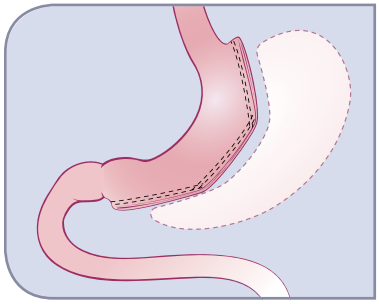

Metabolic and Bariatric Surgery (MBS) for the Treatment of Obesity

2021 Update

This care process model (CPM) was created by a multidisciplinary team at Intermountain Healthcare. Its purpose is to summarize and promote evidence-based approaches to metabolic and bariatric surgery (MBS) as a treatment for obesity in specific populations.

This CPM:

- Serves as an extension of Intermountain's Adult Lifestyle and Weight Management CPM, providing guidance to primary care providers when options beyond lifestyle and non-surgical management are deemed necessary and appropriate, and provides guidance for the care of bariatric patients post surgery.
- Defines protocols for patient selection, psychosocial evaluation, pre-surgery clearance as well as perioperative nutrition evaluation and counseling.
- Identifies Intermountain facilities accredited by the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) for bariatric procedures.

Why Focus ON MBS SURGERY AND OBESITY?

- **Obesity is common**. 40 % of US adults suffer from obesity (BMI ≥ 30), and another 32 % are overweight (BMI 25 – 29.9). This indicates that approximately 72 % of US adults are above normal weight. Of the adults with obesity, almost 8 % have severe obesity (BMI ≥35) [FRY,HAL]
- **Obesity has been linked with an increased risk of multiple chronic conditions**, including heart disease, stroke, type 2 diabetes, end-stage renal failure, certain cancers, and preventable death. [CDC, JEN]
- **Obesity is costly.** People with obesity spend 42 % more on healthcare than the average healthy-weight adult. It is estimated that the US spends up to $209 billion annually on obesity-related health costs.[SPI]
- **MBS is the most successful treatment** for achieving significant and sustained weight loss in patients with severe obesity; more effective than traditional weight management approaches such as physical activity, behavioral modification, and weight loss medications. The NIH has recognized MBS as the only effective treatment to combat severe obesity and maintain weight loss in the long term.
- **MBS improves chronic conditions such as diabetes**. MBS improves diabetes in 85 % and causes remission of the disease in 78 % of patients. People with severe obesity who have had MBS have lower mortality rates than their counterparts who have not had MBS.[NID]

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CLINICAL GUIDELINES SUPPORTING THIS CPM

The following clinical guidelines have been established to assist in the evaluation and treatment of bariatric and metabolic patients:

- Management of Bariatric and Metabolic Patients in the ED
- Anesthesia for Bariatric Surgery

Intermountain® Healthcare

KEY RECOMMENDATIONS

Before referral to Intermountain metabolic and bariatric program/surgeon, patients should:

- Meet medical criteria for MBS surgery *Perioperative Care Protocol 1* pg 3
- Show interest in undergoing MBS after receiving recommended patient education (see more at right).

After referral , the metabolic and bariatric program will ensure:

- Further patient education
- Psychosocial evaluation (*Perioperative Care Protocol 2*- pg 4)
- Preoperative risk assessment (*Perioperative Care Protocol 3*- pg 5)
- Nutritional education (*Perioperative Care Protocol 4*-pg 6)

WHERE TO FIND INFORMATION ABOUT MBS

Widespread use of online resources and anecdotal information often lead patients to inadequate and often inaccurate information.

The ASMBS website provides information about obesity and surgery for diabetes as well as debunks many of the misconceptions about bariatric surgery.

The Intermountain Metabolic and Bariatric Surgery website provides local information and support services for patients and providers regarding MBS.

PATIENT SELECTION PROCESS

Before Referral to MBS Program/Surgeon

Successful patients are the beneficiaries of a team-based approach to care. For at-risk individuals, treatment for obesity should begin with the guidelines set by Intermountain experts in the Adult Lifestyle and Weight Management CPM. During the course of treatment, if it's determined that either lifestyle interventions are ineffective for weight loss or the patient expresses a desire to explore options for weight-loss surgery, the following steps are recommended prior to referral to a surgeon:

☐ Patient meets medical criteria for MBS. Use the algorithm found in Perioperative Care Protocol 1 on page 3 to determine if your patient meets medical criteria for MBS.

☐ Patient shows interest in undergoing MBS after receiving the recommended patient education and discussions. For educational resources, please go to:

https://intermountainhealthcare.org/medical-specialties/general-surgery/bariatric

Here, patients can access recommended education including the following:

- **Surgical weight-loss seminar**: Free online or in-person informational seminar.
- **Basic inclusion and exclusion criteria**: Including the recommendation to avoid pregnancy for 18 months after surgery; also describes other severe health conditions that may preclude them from surgery.
- **List of the required evaluations:** A basic overview of the evaluations that must be completed before surgery.
- **Description of the different surgical treatment options**: See page 7.
- **Shared decision making tools:** These engage patients and prepare them to make decisions about their medical care. These tools provide facts about obesity and life-long expectations as well as treatment options and their features. More importantly, they help patients clarify their values and help them to share those values and concerns with their provider. The Intermountain shared decision making tool can be found here. To view the *EMMI® Solutions Bariatric Surgery* decision tool, go to www.tryemmi.com. The login information can be found on the Bariatric Surgery Appendix located on Intermountain.net.

After Referral to MBS Program/Surgeon

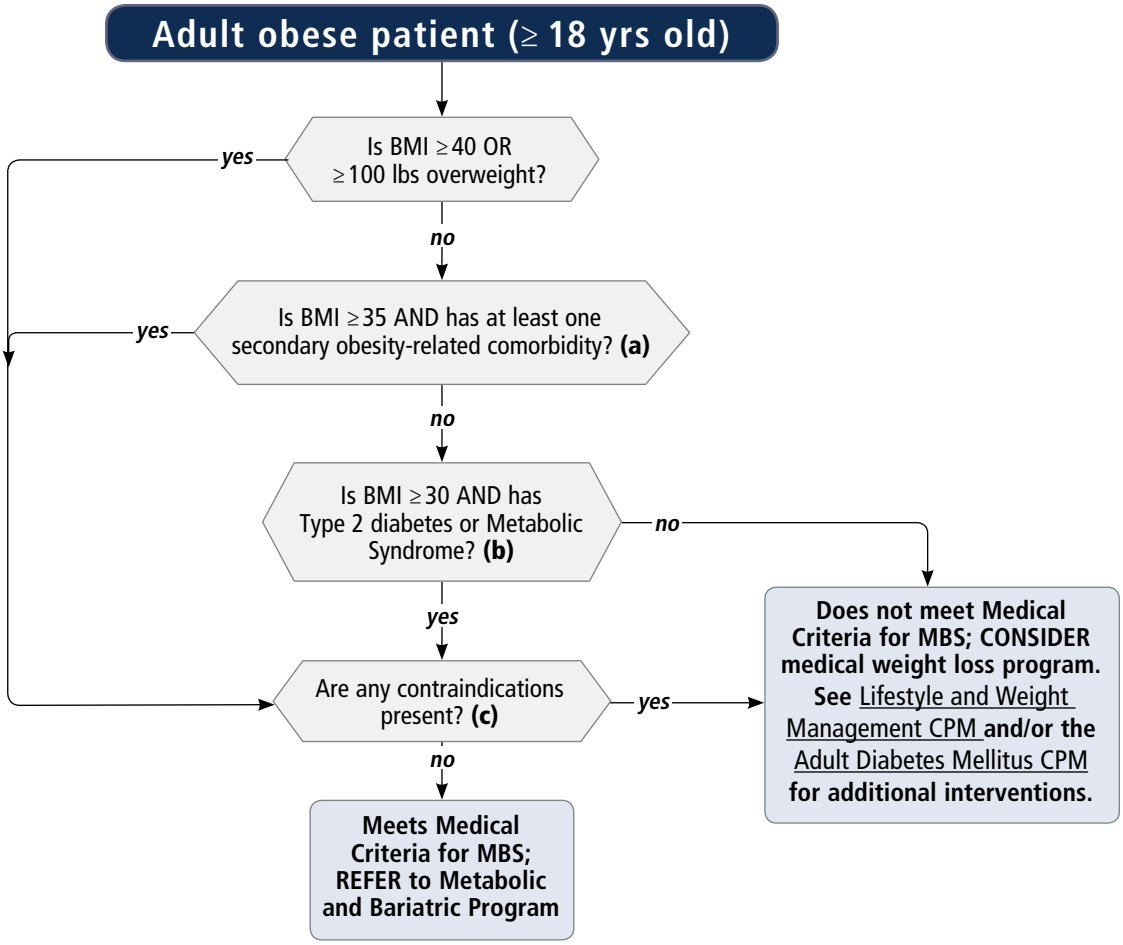
Intermountain's bariatric and metabolic programs take great care to ensure the best possible outcomes. After referral, the patient will undergo an in-depth screening process managed by the surgeon's staff. This process includes:

- Further patient education
- Psychosocial evaluation (**Perioperative Care Protocol 2** — see page 4)
- Preoperative risk assessment (**Perioperative Care Protocol 3** — see page 5)
- Nutrition education (**Perioperative Care Protocol 4** — see page 6)

The process is guided in part by a **bariatric patient care coordinator** at each facility (see sidebar on page 4). The coordinator is accountable for referring to surgeons, helping with individual care plans, promoting education, patient involvement and choice, resource coordination, and a number of other duties.

PERIOPERATIVE CARE PROTOCOL 1

ALGORITHM: DETERMINING IF PATIENT MEETS MEDICAL CRITERIA FOR MBS



ALGORITHM NOTES

(a) Secondary obesity-related comorbidities

- Diabetes
- Degenerative joint or disc disease
- Hypertension
- Hyperlipidemia
- Chronic venous insufficiency
- Gastroesophageal reflux disease
- Coronary artery disease/chronic heart failure
- Asthma
- Obstructive sleep apnea
- Non-alcoholic fatty liver disease
- Obesity hyperventilation syndrome
- Obesity hypoventilation syndrome
- Polycystic ovary syndrome
- Pseudotumor cerebri
- Severe urinary incontinence

Note: Verify CMS criteria and qualifications with individuals insurance provider.

(b) Metabolic syndrome

Metabolic syndrome is a set of risk factors that are known to increase risk for type 2 diabetes, cardiovascular disease, and stroke. According to the National Institutes of Health, metabolic syndrome is present if the patient has **three or more** of the following[NID]:

- **Central obesity**: waist circumference >40 inches in men and >35 inches in women
- **Hypertension:** ≥ 140/90 or taking medication for hypertension
- **Elevated triglycerides**: ≥ 150 mg/dL
- **HDL cholesterol:** <40 mg/dL in men and < 50 mg/dL in women
- **Glucose**: Fasting ≥ 100 mg/dL, 2-hour GTT ≥ 160 mg/dL or HbA1c ≥ 5.7

(c) Contraindications

- Inadequate support system
- Untreated or uncontrolled eating disorder
- Untreated schizophrenia or psychosis
- Uncontrolled bipolar disorder or depression
- Suicidal ideation
- Active or untreated substance use disorder
- Unwillingness to comply with necessary guidelines following bariatric surgery
- Hormonal causes of obesity that can be medically treated (Cushing's, thyroid)
- Pregnancy (pre-surgical pregnancy test)
- Advanced age or other illnesses that greatly reduce life expectancy (< 2 years) and are unlikely to be improved with weight reduction.
- Inability to make decisions, understand the nature of bariatric surgery ,or the behavioral changes required afterward.[MECH]

A decision to proceed with surgery will be made on an individual basis with regard to any other related health conditions that would adversely affect outcomes.

BARIATRIC PATIENT CARE COORDINATORS

Intermountain's bariatric patient care coordinators are responsible for program development and implementation. They act as a bridge between affiliated physicians and internal resources, and also research evidence-based clinical practice processes and develop strategies and action plans to ensure program goals reflect best practices.

Bariatric coordinators:

- Coordinate patient care including assessment, individual plans of care, education, patient involvement and choice, and resource coordination.
- Provide ongoing monitoring and care conferencing according to hospital policy.
- Assist healthcare providers in collaborative interdisciplinary teaching for diagnostic-specific patients.
- Ensure effective planning and arranging for patient services at discharge.
- Evaluate the effectiveness of discharge processes by monitoring 30-day readmissions and completing necessary teaching for identified clinical programs.
- Evaluate patients for admission criteria and appropriate level of care.
- Identify and provide care management for patients with complex needs, prolonged inpatient stays, and/or frequent utilization of acute care services.
- Monitor and evaluate the effectiveness of care management activities in reaching desired patient outcomes on an ongoing basis.
- Ensure compliance with national accreditation requirements

PERIOPERATIVE CARE PROTOCOL 2

PSYCHOSOCIAL EVALUATION

For complete guidelines, see ASMBS guidelines / statement *Recommendations for the presurgical psychosocial evaluation of bariatric surgery patients*

Referral to Behavioral Healthcare Professional

☐ Patient meets medical criteria for MBS (see perioperative care protocol 1— page 3).

☐ Surgeon refers patient to appropriate psychologist, psychiatrist, social worker, or other licensed behavioral healthcare provider. Patients may also be seen by outside providers who have specialized training in obesity medicine or metabolic and bariatric diseases.

Evaluation

Patient may be asked to fill out evaluation forms and surveys as a pre-visit requisite to the behavioral healthcare professional evaluation. The evaluation may include questions regarding the following:

☐ Previous attempts at weight loss. Did patient attempt any interventions advocated in the Adult Lifestyle and Weight Management CPM

☐ Eating and dietary styles:
- Binge eating disorders
- Overeating
- Grazing
- Night eating
- Bulimia

☐ Physical activity / inactivity

☐ Substance use disorder

☐ Compliance with medical treatment

☐ Health-related, risk-taking behaviors (impulsive / compulsive)

☐ Legal history

☐ Cognitive functioning

☐ Knowledge of anticipated surgical procedure

☐ Coping skills, emotional modulation, and boundaries

☐ Psychopathology

☐ Developmental history

☐ Current life situation

☐ Social support

☐ Motivation and expectations

☐ Specific recommendation for surgery

Follow-up

☐ A detailed report from the behavioral healthcare professional is provided to the surgeon's office with specific recommendation for or against surgery.

☐ If surgery is recommended, the patient proceeds along the pathway toward surgery (see Perioperative care protocol 3—page 5).

☐ If surgery is not recommended, the bariatric team confers as to patient disposition.

☐ The patient is informed of the results.

PERIOPERATIVE CARE PROTOCOL 3

PREOPERATIVE RISK ASSESSMENT

This table presents a weighted list of medical clearance elements as determined by the American Association of Clinical Endocrinologists, the Obesity Society, and the ASMBS. These evaluations include a comprehensive medical history, psychosocial evaluation, physical examination, and appropriate laboratory testing.[MECH] In the selection of eligible patients, care must be taken during evaluation to ensure the best possible outcomes. This document defines protocols to ensure that factors beyond BMI are considered including the use of the Grading of the Strength of Recommendations from the NHLBI.[JEN] The scale reflects levels of certainty of net benefit based on available evidence.

Laboratory Testing

Grade A

- ☐ Glycemic control
  - – Individually optimized
  - – HbA1c (6.5 to 7.0)
- ☐ Cardiovascular: Fasting lipid profile
- ☐ Vitamins
  - – B1, B12
  - – D
  - – A
  - – Zinc

Grade B

- ☐ TSH

Grade C

- ☐ *H-pylori* (If blood is positive, check stool.)

As clinically indicated

- ☐ Hematology
  - – CBC auto diff
  - – CMP
  - – PT, PTT, INR (as indicated)
  - – Ferritin
- ☐ Urine analysis
- ☐ Magnesium and phosphorus
- ☐ Pregnancy testing
- ☐ Type and screen per facility protocol
- ☐ Drug screen per facility protocol

Diagnostic Testing

Grade A

- ☐ Evaluate for b-adrenergic blockade if at risk for CAD.

Grade B

- ☐ Cardiology clearance
  - – CHF, MI
  - – Based on individual risk factors, history and physical examination
- ☐ Cardiac echo if cardiac disease or pulmonary hypertension
  - – Heart murmur
  - – MVP
  - – Phen-Fen use
- ☐ Elevated liver function on abdominal ultrasound
- ☐ EGD / GI imaging

Grade C

- ☐ Sleep study and STOP-BANG evaluation (Start treatment preoperatively if positive.)
- ☐ Pulmonary function testing including a chest X-ray
- ☐ Age-appropriate cancer screenings

As clinically indicated

- ☐ Stress test
- ☐ Based on individual risk factors, history and physical examination
- ☐ ECG

Behavioral Health Clearance

Grade A

- ☐ Smoking
  - – Serum nicotine at discretion of surgeon
  - – Post-op avoidance
  - – Cessation 4–6 weeks prior to surgery

Grade C

- ☐ Pre-op testing
  - – *Perioperative Care Protocol #2: Psychosocial Evaluation (see page 4)*
  - – Testing reviewed
  - – Testing complete

Long-term Follow up

Grade A, B, C

- ☐ Willingness to sign agreement is determined
- ☐ Agreement signed and reviewed
- ☐ Follow up regimen established:
  - – Frequency is dependent on the bariatric procedure and severity of comorbidities.
  - – First 30 days (bariatric surgeon)
  - – 6 months (PCP or other)
  - – Annually
  - – Lifetime

Nutritional Health

Grade A

- ☐ Preoperative nutrition evaluation

PATIENT EVALUATION AND GRADING

Grade Strength of Recommendation

- **A = Strong recommendation.** There is a high certainty based on evidence that the net benefit is substantial.
- **B = Moderate recommendation.** There is moderate certainty based on evidence that the net benefit is moderate to substantial, or there is high certainty that the net benefit is moderate.
- **C = Weak recommendation.** There is at least moderate certainty based on evidence that there is a small net benefit.

DIETICIAN REFERRALS

Registered dietitian nutritionists (RDNs) experienced in bariatric nutritional counseling are available at the following locations:

- **LDS Hospital** Outpatient Nutrition Services (801)-507-3253
- **Utah Valley Hospital** Outpatient Nutrition Services (801)-357-8143
- **St. George Regional Hospital, Cedar City Hospital,** and **Garfield Memorial Hospital** shared Outpatient Nutrition Services (435)-251-3793
- **LiVe Well Centers**
  - Park City (435)-333-3535
  - Salt Lake City (385)-282-2700
  - St. George (435)-251-3793
  - Utah Valley (801)-357-4141

DATA TRACKING

The Surgical Services Clinical Program uses 2 applications to track and report important data on MBS at Intermountain Healthcare facilities:

- The Metabolic and Bariatric Accreditation and Quality Improvement Program (MBSAQIP) Data Registry (DR)
- Intermountain's Bariatric Patient Outcomes (BPO) tool.

With the DR, the burden is on site coordinators to gather readmission and reoperation information across the system. In contrast, the BPO tool automatically captures and presents for review all of the patients' clinical events occurring across Intermountain's hospitals and clinics.

The information tracked and reported through these applications helps Intermountain to carefully work in partnership with its metabolic and bariatric patient populations, surgeons, and other care providers to assess and minimize risks for postoperative complications and improve patient outcomes and survival long term.

PERIOPERATIVE CARE PROTOCOL 4

NUTRITION EDUCATION AND THERAPY

Good nutrition remains key to improving health, reversing obesity and chronic diseases, and maintaining weight loss. The role of the registered dietitian nutritionist (RDN) is a critical piece of the MBS process as nutrition assessment and dietary management have been shown to correlate with success.

Preoperative evaluation, assessment, and education

☐ A comprehensive nutrition assessment should be conducted preoperatively by an RDN to help determine if there are any pre-existing nutritional deficiencies and develop appropriate dietary interventions.

☐ The RDN works with the patient to create a plan for a postoperative dietary and activity regimen that will improve long-term outcomes. During the development of the plan, the following are taken into consideration:

- Anthropometrics
- Weight history
- Medical history
- Lab values
- Psychology history
- Dietary intake
- Physical activity
- Psychosocial factors
- Ability to change
- Behavior modifications

☐ If needed, the RDN assists patient in developing a preoperative diet plan. Depending on the patient's BMI and condition, the surgeon may prescribe a preoperative weight loss intervention to reduce liver volumes and improve technical aspects of the surgical procedure. Very low calorie diet (VLCD) options include, but are not limited to, liquid diets and higher protein diets.

Post-operative

Diet regimen for readmissions

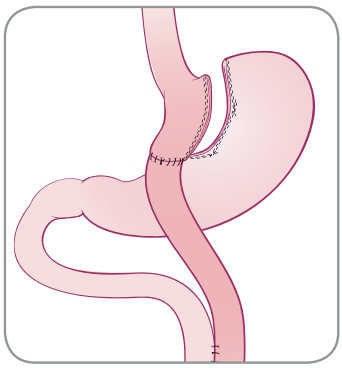
Bariatric patients often have additional surgeries (knee replacement surgery, for example) after the initial period of recovery and weight loss. It is imperative that the primary care provider and / or RDN coordinate with the new admitting team to ensure the necessary dietary restrictions are noted in the patient's records.

Find the Post-Metabolic and Bariatric Surgery Staged Diet Menu here:
https://kr.ihc.com/ckr/Dcmnt?ncid=529806045
(Log onto Intermountain.net before clicking link)

TYPES OF BARIATRIC SURGERY

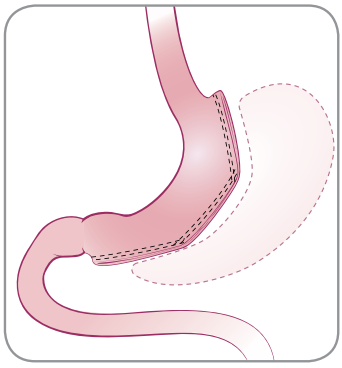
The patient and surgeon will decide together on the best approach by considering the benefits and risks of each type of surgery as well as the patient's goals and values. The patient's BMI, eating habits, health conditions related to obesity, and previous stomach surgeries will be of foremost importance in this decision process. Individual bariatric procedures have their own advantages and disadvantages.

Gastric bypass (Roux-en-Y gastric bypass or RYGB)



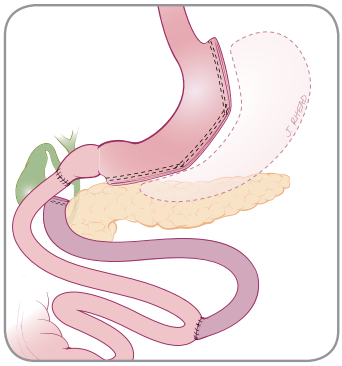
- The top of the stomach is divided from the rest of the stomach, creating a small pouch.
- The top portion of the small intestine is divided. The portion just below the divide is brought up and connected to the pouch.
- The portion just above the divide, which is connected to the remaining stomach, is attached to the small intestine further down so that stomach acid and digestive enzymes can mix with food during digestion.
- Common problems include anemia and low calcium. Aspirin, NSAIDs, and smoking are known causes of ulcers in these patients. Bowel obstruction can occur.
- "Dumping syndrome" (also called rapid gastric emptying) can develop after certain bariatric procedures and may be avoided with post-surgery diet changes.

Sleeve gastrectomy (laparoscopic sleeve gastrectomy or LSG)



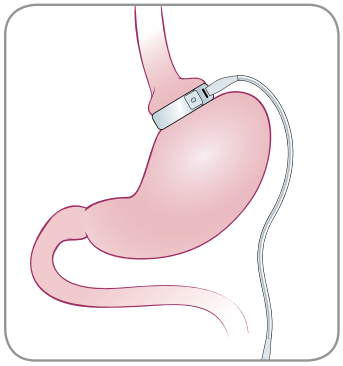
- LSG is the most common bariatric procedure in the U.S. It can also be used as a first-stage surgery in extremely obese patients before performing a duodenal switch procedure.
- A large portion (about 80 %) of the stomach is removed, creating a "sleeve." The smaller stomach restricts the amount of food the stomach can hold.
- The surgery changes the action of gut hormones to increase feelings of satiety, reduce hunger, and increase blood sugar control.
- Gastroesophageal reflux disease can occur or worsen.

Duodenal switch (biliopancreatic diversion with duodenal switch or BPD-DS)



- A large portion of the stomach is removed (similar to sleeve gastrectomy).
- The top portion of the duodenum is divided just below the stomach outlet (pylorus).
- A section of the lower part of the small intestine is brought up and attached to the duodenum, just below the stomach. Most of the small intestine is bypassed, limiting food absorption. A duodenal section will remain in place to collect and transport bile to the lowest portion of the small intestine.
- Common problems include loss of soluble iron (Fe) and vitamins (A, D, E, K), osteoporosis, and kidney stones.

Adjustable gastric banding (laparoscopic adjustable gastric banding or LAGB)



- A small, inflatable band is placed around the top portion of the stomach just below the esophagus.
- A medical provider can tighten or loosen the band by adding or removing sterile saline.
- The band increases the feeling of fullness and reduces food intake.
- Common problems include dysphagia, vomiting, and reflux, which tend to increase over time. Due to these problems and decreased durability, gastric bands are infrequently performed

Additional procedures

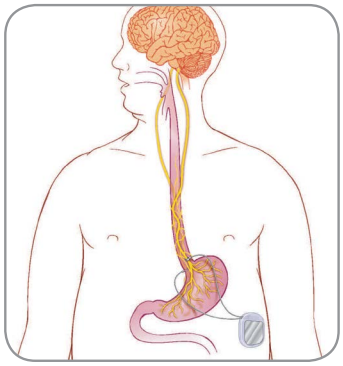
The first 2 procedures below (intra-gastric balloon and vagal nerve block) are approved by the FDA but are not yet performed at Intermountain facilities. Endoscopic sleeve gastrectomy is performed in specialized centers only. **These procedures were included for informational purposes only, as patients may be aware of such procedures and may query their healthcare provider regarding their effectiveness and availability.**

Intra-gastric balloon

- This is an outpatient procedure.
- Using an endoscope, 1 or 2 soft, silicone balloons are placed in the stomach.
- The balloons are filled with air or saline, taking up space in the stomach.
- They are left in place for about 6 months. The patient experiences a feeling of fullness and is likely to eat less.
- The balloons are removed with an endoscope.

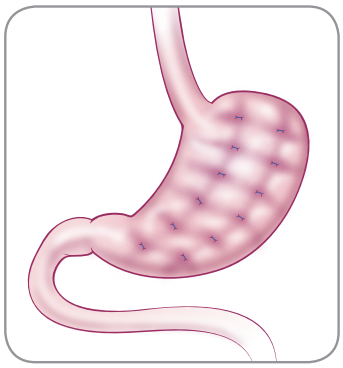
Vagal nerve blockage for obesity (VBLOC)

- The vagus nerve controls hunger and satiety, telling the brain when the stomach feels empty or full.
- A small device, similar to a pacemaker, with wire leads and electrodes, is surgically implanted into the abdomen.
- The small device sends intermittent electrical signals to the abdominal vagus nerve, blocking the nerve activity between the stomach and the brain during waking hours.
- The procedure is reversible.



Endoscopic sleeve gastroplasty

- An endoscope is passed into the stomach.
- The surgeon places sutures in the stomach, creating a smaller space for food to be stored.
- As needed, the procedure can be performed again to recapture the feeling of fullness the patient experienced immediately after the first surgery.
- The procedure can also be reversed.



POSSIBLE RISKS AND COMPLICATIONS

Compared with other operations, bariatric surgery is considered to be remarkably safe, particularly in terms of mortality. According to the Agency for Healthcare Research and Quality (AHRQ), the risk of death from bariatric surgery is 0.1 %, and the overall risk of major complications is about 0.4 %.[AHRQ] This is similar to other abdominal operations.

As in all cases, risk is determined by the type of surgery as well as the patient's comorbidities and general health. Although risks are low, the complications can be deadly and need to be treated by a bariatric surgeon or a physician familiar with treating such complications. Complications can be acute or long-term.[POR]

Acute complications

Acute complications occur in 5 % to 10 % of patients regardless of the type of surgery. In patients with severe obesity, the first sign of a significant problem may only be tachycardia. Other acute complications include:

- Dehydration
- Infection
- Pneumonia
- Hemorrhage, obstruction, or anastomotic leaks
- Recurrent vomiting
- Arrhythmias
- Pulmonary embolism
- Injury to the spleen
- Blood clots

Work ups for these complications should follow standard practice and involve the bariatric surgeon as early as possible.

Long-term complications

- **Acid reflux**, ulcers, or esophagitis
- **Dumping syndrome** or other GI distress
- **Osteopenia / Osteoporosis**
  - In patients with a gastric bypass or duodenal switch, DEXA scanning may be performed at baseline and at 2 years for at-risk patients.
  - Evaluation should include serum PTH, total calcium, phosphorus, Vitamin D 25 hydroxy level, and 24-hour urine calcium.
  - Treat with IV instead of oral bi-phosphonates.
- **Kidney stones** (calcium oxalate)
  - Avoid dehydration.
  - Recommend low-oxalate meal plan.
  - Prescribe oral calcium, potassium citrate, and probiotics containing *Oxalobacter formigenes*.
- **Internal hernias**. Patients who have undergone gastric bypass or BPD-DS and present with a bowel obstruction are more likely to have an internal hernia than just intra-abdominal adhesions. A surgeon needs to be involved soon to prevent loss of small bowel due to ischemia.
- **Other complications** may include hypertension, bowel obstruction, cholelithiasis, kidney failure, anastomotic stenosis, emotional disorders, depression, nutritional deficiencies, hypoglycemia, weight gain, hair loss and loose skin.
- **Neuropathies** due to nutritional deficiencies
- **Anemia** without evidence of blood loss

Please consider referral to a bariatric surgeon to address many of these problems.

Revision and Conversion Surgery

Problems such as strictures and failed weight loss can lead to the need for revisional surgery. Patients who have failed to lose weight or regained a significant amount of weight may also be considered for a conversion from one bariatric procedure to another (e.g., converting a sleeve to a duodenal switch).

POSTOPERATIVE CARE

The post-surgery bariatric patient has unique needs. To address these needs, a panel of Intermountain experts examined the standards set by the MBSAQIP and developed a system for effective handoffs from the surgical care team to the primary care provider. The MBSAQIP requires that documented processes be developed for long-term follow up including:

- **Identifying patients that are more than 1 year out from initial follow up**
- **Addressing why patients get lost to follow-up and how to avoid this**
- **Screening for mental health issues.** Current and past DSM5 psychiatric disorders are prevalent among bariatric surgery candidates and are associated with greater obesity and lower functional health status, highlighting the need to understand potential implications for surgery preparation and outcome.[KAL]
  - Presurgery psychosocial functioning does not seem to affect the outcome of surgery, and psychosocial outcome is generally encouraging over the short term.
  - Moderate-quality evidence supports an association between bariatric surgery and lower rates of depression postoperatively.[DAW]
  - Many patients experience depression and binge eating disorder, which is associated with weight regain.
  - Poor adjustment after weight loss has also been reported as a factor in alcohol abuse and suicide.[HSU]

Abbreviations:
LAGB: Laparoscopic gastric band
LSG: Laparoscopic sleeve gastrectomy
RYGB: Roux-en-Y gastric bypass
BPD-DS: Biliopancreatic diversion with duodenal switch
PCP: Primary care provider

PREGNANCY AND MBS

MBS may increase fertility in some patients. Providers should counsel on the need for birth control, as pregnancy should be avoided for 18 months after surgery.

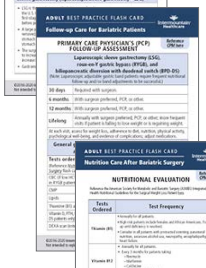
Non-oral birth control is recommended for women who have had RYGB or malabsorptive surgeries.

Women who become pregnant after bariatric surgery need to be monitored closely and counseled regarding nutrition, weight gain, and supplementation to ensure the health of the fetus.

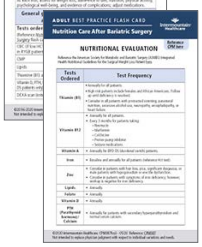
- Monitor for nutritional deficiencies every trimester including screening for iron, folate, B_{12}, calcium, and fat-soluble vitamins.
- Make band adjustments in patients with LAGB to ensure appropriate weight gain and fetal health during pregnancy. [MECH]

BEST PRACTICE FLASH CARDS ALIGNED WITH THIS CPM

Metabolic and Bariatric Procedures



Follow-Up Care for Bariatric Patients



Nutritional Care After Bariatric Surgery

ROUTINE CARE AND FOLLOW UP

Many primary care providers are likely to have patients in their practice who have had weight loss surgery. To understand what follow-up they should have, refer to the table below: [MECH]

TABLE 1: Routine Care and Follow-Up Visits

Post-surgery:	30 days	6 months	12 months	Lifelong
LSG RYGB BPD-DS LAGB	Required visit with surgeon	Visit with surgeon preferred, PCP, or other	Visit with surgeon preferred, PCP, or other	Annually with surgeon preferred, PCP or other; more frequent visits if patient is failing to lose weight or is regaining weight
LAGB	LAGB patients require frequent nutritional follow-up and/or band adjustments in addition to visits listed above.			

At each visit, assess for weight loss, adherence to diet, nutrition, physical activity, psychological well-being, and evidence of complications; adjust medications.

PCP GUIDELINES FOR PATIENT CARE IF SURGEON/PROGRAM NOT AVAILABLE

Testing Recommendations (Increase frequency if indicated)

CBC	• Annually for all patients. • If low HCT, check iron/ferritin especially in RYGB patients.	Zinc	• Consider in patients with hair loss, pica, significant dysgeusia, or male patients with hypogonadism or erectile dysfunction. • Consider in patients with symptoms of iron deficiency; however, workup is negative for iron deficiency.
CMP	• Annually for all patients.	Folate	• Annually for all patients.
Lipids	• Annually for all patients	Vitamin D	• Annually for all patients.
Iron	• Baseline and annually for all patients (reference Hct test).	Vitamin B12	• Annually for all patients. • Every 3 months for patients taking: – Neomycin – Metformin – Colchicine – Proton-pump inhibitor – Seizure medication
Vitamin A	• Annually for BPD-DS (duodenal switch) patients.	PT-prothrombin	• Annually for all patients. • In lieu of testing Vitamin K.
PTH-Parathyroid Hormone/Calcium	• Annually for patients with secondary hyperparathyroidism and normal serum calcium .	DEXA scan	• At baseline and 2-years post-op. • Osteoporosis counseling if warranted .
Thiamine (B1)	• Annually for all patients. • High-risk patients include females and African Americans. Follow up until deficiency is resolved. • Consider in all patients with protracted vomiting, parenteral nutrition, excessive alcohol use, neuropathy encephalopathy, or heart failure.		

TABLE 1: Routine Care and Follow-Up Visits (Continued)

Comorbidity Assessment

Diabetes	Monitor blood glucose; Adjust medication as needed	Hyperlipidemia	Monitor lipid level; Adjust medication as needed
Hypertension	Monitor blood pressure; Adjust medication as needed	Sleep apnea	Monitor C-pap tolerance; Refer to sleep lab as needed

Physical Activity

- INCREASE as tolerated
- Cardio workout: START at 150 minutes per week; Work up to GOAL of 300 minutes per week
- Strength training: RECOMMEND two to three 30-minute sessions per week.

Diet

(See *The American Society for Metabolic and Bariatric Surgery Integrated Health Nutritional Guidelines for the Surgical Weight Loss Patient 2016 update: Micronutrients*)

- CONTROL portions. Initially, ¼–½-cup portions. Ideally, < 1-cup portions (lifelong).
- RESTRICT food selection. ENCOURAGE a wide variety of vegetables, lean proteins, and healthy fats. AVOID simple sugars, refined grains, and processed foods.
- RECOMMEND collaboration and consultation with a registered dietitian nutritionist who is experienced in treating bariatric patients.
- RECOMMEND collaboration and consultation with Behavioral Health for patient to participate in ongoing support groups and meet with licensed providers as needed.

Nutritional Supplementation Recommendations

- Liquid or chewable supplements are recommended to help with absorption in the first 3 – 6 months.
- If surgery was done in the last year, check nutrient levels every 3 – 6 months.
- If surgery was > 1 year ago, check nutrient levels annually and supplement as needed.
- If patient is deficient, look up replacement recommendations.

Recommended Daily Allowance (RDA) / Intake for ALL PATIENTS

Multivitamin (MVI)	• Up to 200 % RDA total, 1–2 pills per day orally	Calcium citrate	• LAGB, LSG and RYGB: 1,200–1,500 mg (500 mg, 3 times daily) • BPD-DS: 1,800–2400 mg, daily
Vitamin D	• 3,000 IU daily until 25(OH) >30		

RDA / Intake AS INDICATED (RDA met by MVI; additional supplementation may be necessary)

Thiamin (B1)	At least 12 mg daily, preferably 50 mg once or twice daily.	Ferritin	• Ferrous gluconate, 325 mg, orally
Vitamin B12	• 350–500 mcg daily (orally, sublingual, or as liquid) • 1,000 mcg monthly if intramuscular or subcutaneous injection, as prescribed • Nasal spray, as directed	Iron	• If low-risk, 18 mg contained in MVI • Ferrous gluconate, 325 mg orally • Elemental iron, 45 - 60 mg daily (menstruating women) • All iron is to be taken separately from calcium
Copper	• LAGB/LSG: 100 % RDA, (1 mg) daily) • RYGB/BPD-DS: 200 % RDA (2mg) daily)	Folate	• 1 mg daily, orally • Essential for women of child-bearing age
Vitamin A	• LAGB: 5,000 IU daily • RYGB / LSG: 5,000 - 10,000 IU daily • BPD-DS: 10,00 IU daily	Zinc	• LAGB / LSG: 100 % RDA (8–11 mg) daily • RYGB: MVI with 100 - 200 % RDA (8–22 mg) daily • BPD-DS: MVI with 200 % RDA zinc (16–22 mg) + copper (1 mg copper / 8–15 mg zing) daily
Vitamin E	• 15 mg daily	Vitamin K	• LAGB / RYGB / LSG: 90–120 mcg daily • BPD-DS: 300 mcg daily

Abbreviations:
LAGB: Laparoscopic gastric band
LSG: Laparoscopic sleeve gastrectomy
RYGB: Roux-en-Y gastric bypass
BPD-DS: Biliopancreatic diversion with duodenal switch
PCP: Primary care provider

HEALTH LITERACY: COMMUNICATING WITH YOUR PATIENTS

Health literacy is not just the ability to read. It involves understanding concepts and acting on medical instructions with confidence.

Physicians and educators need to:

- **Understand barriers to readiness.** Language, education, financial, cultural, and mental health concerns may prevent adoption of necessary weight-loss goals.
- **Focus on "Teach me 3."** Evidence suggests that it's easier for a patient and family to understand and comply with key education concepts when delivered in 3 small segments at a time.
- **Practice teach-back concepts.** Ask the patient to repeat instructions as well as key goals and concepts. This assures the provider that the patient and/or caregiver understands and can manage the required lifestyle changes.

DIABETES MANAGEMENT

Intermountain's Adult Diabetes Mellitus CPM promotes a comprehensive, team-based care approach for adults with diabetes in the outpatient setting.

WEIGHT MANAGEMENT FOR LIFE

Key factors to maintaining weight loss after surgery

Key factors to maintaining weight loss include making permanent lifestyle changes that include a healthy balanced diet including regular breakfasts, avoiding added sugars, structured eating habits, regular exercise, adequate sleep, and stress management. (See pages 10–11 for follow-up care.) Participation in follow-up visits with the surgeon and/or primary care physicians, dietitians, and behavioral health professionals as well as continuing postoperative education, all contribute to long-term weight maintenance. Physicians and care managers should regularly address the following with their bariatric patients:

- Dietary adherence
- Psychosocial adjustment
- Support system
- Lifestyle modifications
- Comorbidity treatment adjustments
- Barriers
- Body measurements/weight/vitals
- Labs/supplements (see page 10-11)

Weight regain

Patients who have had MBS can regain 20–25% of their initial weight loss within 10 years. [HEB] **It is imperative that the treating physician and staff engage the patient as soon as a weight-gain trend is established.** Interventions to consider include:

- LiVe Well Centers: Intermountain's multidisciplinary treatment centers (nutritions, exercise, mental health, and/or lifestyle medicine consultation).
- Weigh to Health program: Intermountain's weight-management program.
- Referral to a licenced therapist.

MBS support groups and educational services

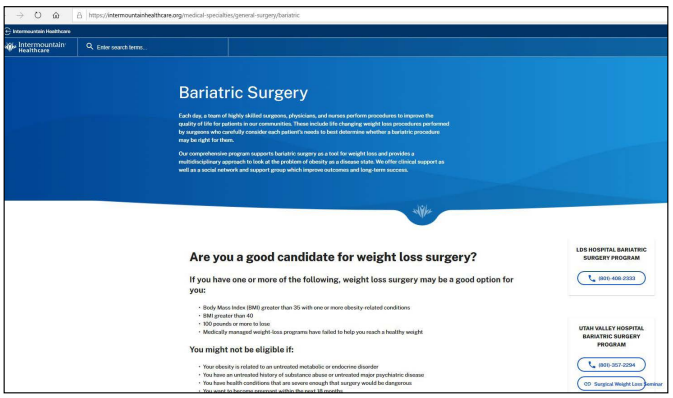
Intermountain bariatric facilities offer no-cost classes in which prospective patients can learn about MBS, as well as support groups and educational resources. Some surgeons offer ongoing support as part of their surgery package. It is recommended that patients be referred to their surgeon's office or contact one of the facilities listed below for more information. Got to Intermountain's Metabolic and Bariatric Surgery Website to find details about classes, support groups or contact a program directly using the numbers below.

LDS Hospital
801-408-2333

Utah Valley Hospital
801-357-2294

St. George Regional Hospital
435-251-1632

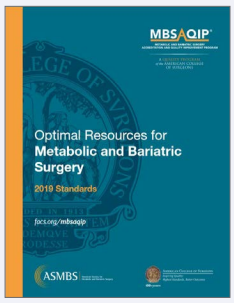
Use Intermountain's Metabolic and Bariatric Surgery Website to find details about programs, classes, and support groups.



PROGRAM CERTIFICATION

The 2019 MBSAQIP patient standards document defines the standards and procedures for accreditation of MBS centers.

The **document** is a joint effort of the American College of Surgeons (ACS) and the American Society for Metabolic and Bariatric Surgery (ASMBS). It can be found on the MBSAQIP website.



KEY SOURCES

The following are the primary sources used in the development of this CPM. A complete list of references can be found on the next page.

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ACCREDITED INTERMOUNTAIN CENTERS FOR WEIGHT-LOSS SURGERY

In 2014, the ASMBS and the American College of Surgeons (ACS) joined together to become a single certifying body — the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) — for MBS programs in the United States and Canada. Accreditation by MBSAQIP indicates the facility and associated surgeons have achieved standard benchmarks and support continuous quality improvement.

Intermountain has developed perioperative protocols that align with MBSAQIP standards. The protocols address the entire perioperative process, including psychosocial evaluation, patient screening, pre- and post-operative care, and nutrition evaluations and counseling. In addition, Intermountain has developed 2 clinical guidelines detailing Anesthesia for Bariatric Surgery and providing guidance for treatment of Bariatric Patients in the Emergency Department.

Accredited Intermountain Centers

Currently, 3 Intermountain surgery centers are accredited for all types of MBS.

LDS Hospital
8th Avenue & C Street
Salt Lake City UT, 84143
801-408-2333

Utah Valley Hospital
1034 North 500 West
Provo UT, 84604
801-357-2294

St. George Regional Hospital
1380 East Medical Center Dr.
St. George UT, 84790
435-251-1632

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This CPM presents a model of best care based on the best available scientific evidence at the time of publication. It is not a prescription for every physician or every patient, nor does it replace clinical judgment. All statements, protocols, and recommendations herein are viewed as transitory and iterative. Although physicians are encouraged to follow the CPM to help focus on and measure quality, deviations are a means for discovering improvements in patient care and expanding the knowledge base. Send feedback to Shelly Brimhall, RN MSN, Intermountain Healthcare, Surgical Operations MBS Nursing PRoject Manager, (Shelly.Brimhall@imail.org).

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