Key Points

- These guidelines summarise best evidence level dietetic advice on supplementation post bariatric surgery.

- The preparations recommended in this policy will provide the appropriate micronutrients. Other preparations of A-Z complete multivitamin with minerals and trace elements are available to buy from chemists and supermarkets but we cannot guarantee these contain appropriate or sufficient levels of micronutrients.

- Regular blood monitoring, as part of the shared care model for chronic disease management, liaising with the bariatric service as required, is advised to ensure nutritional deficiencies do not develop.

- There may be cases when patients develop deficiencies despite the routine supplementation recommended in this guideline. Similarly nutritional levels may increase above range. If unsure about how to interpret a particular blood test, treat a particular micronutrient deficiency, or amend supplementation please contact the Bariatric Dietitians on 01823 343394 for advice.
Prior to Bariatric Surgery

- Ensure nutritional blood tests have been performed within the last 6 months / upon referral to surgical team. These should include: FBC, Vitamin B12 (serum MMA recommended if available), Folic acid, Ferritin, Vitamin D 25-OH, Calcium, PTH, LFTs, U&Es; if clinically indicated also HbA1c and lipid profile.
- Patient will be advised if needs to start A-Z complete multivitamin with minerals and trace elements once daily (for example Forceval once daily) at one stop clinic assessment.
- Other supplementation according to patient’s pre-operative nutritional blood screening.
### Post Bariatric Surgery

<table>
<thead>
<tr>
<th>Supplements on prescription (unless otherwise stated)</th>
<th>Gastric Band &amp; Balloon</th>
<th>Gastric Bypass &amp; Sleeve Gastrectomy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First 2 weeks post op:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Multivitamin, minerals &amp; trace elements (Forceval soluble is preference)</td>
<td>1 daily chewable/liquid/dissolvable</td>
<td>1, twice daily chewable/liquid/dissolvable</td>
</tr>
<tr>
<td>2. Calcium &amp; Vitamin D: Adcal D3 or equivalent</td>
<td>1, twice daily</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(if use equivalent, to provide at least 1000mg calcium and 20mcg vitamin D. If use Theical-D3 must take as half tablet twice daily)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>After 2 weeks, lifelong (unless stated otherwise):</strong></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Multivitamins, minerals &amp; trace elements (A-Z complete) – Forceval capsule is preference</td>
<td>1 daily</td>
<td>1, twice daily</td>
</tr>
<tr>
<td>2. Thiamine (Vitamin B1) (over the counter)</td>
<td>50-100mg daily</td>
<td></td>
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<tr>
<td></td>
<td>(first 2 years post-op only but continue/restart if high risk, see below for details)</td>
<td></td>
</tr>
<tr>
<td>3. Calcium &amp; Vitamin D: Adcal D3 or equivalent</td>
<td>1 twice daily</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(if use equivalent, to provide at least 1000mg calcium and 20mcg vitamin D. If use Theical-D3 must take as half tablet twice daily)</td>
<td></td>
</tr>
<tr>
<td>4. Vitamin D (over the counter)</td>
<td>25mcg twice daily</td>
<td></td>
</tr>
<tr>
<td>5. Ferrous gluconate</td>
<td>Not routine</td>
<td>300mg daily</td>
</tr>
<tr>
<td>6. Vitamin B12 (hydroxycobalamin)</td>
<td>Not routine</td>
<td>1mg IM 3 monthly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Start 6 months post op</td>
</tr>
<tr>
<td>Planning for and during pregnancy (advise to plan pregnancy after 12-18months of operation – ideally wait until weight stable)</td>
<td>As above but ensure vitamin A in A-Z is in beta carotene form (Forceval capsules fine). Plus 5mg folic acid for at least 3 months pre-conception &amp; up until 13th week of pregnancy.</td>
<td>As above but <strong>reduce</strong> A-Z to once a day and ensure vitamin A is in beta carotene form (Forceval capsules fine). Plus 5mg folic acid for at least 3 months pre-conception &amp; up until 13th week of pregnancy.</td>
</tr>
</tbody>
</table>
Additional Supplementation If:
1. Prolonged vomiting (more than 3 consecutive days in a week recurrently)
2. Symptoms suggestive of hypoglycaemia not obviously due to dumping
3. Regular, high volume intake of alcohol
   - Increase Thiamine to total of 200mg daily (i.e. 100mg twice daily)
   - Add Vitamin B co strong, 1 tablet three times daily
   - Points 1 and 2 - Continue above for 2 months initially and refer to Bariatric dietitian for advice
   - Point 3 – Continue until reduced/stopped.

While patients may experience occasional regurgitation of food after bariatric surgery, it is not normal to have prolonged vomiting. In this instance a referral back to the bariatric surgery service is recommended.

Considerations When Taking Vitamins and Minerals
The preparations recommended in this guideline will provide the appropriate micronutrients. Generic equivalents of calcium, vitamin D and iron supplements on prescription are acceptable. Other preparations of A-Z complete multivitamin with minerals and trace elements are available to buy from chemists and supermarkets but we cannot guarantee these contain appropriate or sufficient levels of micronutrients.

- Total **daily** dosing from ALL supplements taken should include:
  - Thiamine - at least 50mg
  - Calcium - 1200mg-1500mg in divided doses (includes dietary intake)
  - Vitamin D - at least 75mcg (3000 IU) in divided doses
  - Iron - Band & Balloon: at least 12mg, Bypass & Sleeve: 45-60mg
  - Folic acid - at least 400mcg
  - Copper – Band, Balloon & Sleeve: at least 1mg, Bypass: 2mg
  - Zinc - 8-15mg per 1mg Copper
  - Vitamins A and E
  - Selenium

- We routinely recommend supplementing vitamin B12 with IM injections to maintain levels within normal range. We do not routinely recommend the use of oral or sublingual supplementation.
- Calcium supplements should be taken at least two hours apart from multivitamins and minerals or iron supplements.
- Calcium supplements should be spread throughout the day (i.e. not to take all tablets in one go).
- Iron and Multivitamins containing iron are best taken with vitamin C containing food if possible- such as a small amount of orange juice, fruit and vegetables. Avoid taking with antacids, Calcium and foods/drinks high in phytates or polyphenols (beans, peas, lentils, pulses, wholegrains, bran, brown rice, oats, potatoes, nuts, seeds, dark chocolate, cocoa, tea and coffee, including decaffeinated).
- Some supplements contain allergens (for example nuts, soya, and milk) and may not be halal certified or suitable for vegans/vegetarians. If struggling to find a suitable supplement, liaise with the Bariatric Dietitians.

**Considerations For Other Medicines**

- **Thyroxtine:** Avoid taking Thyroxine at the same time as multivitamins and minerals, iron and calcium as they can prevent absorption of Thyroxine. It is recommended that Thyroxine is taken 2 hours before or 2 hours after micronutrient supplements.
- **Anti-coagulants:** Forceval does not contain vitamin K however other multivitamin and mineral preparations may. Patients taking anti-coagulants should be advised to choose a preparation that doesn’t contain vitamin K. If this is unavoidable INR should be monitored and anticoagulant adjusted as appropriate.
- **Isotretinoin/Roaccutane:** Please contact bariatric surgery team as caution needed if patient has high dietary vitamin A intake in addition to that in vitamin and minerals.
- **Antacids:** Can impair absorption of vitamins and minerals if taken with micronutrient supplements.
- **For guidance on use of specific drugs see:** [https://www.sps.nhs.uk/articles/what-should-be-considered-when-prescribing-medicines-for-patients-who-have-undergone-bariatric-surgery/](https://www.sps.nhs.uk/articles/what-should-be-considered-when-prescribing-medicines-for-patients-who-have-undergone-bariatric-surgery/)
Blood Monitoring For All Bariatric Surgery Patients

The following routine blood tests should be monitored after all bariatric surgery, as part of the shared care model for chronic disease management, every 3 months in the first year post-operatively, and at least annually thereafter. After intragastric balloon insertion, routine bloods should be tested at month 3 as a minimum.

If any results are abnormal despite compliance the bariatric surgery service can be contacted for advice. More frequent monitoring (2-3 monthly) may be necessary until stable and/or corrected.

**Routine nutritional blood tests:**

- Full blood count
- Urea and electrolytes
- Phosphate and Magnesium
- Liver function tests
- Ferritin
- Folate
- Vitamin B12 (serum MMA recommended if available, consider if history of B12 deficiency or pre-existing neuropathy)
- Calcium
- Parathyroid hormone (PTH)
- 25(OH) Vitamin D (6-12 monthly)
- Zinc, Copper & Vitamin A – *Gastric bypass only* - once within first 12 months of surgery, then annually (Zinc and Copper levels affect each other)

If Diabetes pre-surgery or clinically indicated

- HbA1c (consider Fasting glucose if anaemia) 6-12 monthly

If known dyslipidaemia or concerns re. lipids

- Fasting lipid profile 6-12 monthly

If low ferritin or clinical concern despite normal ferritin

- Transferrin saturation
Additional nutritional blood tests

If there are clinical concerns about poor nutrition or lack of supplementation, we would also advise these additional blood tests:

- Vitamin A - night blindness, poor wound healing, loss of taste, steatorrhoea, other fat soluble vitamins low
- Vitamin E – unexplained anaemia, neuropathy, muscle weakness, steatorrhoea, other fat soluble vitamins low
- Vitamin K (INR) – excessive bruising, bleeding gums, heavy/uncontrolled bleeding
- Zinc & Copper – unexplained anaemia, hair loss, change/loss of taste, poor wound healing, glossitis, recurrent infections, diarrhoea, acrodermatitis enteropathica like rash, neuropathy
- Selenium – fatigue, anaemia, diarrhoea/malabsorptive symptoms, chronic bone disease, heart failure

There may be cases when patients develop deficiencies despite the routine supplementation recommended in this guideline. If unsure about how to interpret a particular blood test or treat a particular micronutrient deficiency, please contact the Bariatric Dietitians on 01823 343394 for advice.

Blood Monitoring When Planning, During and After Pregnancy

Those who are planning a pregnancy should have their routine and additional nutritional bloods tested (as above).

During pregnancy check routine nutritional blood tests at least twice. Our current practice is to perform these at the first antenatal appointment (end of first trimester) and at 26 weeks of pregnancy. If clinical concern, check additional nutritional bloods.

Check routine nutritional bloods 3 months postpartum. Continue these 3 monthly if breastfeeding.
Post Bariatric Surgery – Other Procedures Not Mentioned In These Guidelines

We recommend following the guidance as outlined above for Gastric Bypass and Sleeve Gastrectomy and contact the Bariatric Dietitians on 01823 343394 for further guidance as more supplementation may be necessary.

Guideline Updates

These guidelines are reviewed every 2 years however they may be updated earlier if new evidence emerges. Please regularly check the bariatric surgery service website (http://www.tsft.nhs.uk/wards-and-departments/departments-services/bariatric-surgery/) for updates.

We welcome your feedback/suggestions on how to improve this document, and if any training or further information is needed. Please feedback to the Bariatric Dietitians as above.

References:


Guideline for the Supplementation and Blood Monitoring of Bariatric Surgery Patients
