



Overview of **Nutrition** for the Bariatric Patient

Gulf Coast Bariatrics' Support Group
September 15, 2021



Science Based.
Patient Focused.

Why Worry About Vitamins and Minerals?



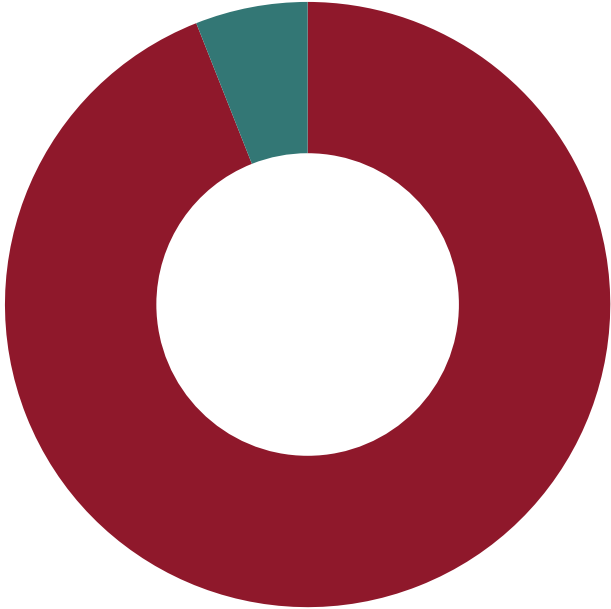
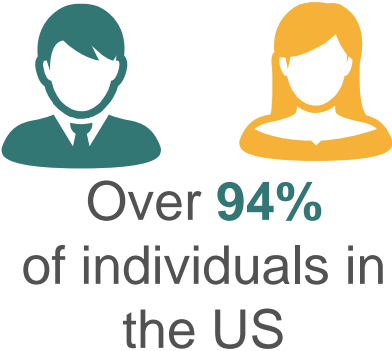
Nutritional deficiencies are
**common even before
weight loss surgery**



Weight loss surgery can
worsen deficiencies

Few US Adults Meet Basic Nutritional Needs

Results from a Large Nationally Representative Study

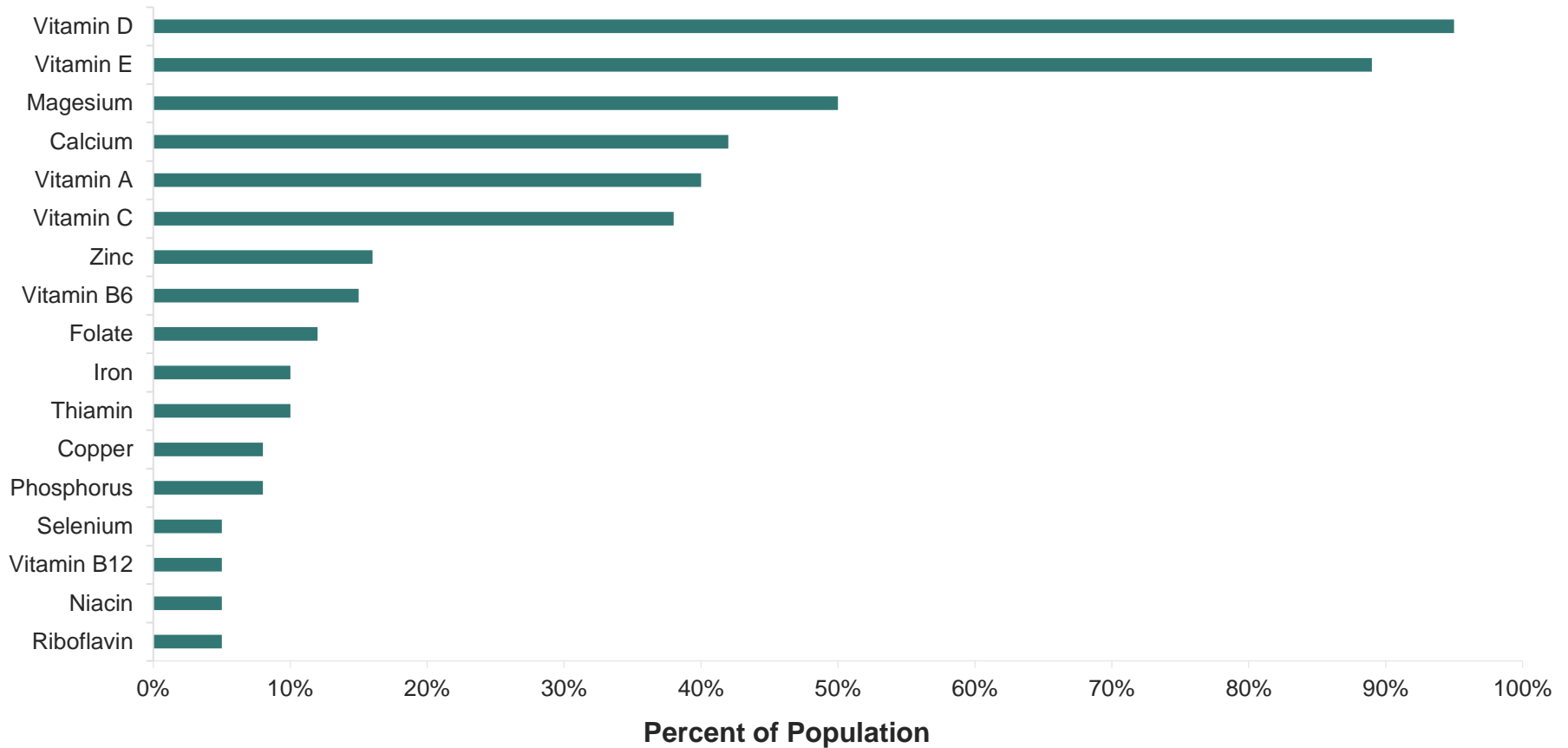


...failed to meet the recommended intake for one or more nutrients from food and beverages alone

Data from What We Eat in America, NHANES 2007-2010. Report: Scientific Report of the 2015 Dietary Guidelines Advisory Committee

US adults do not meet intake requirements for key essential nutrients

Percent of population with usual intakes below the estimated average requirement



Data from What We Eat in America, NHANES 2007-2010. Report: Scientific Report of the 2015 Dietary Guidelines Advisory Committee

Bariatric patients are no exception

Multiple studies have identified deficiencies before surgery



Iron

36-57%



Vitamin D

26-93%



Vitamin B12

18 - 25%



Zinc

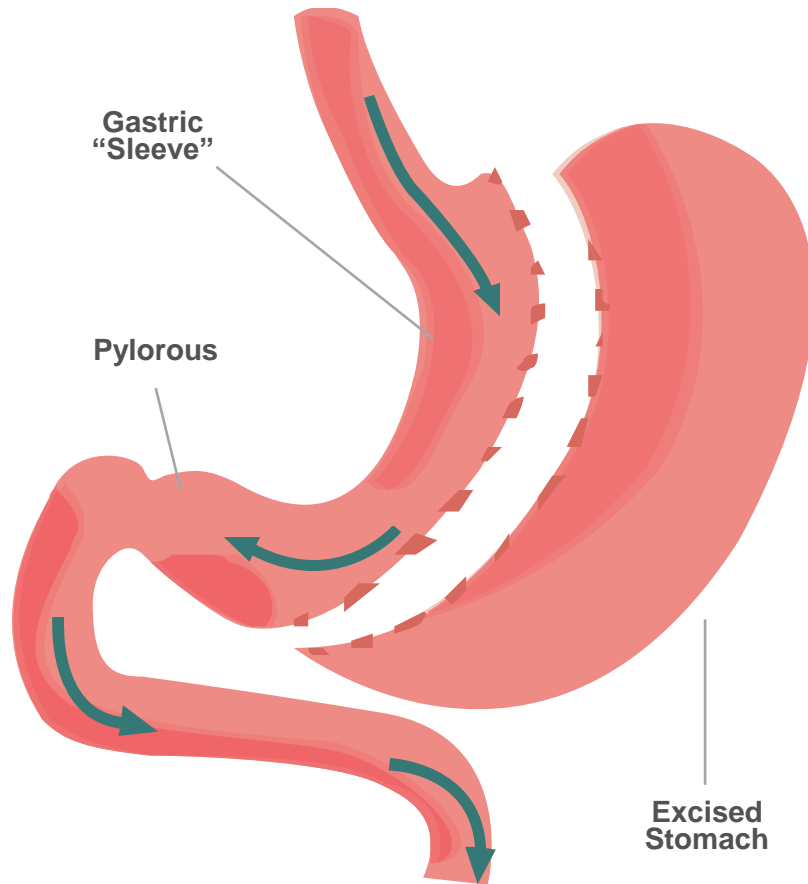
25%

...and surgery can exacerbates existing deficiencies and create new ones



Nutritional Impact by Procedure

Vertical Sleeve Gastrectomy (VSG)



Nutrient deficiencies may arise due to:

Reduces stomach volume

Reduced dietary intake

Decreased capacity for digestion due to changes in stomach size

Reduced gastric acid (use of PPIs, and reduced volume)

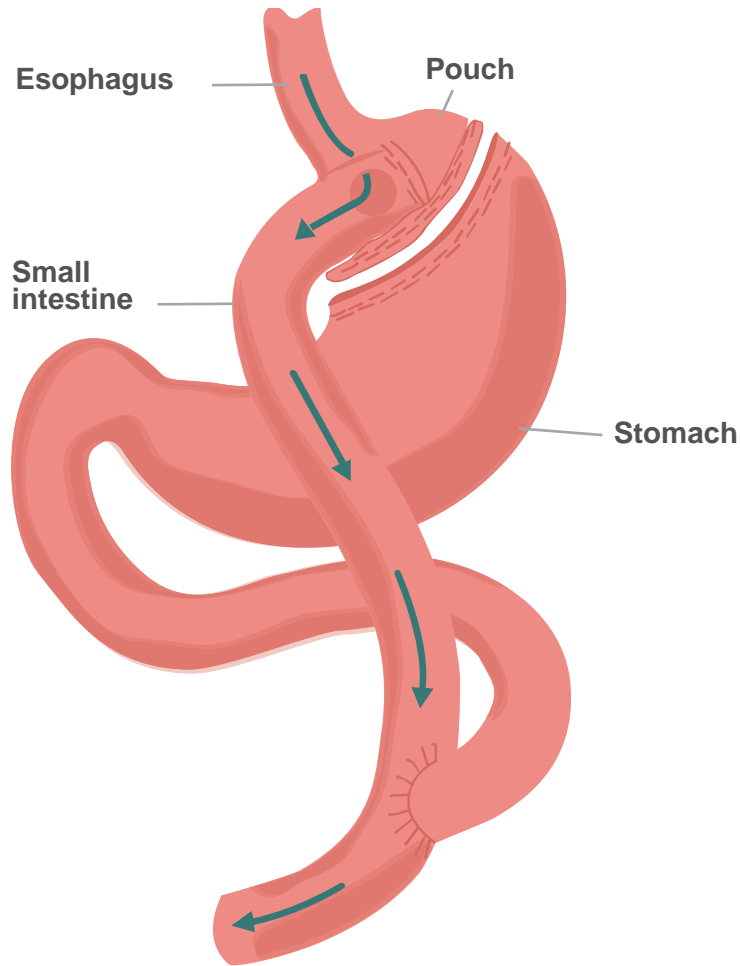
Vertical Sleeve Gastrectomy (VSG) and Deficiencies

Nutrient/Lab	% Deficient
Ferritin	32.9%
Vitamin D	30.4%
Albumin	8.5%
B12	3.2%
Folic acid	2.2%

Study

117 patients after
laparoscopic sleeve
gastrectomy followed for 2
years after surgery

Gastric Bypass (RYGB)



Nutrient deficiencies may arise due to:

Reduced dietary intake

Decreased capacity for digestion due to changes in stomach size

Micronutrient absorption impaired due to bypassing sections where absorption predominantly occurs

Gastric Bypass (RYGB) and Deficiencies

Nutrient/Test	% became deficient post-op
B12	58%
Folate	12%
Vitamin D	52%
Iron	28%
Zinc	37%

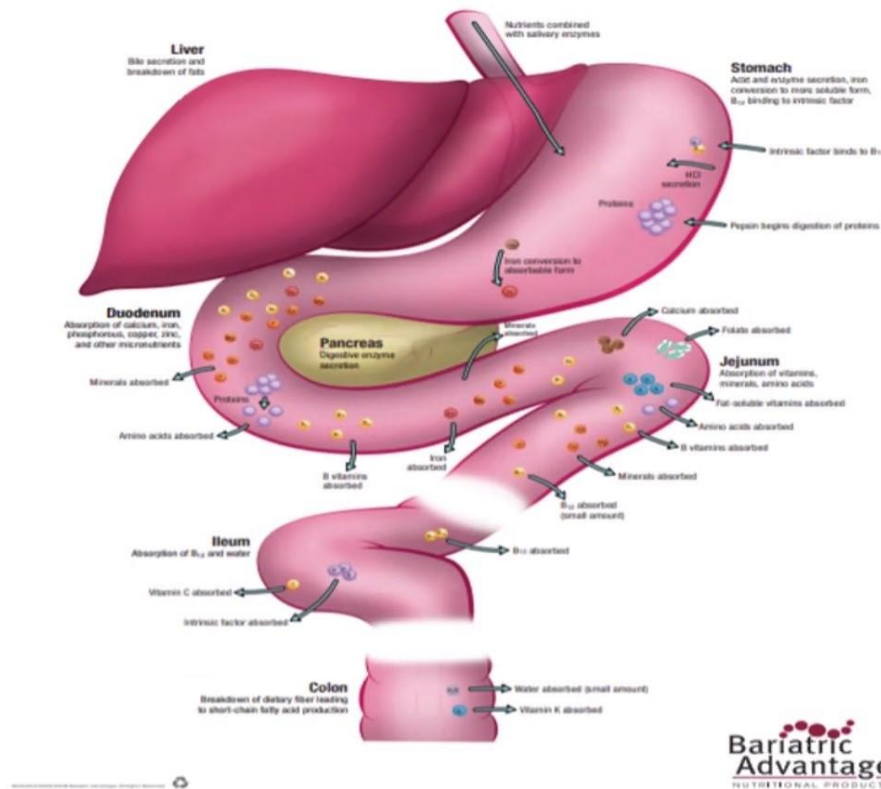
Study

86 patients with RYGB
followed for 3 years

- 1) Gehrler et al. *Obes Surg* 2010;20:447-453
- 2) Van der Beek et al. *Obes Surg* 2015;25(5):818-23

Absorption poster is hanging in exam rooms

DIGESTION AND ABSORPTION OF NUTRIENTS



- Active vs. passive absorption.
- RYGB bypass of duodenum.
- Less stomach acid production.
- Less nutritional opportunity.

ASMBS Guidelines for Vitamin and Mineral Supplementation

Routine micronutrient supplementation may be initiated pre-operatively

Gastric Bypass (RNY) and Sleeve

- High potency multi-vitamin providing 200% daily value* in form targeted for bariatric patient
- 1200-1500 mg calcium per day
- At least 3000IU vitamin D and B12 1000mcg/day or as needed to maintain levels
- Additional iron and B vitamins including B12, and other nutrients as needed

A minimum protein intake of 60g/day and up to 1.5kg ideal body weight per day with higher levels to be assessed on an individualized basis

Ailles et al *Surg Obes Relat Dis.* 2008 Sep-Oct;4(5 Suppl):S73-108.

* for at least 2/3 of nutrients



Nutritional Supplementation

Why does it matter?

What Does It Do?

- Assures meeting daily nutritional needs
- Provides a foundation for all other nutrition
- Nutrients are important in biological processes involved in regulating weight.

Why a Risk?

- Low intake of key nutrients due
 - Less food
 - Lowered ability to absorb nutrients

Deficiency

- Identified frequently before surgery
- Very common after surgery
- Risk of deficiency is reduced with supplementation
- Deficiency leads to issues related to blood, nerve, and

Your Bariatric Advantage Multivitamin plus calcium has the right amounts your body needs to support a healthy immune system!

Capsule Multivitamin



One capsule per day multivitamin

- 45 mg iron (from ferrous fumarate)
- 10,000 IU Vitamin A
- 3,000 IU Vitamin D3
- 60 IU Vitamin E
- 120 mcg Vitamin K
- 120mcg Vitamin C
- 500 mcg vitamin B12
- 25 mg thiamin (vitamin B1)
- 20 mg Zinc



Three capsules per day multivitamin

- 45 mg iron (from ferrous fumarate)
- 10,000 IU Vitamin A
- 3,000 IU Vitamin D3
- 60 IU Vitamin E
- 300 mcg Vitamin K
- 120mcg Vitamin C
- 1,000 mcg vitamin B12
- 50 mg thiamin (vitamin B1)
- 20 mg Zinc

Chewable Multivitamins



Two chewable tablets per day multivitamin

- 45 mg iron (from ferrous fumarate)
- 10,000 IU Vitamin A
- 3,000 IU Vitamin D3
- 150 IU Vitamin E
- 300 mcg Vitamin K
- 90 mcg Vitamin C
- 1,000 mcg vitamin B12
- 50 mg thiamin (vitamin B1)
- 16 mg Zinc
- Micelle Technology to help absorb Vitamins A,D,E,K better

Two chewy bites per day multivitamin + two Iron 45 mg capsules

- 45 mg iron (from ferrous fumarate)
- 5,000 IU Vitamin A
- 3,000 IU Vitamin D3
- 60 IU Vitamin E
- 160 mcg Vitamin K
- 400 mcg Vitamin C
- 1,000 mcg vitamin B12
- 25 mg thiamin (vitamin B1)
- 15 mg Zinc

What Does It Do?

- Bones and teeth – 99% of calcium is found in teeth and bones
- Tissue health
- Nerve transmission and muscle contraction

Why at Risk for Deficiency?

- Reduced food intake can make it difficult to get enough calcium
- Need highly absorbable forms
- Need to protect against bone loss with rapid weight loss

Why does it matter?

- Deficiencies can go unnoticed, as assessment requires regular monitoring and specialized tests.
- Osteoporosis is a late sign
- Fracture risk

Requires Vitamin D₃ for absorption

Citrate vs. Carbonate

Citrate aids in calcium absorption with reduced stomach acid. Citrate is recommended for bariatric patients

Calcium

Calcium as highly absorbable Calcium Citrate



Chewable tablets

Contains 500mg calcium citrate + 500 IU vitamin D3

- Wild Cherry
- Chocolate
- Cinnamon



Chewy Bites

Contains 500mg calcium citrate + 500 IU vitamin D3

- Strawberry
- Tropical Orange
- Coconut
- Caramel
- Chocolate
- Peanut Butter Chocolate
- Lemon
- Raspberry
- Pineapple Mango
- Assorted Sweet Variety
- Assorted Fruit Variety

What Does It Do?

- Promotes calcium and phosphorus absorption
- Needed for bone growth and bone remodeling

Why a Risk?

- Up to 90% of preoperative patients reported to be deficient
- Over 50% of post-operative patients remain deficient despite taking a multivitamins – monitoring of levels and tailored supplementation important
- Use of SPF, less time spent in sun
- Low intake of vitamin D-rich foods

Deficiency

- Bone disorders
 - Brittle Bones (Osteoporosis/ Osteopenia)
 - Bones Softening (Osteomalacia)
 - Fracture risk

Vitamin D₃

Uses Vitamin D₃ – the clinically preferred form



- Easy-swallow small capsule
- Water-miscible “dry” form
- 5,000 IU per capsule



- Chewable Gels
- 10,000 IU
- Patented gel emulsion technology designed to support better bioavailability

What Does It Do?

- Carries oxygen, enzyme functions, immune function, detoxification, growth and development

Why a Risk?

- Non-heme sources must be solubilized in acidic environment of the stomach
- Primarily absorbed in duodenum
- Greater risk in women with periods

Deficiency

- Red Blood Cell Deficiency (Anemia)
- Fatigue
- Muscle Fatigue
- Ongoing Hair Loss
- Pica/Ice Eating
- Restless Legs

Inhibitors of Iron Absorption



Calcium has been shown to reduce iron absorption after a meal by 50-60%²



Coffee reduces iron absorption from food by ~40%³

1) Institute of Medicine, Dietary Reference Intakes for Iron, 2001
2) Hallberg et al. *Am J Clin Nutr* 1991;53:112-119
3) Morck et al. *Am J Clin Nutr* 1983;37(3):416-420

Iron

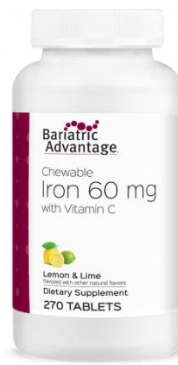
Bariatric Advantage has Iron a range of strengths in both chewable and capsule, in the right forms of Iron



- Chewable
- 18mg Iron
- Ferronyl® carbonyl
- Vitamin C to optimize iron absorption and utilization



- Chewable
- 29mg Iron
- Ferronyl® carbonyl & Ferrous Fumarate
- Vitamin C to optimize iron absorption and utilization



- Chewable
- 60mg Iron
- Ferronyl® carbonyl
- Vitamin C to optimize iron absorption and utilization



- Chewy Bite
- 30mg Iron
- Ferric Orthophosphate
- Vitamin C to optimize iron absorption and utilization



- Capsule
- 45mg (per 2 capsules)
- Ferrous Fumarate
- Vitamin C to optimize iron absorption and utilization, Thiamin, and Copper



- Tablet
- 29 mg of iron
- Ferrous bis-glycinate
- B Vitamins and other nutritional factors.

Vitamin B₁ (Thiamin)

What Does It Do?

- Role in enzymes, very important for converting dietary carbohydrate to cellular energy
- Most important to the brain and cardiovascular systems
- Plays a role in muscle contraction and conduction of nerve signals

Why a Risk?

- Primary site of absorption is partly bypassed by most procedures
- Vomiting and decreased food consumption are both risks of thiamin deficiency
- Very short half life – must be given rapidly if low oral intake

Deficiency

- Mental changes including apathy, reduced short-term memory, confusion, irritability
- Muscle weakness
- Cardiovascular effects such as enlarged heart
- Nerve damage

Vitamin B₁₂ (Cobalamin)

What Does It Do?

- B₁₂ is a cofactor in essential physiological reactions
- Very important for nerves, brain, heart, blood cell production, DNA

Why a Risk?

- Stomach acid frees from food
- Stomach intrinsic factor needed to absorb most of the B₁₂ from diet
- Only 1-3% absorbed without intrinsic factor

Deficiency

- Fatigue
- Tingling and Numbness
- Weakness
- Shortness of Breath
- Sore Tongue (Severe)
- Mood and Memory Changes
- Palpitations
- Flatulence/Constipation

Vitamin B₁ & B₁₂

Delivered in a substantial level in all our Multivitamins but also available on their own for therapeutic regimens



- Capsule
- 100mg B₁



- Fast Melting Tablets
- 1000mcg B₁₂
- With Folic Acid for combined affect
- Flavors
 - Peppermint
 - Black Cherry

Sublingual

What Does It Do?

- Major functional and structural component of all the cells of the body
- Promotes muscle growth and strength – half of body protein is present in skeletal muscle
- The body requires protein for maintenance and repair

Why a Risk?

- Decreased dietary intake and volume
- Intolerance 37%-65% of patients report food intolerances, and meat intolerances is one of the most common
- Protection of muscle mass during weight loss

Deficiency

- Loss of muscle and decreased strength (Sarcopenia)
- Negative impact on bone health
- Hair loss
- Associated with other vitamin and mineral deficiencies and electrolyte disturbances

Aills et al. *Surg Obes Relat Dis.* 2008;4(5 Suppl):S73-108.

Institute of Medicine 2005. Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids, Hannon et al., *J Bone Miner Res.* 2000; 15(12):2504-12

Protein Shakes

Meal Replacements



- 27g Protein
- 100% Whey Protein Isolate
- 5g Fiber
- 1g Sugar
- 23 Essential Vitamins & Minerals

Flavors

- Chocolate
- Vanilla
- Strawberry
- Orange Cream
- Iced Latte
- Banana
- Cookies & Cream
- Unflavored
- Chicken Soup

Protein Supplement



- 20g Protein
- 100% Whey Protein Isolate
- 6g Fiber
- 1g Sugar

Flavors

- Chocolate
- Vanilla

Clear Protein Option



- 80 calories
- 20 g Protein
- 100% Whey Protein Isolate
- 0 g Sugar
- 0 g Carbs
- No artificial sweeteners-
sweetened with Stevia and Monk Fruit
- Available in 16.9 oz. Ready to Drink
bottles

What's New at Bariatric Advantage.....

Balanced Protein Bar!!

- **Peanut Butter Chocolate flavor!**
- Key nutrients:
 - 19 g protein
 - 8 g of fiber from inulin and chicory root
 - 18 grams net carb from rice flour, peanut butter, chocolate, sugar
 - Gluten free
 - Clean ingredients
 - No artificial flavors or sweeteners- 4 g sugar from cane sugar and stevia



Microbiome: What Does It Do?

- Help breakdown food and promote nutrient absorption
- Microbes found in the gut play help protect against undesirable microbes
- Promote healthy immune responses
- Strengthen the immune system

Healthy Microbiome

- Compete with invaders for dietary ingredients as growth substrates
- Compete for binding sites of pathogens
- Reduces inflammation
- Improves gut barrier function
- Stimulates immune responses

Benefits of Probiotics

- Certain probiotics promote the production of antibodies to fight invaders
- Boost immune cells to attack invading pathogens

**Benefits of probiotics are strain specific;
there are specific strains for gastrointestinal and immune health**

Probiotic Strain Matters

Genus, species, strain	Studied benefits
Lactobacillus acidophilus NCFM Bifidobacterium lactis Bi-07 (Floravantage Balance)	<ul style="list-style-type: none">• Helps maintain balance of intestinal flora• Supports immune system
Bifidobacterium lactis B-420 (Floravantage Control)	<ul style="list-style-type: none">• Helps control body fat and body weight (use as part of weight management program)
Lactobacillus salivarius UCC118	<ul style="list-style-type: none">• Supports tight junctions of intestinal epithelial cells
Lactobacillus rhamnosus GG	<ul style="list-style-type: none">• Prevention and reduction of atopic dermatitis in children
Lactobacillus plantarum 299V	<ul style="list-style-type: none">• Support of gut barrier function and improvement of IBS symptoms

Bariatric Advantage Probiotic Options



- Chewable
- 10 billion CFUs (colony forming units)
- **Designed to help achieve a healthy microbiome and intestinal environment and support a healthy immune system**
- A 50:50 Blend of:
Lactobacillus acidophilus NCFM®
Strain
Bifidobacterium lactis Bi-07

- Capsule
- 15 billion CFUs (colony forming units)
- **Designed to help achieve a healthy microbiome and intestinal environment and support a healthy immune system**
- A 50:50 Blend of:
Lactobacillus acidophilus NCFM®
Strain
Bifidobacterium lactis Bi-07

- Capsule
- 10 billion CFUs (colony forming units)
- **Designed to help control body weight and body weight regulation, body fat, abdominal fat, and reduce waist circumference**
- Clinically studied proprietary blend with strains of Bifidobacterium lactis B420

Best practices, vitamin protocols

2021

Bariatric Advantage Daily Supplement Plan



Breakfast
CHEWABLE
Advanced
Multi EA

2 tablets

or



CAPSULE
Ultra Solo
with Iron

1 capsule



Lunch
Calcium Citrate
Chewy Bites

500mg

Dinner
Calcium Citrate
Chewy Bites

500mg

**Snack (2 Hours
After Lunch)**

**(for gastric
bypass only)**

Calcium Citrate
Chewy Bites

500mg



Taking Your Vitamins

Making Nutrition Work for YOU

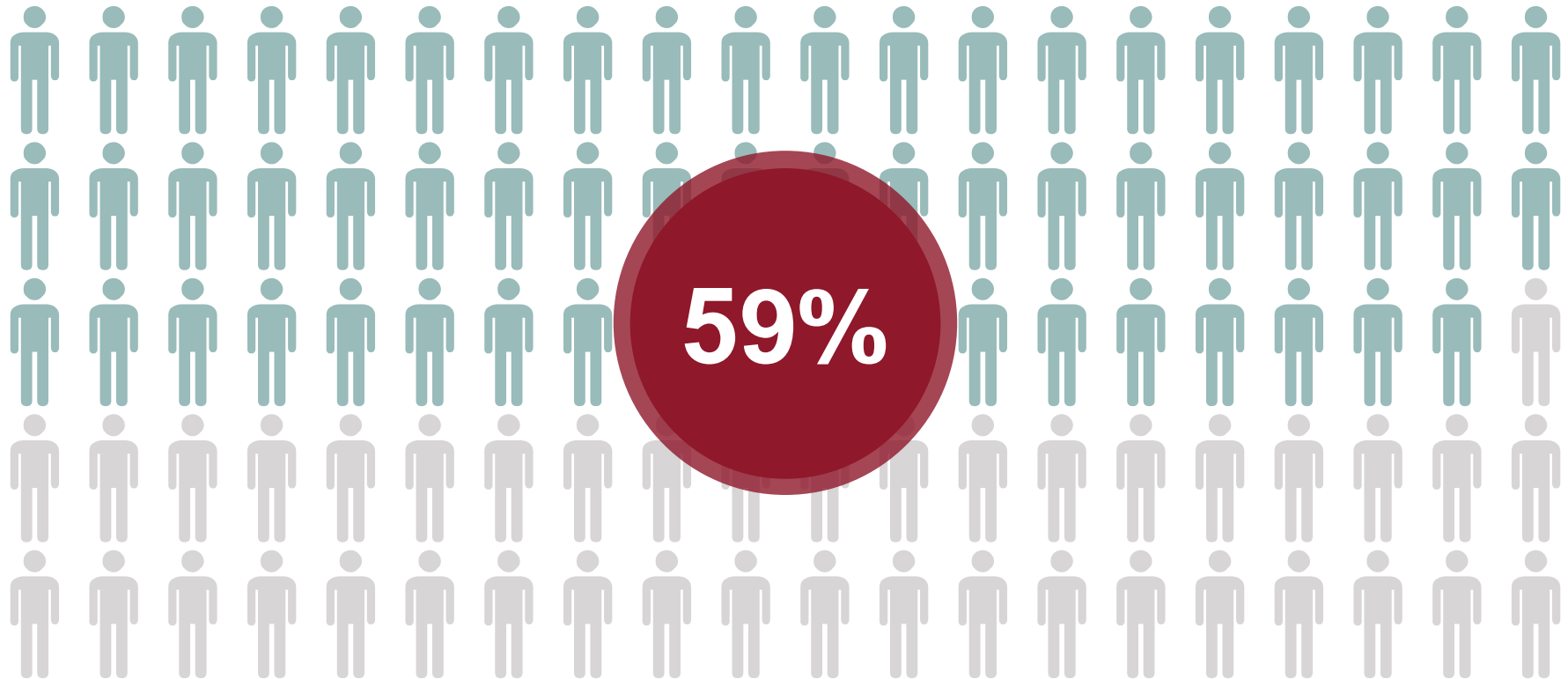
Nutrient Based on previous slide "Available Guidelines," see individual guidelines for specifics	Minimum daily level to prevent deficiencies (oral doses) *Recommendations based on procedure type and patient-specific demographics
Iron	18 mg or 45-60 mg
Vitamin B ₁₂	350-500 mcg
Folate	400-1,000 mcg
Thiamin	12-100 mg
Calcium	1,200-2,400 mg
Vitamin D	3,000 IU (titrate serum 25(OH)D lab to > 30 ng/ml)
Vitamin A	5,000-10,000 IU
Vitamins E & K	15 mg/90-300 mcg
Zinc & copper	8-22 mg/1-2 mg
Selenium	"high-potency MVI"
Magnesium	"contains magnesium"
Additional B vitamins	100-200% DV
Trace minerals (molybdenum, manganese, chromium, etc.)	"complete in minerals"

Nutrient	Minimum Daily Level to Prevent Deficiencies (Oral Doses)	Number of Tablets Needed? Bariatric Advantage—Advanced Multi EA ¹	Number of Tablets Needed? Flintstones, Children's Chewable
Iron	18 mg or 45-60 mg	1-2	2 or 5-6
Vitamin B ₁₂	350-500 mcg	1	145-208
Folate	400-1,000 mcg	1-2	1-2
Thiamin	@ least 12 mg	2	10
Vitamin D	3,000 IU (75 mcg)	2	4
Vitamin A	5,000-10,000 IU (~1,500-3,000 mcg)	1-2	4-8
Vitamins E/K	15 mg/90-300 mcg	1-2	1 / 2-5
Zinc/Copper	8-22 mg/1-2 mg	2	3-5
Selenium	"high-potency MVI"	1	Does not contain
Magnesium	"contains magnesium"	1	Does not contain
Additional B vitamins	100-200% DV	1-2	1-2

1. Product labeling. Bariatric Advantage Advanced Multi EA. Available at: https://www1.bariatricadvantage.com/catalog/group/110373/advanced_multi_ea. Accessed September 24, 2020.
2. Product labeling. Flintstones Complete Chewable Multivitamin. Available at: <https://www.flintstonesvitamins.com/products/complete-chewable-vitamins>. Accessed September 24, 2020.

Nutrients	Centrum	Tabs needed	Flintstones	Tabs needed	Alive	Tabs needed	Women's 1 a Day	Tabs needed
Iron 45-60 mg	8 mg	6	18 mg	3	None	—	18 mg	3
B ₁₂ 350-500 mcg	6 mcg	58-83	6 mcg	58-83	4.5 mcg	78-111	6 mcg	58-83
Folate 400-800 mcg 800-1,000 mcg	400 mcg	1-2	400 mcg	1-2	200 mcg	2-4	400 mcg	1-2
Thiamin At least 12 mg	1.5 mg	8	1.5 mg	8	1.8 mg	7	1.5 mg	8
Vitamin D 3,000 IU	400 IU	8	600 IU	5	400 IU	8	1,000 IU	3
Vitamin A 5,000-10,000 IU	1,500 IU	4-7	3,000 IU	2-4	1,250 IU	4-8	2,500 IU	2-4
Vitamin E 15 mg	30 IU	1	30 IU	1	15 IU	1	22.5 IU	1
Vitamin K 90-120 mcg	10 mcg	9-12	None	—	None	—	25 mcg	4
Zinc 8-22 mg	15 mg	1-2	12 mg	1-2	1.25 mg	7-18	15 mg	1-2
Copper 1-2 mg	2 mg	1	2 mg	1	None	—	2 mg	1
Selenium *high-potency MVI	None	—	None	—	None	—	20 mcg	1
Magnesium "contains magnesium"	40 mg	1	None	—	None	—	None	—
Additional B vitamins 100--200% DV	100%	1-2	100%	1-2	25%	4-8	100%	1-2
Trace minerals "Complete in"	Contains	1	None	—	None	—	Contains	1

Compliance with supplements after surgery is suboptimal



In the year after surgery compliance with multivitamin regimen was 59% in a group of 307 bariatric surgery patients

Nutritional Supplementation reduces the risk of deficiencies

Odds of developing a vitamin A, B12, D or iron deficiency were significantly less in patients who were compliant with supplementation

80%

Compliance reduced risk of developing iron deficiency by 80% on average for the group

10%

Probability of developing vitamin D deficiency are 10% compliant and 34% non-compliant

25%

Supplementation resulted in at least 25% reduction in odds of developing B12 deficiency

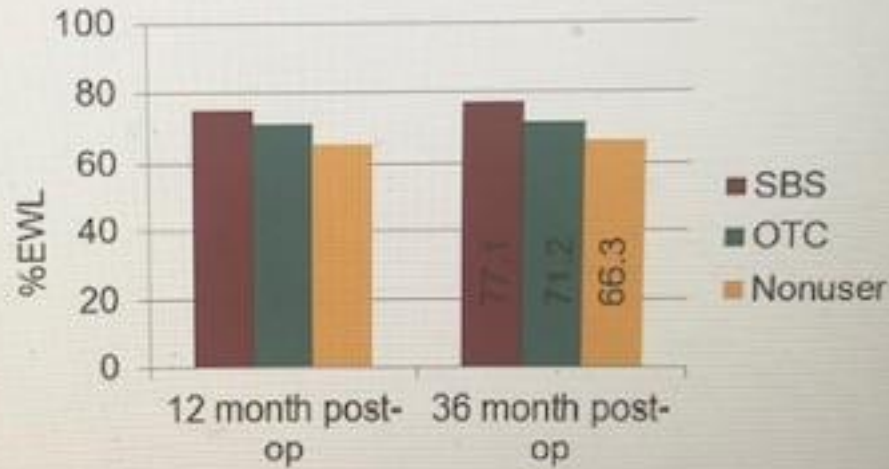
12
months

Compliance with regimen significantly related to lower probability of developing vitamin A deficiency at 12 months after surgery

Study: **309 bariatric surgery patients** with normal nutrient status at baseline instructed to take a vitamin and mineral supplement compliance with guidelines for bariatric patients

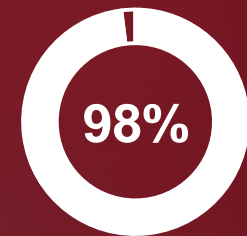
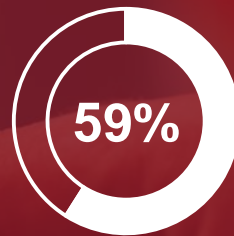
Inadequate supplement intake has been shown to decrease weight loss after surgery

Take away:
Patients who take bariatric supplement (SBS) lost 6% more weight than taking and over the counter (OTC) supplement and 11% more weight than patients who don't take vitamins!



Can standard multivitamin supplements do the job?

Study in American Journal of Clinical Nutrition indicates that they do not.



This study followed **137 gastric bypass patients** who used standard multivitamins with levels of key nutrients below requirements for bariatric patients

After 1 year, **59%** of these patients **had nutritional deficiencies despite this supplementation** and required additional supplements

After 2 years, **98%** of these patients **had nutritional deficiencies despite this supplementation** and required additional supplements

Not all supplements are the same.



Products scientifically designed to **meet the specific and unique nutritional demands of bariatric patients.**

- Bioavailable and Elemental Forms
- Absorption enhancing technology
- Higher levels of Vitamin A, B1 B12, D and Iron
- Delicious variety chewable forms and flavors



Products are **manufactured under strict quality controls to ensure quality and purity and that go beyond FDA requirements**

- Triple Certified GMP (Good Manufacturing Practices)
- Tested four times through the manufacturing process to ensure delivery of nutrients

Over the counter vs Bariatric Advantage supplements



OR



4 supplements per day=\$55.97
With 15% off DISCOUNT!

9-12 supplements per day= \$55.50

Tablets, Capsules, or Liquids?



Avoid coated tablets unless your doctor has specifically recommended them



Gelatin capsules usually recommended after the gut has healed 30-90 days after surgery



Chewable tablets usually preferred

- Only adult bariatric specific formulations (not children's)
- ASMBS recommended post operatively.
- Fun and delicious so easy to remember to take



Liquids

- Look carefully at ingredients
- Check shelf life
- Check other ingredients

What Can We Conclude?



Many people start out with **low nutrition** before surgery



Nutritional supplementation is necessary after surgery



Bariatric surgery **increases deficiencies** through:

- Less food
- Different food
- Digestive and absorptive changes



Your **practitioner** can help you choose the products that are appropriate for your treatment and procedure



Not all supplements are the same
Look for quality products designed to meet the specific and unique nutritional demands of bariatric patients.

Take Your Vitamins

Listen to your doctor – and stick to what is recommended for:



Diet



Supplements



Follow-up
Lab Tests



When you have questions or concerns, **ask your doctor, dietitian or other trusted bariatric professional.**



Be cautious of outside advice.



Be consistent – they do not work if you do not take them!



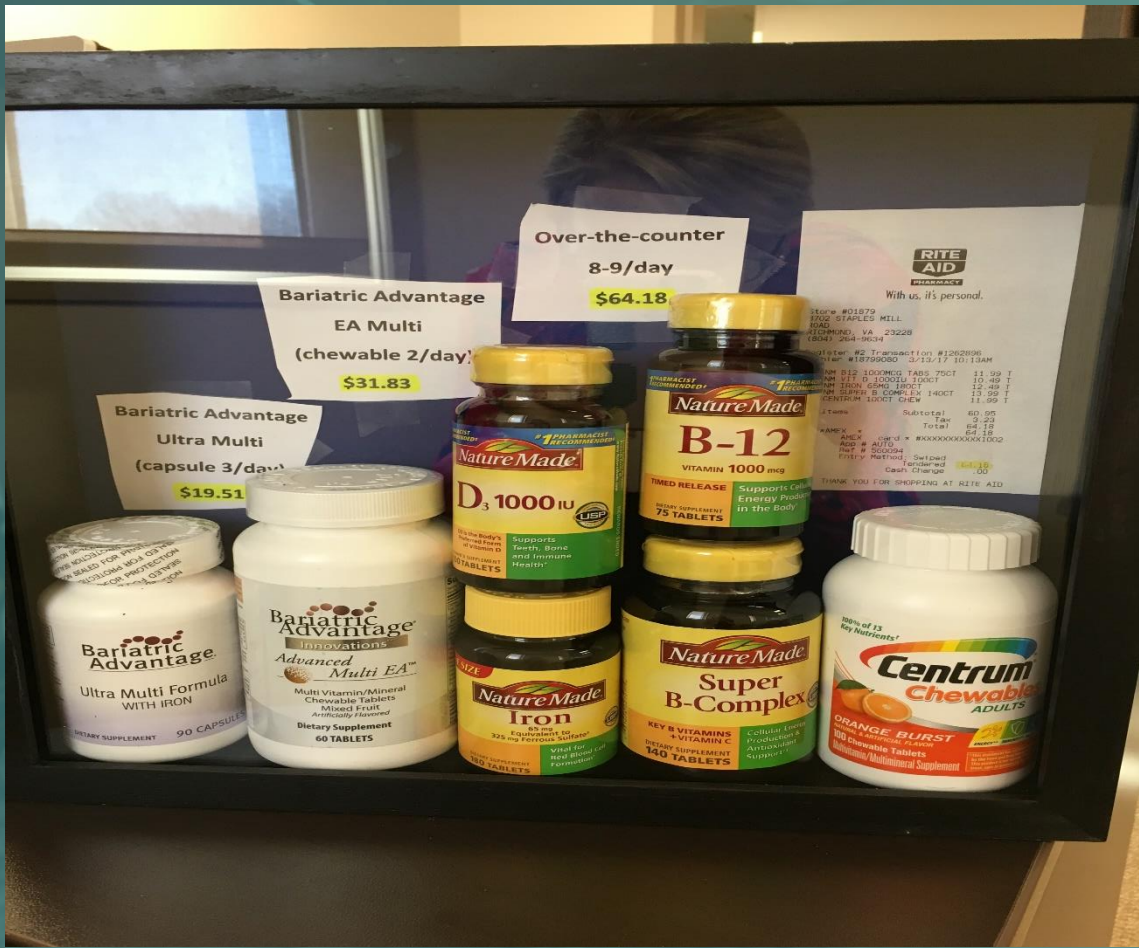
Pick your supplements carefully – not all supplements are the same!

Options can be overwhelming...



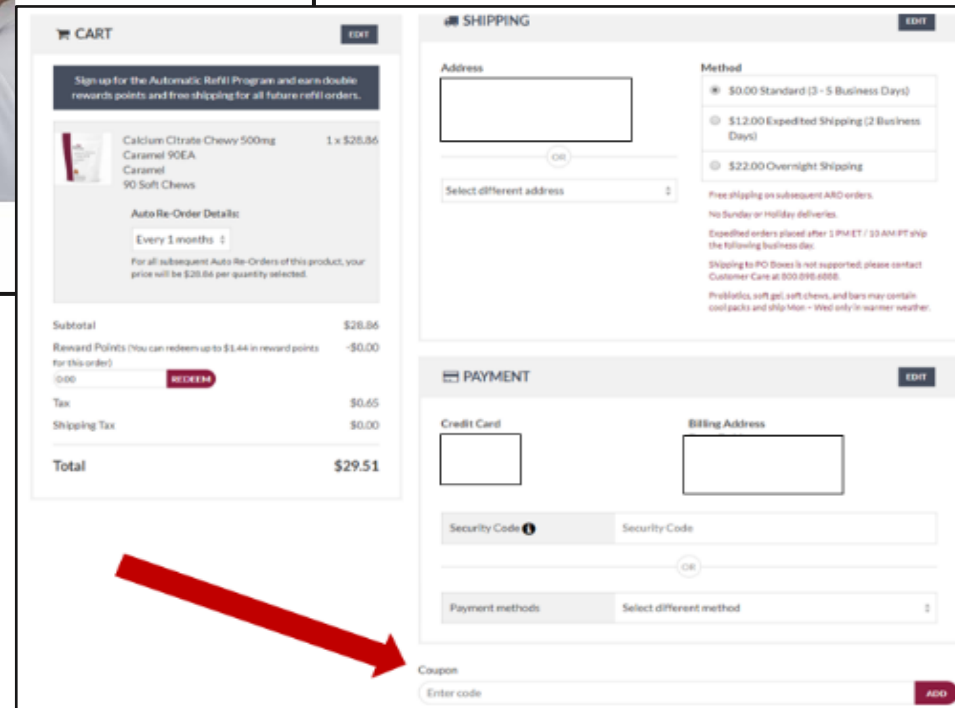
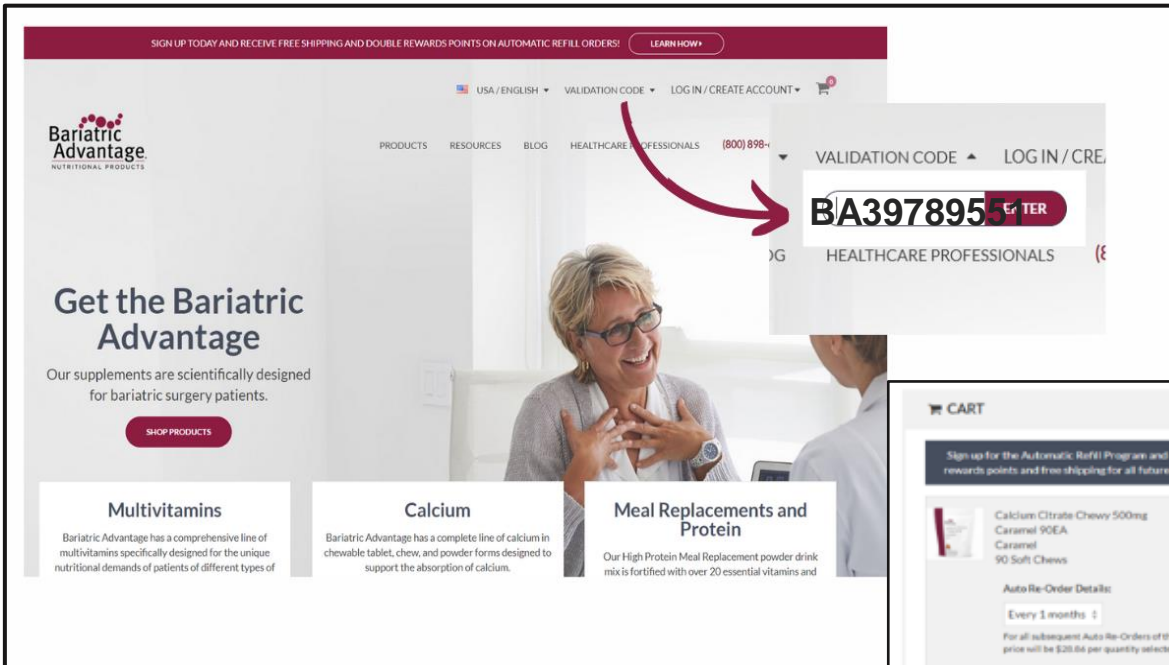
Options can also be expensive...

(and difficult to remain compliant with)



Order at: www.bariatricadvantage.com
or call 1.800.898.6888

Validation Code:
BA39789551



Coupon Code:
BA3978955110
for additional 10% off


Patient Support Solutions

- Automatic Re-order – **ALWAYS FREE SHIPPING**
 - Sign up for the auto renewal program, & you'll receive free shipping and double rewards points towards FREE products
- 100% Satisfaction Guarantee

The screenshot displays two main sections of the website: the shopping cart and the sign-in/register page.

CART

Sign up for the Automatic Refill Program and earn double rewards points and free shipping for all future refill orders.

	Calcium Citrate Chewy 500mg Caramel 90EA Caramel 90 Soft Chews	1 x \$28.86
---	---	-------------

Auto Re-Order Details:

Every 1 months

Subsequent Auto Re-Orders of this product, your price will be \$28.86 per quantity selected.

Subtotal	\$28.86
Shipping	\$6.50
Tax	\$0.29
Shipping Tax	\$0.00
Total	\$35.65

SIGN-IN / REGISTER

Already have an account?
Sign in for a quicker checkout.

Email	Email
Password	Password

Forgot password?

CHECKOUT

New Customers
Password must be at least 6 characters, and contain both lower and upper case letters and a number.

First Name	First Name
Last Name	Last Name
Email	Email
Confirm Email	Confirm Email

10% off coupon!

<https://info.bariatricadvantage.com/ba39789551091521>

Complete the 1 Minute survey
& you'll receive via email another coupon for 10% again



**Thank you for attending
Gulf Coast Bariatrics'
Support Group!**

Order at: www.bariatricadvantage.com

or

<https://gulfcoastbariatrics.bariatricadvantage.com/>