Vitamin Recommendation List

Take this with you when shopping for a vitamin

Vit B1 (thiamine)	50-100mg/d
Vit B12	350-500ug/d *Lap Band*
VitB12	1000mcg/month *sleeve, bypass, switch*
Folate	400-800 mcg
Folate (child bearing)	800-1000mcg/d
Calcium	1200-1500mg/d
Vit A	5000 IU/d
Vit A	*5000-10,000 IU/d bypass*
Vit A	*10,000 IU/d switch*
Vit E	15mg/d
Vit K	90-120 ug/d
Vit K	*300 ug/d switch*
Vit D3	3,000 IU/d
Iron	18mg/d males
Iron	45-60 mg/d females
Zinc	8-11 mg/d
Zinc	*16-22 mg/d bypass or switch*
Copper	1mg/d
Copper	*1-2mg/d bypass*
Copper	*2 mg/d switch*

Table 3
Supplement Recommendations to Prevent Post-WLS Micronutrient Deficiency

Vitamin B1 (Thiamin)

Thiamin supplementation above the RDA is suggested to prevent thiamin deficiency.

All post-WLS patients should take at *least* 12 mg thiamin daily (Grade C, BEL 3) and preferably a 50 mg dose of thiamin from a B-complex supplement or multivitamin once or twice daily (Grade D, BEL 4) to maintain blood levels of thiamin and prevent TD. ☑

Vitamin B12 (Cobalamin)

All post-WLS patients should take vitamin B12 supplementation. (Grade B, BEL 2) ☑

Supplement dose for vitamin B12 in post-WLS patients varies based on route of administration (Grade B, BEL 2): ☑

Orally by disintegrating tablet, sublingual, or liquid: 350–500 μg daily

Nasal spray as directed by manufacturer

Parenteral (IM or SQ): 1000 μg monthly

Folate (Folic Acid)

Post-WLS patients should take 400–800 μg oral folate daily from their multivitamin. (Grade B, BEL 2) ☑

Women of childbearing age should take 800–1000 μg oral folate daily. (Grade B, BEL 2) ☑

Iron

Post-WLS patients at low risk (males and patients without history of anemia) for post-WLS iron deficiency should receive at least 18 mg of iron from their multivitamin. (Grade C, BEL 3) ☑

Menstruating females and patients who have undergone RYGB, SG, or BPD/DS should take at least 45–60 mg of elemental iron daily (cumulatively, including iron from all vitamin and mineral supplements). (Grade C, BEL 3) ☑

Oral supplementation should be taken in divided doses separately from calcium supplements, acid-reducing medications, and foods high in phytates or polyphenols. (Grade D, BEL 3) ☑ Recommendation is downgraded to D, since majority of evidence is from non-WLS patients.

Vitamin D and Calcium

All post-WLS patients should take calcium supplementation. (Grade C, BEL 3) ☑

The appropriate dose of daily calcium from all sources varies by surgical procedure:

BPD/DS: 1800–2400 mg/d

LAGB, SG, RYGB: 1200–1500 mg/d

The recommended preventative dose of vitamin D in post-WLS patients should be based on serum vitamin D levels: Recommended vitamin D3 dose is 3000 IU daily, until blood levels of 25(OH)D are greater than sufficient (30 ng/mL) (Grade D, BEL 4) ☑

A 70–90% lower vitamin D3 bolus dose is needed (compared to vitamin D2) to achieve the same effects as those produced in healthy non-bariatric surgical patients. (Grade A, BEL 1) ☑

To enhance calcium absorption in post-WLS patients (Grade C, BEL 3): ☑

Calcium should be given in divided doses.

Calcium carbonate should be taken with meals.

Calcium citrate may be taken with or without meals.

Vitamins A, E, and K

Post-WLS patients should take vitamins A, E, and K, with dosage based on type of procedure:

LAGB: Vitamin A 5000 IU/d and vitamin K 90–120 ug/d (Grade C, BEL 3) ☑

RYGB and SG: Vitamin A 5000–10,000 IU/d and vitamin K 90–120 ug/d (Grade D, BEL 4) ☑

LAGB, SG, RYGB, BPD/DS: Vitamin E 15 mg/d (Grade D, BEL 4) ☑

DS: Vitamin A (10,000 IU/d) and vitamin K (300 μg/d) (Grade B, BEL 2) ☑

Higher maintenance doses of fat-soluble vitamins may be required for post-WLS patients with a previous history of deficiency in vitamin A, E, or K. (Grade D, BEL 4)

Water-miscible forms of fat soluble vitamins are also available to improve absorption (Grade D, BEL 4)

Special attention should be paid to post-WLS supplementation of vitamin A and K in pregnant women. (Grade D, BEL 3) ☑

Zinc

All post-WLS patients should take > RDA zinc, with dosage based on type of procedure (Grade C, BEL 3): ☑

BPD/DS: Multivitamin with minerals containing 200% of the RDA (16–22 mg/d)

RYGB: Multivitamin with minerals containing 100–200% of the RDA (8–22 mg/d)

SG/LAGB: Multivitamin with minerals containing 100% of the RDA (8–11 mg/d)

To minimize the risk of copper deficiency in post-WLS patients, it is recommended that the supplementation protocol contain a ratio of 8–15 mg of supplemental zinc per 1 mg of copper. (Grade C, BEL 3) ☑

Formulation and composition of zinc supplements should be considered in post-WLS patients to calculate accurate levels of elemental zinc provided by the supplement. (Grade D, BEL 4) ☑

Table 3
Continued.

Copper

All post-WLS patients should take > RDA copper as part of routine multivitamin and mineral supplementation, with dosage based on type of procedure (Grade C, BEL 3): ☑

BPD/DS or RYGB: 200% of the RDA (2 mg/d)
SG or LAGB: 100% of the RDA (1 mg/d)

In post-WLS patients, supplementation with 1 mg copper is recommended for every 8–15 mg of elemental zinc to prevent copper deficiency. (Grade C, BEL 3) ☑

In post-WLS patients, copper gluconate or sulfate is the recommended source of copper for supplementation. (Grade C, BEL 3) ☑

WLS = weight loss surgery; RDA = recommended dietary allowance; BEL = best evidence level; TD = thiamin deficiency; IM = intramuscular; SQ = subcutaneous; RYGB = Roux-en Y gastric bypass; SG = sleeve gastrectomy; BPD/DS = biliopancreatic diversion/duodenal switch; LAGB = laparoscopic adjust gastric band.

☑ New recommendation since 2008 [1] is noted by ☑, otherwise there is no change in the current recommendation.

Table 6
Nutrient Supplementation for Patients with WLS and Without WLS.

Nutrients	Non-WLS		WLS Preventative Supplements			
	Dietary Reference Intake (DRI)	**Tolerable Upper Intake Level (UL) Daily Value (DV)**	**AGB**	**LSG**	**RYGB**	**BPD/DS**
Vit B 1	1.2 mg/d 14 yrs+ M 1.1 mg/d 19 yrs+ F	**UL:** none set; no reports of adverse effects from >50 mg B1/d from food or supplements **DV: 1.5 mg**	At least 12 mg/d At risk patients: at least 50 -100mg/d			
Vit B 12	2.4 ug/d 14 yrs+ M,F	**UL:** none set; due to its low potential for toxicity **DV: 6 ug**	350–500 ug/d oral, disintegrating tablet, SL or liquid or nasal – as directed or 1000 mcg/mo IM			
Folate	400 ug/d 19 yrs+ M,F	**UL:** 1000 mcg all ages & pregnancy **DV: 400 ug**	400–800 mcg oral 800–1000 mcg F childbearing ages			
Calcium	1000 mg/d 19–70 yrs M, 19–50 yrs F 1200 mg 51–70 + yrs F	**UL:** 2000–3000 mg /d **DV:** 1000 mg	1200–1500 mg/d			1800–2400 mg/d
Vit A	900 ug/d 14 yrs+ M; 700 ug/d 14 yrs+ F	**UL:** 10,000 IU/d (3000 mcg RAE/d)* retinol **DV:** 5000 IU	5000 IU/d		5000–10,000 IU/d	10,000 IU/d
Vit E	15 mg/d 14 yrs+ M,F	**UL:** 1000 mg/d (1500 IU/d) **DV:** 30 mg	15 mg/d			
Vit K	120 ug/d 19 yrs+ M 90 ug/d 19 yrs+ F	**UL:** none set; due to its low potential for toxicity **DV:** 80 ug	90–120 ug/d			300 ug/d
Vit D	600 IU/d (15 ug/d) 14 yrs+ M,F	**UL:** 4000 IU/d (100 ug/d) **DV:** 400 IU	At least 3000 IU/d to maintain D,25(OH) levels > 30 ng/mL			
Iron	8 mg/d 19 yrs+ M 8 mg/d 51 yrs+ F 18 mg/d 19–50 yrs F	**UL:** 45 mg/d **DV**: 18 mg	At least 18 mg/d from multivitamin	At least 45–60 mg/d in F with menses and/ patients with history of anemia		
Zinc	11 mg/d 19 yrs+ M 8 mg/d 19 yrs+ F	**UL:** 40 mg/d **DV:** 15mg	8–11 mg/d		8–11 mg/d to 16–22 mg/d	16–22 mg/d
Copper	900 ug/d 19 yrs+ M,F	**UL:** 10,000 mcg/d **DV**: 2 mg	1 mg/d		1–2 mg/d	2 mg/d

WLS =weight loss surgery; UL = upper intake level; DV = daily value; AGB = adjustable gastric band; LSG = laparoscopic sleeve gastrectomy; RYGB = Roux-en-Y gastric bypass; BPD/DS = biliopancreatic diversion/duodenal switch; SL = sublingual; IM = intramuscular; RAE = retinol activity equivalents; SQ = subcutaneous

Supplementation for non-WLS patients: Dietary Reference Intake (DRI), Daily Value (DV), Tolerable Upper Intake Level (UL) Supplementation for WLS patients: Actual dose for nutrients by type of WLS.

https://www.nal.usda.gov/sites/default/files/fnic_uploads//RDA_AI_vitamins_elements.pdf accessed 02/27/2017;
https://www.nal.usda.gov/sites/default/files/fnic_uploads//DRI_Elements.pdf accessed 02/27/2017

NUTRIENT	POTENTIAL	WHAT IT DOES	WHERE IT'S FOUND	SYMPTOMS AND PROBLEMS
Vitamin B1 *thiamin*	VERY COMMON	converts carbs to sugar, breaks down fats and protein, healthy digestion, nervous system, skin, hair, eyes, mouth, liver, immune system	pork, organ meats, wholegrain/enriched cereals, brown rice, wheat germ, bran, brewer's yeast, blackstrap molasses	decreased heart function, age-related cognitive decline, Alzheimer's, fatigue
Vitamin B2 *riboflavin*	LOW	metabolism, converts carbs to sugar, breaks down fat & protein, healthy digestion, nervous system, skin, hair, eyes, mouth, liver, antioxidant properties	brewer's yeast, almonds, organ meats, whole grains, wheat germ, mushrooms, soy, dairy, eggs, green vegetables	poor iron absorption, anemia, decreased free radical protection, cataracts, poor thyroid function, B6-deficiency, fatigue, elevated homocysteine
Vitamin B3 *niacin*	VERY COMMON	energy, digestion, nervous system, skin, hair, eyes, mouth, liver, eliminates toxins, sex/stress hormone production, improves circulation and cholesterol	beets, brewer's yeast, meat, poultry, organ meats, fish, seeds, nuts	cracking, scaling skin, digestive problems, confusion, anxiety, fatigue, reduced endurance
Vitamin B6 *pyroxidine*	VERY COMMON	used in 100 enzymes for protein metabolism, RBC production, reduces homocysteine, healthy nerve & muscle cells, DNA/RNA, B12 absorption, immune function	poultry, tuna, salmon, shrimp, beef liver, lentils, soybeans, seeds, nuts, avocados, bananas, carrots, brown rice, bran, wheat germ, whole-grain flour	depression, sleep and skin problems, elevated homocysteine, increase heart disease risk
Vitamin B12 *cobalamin*	VERY COMMON	healthy nerve cells, DNA/RNA, red blood cell production, iron function	fish, meat, poultry, eggs, dairy products	anemia, fatigue, weakness, constipation, loss of appetite, weight loss, numbness and tingling in the hands and feet, depression, confusion, dementia, poor memory, mouth or tongue soreness
Biotin	RARE	carbohydrate, fat, amino acid metabolism (the building blocks of protein)	meats, vegetables, unprocessed grains, brewer's yeast, corn, cauliflower, kale, broccoli, tomatoes, avocado, legumes, lentils, egg yolks, milk, sweet potatoes, seeds, nuts, wheat germ, salmon	depression, nervous system abnormalities, premature graying, hair loss, skin problems
Folate	VERY COMMON	brain function, mental health, DNA/RNA during infancy, adolescence and pregnancy, with B12 to regulate RBC production, iron function, reduce homocysteine	fortified cereals, grains, tomato juice, green vegetables, black-eyed peas, lentils, beans	anemia, impaired immune function, fatigue, insomnia, premature hair loss, high homocysteine, heart disease risk
Pantothenate	COMMON	RBC production, sex and stress-related hormones, immune function, healthy digestion, helps use other vitamins	meat, vegetables, whole grains, brewer's yeast, avocado, legumes, lentils, egg yolks, milk, sweet potatoes, seeds, nuts, wheat germ, salmon	reduced stress tolerance, poor wound healing, skin problems, fatigue
Vitamin A *retinol*	COMMON	eyes, immune function, skin, essential to cell growth and development	milk, eggs, liver, fortified cereals, orange or green vegetables, fruits	night blindness, poor immune function, zinc deficiency, fat malabsorption

NUTRIENT	POTENTIAL	WHAT IT DOES	WHERE IT'S FOUND	SYMPTOMS AND PROBLEMS
Vitamin D *ergocalciferol*	COMMON	calcium and phosphorus levels, calcium absorption, bone mineralization	sunlight, milk, egg yolk, liver, fish	osteoporosis, decreased calcium absorption, thyroid problems
Vitamin E *a-tocopherol*	COMMON	antioxidant, regulates oxidation reactions, stabilizes cell membrane, immune function, protects against cardiovascular disease, cataracts, macular degeneration	wheat germ, liver, eggs, nuts, seeds, cold-pressed vegetable oils, dark leafy greens, sweet potatoes, avocado, asparagus	dry skin and hair, rupturing of red blood cells, anemia, easy bruising, PMS, hot flashes, eczema, psoriasis, cataracts, poor wound healing, muscle weakness, sterility
Calcium	VERY COMMON	bones and teeth, helps heart, nerves, muscles, other body systems work properly, needs other nutrients to function	dairy, wheat flour, soy flour, molasses, brewer's yeast, Brazil nuts, broccoli, cabbage, dark leafy greens, hazelnuts, oysters, sardines, canned salmon	osteoporosis, osteomalacia, osteoarthritis, muscle cramps, irritability, acute anxiety, colon cancer risk
Magnesium	VERY COMMON	used in 300 biochemical reactions, muscle/nerve function, keeps heart rhythm steady, immune system, strong bones, regulates calcium, copper, zinc, potassium, vitamin D	green vegetables, beans, peas, nuts, seeds, whole, unprocessed grains	loss of appetite, nausea, vomiting, fatigue, weakness, numbness, tingling, cramps, seizures, personality changes, abnormal heart rhythms, heart spasms
Selenium	COMMON	antioxidant, works with vitamin E, immune function, prostaglandin production	brewer's yeast, wheat germ, liver, butter, cold water fish, shellfish, garlic, whole grains, sunflower seeds, Brazil nuts	destructive changes to heart, pancreas, sore muscles, increased fragility of red blood cells, weak immune system
Zinc	VERY COMMON	supports 100 enzymes, immune system, wound healing, sense of taste/smell, DNA synthesis, normal growth, development during pregnancy, childhood, adolescence	oysters, red meat, poultry, beans, nuts, seafood, whole grains, fortified breakfast cereals, dairy	growth retardation, hair loss, diarrhea, delayed sexual maturation, impotence, eye and skin lesions, loss of appetite/taste, weight loss, delayed wound healing, mental lethargy
Co-Q10	COMMON	powerful antioxidant, stops oxidation of LDL cholesterol, energy production, important to heart, liver, kidney function	oily fish, organ meats, whole grains	congestive heart failure, high blood pressure, angina, mitral valve prolapse, fatigue, gingivitis, weak immune system, stroke, cardiac arrhythmias
Carnitine	LOW	energy, heart function, oxidize amino acids for energy, metabolize ketones	red meat, dairy, fish, poultry, tempeh (fermented soybeans), wheat, asparagus, avocados, peanut butter	elevated cholesterol, abnormal liver function, muscle weakness, reduced energy, impaired glucose control
N-Acetyl Cysteine (NAC) & Glutathione	COMMON	glutathione production, lowers homocysteine, lipoprotein (a), heal lungs of free radical damage, inflammation, decrease muscle fatigue, liver detoxification, immune function	meats, ricotta, cottage cheese, yogurt, wheat germ, granola, oat flakes	free radical overload, elevated homocysteine, increased cancer risk, cataracts, macular degeneration, impaired immune function, impaired toxin elimination
Alpha Lipoic Acid	COMMON	energy, blood flow to nerves, glutathione levels in brain, insulin sensitivity, effectiveness of vitamins C, E, other antioxidants	supplementation, spinach, broccoli, beef, Brewer's yeast, some organ meats	diabetic neuropathy, reduced muscle mass, risk of atherosclerosis, Alzheimer's, failure to thrive, brain atrophy, increased lactic acid production