3 months post -op.</p> <p>-For alternative to bisphosphonates available consult local guidance, or refer for specialist input as appropriate.</p>
<p><b>VTE prophylaxis (VTEP)</b></p>	<p>Bariatric surgery patients are a high-risk group for VTE. In patients with medical grade obesity (BMI &gt;30 kg/m<sup>2</sup>), weight-based prophylactic LMWH dosing is preferable.</p>	<p>Once haemostasis established.</p> <p>As per trust thromboprophylaxis guidelines and post-op plan.</p>
<p><b>Micronutrient malabsorption</b></p>	<p>In gastric bypass the sites of absorption for some vitamins and minerals is bypassed, for example calcium is absorbed in the duodenum. The result is deficiency of the vitamin or mineral. Substituting calcium carbonate with calcium citrate can increase calcium absorption in these patients.</p> <p>Deficiencies in fat soluble vitamins, i.e. vitamins A, D, E, K, occur due to fat malabsorption in gastric bypass patients. These patients will need life-long supplementation of these vitamins.</p> <p>Parietal cells are reduced in gastric bypass and gastric sleeve patients due to the loss of stomach. This means that less intrinsic factor is secreted so absorption of vitamin B12 is reduced. Three monthly vitamin B12 injections can be an effective alternative route of administration.</p>	<p>As per protocol (appendix 1 )</p> <p>To start at pureed diet stage. (normally 2 weeks post op)</p> <p><b>Note: Dietetic supplements can interact with prescribed medication</b></p>
<p><b>Bile salt malabsorption</b></p>	<p>Patients are at risk of gallstones. Ursodeoxycholic acid should be advised for 6 months in gastrectomy and bypass patients.</p>	<p>Started by GP 2 weeks post op.</p> <p>Not required if patient has had a cholecystectomy</p>

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## 5. General recommendations post discharge

The effects of bariatric surgery can vary between patients but some general advice for managing medication are as follows:

- Review patient's medication regularly. PCN/Practice Pharmacists and GPs may be best placed to carry out these reviews.
- Monitor for decreased efficacy of medications.
- Monitor for side effects and signs of toxicity, a possible result of increased bioavailability.
- If efficacy is reduced, consider change of formulation or route, or alternative medications with more favourable pharmacokinetics.
- Required doses of medications for chronic conditions, e.g. antihypertensives and diabetic medication, may decrease as weight loss occurs so these medicines should be regularly evaluated.
- Discuss any drug changes with the patient and communicate them to other health professionals involved in their care.

## 6. Useful resources

- Consult the "NEWT Guidelines" (visitor's site) for advice and practical information on whether a tablet can safely be crushed or a capsule opened. Subscription is required for drug specific information. <http://www.newtguidelines.com/visitor.html>
- White, R. and Bradnam, V. (2015) Handbook of Drug Administration via Enteral Feeding Tubes. Third Edition. Pharmaceutical Press, London. Subscription required for electronic version via Medicines Complete
- UKMi's Medicines Q&A published in July 2013 on 'What are the therapeutic options for patients unable to take solid dosage forms?' includes a table of alternative formulations arranged according to commonly prescribed drug classes.
- Electronic medicines compendium for Summary of Product Characteristics (SPCs) [www.medicines.org.uk/emc](http://www.medicines.org.uk/emc)
- MHRA for SPCs not listed on the Electronic Medicines Compendium <https://products.mhra.gov.uk/>
- British National Formulary (BNF) [www.medicinescomplete.com/mc/bnf/current/](http://www.medicinescomplete.com/mc/bnf/current/)
- NHS – Gastrectomy [www.nhs.uk/conditions/gastrectomy](http://www.nhs.uk/conditions/gastrectomy)
- [BOMSS GP Hub](#)

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## Appendix 1 Post Operative Bariatric Surgery Guidelines

	Lap gastric band	Lap sleeve gastrectomy	Lap Roux-en-y gastric bypass	Lap Biliopancreatic diversion +/- duodenal switch	One-anastomosis gastric bypass/ Mini Gastric Bypass
<b>Diet</b>	Free fluids: week 1&2 Pureed Diet : week 3&4 Soft Diet: Week 5&6 Normal diet from week 7	Free fluids: week 1&2 Pureed diet : week 3&4 Soft Diet: Weeks 5-8 Normal diet from week 9	Free fluids: week 1&2 Pureed diet : week 3&4 Soft Diet: Weeks 5-8 Normal diet from week 9	Free fluids: week 1&2 Pureed diet : week 3&4 Soft Diet: Week 5-8 Normal diet from week 9	Free fluids: weeks 1-4 Puree diet: week 5&6 Soft diet: weeks 7&8 Normal from week 9, or as stipulated by surgeon
<b>Medications taken on discharge</b>	Analgesia as per post op plan**	Analgesia as per post op plan** 30mg Lansoprazole Fastabs OD (or alternative PPI cover) (3/12) Ursodeoxycholic acid 750mg ON (to start when on pureed diet) (6/12) *	Analgesia as per post op plan** 30mg Lansoprazole Fastabs OD (or alternative PPI cover) (3/12) Ursodeoxycholic acid 750mg ON (to start when on pureed diet) (6/12) *	Analgesia as per post op plan** 30mg Lansoprazole Fastabs OD (or alternative PPI cover) (3/12) Ursodeoxycholic acid 750mg ON (to start when on pureed diet) (6/12) *	Analgesia as per post op plan**  30mg Lansoprazole Fastabs OD (or alternative PPI cover) (3/12)  Ursodeoxycholic acid 750mg ON (to start when on pureed diet) (6/12) *
<b>Vitamin &amp; Mineral supplements</b>  <b>To start supplementation 2 weeks post op</b>	Santogen A-Z † 2 x daily <i>(for women under 55 without hysterectomy or CKD patients with eGFR less than 45ml/min prescribe Forceval 1 x daily)</i>  Colecalciferol 2 X 1000 units tablets per day (Stexerol-D3®)	Santogen A-Z † 2 x daily <i>(for women under 55 without hysterectomy or CKD patients with eGFR less than 45ml/min prescribe Forceval 1 x daily)</i>  Colecalciferol 2 X 1000 units tablets per day (Stexerol-D3®)  200mg ferrous sulphate* [2x 200mg – for women who menstruate]  1mg Hydroxocobalamin IM injection once every 3 months	Santogen A-Z † 2 x daily <i>(for women under 55 without hysterectomy or CKD patients with eGFR less than 45ml/min prescribe Forceval 1 x daily)</i>  Colecalciferol 2 X 1000 units tablets per day (Stexerol-D3®)  200 mg ferrous sulphate* [2x 200mg – for women who menstruate]  1mg Hydroxocobalamin IM injection once every 3 months	Santogen A-Z † 2 x daily <i>(for women under 55 without hysterectomy or CKD patients with eGFR less than 45ml/min prescribe Forceval 1 x daily)</i>  Colecalciferol 2 X 1000 units tablets per day (Stexerol-D3®)  200mg ferrous sulphate* [2x 200mg – for women who menstruate]  1mg Hydroxocobalamin IM injection once every 3 months  100 units – Vitamin E Capsule (E-caps or Valuepack Vit E)  Vitamins A&D - 3 capsules each day  Menadiol 10mg Tablet-once each day	Santogen A-Z † 2 x daily <i>(for women under 55 without hysterectomy or CKD patients with eGFR less than 45ml/min prescribe Forceval 1 x daily)</i>  Colecalciferol 2 X 1000 units tablets per day (Stexerol-D3®)  200mg ferrous sulphate* [2x 200mg – for women who menstruate]  1mg Hydroxocobalamin IM injection once every 3 months  <b>If limb length &gt;150cm add:</b> 100 units – Vitamin E Capsule (E-caps or Valuepack Vitamin E)  Vitamins A&D - 3 capsules each day  Menadiol 10mg Tablet-once each day

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	Lap gastric band	Lap sleeve gastrectomy	Lap Roux-en-y gastric bypass	Lap BPD +/- duodenal switch	OAGB/MGB
<b>CLO Test</b>	N/A	<b>If Clo +ve</b> Eradication therapy (when on pureed diet)			
<b>VTEP ***</b> <100kg	Enoxaparin 40mg OD 4 weeks post op ( <i>full supply given on discharge</i> )				
100kg - 150kg	Enoxaparin 80mg OD 4 weeks post op (split dose for 3 days or until haemostasis achieved) ( <i>full supply given on discharge</i> )				
>150kg	Enoxaparin 120mg OD 4 weeks post op (split dose for 3 days or until haemostasis achieved) ( <i>full supply given on discharge</i> )				
<b>Blood tests (Hospital) (Pre operative – please ensure taken before liver shrinkage or pre operative diet started)</b>	U&E, LFT, bone profile, FBC, ferritin, folate, Vit D, PTH, HbA1c, lipid profile, renal function and vitamin B12  Zinc, copper, selenium Vitamin A (where deficiency suspected pre-operatively)  <u>If T2DM</u> : fasting insulin, serum fasting glucose [unless using exogenous insulin], c-peptide  Cytokine panel and CRP	U&E, LFT, bone profile, FBC, ferritin, folate, Vit D, PTH, HbA1c, lipid profile, renal function and vitamin B12  Zinc, copper, selenium Vitamin A (where deficiency suspected pre-operatively)  C-peptide, fasting insulin, serum fasting glucose [unless using exogenous insulin]  Cytokine panel and CRP	U&E, LFT, bone profile, FBC, ferritin, folate, Vit D, PTH, HbA1c, lipid profile, renal function and vitamin B12  Zinc, copper, selenium Vitamin A (where deficiency suspected pre-operatively)  C-peptide, fasting insulin, serum fasting glucose [unless using exogenous insulin]  Cytokine panel and CRP	U&E, LFT, bone profile, FBC, ferritin, folate, Vit D, PTH, HbA1c, lipid profile, renal function and vitamin B12  Zinc, copper, selenium Vitamin A  C-peptide, fasting insulin, serum fasting glucose [unless using exogenous insulin]  Cytokine panel and CRP	U&E, LFT, bone profile, FBC, ferritin, folate, Vit D, PTH, HbA1c, lipid profile, renal function and vitamin B12  Zinc, copper, selenium Vitamin A  C-peptide, fasting insulin, serum fasting glucose [unless using exogenous insulin]  Cytokine panel and CRP
<b>Blood tests (Hospital/GP) (Post-operative)</b>  These to be conducted up to 24 months post-op  If face to face appointments, then hospital will conduct	<b>Annual</b> U&Es, LFT, bone profile, FBC, ferritin, folate, Vit D, PTH, lipid profile and vitamin B12  <b>If T2DM:</b> fasting insulin§, c-peptide§, Cytokine profile§, serum fasting glucose [unless using exogenous insulin], CRP, HbA1c	<b>3,6,12 months then annually</b> U&Es, LFT, bone profile, FBC, ferritin, folate, Vit D, PTH, HbA1c, lipid profile and vitamin B12  <b>6 and 12m only [if T2DM pre op]</b> C-peptide§, fasting insulin§, Cytokine profile§, fasting serum glucose, HbA1c	<b>3,6,12 months then annually</b> U&Es, LFT, bone profile, FBC, ferritin, folate, Vit D, PTH, HbA1c, lipid profile and vitamin B12  <b>6 and 12m only [if T2DM pre op]</b> C-peptide§, fasting insulin§, Cytokine profile§, fasting serum glucose, HbA1c, CRP	<b>3,6,12 months then annually</b> U&Es, LFT, bone profile, FBC, ferritin, folate, Vit D, PTH, HbA1c, lipid profile and vitamin B12  <b>6 and 12m only [if T2DM pre op]</b> C-peptide§, fasting insulin§, Cytokine profile§, fasting serum glucose, HbA1c, CRP	<b>Limb length ≤ 150cm:</b> See advice for Lap Roux-en-Y <b>Limb length &gt;150cm:</b> Malabsorptive. See advice for Lap BPD/DS  <b>6 and 12m only [if T2DM pre op]</b> C-peptide§, fasting insulin§, Cytokine profile§, fasting serum glucose, HbA1c, CRP

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<p><b>If virtual appointments, then GP to conduct</b></p> <p><b>If patient is discharged from bariatric service prior to 24 months post op, then GP to conduct blood tests</b></p>		<p><b>Annually</b> Zinc, copper, selenium, CRP, cytokine panel</p>	<p><b>Annually</b> Zinc, copper, selenium, CRP, cytokine panel</p>	<p><b>Annually (minimum)</b> Vit E, Vitamin K, PIVKA-II, Vitamin A, Zinc, copper, selenium, CRP, cytokine panel</p>	<p><b>Annually (minimum)</b> Vit E, Vitamin K, PIVKA-II, Vitamin A, Zinc, copper, selenium, CRP, cytokine panel</p>
<p><b>Blood tests (GP) (Post operative)</b></p> <ul style="list-style-type: none"> <li>• <b>24 months post op</b></li> <li>• <b>These to be conducted annually</b></li> </ul>	<p><u>Annually</u> U&amp;Es, LFT, bone profile, FBC, ferritin, folate, Vit D, PTH and vitamin B12</p> <p>If pre-op T2DM: HbA1c</p> <p>If pre-op lipidaemia: lipid profile</p>	<p><u>Annually</u> U&amp;Es, LFT, bone profile, FBC, ferritin, folate, Vit D, PTH, vitamin B12, Zinc, copper, selenium and CRP</p> <p>If T2DM: HbA1c</p> <p>If pre-op lipidaemia: lipid profile</p>	<p><u>Annually</u> U&amp;Es, LFT, bone profile, FBC, ferritin, folate, Vit D, PTH, vitamin B12, Zinc, copper, selenium and CRP</p> <p>If T2DM: HbA1c</p> <p>If pre-op lipidaemia: lipid profile</p>	<p><u>Annually</u> U&amp;Es, LFT, bone profile, FBC, ferritin, folate, Vit D, PTH, vitamin B12, Zinc, copper, selenium and CRP</p> <p>If T2DM: HbA1c</p> <p>If pre-op lipidaemia: lipid profile</p> <p><u>Annually (minimum)</u> Vit E, Vitamin K, PIVKA-II, Vitamin A,</p>	<p>Limb length ≤ 150cm: See advice for Lap Roux-en-Y Limb length &gt;150cm: Malabsorptive. See advice for Lap BPD/DS</p> <p><u>Annually</u> U&amp;Es, LFT, bone profile, FBC, ferritin, folate, Vit D, PTH, vitamin B12, Zinc, copper, selenium and CRP</p> <p>If T2DM: HbA1c</p> <p>If pre-op lipidaemia: lipid profile</p> <p><u>Annually (minimum if limb length is &gt;150cm)</u> Vit E, Vitamin K, PIVKA-II, Vitamin A,</p>

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## KEY

\*Not required if patient has had cholecystectomy.

\*\* Patients pain should be assessed prior to discharge.

\*\*\***Doses may vary according to risk of bleeding. Please refer to post-operative plan for individual consultant preferences.** Dose reduction or alternate thromboprophylaxis may be required in renal impairment (refer to Trust VTEP guidance or contact haematology/renal teams for advice if necessary)

‡ Suitable OTC A-Z supplements may be taken as an alternative to Santogen A-Z if not tolerated (to take 2 tablets of alternative). Forceval is the only suitable alternative in Lap BPD/DS. For other procedures: Sanatogen A-Z complete, Superdrug A-Z multivitamin and mineral, Tesco Complete multivitamin and mineral, Lloyds Pharmacy A-Z multi-vitamin and mineral supplement.

+ 210mg ferrous fumarate or 300-mg of ferrous gluconate can be prescribed as an alternative to ferrous sulphate

§ - Test not required to be undertaken by GP

## Notes

- All patients with BPD/DS should remain under specialist review lifelong to facilitate regular monitoring of serum vitamin A, E and K levels.
- Prescribe oral thiamine 200-300mg daily with vitamin B co strong 1 or 2 tablets three times daily to people with faster than average weight loss, vomiting, dysphagia or poor dietary intake, to be reviewed monthly until symptoms resolve and in discussion with bariatric team.
- Vitamin D levels should be maintained above 75nmol/L. If patients are being prescribed Vitamin D2 supplements then Total-25-OH Vitamin D must be monitored.
- We would recommend that calcium requirements are met through diet first. If unable to achieve by diet alone, recommended supplementation via calcium citrate (to be taken without food) due to lower incidence of kidney stone formation. If not well tolerated or available, calcium carbonate (to be taken with food) can be given instead.
- Combined calcium and Vitamin D supplementation (e.g. AdCal D3) should only be considered if PTH is raised in the context of normal calcium and Vitamin D levels
- Consider checking for Vitamin K deficiency in any patient if excessive bruising/coagulopathy.
- The supplementation recommendations are not intended for pregnant patients. Patients that are pregnant or planning pregnancy should have their supplementation regimen reviewed with a bariatric dietician.
- If any blood tests are out of range then please contact Bariatric Dieticians for further advice.

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Document Detail	
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Stakeholder consultation across SEL	Other specialists consulted: Upper GI and Metabolic Surgeon Metabolic Surgeon, Chair of Bariatric and Metabolic Surgery Upper GI and Bariatric Surgeon Upper GI and Bariatric Surgeon PRUH diabetConsultant Endocrinologist and Obesity Physician GSTT
Related documents	Guidelines for medication management in the peri-operative period Bariatric diabetes management guideline
Keywords	Perioperative, Medications, Bariatric, Metabolic Surgery
Relevant external law, regulation, standards	BOMSS, NICE

**Approval date:** July 2024

**Review date:** July 2026 (or sooner if evidence or practice changes)

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