

Vitamins and Minerals After Bariatric Surgery

Vitamins and minerals are also known as ‘micronutrients’, because they are needed by the body in much smaller amounts [milligrams (mg) or micrograms (mcg per day)] than the other nutrients that make up a healthy diet, such as carbohydrate, protein and fat (called macronutrients). Vitamins and minerals are essential nutrients, which means that we cannot make them in our body and so we must get them from our diet; although Vitamin D is an exception as we can make it in our skin when exposed to sunlight.

Bariatric surgery dramatically decreases the body’s ability to absorb vitamins and nutrients from our diets by restricting the amount of food you consume and/or reducing absorption. This can result in malnutrition and deficiencies which can be detrimental to your health.

Why are they important?

Vitamins perform a wide variety of functions in our bodies, such as helping to release energy from the foods that we eat, playing a role in DNA synthesis, and acting as antioxidants to protect our cells from damage.

Minerals such as calcium and iron also have a range of essential functions, such as the formation of bones and teeth, and are needed for the normal function of our nervous system. Some vitamins and minerals may be absorbed more efficiently by the body from the foods that we eat, rather than from food supplements (such as the iron in red meat).

How much of the different vitamins and minerals do I need?

We may need different amounts of vitamins and minerals depending on our age, sex, and also for women during pregnancy or breastfeeding.

The UK government has published a set of dietary reference values (DRVs) for different vitamins and minerals. These provide an estimate of the amounts required each day by different groups of healthy people in the general population to support growth and development, and to maintain good health.

Throughout your bariatric pathway, the team will be monitoring your blood biochemistry to ensure you are getting enough vitamins and minerals. It is important you take all the prescribed medications to ensure this.

Patients must agree to purchase all vitamins and minerals described in order to have bariatric surgery

Before bariatric surgery you should take a chewable or tablet A-Z multivitamin/mineral 1 a day and 10 mcg Vitamin D daily.

After bariatric surgery you need to take a:

- Multivitamin/mineral supplement (GP may prescribe Forceval, or may ask you to purchase)
- Calcium & Vitamin D 25mcg daily supplement (GP may prescribe, or may ask you to purchase)
- Iron supplement (GP may prescribe, or may ask you to purchase)
- 1mg Vitamin B12 injection every 3 months (available through your GP)
- Omeprazole or Lansoprazole (available on prescription from your GP)

The following tables show you the options that are available

1) Buy one of the following multivitamins & minerals available online, large chemist or supermarkets.

For the first 4-6 weeks after surgery, you will need to take a chewable multivitamin/mineral i.e Forceval soluble x1 a day or Centrum Chewable x2 a day before moving onto one of the below.

Take these with or after your main meal.

The bariatric team will send you home with Forceval soluble x1 a day, however these are other alternatives.


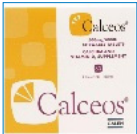



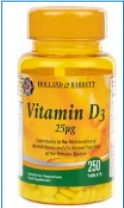
<p>Forceval x 1 a day 45p/day</p> 	<p>Sanatogen A-Z Complete x 2 a day 18p/day</p> 	<p>Lloyds Pharmacy, Superdrug or Supermarket Own-brand A-Z e.g. Tesco, Morrisons, Asda x 2 a day 8-12p/day</p> 	<p>Holland & Barrett ABC+ x 1 a day 7p/day</p> 	<p>Centrum Chewable x2 a day 50p/day</p> 
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- 2) Buy one of the following Calcium & Vitamin D supplements, to maintain bone health and help prevent osteoporosis.

The chewable tablets can be taken straight away following your bariatric surgery.

Other tablets can be taken 4-6 weeks following your surgery.

The bariatric team will send you home with AdcalD3 chewable, however these are other alternatives.

<p>Adcal-D3 chewable 1 tablet twice a day (morning & night) 22p/day</p> 	<p>Calceos (chewable) 1 tablet twice a day (morning & night) 18p/day</p> 	<p>Calcichew D3 Forte chewable 1 tablet twice a day (morning & night) 23p/day may need prescription</p> 	<p>Calcichew D3 Caplet 1 tablet twice a day (morning & night) 20p/day may need prescription</p> 	<p>Cacit D3 effervescent 1 tablet twice a day may need prescription</p>	<p>Holland & Barrett Chewable Calcium 500mg* 1 tablet twice a day 14p/day</p>  <p>Holland & Barrett Vitamin D3 25ug (mcg)* 1 tablet a day</p> 
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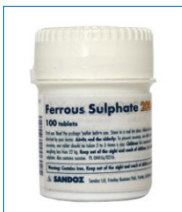

**Other brands with the same doses are also suitable*

- 3) Buy one of the following Iron supplements

To be taken 2 hours away from the calcium tablet along with 1mg Vitamin b12 injection (via GP).

To take once a day or twice a day, particularly important for menstruating women, to prevent iron deficiency anaemia.

The bariatric team will send you home with Sodium Feredetate, however these are other alternatives.

<p>Ferrous Fumarate* 210mg 7p/day</p>  <p>*Often better tolerated</p>	<p>Ferrous Sulphate 200mg 5p/day</p> 	<p>Ferrous Gluconate 300mg 3p/day (take 1 hour before meal)</p> 
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Can I get enough vitamins and minerals from a vegetarian or vegan diet?

Well-organised vegetarian and vegan diets can provide most essential nutrients but, there are some nutrients that you might want to give more consideration to if you are following a vegetarian or vegan diet, or if you are reducing the amount of meat, fish and dairy foods that you eat. This is because it may be more difficult to get enough of some vitamins or minerals from plant-based foods alone (like vitamin B12), or they may not be absorbed as easily by the body (referred to as 'bioavailability').

For example, the iron found in plant foods such as beans, lentils, nuts and green vegetables (called 'non-haem' iron) is less readily absorbed by the body than the iron from animal sources (known as 'haem iron').

Vitamin B12, Iron, Calcium and Vitamin D are likely to be lower in a vegetarian and vegan diets however, continuing with the prescribed multivitamin, vitamin and mineral medications will ensure adequate intake.

Should I be taking additional vitamins and minerals which are not prescribed by the bariatric team?

As described previously, the prescribed multivitamin, vitamin and mineral tablets alongside a balance diet should ensure you are getting enough in your body. If you were wanting to take additional over the counter vitamins and minerals, please discuss with your dietitian first to ensure they are safe to take. e.g It is important not to take an additional copper supplementation as this causes zinc deficiency. What you need to take is a zinc:copper ratio of 15mg:2mg which is the balance in the Forceval which we advise you to take daily to prevent deficiency.

What happens if I get a deficiency of a vitamin or mineral?

A deficiency is a long-term lack of vitamin or mineral.

The tables below provide more information about the various roles of vitamins and minerals in the body, and which foods you can find them in. The bariatric team will discuss whether you have any vitamin and mineral deficiencies before changing your diet. Please use the table as information only as your medications will fortify your diet as needed.

Vitamins	It helps...	Deficiency Symptoms	Some food sources
Vitamin B1 (thiamin)	...to release energy from food. It also helps our nervous system and heart function normally.	Chronic digestive disorders Nerve damage Loss of appetite Burning sensation in the feet Muscular weakness and cramping Fatigue Memory loss	Bread, fortified breakfast cereals, nuts and seeds, meat (especially pork), beans and peas.
Vitamin B2 (riboflavin)	...to release energy from food, reduce tiredness, and helps to maintain normal skin and a normal nervous system.	Fatigue Mouth or lip sores, or cracks Nerve damage Sore throat Inflamed tongue	Milk and milk products, eggs, fortified breakfast cereals, offal, some oily fish (such as mackerel and sardines), mushrooms and almonds.

Vitamins	It helps...	Deficiency Symptoms	Some food sources
Vitamin B3 (niacin)	...to release energy from food, reduce tiredness, and helps to maintain normal skin and a normal nervous system.	Rash Fatigue Bright red tongue Circulatory problems Constipation	Meat, poultry, fish and shellfish, wholegrains (such as brown rice, wholewheat pasta and quinoa), bread and some nuts and seeds (such as peanuts and sesame seeds).
Vitamin B6	...to make red blood cells, which carry oxygen around the body. It helps our immune system work properly, regulates hormones and helps to reduce tiredness.	Cracks or soreness on lips Soreness or glossiness on the tongue Changes in mood Weak immunity system Fatigue	Meat, poultry, fish, fortified breakfast cereals, egg yolk, yeast extract, soya beans, sesame seeds, some fruit and vegetables (such as banana, avocado and green pepper).
Vitamin B12	...to make red blood cells, helps the nervous system function normally, and helps to reduce tiredness.	Anaemia/Tiredness Breathlessness Lack of concentration Irreversible neuropathy	Meat, fish, shellfish, milk, cheese, fromage frais, eggs, fortified yeast extract and fortified breakfast cereals.
Folate/Folic acid	...to make red blood cells, reduce tiredness and helps the immune system work as it should. It is also needed for the normal development of the nervous system in unborn babies.	Fatigue Tongue swelling Headaches Irritability Sores in mouth	Green leafy vegetables, some breads (such as malted wheat and brown bread), offal, peas and beans, oranges, berries and fortified breakfast cereals.
Vitamin C	...to protect cells from damage. It helps form collagen, which is important for normal bones, gums, teeth and skin. It also helps the immune system and the nervous system to function normally.	Weakness Feeling fatigue Sore arms or legs Gum diseases	Fruit (especially citrus fruits, blackcurrants, strawberries, papaya and kiwi), green vegetables, peppers and tomatoes.
Vitamin A	...the immune system to function normally, helps with vision and helps the maintenance of normal skin.	Dry Skin Dry Eyes Night blindness Acne	Liver, cheese, eggs, dark green leafy vegetables and orange-coloured fruits and vegetables (such as carrot, sweet potato, butternut squash, cantaloupe melon and papaya)

Vitamins	It helps...	Deficiency Symptoms	Some food sources
Vitamin D	...the body to absorb calcium and to build and maintain healthy bones and muscles. It also helps the immune system to work as it should.	Osteoporosis Increase risk of dementia Depression Bone pain	Oily fish, eggs, fortified breakfast cereals and fat spreads. In spring/summer, the majority of people will get most of their vitamin D through the action of sunlight on the skin.
Vitamin E	...to protect the cells in our bodies against damage.	Disorientation Muscle Weakness Vision Problems	Vegetable and seed oils (such as olive, rapeseed, sunflower, peanut oils) nuts and seeds (such as sunflower seeds and almonds), avocados and olives
Vitamin K	...with normal clotting of blood and is required for normal bone structure.	Excessive bleeding Poor wound healing	Green vegetables (including leafy greens, broccoli, green beans and peas) and some oils (such as rapeseed, olive and soya oil)

Minerals	It helps...	Deficiency Symptoms	Some food sources
Calcium	...to build and maintain strong bones and teeth. It helps nerves and muscles to function normally and helps blood to clot normally.	Osteoporosis Nerve and muscle weakness	Milk, cheese, yogurt, fromage frais, some green leafy vegetables (such as kale), calcium-fortified dairy-alternatives, canned fish (where soft bones are eaten) and breads (white, brown and wholegrain)
Fluoride	...to form strong teeth and helps to reduce the risk of tooth decay.	Weak fragile bones Increased risk of fractures Tooth decay	Tap water, tea (and toothpaste)
Iodine	...to make thyroid, and it helps the brain to function normally.	Swelling in the neck Unexplained weight changes	Milk, yogurt, cheese, some fish (such as cod, mackerel, haddock), some shellfish (such as crab and mussels) and eggs (and some fortified dairy alternatives)
Iron	...to make red blood cells, which carry oxygen around the body. It also helps the immune system to work and helps the brain to function normally.	Anaemia/Tiredness Breathlessness Lack of concentration Increased risk of infection	Offal, red meat, beans, pulses, nuts and seeds, fish (such as canned sardines and mussels), quinoa, wholemeal bread and dried fruit

Minerals	It helps...	Deficiency Symptoms	Some food sources
Magnesium	...to release energy from food, maintain strong bones and it helps normal muscle and nerve function.	Muscle weakness Heart Irregularities Nerve/muscle dysfunction	Nuts and seeds (such as Brazil nuts and sunflower seeds), wholegrain breakfast cereals, wholegrain and seeded breads, brown rice and quinoa
Phosphorus	...to build strong bones and teeth and helps to release energy from food.	Weakness Anaemia Rapid weight loss Oral infections Joint pain Decreased appetite	Red meat, poultry, fish, milk, cheese, yogurt, eggs, bread and wholegrains (such as brown rice and wholewheat pasta).
Potassium	...regulate the water content in the body and maintain a normal blood pressure. It also helps the nerves and muscles to function normally.	Abnormal heart rhythm Weakness Tiredness Muscle cramps Confusion Constipation	Some fruit and vegetables (such as banana, blackcurrants, avocado, spinach, parsnip and beetroot), dried fruit (such as apricots, sultanas and figs), poultry, red meat, fish, milk and wholegrain breakfast cereals
Selenium	...to protect the cells in our bodies against damage, helps the immune system to work as it should, and helps maintain normal skin and nails, and normal fertility in males.	Damage to the skeleton, heart and other muscles Increased risk of malignancy Tiredness Diarrhoea	Some nuts and seeds (such as Brazil nuts, cashews and sunflower seeds), eggs, offal, poultry, fish and shellfish
Sodium	...regulate the water content in the body.	Dizziness Muscle cramps Confusion Difficulty concentrating Nausea	Very small amounts found naturally in foods. Often added as salt (sodium chloride) during processing, preparation, preservation and serving. Currently intakes of sodium are too high, and most people need to reduce their intake substantially.

Minerals	It helps...	Deficiency Symptoms	Some food sources
Zinc	...contribute to normal mental skills and abilities and helps to maintain normal hair, skin and nails. It also helps with the normal healing of wounds and contributes to normal fertility and reproduction.	Poor immunity Diarrhoea Muscle wasting Skin rashes Taste changes Poor healing	Meat, poultry, cheese, some shellfish (such as crab, cockles and mussels), nuts and seeds (such as pumpkin seeds and pine nuts), wholegrain breakfast cereals and wholegrain and seeded breads.
Copper	...plays a role in forming red blood cells, enzymes, connective tissue, and bone. It also plays a vital role in immune health. Copper also influences energy production and iron absorption, helping the body produce collagen.	Low immunity Cardiac Arrhythmia Anaemia Poor wound healing Fatigue Vision Loss	Beef liver, shiitake mushrooms, leafy greens (such as lettuce, kale, spinach etc), nuts and seeds (such as cashew), lobster, oyster and shellfish

Reference: BNF (2021) <https://www.nutrition.org.uk/healthy-sustainable-diets/vitamins-and-minerals/?level=Consumer>

What Psychological Support is available?

The Bariatric Surgery Psychology Service have put together some useful information below, to offer support to anyone experiencing distress around taking their vitamins. This includes exercises and resources you can use to calm yourself down in order to take the first steps towards becoming more comfortable and less anxious when swallowing vitamins.

1) Relaxation & Anxiety Management Techniques

- If you are feeling really anxious about taking your vitamins, there are some useful self-soothing and relaxation techniques you can use to help reduce tension in your throat and stop it from tightening up.
- These techniques include Controlled Breathing, Progressive Muscle Relaxation and Visualisation & Guided Imagery. We have included resource sheets with information about how to use these and practice exercises with this document.
 - **Controlled Breathing Technique**
 - **Progressive Muscle Relaxation (PMR)**
 - **Visualization & Guided Imagery**

2) Graded Exposure:

- We know that your anxiety is due to a specific trigger, which in this case is the psychological fear of swallowing vitamins. This may be due to a variety of different reasons.
- Over time if you keep avoiding this, the anxiety and panic may grow and make you more fearful. But through the graded exposure technique you can become more confident and comfortable with the situation and confront your anxiety.
- It can be scary, at first but you can learn to take small manageable steps like simply trying to sit with the idea of swallowing vitamins before taking further steps. We have included an example below, but you can also use the following resource sheet to support you.

▪ Guided (Situational) Exposure

Top tip:

In the example below, there are a number of situations, which include taking small manageable steps to move towards overcoming your fear and reducing your anxiety around taking vitamins.

Please note: You will need to try each step multiple times and over several days. Each time the exposure to each situation is re-introduced, your peak anxiety will lower. For example, an experience which was a 6/10 (in terms of anxiety and fear) will hopefully become a 5/10 and then a 4/10 etc.

Change cannot happen if you try each step just once so **slowly move through the list, repeating each situation a few times**. Feel the peak of anxiety, and then use the breathing and relaxation techniques to return to baseline levels of calm. When you feel calmer and less anxious move onto the next step in the process.

Important reminder: When trying the graded exposure task below, please only take the number of vitamins prescribed per day and do not exceed the advised dosage.

For example:

1. Imagine the idea of swallowing or taking a vitamin in pill form (3/10)
2. Move towards actually having a vitamin in your hand to become comfortable with the size and texture (4/10)
3. Then try to take the smallest size vitamin you have (5/10)
4. When you're more comfortable move on to trying to swallow a bigger sized vitamin e.g., move from small to medium to big vitamins (6/10)
5. Move on to try and take more than one vitamin at a time – after one another (7/10)
6. When it feels difficult try to swallow the vitamins with lots of water, or with food, to help you feel safer and know you have methods in place (8/10)
7. Then move onto closing your eyes and swallowing vitamins quicker (9/10)
8. When you feel more confident try swallowing vitamins of different sizes and textures more often and frequently (10/10)

We hope this information sheet is useful in helping you to begin taking your vitamins in an oral form or move from a liquid to oral form.

If you have any questions, please get in touch with the Bariatric team.

If you have any psychological concerns, please also let the team know as they may be able to refer you into the Bariatric Psychology Service for some additional guidance and support.

If you have any comments about this leaflet or the service you have received you can contact :

Your Healthcare Professionals:

Bariatric Surgery Specialist Dietitian's and Nurse

Telephone: 01484 355217

www.cht.nhs.uk

If you would like this information in another format or language contact the above.

Potřebujete-li tyto informace v jiném formátu nebo jazyce, obraťte se prosím na výše uvedené oddělení

Jeżeli są Państwo zainteresowani otrzymaniem tych informacji w innym formacie lub wersji językowej, prosimy skontaktować się z nami, korzystając z ww. danych kontaktowych

ਚ ਤੁਸੀਂ ਇਹ ਜਾਣਕਾਰੀ ਕਿਸੇ ਹੋਰ ਪ੍ਰਾਚੂਪ ਜਾਂ ਭਾਸ਼ਾ ਵਿੱਚ ਲੈਣਾ ਚਾਹੁੰਦੇ ਹੋ,
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اگر آپ کو یہ معلومات کسی اور فارمیٹ یا زبان میں درکار ہوں، تو
برائے مہربانی مندرجہ بالا شعبے میں ہم سے رابطہ کریں۔

"إذا احتجت الحصول على هذه المعلومة بشكل مغاير أو مترجمة إلى لغة مختلفة فيرجى منك الاتصال بالقسم
المذكور أعلاه"