Table 1: Post-Bariatric Surgery Nutrition and Exercise, Vitamin Supplementation and Monitoring for Prevention of Complications

Post-bariatric surgery nutrition and exercise: Eat 3–5 small meals; chew food slowly; aim for minimum 60g protein/day (LS/RYGB) or 80g–120 g protein/day (duodenal switch/DS); separate liquids and solids by 30 minutes; no carbonated or caffeinated beverages; minimal to no alcohol intake; no smoking, no NSAIDs or DOACS post RYGB and DS; activity: 150 to 300 minutes/week.

Vitamins and minerals	**Daily prevention recommendation post-bariatric surgery (solid line means difference in dosing; — means no evidence of difference in dosing between the types of bariatric surgery)**			**Description of supplement with suggested timing (most patients will require complete multivitamins [MVs] with additional supplementation of B12, D, calcium and iron)**
	Laparoscopic Adjustable Gastric Banding or Sleeve	Roux-en-Y Gastric Bypass	Duodenal Switch	
Vitamin B2 (Riboflavin)		3.4 mg		Take complete MVs at breakfast. The vitamins and minerals listed on the left can be found in OTC complete MVs. Patients and clinicians need to carefully check labels as formulations differ between brands and sometimes can change. Generally, patients will need two complete OTC MV / day to reach the daily recommendations post bariatric surgery. The ratio of zinc:copper should remain 8–15 mg:1 mg. Some marketed vitamins are labelled as post bariatric surgery vitamins but may still need additional calcium, iron, B12 or vitamin D supplementation. Read labels carefully and adjust according to lab results. If pregnant, switch OTC MV to prenatal vitamin, not to exceed 5000 IU of vitamin A per day. Avoid retinol-based vitamin A during pregnancy and lactation; it is safe to continue beta-carotene. Additional screening and increased requirements of vitamin A in duodenal switch or if steatorrhea presents.
Vitamin B3 (Niacin)		40 mg		
Pantothenic acid (B5)		20 mg		
Vitamin B6		4 mg		
Biotin		60 mcg		
Vitamin C		120 mg		
Selenium		140 mcg		
Magnesium		400 mg		
Manganese		4 mg		
Chromium		120 mcg		
Molybdenum		50 mcg		
Zinc	8–11 mg	8–22 mg	16–22 mg	
Copper	1 mg	1–2 mg	2 mg	
Vitamin A	5000–10000 IU	5000–10000 IU	10000 IU	
Vitamin K	90–120 mcg	90–120 mcg	300 mcg	
Vitamin E		15mg		
Folic acid		400–800 mcg		
Folic acid (pre-conception to 12 weeks GA)		1000 mcg		
Folic acid from >12 wks to breastfeeding/ or 4–6 wks postpartum		800–1000 mcg Duodenal Switch		

ADDITIONAL SUPPLEMENTS				
Vitamins and minerals	**LAGB or LS**	**RYGB**	**DS**	**Description of supplement with suggested timing**
Vitamin B1 (thiamine)		12 mg		If insufficient amount in complete MV, add a 50 mg B-complex supplement Take at breakfast
Vitamin B1 for at-risk patients*		50–100 mg		Take two 50 mg B-complex supplements
Vitamin B12		350–500 ug		Take at breakfast Oral: 350–500 ug/day Nasal spray: as directed by manufacturer Parenteral (IM or SC): 1000 ug monthly
Vitamin D		3000 IU		Take at breakfast Titrate vitamin D supplementation: To maintain 25(OH)D levels at > 75nmol/L To parathyroid hormone levels It is not uncommon that for duodenal switch, higher supplementation of vitamin D (as high as 50,000 IU 2-3 times/week) may be required. D3 (cholecalciferol) is preferred over D2 (ergocalciferol) for its more potent effect
Calcium (from food and supplements)	1200–1500 mg	1200–1500 mg	1800–2400 mg	Take in divided doses Calcium citrate (preferred) with or without meals Calcium carbonate with meals Titrate to calcium and parathyroid hormone levels
Iron Low risk (men and patients without history of anemia)	18 mg			Take before bed Do not take with calcium as absorption blocked.
Menstruating women	45–60 mg			Ferrous sulphate is the preferred iron supplement, but others may be considered if this supplement is not tolerated Take with vitamin C 250–500 mg for better absorption with non-heme iron supplements Formulations of different non-heme iron supplements (elemental iron mg): • Ferrous sulphate 300 mg (60 mg) • Ferrous gluconate 300 mg (35 mg) • Ferrous fumarate 300 mg (99 mg) There is no evidence for the role of heme iron supplements (11 mg elemental heme iron/tablet) for prevention of anemia in post bariatric surgical patients. However, if this is what is tolerated clinically, careful monitoring of CBC and ferritin levels are warranted

*At-risk factors include GI symptoms such as intractable nausea and vomiting, malnutrition, excessive and/or rapid weight loss, excessive alcohol use

LAB MONITORING				
	LAGB or LS	**RYGB**	**DS**	**Comments**
Lab values to monitor	CBC, electrolytes, albumin, ferritin, B12, folate, calcium, 25(OH) vitamin D, PTH	Same as LAGB/ LS + vitamin A, zinc, copper	Same as RYGB + INR	Screen for thiamine for at-risk patients* or who have clinical features related to thiamine deficiency (see Table 2)
Lab frequency First year post-op: Thereafter:	Every 3–6 months Yearly	Every 3-6 months Yearly	Every 3 months Every 6-12 months	In pregnancy, labs should be monitored each trimester: CBC, ferritin, albumin, B12, 25(OH) D, calcium, PTH, folate For hypoabsorptive surgeries add zinc, copper, vitamin A (for duodenal switch possibly add vitamin E and vitamin K) Vitamin A levels with RYGB and DS need to be adjusted

*At risk factors include GI symptoms such as intractable nausea and vomiting, malnutrition, excessive and/or rapid weight loss, excessive alcohol use
LAGB: laparoscopic adjustable gastric banding; LS: laparoscopic sleeve; RYGB: Roux-en-Y gastric bypass; DS: duodenal switch; NSAIDs: non-steroidal anti-inflammatory drugs; DOACs: direct oral anticoagulants; OTC: over-the-counter; MV: multivitamin; CBC: complete blood count

Source: Shiau, J.