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Bariatric Surgery
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Introduction

The VA National Center for Health Promotion and Disease Prevention (NCP), Veterans Health Administration (VHA) Office of Patient Care Services, with input from the field, developed a Weight Management Program for Veterans (MOVE!®). This program is based on the NIH Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report[1] and the United States Preventive Services Task Force (USPSTF) Screening and Interventions for Obesity in Adults: Summary of the Evidence for the US Preventive Services Task Force[2] and Screening for Obesity in Adults.[3]

The following resources provide guidance to VHA clinicians for implementation/maintenance of weight management programs:

Handbook 1101: Managing Overweight and/or Obesity for Veterans Everywhere (MOVE!) Program[4]
Joint Veterans Affairs (VA)/Department of Defense (DoD) Clinical Practice Guideline for Screening and Management of Overweight and Obesity (CPG) (2006)[5]

The MOVE! Reference Manual addresses the full spectrum of weight management. The manual consists of topic-specific chapters, and each topic should be considered in relation to others.

General Information

Bariatric surgery is the only intervention that has been shown to produce significant, sustained weight loss among the extremely obese (BMI >40 or >35 with one or more significant obesity-related comorbid conditions), but the risks associated with surgery are higher than those associated with other weight control options. VHA patient selection criteria for bariatric surgery are evolving based on the latest scientific evidence. To minimize complications and provide the best weight loss result, surgical intervention should be targeted to those who are most able to comply with post-surgery requirements.

Although not all VA facilities currently offer bariatric surgery, these procedures are happening more frequently within and outside of the VHA. Thus, VA health care staff can expect to provide pre- and post-operative care for Veterans having these procedures at other VAMCs or at non-VA facilities. The list of bariatric centers in the VA can be found on

the Surgical Service http://www.medicalsurgical.va.gov/. The VHA Handbook on Bariatric Surgery (No. 1102.6) provides the specific policy on bariatric surgery within VA; some aspects of the policy are described in this chapter. Because of the specialized staff and equipment needed to provide this service, bariatric surgery services will likely be regionally situated rather than being provided at every VAMC facility. Specific details about the referral process for bariatric surgery within VA can be found in the Handbook. In addition, NCP has developed a Quick Reference Guide for Primary Care Providers to assist clinicians in assessing and managing bariatric surgery patients; this guide is available on the MOVE! website.

Efficacy

Research on bariatric surgery continues to accumulate. The evidence clearly supports the superiority of bariatric surgery over non-surgical treatments for the management of patients with a BMI >40, in terms of outcomes such as:[6, 7]

- Weight loss
- Long-term weight loss maintenance
- Prevention, reduction, or resolution of comorbidities such as diabetes, sleep apnea, and lipid abnormalities
- Improved health-related quality of life

Data on bariatric surgery for less obese patients (BMI >35) support similar effectiveness when patients have comorbid weight-related health problems such as diabetes and hypertension.[6] Newer evidence suggests that patients with Type II diabetes may benefit from surgery, with resolution or improvement in 87 percent of patients.[8]

Types of Procedures

Currently available bariatric surgery procedures can be categorized into three types: purely malabsorptive, restrictive, and restrictive/malabsorptive. Each type of procedure is described in further detail below. Effectiveness for inducing weight loss, surgical risks, and long-term complications varies among procedure types. Although greater amounts of weight loss can be achieved with restrictive/malabsorptive procedures, these procedures generally result in greater risk for medical complications. Laparoscopically performed procedures (see below) are as effective as open procedures, are associated with shorter hospital stays, and may have fewer late complications.[9]

Purely malabsorptive surgical procedures for weight loss are rarely performed due to the high risk of adverse effects and long-term medical complications. One exception is biliopancreatic diversion with a duodenal switch, a malabsorptive procedure that is offered

at some bariatric surgical centers. In a majority of VHA bariatric surgery facilities the most common procedures are restrictive and restrictive/malabsorptive.

Key Point: Facilities performing bariatric surgery vary in terms of what procedures they offer.

Restrictive Procedures

Restrictive procedures limit the capacity of the stomach and slow gastric emptying, which causes the patient to feel full with even very small meals. Restrictive procedures include vertical banded gastroplasty, silastic ring vertical gastroplasty, and adjustable silicone gastric banding. These procedures can be performed laparoscopically and lead to an average weight loss of 30 percent of body weight, or about a 90-pound weight loss for a 300 pound person. More recently, some bariatric surgery centers have begun to perform sleeve gastrectomies as a precursor to the Roux-en-Y bypass graft (see below), as the first step of a two-stage approach for high-risk bariatric patients, or as the primary bariatric surgical intervention. Currently, the long-term efficacy of the procedure (beyond three-five years) is unknown. Figures 11-1 through 11-3 illustrate several currently available restrictive bariatric procedures.

Figure 11-1 Vertical Banded Gastroplasty (VBG)

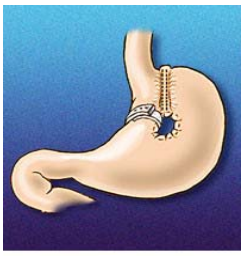


Figure 11-2 Laparoscopic Adjustable Gastric Banding (LAGB)

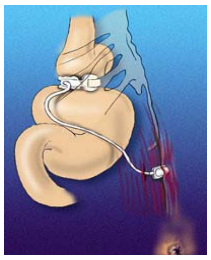


Figure 11-3 Vertical Sleeve Gastrectomy (VSG)

Pictures courtesy of American Society for Metabolic and Bariatric Surgery.

Restrictive/Malabsorptive Procedures

Restrictive/malabsorptive procedures combine features of restrictive surgeries with procedures that divert food from the stomach to a more distal point of the small intestines. This limits the absorption of food and thus reduces calorie/nutrient intake even further. Specific procedures that fall into this category include the Roux-en-Y gastric bypass, silastic ring or vertical banded gastric bypass, and the biliopancreatic diversion. These procedures can be performed laparoscopically. Compared to restrictive surgeries alone, restrictive/ malabsorptive procedures lead to a larger degree of weight loss as, an average of around 35 percent of body weight, or about a 105 pound weight loss for a 300 pound person. Figures 11-4 through 11-6 illustrate several of these procedures.

Figure 11-4 Roux-en-Y Gastric Bypass (RYGB)

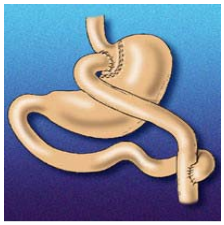


Figure 11-5 Vertical Banded Gastric Bypass (VGB)

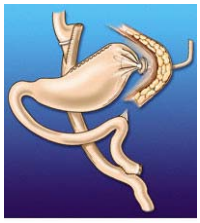
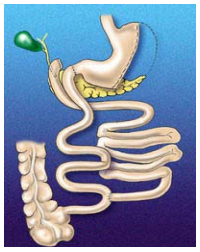


Figure 11-6 Biliopancreatic Diversion with Duodenal Switch (BPD/DS)



Pictures courtesy of American Society for Bariatric Surgery

While the Roux-en-Y Gastric Bypass has been the most studied bariatric procedure with respect to safety and efficacy, surgeon experience and patient's clinical status should ultimately determine which procedure is used. Veterans and surgeons should discuss the risks and benefits of the various procedures and mutually agree on which choice is best.

New Procedures and Techniques

The field of bariatric surgery is rapidly evolving, as is the development of new non-surgical procedures designed to mimic the effects of surgery. Several new surgical procedures

(e.g., sleeve gastrectomy) and non-surgical (endoluminal) procedures (intra-gastric balloons) are on the horizon. These techniques are being evaluated as single-stage techniques and as the first-stage in a two-stage procedure for patients at particularly high risk from traditional surgery (those with very high BMI and/or serious medical comorbidities).

With sleeve gastrectomy, the stomach is reduced to about 15 percent of its original size by surgical removal of a large portion of the stomach, following the major curve. The open edges are then attached together (often with surgical staples) to form a sleeve or tube with a banana shape. Not enough research has accumulated yet on these newer techniques to have a solid understanding of their effectiveness, risks, or long-term complications. We also do not know how these techniques compare to existing techniques in terms of durability of results and cost.

Complications and Risks

Studies estimate the risk of death from bariatric surgery to be between 0 and 2 percent.[6] In general, laparoscopically performed procedures have lower mortality risks than open procedures and have lower rates of wound-related complications, such as wound infection and incisional hernias. An analysis of patients who received bariatric surgery in one of 12 VA facilities between 2000 and 2006 reported that patients with extremely high BMIs (>50) and/or a high burden of comorbidities have a greater risk of death after surgery (median follow-up 984 days), compared to patients with lower BMIs and lesser comorbidity burdens.[10]

Complications occur in about 20 percent of bariatric surgical cases.[6] Complications resulting from bariatric surgery include the usual risks of any surgical procedure, such as anesthesia problems, bleeding, and cardiovascular events incurred while on the operating table or in the early post-operative period (MI, CVA, DVT/PE). Other complications soon after surgery include nausea/vomiting, incisional hernias, wound infections, strictures, stomach ulcers, stomach/intestine leaks or ruptures, and bowel obstruction. For procedures that use bands, slippage and/or failure may occur. Some of these complications require additional surgery to repair.

Regurgitation without nausea or true vomiting may be common in the first few months after surgery and is usually due to overeating, eating too rapidly, and/or not chewing food adequately. When vomiting increases in frequency, it is typically associated with intolerance to solid foods. Stoma strictures or obstruction due to internal hernias should be considered. Patients with frequent vomiting can develop low thiamine, potassium, and magnesium levels that require oral or intravenous supplementation.[11]

Later surgical complications include bleeding or perforated ulcers, gallstone formation due to rapid weight loss, bowel obstruction due to internal hernia or adhesions, and dumping syndrome.[12] Dumping syndrome occurs most commonly in those who have malabsorptive

procedures and is characterized by a variety of unpleasant and distressing symptoms, such as nausea, abdominal cramping, diarrhea, lightheadedness, fast heart rate, flushing, and passing out in response to eating or drinking foods high in sugars and fats.[13] However, patients may develop a fear of dumping episodes, which can have a strong positive effect on modification of food intake.

Long-term medical complications mainly result from nutritional deficiencies that occur due to reduced intake and/or absorption of nutrients. Patients who have had bariatric surgery are at high risk for dehydration, as well as deficiencies of vitamin B12, fat-soluble vitamins (A, D, E, and K), iron, folate, calcium, and protein. These nutrient deficiencies are more common with the restrictive/malabsorptive procedures than purely restrictive procedures.[13]

The decreased metabolism that typically occurs with rapid weight loss sometimes leads to cold intolerance, fatigue, and hair loss. These symptoms usually occur 2-4 months after surgery and diminish with stabilization of weight loss.[14] In most cases, total hair loss does NOT occur, and the hair that is lost will re-grow. Major weight loss also leads to excessive skin folds, which can be surgically removed; however, this surgery is not available in VA.

Key Point: Veterans who are candidates for bariatric surgery should be informed that surgical removal of excess skin is not authorized for VA payment.

VA Criteria for Use

In September 2005, the VHA Handbook on Bariatric Surgery was signed by the Under Secretary for Health and made available for use within in VA. The handbook outlines official VHA policy pertaining to bariatric surgery and was developed by the VA Bariatric Surgery Workgroup, with input from various individuals and program offices within VA.

The criteria for bariatric surgery are designed to be consistent with current existing literature and consensus opinion to select candidates who are most likely to benefit and least likely to be harmed. In order for patients to be considered for bariatric surgery, they should meet the following criteria:

- BMI >40 (patients with BMI >35 and obesity-associated conditions can also be considered)
- No medical contraindications to bariatric surgery
- Participation in a behaviorally based weight management program (such as MOVE!) for at least 3 months, with some evidence of adequate pre-operative weight loss
- A formal psychological evaluation that finds the person to be mentally and emotionally stable, likely to be able to control eating-related impulses and comply with a restricted diet post-surgery, and likely to maintain the frequent and long-term follow up necessary after this procedure

These requirements are minimum established national criteria. Facilities performing these procedures may have additional criteria and/or requirements. This next section will discuss these criteria in further detail.

Criterion #1: BMI >40
Because most studies of bariatric surgery have been limited to participants with BMI >40, efficacy and safety data can only be generalized to this population. Patients with this level of obesity are unlikely to be able to lose and sustain clinically significant amounts of weight (>10% of body weight) with behavioral interventions alone. Patients with BMI 35-40 can also be considered if they have obesity-associated conditions that are likely to respond to weight loss, such as diabetes. Some new evidence is accumulating that suggests patients with diabetes at BMI levels lower than 35 can also benefit from surgery.

Criterion #2: No medical contraindications to bariatric surgery
The following conditions are contraindications to bariatric surgery:

- Current tobacco use (Veterans must abstain from smoking for at least 6 weeks prior to surgery)
- Oxygen-dependent chronic obstructive pulmonary disease (COPD), contraindication based on severity
- Active hepatitis B or cirrhosis (active hepatitis C can receive consideration on an individual basis)
- Congestive heart failure or pulmonary hypertension that is unresponsive to treatment
- Multiple abdominal operations, complicated incisional hernias, or a history of multiple, diffuse, or severe intra-abdominal infections
- Uncontrolled psychotic disorder and/or history of noncompliance with prescribed psychiatric treatment, as determined by a psychiatrist or psychologist
- Active substance abuse within one year prior to consideration for bariatric surgery

Depending on severity, patients may have other medical conditions that make them poor surgical candidates. Consult with a bariatric surgeon for questions about individual cases.

Criterion #3: Participation in MOVE! (or a similar program), with adequate pre-operative weight loss
Potential surgical candidates must participate in a behaviorally-based weight management program such as MOVE! for at least 3 months prior to surgery. The purpose of such a requirement is to become familiar with post-surgical diet requirements, begin a program of physical activity, and address significant behavioral issues that may be barriers to maintaining weight loss (such as depression or binge eating). This period of time also serves as an opportunity to demonstrate ability to comply with appointments and follow-up. An “adequate” weight loss must also be demonstrated prior to surgery; however, because the adequacy of pre-operative weight loss in these situations is usually a matter of clinical judgment, the Handbook does not currently define what constitutes sufficient weight loss. A loss rate of ½ to 2 pounds per week is consistent with what can be expected within a behaviorally based program. However, because of their extreme obesity, bariatric surgery candidates often have significant barriers to engaging in sufficient amounts of physical

activity to achieve this rate; thus, lower rates of weight loss may still be considered "adequate." Some centers have instituted mandatory pre-operative weight loss programs using low-calorie diets, typically in the form of all-liquid, high-protein diets. This approach is thought to lower short-term post-operative complication rates.

Criterion #4: A formal psychological evaluation
Because bariatric surgery requires life-long behavior modification post-operatively and because of the higher risks associated with the procedure as compared to non-surgical treatments, a psychological evaluation can be helpful to identify patients who either won't benefit from surgery or who may even be harmed by surgery. The recommended formal psychological evaluation (described in further detail in Appendix 11-1) assesses:

- Stability of existing mental illness
- Current substance abuse or undiagnosed mental illness
- Presence of psychosocial factors that may complicate treatment

The psychological evaluation should be performed by a behavioral health professional with experience in the evaluation and treatment of mental illness. In addition, the evaluator should have some familiarity with bariatric surgery procedures, follow-up protocols, and required post-operative behavioral changes.

Pre-Operative Care and Evaluation

Veterans identified by their primary care medical providers as potential bariatric surgery candidates will be screened by the bariatric surgeon and other bariatric surgery team members at a VHA or outside facility, per the referral process detailed in the VHA Handbook on Bariatric Surgery. In general, selected patients meet with the surgeon and other bariatric staff (dietitian, psychologist, others), usually more than once, to prepare for surgery. In some VHA facilities, this meeting can be arranged via video teleconferencing. The following table (11-1) describes the role of various team members when preparing a patient for bariatric surgery.

Table 11-1: Roles of Bariatric Surgery Team Members

Team Member	Topics Covered
Primary Care Provider	• Perform initial medical evaluation and determine if patient meets medical criteria for surgery. • Stabilize chronic underlying conditions. • Coordinate with pharmacist (see below) to safely change medications to instant release formulations prior to surgery. • Arrange for patient consultations with other team members.
Surgeon	• Identify needed preoperative requirements to improve surgical outcomes. • Determine if preoperative weight loss is indicated (surgery in patients with very high BMI can be technically more difficult and carry a higher risk of complications). Note: Preoperative treatments and/or guidance for surgery may vary from surgeon to surgeon; these should be clarified during preoperative consultation.

Team Member	Topics Covered
Anesthesia Provider	• Request modification or discontinuation of certain medications prior to surgery.
Pharmacist	• Plan and supervise short- and long-term post-surgical changes in medications or formulations (such as conversion of sustained-release [SR] medications to instant-release formulations and use of liquid formulations for multivitamins and/or other nutritional supplements).

Registered Dietitian	• Conduct preoperative nutrition assessment.
	• Provide diet counseling and support for preoperative weight loss.
	• Prepare patient for postoperative diet progression:
	  ‣ Identify specific dietary needs or issues that may complicate the postoperative period (e.g., dairy intolerance, food allergies).
	  ‣ Provide education on postoperative diet and vitamin/mineral supplements.

Psychologist	• Conduct preoperative psychological evaluation to assess suitability for surgery. Patients should be classified into one of the following groups: 1. Not a surgical candidate on the basis of currently active serious psychopathology and/or evidence of repeated poor adherence to medical regimens, appointments, or follow-up instructions. 2. Delayed decision pending further psychological evaluation and/or treatment. 3. Psychologically stable for surgery but should continue ongoing treatment and/or support before and after surgery. 4. Psychologically stable for surgery and can receive further psychological assessment and treatment on an as-needed basis.
Physical Activity Specialist	• Work with patient to develop an individualized preoperative exercise and physical activity plan. • Prepare patient for postoperative activity/exercise progression to improve flexibility, range of motion, and balance.

Pre-Operative Evaluation

There is no standard battery of tests for preoperative evaluation. Clinical judgment should be used to plan and order preoperative tests and consultations. Most patients will require some preoperative testing, depending on their clinical status and as determined by the surgeon and anesthesiologist, but not all tests listed below will be required in all cases. It can take 3 to 6 months to complete all needed tests and evaluations.

Phase 1–Early Preparation: This phase, which primarily involves the local MOVE! team, takes place 3-6 months prior to surgery. During this phase, bariatric surgical candidates should attend a series of sessions with the dietitian, psychologist, nurse case manager, and other relevant staff. These sessions should be designed to:

- Offer patient education materials and answer any questions the patient might have.
- Support and encourage patient participation in a multidisciplinary weight management program such as MOVE! or use the criteria of the bariatric program site for pre-surgery weight management. Patients should begin making dietary, physical activity, and lifestyle changes to lose some weight prior to surgery.

A psychological evaluation should also be completed in this phase.

Pre-Operative Testing

The following medical tests may be considered:

Blood tests

- Complete blood count
- Serum chemistries (Ca+, SAP, glucose, lipids)
- Thyroid panel (TSH, T4,T3)
- HgbA1c
- Folate
- Serum vitamin B12 (MMA, homocysteine)
- Serum iron studies (ferritin/iron/TIBC)
- Parathyroid hormone (PTH)
- Vitamin D - 25-hydroxyvitamin D (25-OH D)
- Thiamin
- Vitamin A

Urine tests

- Urinalysis for protein (if positive, obtain a 24-hour specimen to calculate creatinine clearance and protein)
- Random urine drug screen

Other tests

- Electrocardiograph (ECG)
- Upper endoscopy (EGD)
- Chest X-ray and/or spirometry
- H. pylori testing (with subsequent treatment if positive)
- Carotid doppler
- Exercise stress test or equivalent CAD screen (stress echo, nuclear stress test)
- Baseline dual-energy X-ray absorptiometry (DEXA) bone density scan
- Gallbladder ultrasound

Phase 2—Intermediate Preparation: This phase, which primarily involves the local bariatric surgery case manager/liaison and the bariatric surgery team staff (with the key staff member being the bariatric surgery coordinator), typically takes place 1 month prior to surgery. The following activities should take place during this phase:

The surgical candidate continues with MOVE! while progress of non-surgical treatment is monitored. The primary care provider or MOVE! dietitian provides nutrition management, which includes assessment of nutrition-related lab values, review of weight/BMI history, review of patient food and activity records, provision of nutrition education (as needed),

and evaluation of nutritional factors related to comorbidities, medications, supplements, and compliance.

The case manager or local bariatric liaison (who may be in a different physical location) steps in to coordinate with the Bariatric Surgery Center Coordinator.

The surgical candidate undergoes an orientation by the bariatric team (surgeon, dietitian, psychologist, pharmacist, and physical activity specialist) for continued education, consultation, and evaluation (see Table 11-1). This can be provided in the form of a V-Tel visit with patient, family, local liaison, case manager, and surgeon to facilitate the clinical relationship and handoff to the surgical site team.

The case manager/liaison verifies that all assessments/evaluations have been completed and orders pre-surgical labs/nutritional supplements and other pre-surgical clinical activities.

Phase 3—Final Preparation: This phase, which primarily involves the inpatient bariatric surgery team, typically takes place 1-2 days prior to surgery. The following activities should take place during this phase:

- Patient is admitted to the bariatric surgery facility.
- Pre-surgical work-ups are completed, including a review of pre-operative tests, evaluations, and consultations.
- The surgeon, in collaboration with the bariatric team, makes the final decision as to whether to proceed with surgery.
- The bariatric surgery team completes surgery as scheduled.

Pre-Operative Instructions

Some surgeons may ask patients to go on a low-calorie, high-protein diet a week or two before surgery to shrink a fatty liver or to begin muscle strengthening exercises to prevent post-surgical muscle wasting due to periods of relative inactivity after surgery. Extremely obese patients may be asked to lose a specified amount of weight prior to surgery to minimize the risk of surgical complications.

Pre-Surgery Education

Prior to surgery, a bariatric team member should meet with the patient to review the typical hospital and post-hospital course, wound care, post-operative diet and physical activity instructions, and who to call for information regarding problems, questions, and follow-up appointments. Some bariatric surgical programs hold pre-surgical group sessions. Topics covered include management of binge eating, stress/mood management techniques, medical information on the short- and long-term side effects of surgery and management strategies, dietary management, and first-hand experiences of patients who have already

undergone the surgery. A major purpose of these pre-surgical sessions is to assist patients in forming realistic expectations and developing skills required for successful weight loss and maintenance. Inclusion of professionals representing multiple disciplines in such sessions (e.g., physician, dietitian, exercise specialist) is appropriate. Patients should also be educated regarding the importance of multivitamin and mineral supplements.

Key Point: Pre-surgical patient education should reinforce the need and importance of taking prescribed vitamin/mineral supplements for the rest of their lives. A lifelong daily high-potency multivitamin and mineral supplement, containing 100 percent of the daily value for at least two-thirds of nutrients, is recommended for all patients, regardless of type of procedure. A complete formula with at least 18 mg iron, 400 µg folic acid, calcium, fat-soluble vitamins (A, D, E, K), selenium, and zinc is preferable. Supplementation can be initiated pre-surgically with tablets, keeping in mind that some patients may only be able to tolerate a liquid or chewable version initially for up to a month post-operatively.

Common Issues in Pre-Operative Care and Evaluation

Patients are sometimes so eager to obtain bariatric procedures that they are willing to say just about anything the staff wants to hear in order to be approved for such surgery. This further supports the need for patients to participate in a program such as MOVE! before undergoing surgery. The pre-surgery period should be used to help the patient build weight management skills that will be needed following surgery. It also provides an opportunity for the team to become more familiar with the patient's individual needs and to address any issues that arise prior to surgery.

Bariatric surgery is a tool to assist with weight loss and maintenance; however, without proper adherence to post-operative dietary instructions, patients will not lose clinically significant amounts of weight. Furthermore, over time they may regain whatever weight they do lose, defeating the purpose of the surgery. Unfortunately, binge-eating is very common in the extremely obese. In addition to "sabotaging" the purpose of bariatric surgery, inability to manage binge eating can place the post-bariatric patient at risk for complications such as severe reflux, vomiting with electrolyte disturbances, and in rare cases, gastric rupture. A good sign is when patients can acknowledge the extent of their problem eating/drinking behaviors and are willing to work on gaining mastery prior to surgery.

Some patients see bariatric surgery as a quick fix with little impact on overall lifestyle and functioning. Although bariatric surgery often leads to relatively rapid weight loss, maintenance of weight loss can be a problem. Patients need to be able to verbalize an understanding that long-term maintenance requires an ongoing commitment to dietary, physical activity, and behavioral modifications.

Key Point: Although very effective, bariatric surgery requires lifetime changes in diet and lifestyle and long-term medical surveillance.

Post-Operative Care

Typically, patients follow up with the bariatric surgical team within 1 to 2 weeks of hospital discharge. On-going management transitions to primary care provider within a week or two of surgery, assuming an uncomplicated course. The bariatric surgery teams continue to be involved in post-operative follow-up care as well. At each follow-up contact, providers should assess the following:

- Dietary history and food tolerance
- Changes in weight
- Obesity-associated comorbidities
- Medical complications of bariatric surgery
- Activity levels versus established activity goals (encourage aerobic exercise and strength training, to the degree tolerable to patient)
- Need for participation in support groups, ideally a bariatric surgery group

Interval follow-up is usually scheduled at 1, 3, 6, 12, 18, and 24 months, and annually thereafter. For patients with "bands," follow-up at weeks 1 and 6 is scheduled with the bariatric team. Thereafter, the surgical and primary care teams should negotiate an appropriate "band management plan." Patients should be advised to call the bariatric site if they are not losing at least ½ pound of weight per week.

An overview of the typical post-operative course is provided in Table 11-2.

Table 11-2 Overview of Typical Post-Operative Course

Phase	Description	Diet Changes	Expected Weight Loss
Phase 1: Early (1-6 wks post-op)	*Side Effects:* • Food intolerance • Rapidly changing comorbid conditions: diabetes, HTN *Complications:* • Anastomotic or staple line leaks, pulmonary embolus (PE), myocardial infarction (MI), pneumonia • GI bleeding • Bowel perforation • Incisional hernia • Small bowel obstruction • Wound infections *Medications:* • Restart most medications as soon as possible. Alternative formulations (liquids, crushable pills, smaller (cut) pills usually required. • Be prepared to adjust blood pressure and diabetes medications frequently. Be cautious with diuretics during this phase.	• **< 2 weeks post-op:** low-sugar or sugar-free clear liquid diet for the first 24 hours followed by a high-protein, low-fat/sugar-free full liquid diet (30 ml every 3 hours); Patients are usually restricted to 400-600 kcal/day • **2-4 weeks post-op:** high-protein pureed diet: 60-80g of protein daily over 3-6 small planned meals with bariatric serving sizes (1-2 ounces), supplemented with high - protein liquids as needed and tolerated. • **4-6 weeks post-op:** transition diet to solid foods, maintaining high protein intake of 60-80g protein daily over 3-6 small planned meals with bariatric serving sizes (3-4 ounces), supplemented with high -protein liquids as needed and tolerated. Patients start one food at a time in small quantities so that foods, not well tolerated, can be easily identified.	**Note: Expected weight loss will vary by type of surgery. See Table 8-3 – Expected Weight Loss By Surgical Type.**
Phase 2: Intermediate (7-12 wks post-op)	*Side Effects:* • Food intolerance • Dumping syndrome (for bypass procedures) *Complications:* • Stomal stricture/stenosis • Marginal ulcers (GI bleeding)	Solids at every meal. High protein: 60-80g of protein daily over 3-6 small planned meals with bariatric serving sizes (4-6 ounces), supplemented with high - protein liquids as needed and tolerated.	**Note: Expected weight loss will vary by type of surgery. See Table 8-3 – Expected Weight Loss By Surgical Type.**
Phase 3: Ongoing (≥13 wks post-op)	*Side Effects:* • Improving co-morbid conditions: diabetes, hypertension, hyperlipidemia, obstructive sleep apnea, osteoarthritis • Developing medical conditions: osteoporosis/osteomalacia and anemia, nutritional deficiencies *Complications:* • Cholelithiasis • Small bowel obstruction • Internal hernias	Solids at every meal. High protein : 60-80g of protein daily over 3-6 small planned meals with bariatric serving sizes that may be expanded to 6-8 ounces each, supplemented with high - protein liquids as needed and tolerated.	**Note: Expected weight loss will vary by type of surgery. See Table 8-3 – Expected Weight Loss By Surgical Type.**

Please also refer to nutrition guidance provided by your local site and as dictated by patient tolerance.

Patients are likely to need individual specialty consultations from various MOVE! team staff for routine follow-up and specific post-operative problems. Self-management support (group or individual sessions) may be used to provide care and are of particular value when participants are all post-bariatric patients. A support group may provide a venue for mutual support of other patients experiencing similar issues, an opportunity for education on adherence, and a mechanism for identifying patients who may be having particular difficulty in coping. The support group format provides an efficient way for behavioral health professionals to provide assistance in managing binge eating, stress, and problems with interpersonal relationships, sex, and mood. Long-term weight loss management can also be supported by providing guidance on relapse prevention, ongoing self-reward for adherence to healthy lifestyle regimens, and other behavioral maintenance strategies.

Expected Weight Loss

The average weight loss following bariatric surgery is 30 to 35 percent of body weight. In the first month after surgery, patients typically lose about a pound per day. After this period, the rate gradually slows down, and weight loss generally plateaus at 12-18 months after surgery. By 24 months, most patients are either maintaining or regaining weight. Despite large amounts of absolute weight loss, some patients may still remain overweight or obese at the peak of their loss. Even so, most patients will experience large improvements in their health, functioning, and quality of life.

Table 11-3 Expected Loss of Excess Weight Following Bariatric Surgery (Average Weight Loss Percentage, by Procedure)[15]

Type of Bariatric Procedure	Expected Loss of Excess Weight (EWL)				
	EWL Range	1-year EWL	2-Year EWL	5-Year EWL	10-Year EWL
Adjustable Gastric Binding (AGB)	32-70%	50%	55%	50%	No data available
Roux-en-Y Gastric Bypass	33-77%	64%	67.5%	58%	52%
Biliopancreatic Diversion/ Duodenal Switch (BPD/DS)	62-75%	71.8%	75.1%	73.3%	77%

Note: Data are not yet available for the Vertical Sleeve Gastrectomy.

Bariatric surgery for adults can be expected to result in at loss of least 50 percent excess weight.

Short-Term Post-Operative Guidance

In the immediate and short-term post-operative period, patients should be instructed to seek medical attention for:

- Difficulty breathing
- Increased heart rate
- Fever >101° F, or chills
- Severe nausea and vomiting persisting >24 hours
- Inability to pass urine
- Sudden persistent increase in pain or discomfort not relieved by prescribed medications
- Signs or symptoms of wound infection:
    - Extreme redness, warmth, or pain at the site of incision
    - Separation of incision edges
    - Increase or change in color of drainage

Some patients may be given specific wound-care guidance from their surgical team. General care includes:

- Keeping the incision clean and dry
- Covering stapled incisions with plastic wrap for showering until staples are removed (usually 10-14 days post-op)
- Placing steri-strips on the incision after staples are removed and leaving on until they fall off or for 7-10 days

Patients will usually return home with pain medicines prescribed by their surgeon. Common side-effects of narcotic pain medicines include drowsiness, confusion, nausea/vomiting, constipation, lightheadedness, and urinary retention.

Medication

Immediately after surgery, patients should discuss their current prescriptions with their primary care provider to determine if any should be modified or discontinued. Many patients will require immediate reductions in antihypertensive and/or diabetic medications. Until a solid diet has been resumed, patients should crush all pills or take a chewable version if available. Note that time-release pills or capsules should never be crushed. Thus, a temporary switch to an alternative pill should be arranged.

In general, post-bariatric patients should avoid the use of aspirin and non-steroidal anti-inflammatory drugs (NSAIDs). Ulcers at the anastomotic margins can occur after surgery and may be a source of symptomatic or asymptomatic GI blood loss.

Table 11-4 Potential Complications and Medical Considerations

Disease/Condition	Issues	Assessment/Surveillance	Medical / Medication Considerations
Diabetes mellitus	Medication requirements are reduced drastically during the postoperative period as a result of decreased weight and calorie restriction. Patients are typically discharged on sliding scale insulin for their diabetic medication regimen, and some patients with type 2 diabetes may be able to completely discontinue their diabetic medications soon after surgery.	Educate patients about symptoms of hypoglycemia, especially those taking sulfonylureas or thiazolidinediones.	In the immediate post-operative period, patients should be managed on sliding scale insulin with frequent glucose monitoring. Avoid oral hypoglycemics if at all possible due to rapidly changing insulin requirements. If an oral hypoglycemic agent is used, metformin is a better alternative than sulfonylurea or thiazolidinediones. Oral hypoglycemics are resumed when needed after the post-surgical diet has been stabilized.
Hypertension	Blood pressure tends to improve in the immediate post-operative period, requiring an initial decrease in medications; however, reductions may not be sustained in the long term.	Patients should be monitored closely for signs of hypotension during the initial post-op diuresis that occurs. Periodic long-term surveillance of blood pressure is required.	Discontinue any previously prescribed diuretics during the immediate postoperative period due to the increased risk of dehydration. After initial post-op period, increase or restart medications if blood pressure is not under control.
Pain	Pain management for chronic conditions is often still required. Bariatric surgery reduces medication options because NSAIDS and aspirin should be avoided permanently to reduce risk of GI bleeding. Enteric-coated baby aspirin can be allowed prophylactically for coronary heart disease, if tolerated. This is less of a concern with the Lap Band.	Monitor pain and assess for inadvertent aspirin or NSAID use. Consider non-pharmacologic pain management alternatives.	Acetaminophen, opioids, and tramadol are possible medication alternatives. Clinicians should seriously weigh the risks and benefits of restarting NSAIDS or aspirin after surgery.
Osteoporosis	Bariatric patients are at increased risk due to reduced calcium absorption and increased bone resorption, which often leads to secondary hyperparathyroidism.	If alkaline phosphatase is elevated, parathyroid hormone level should be checked and a DEXA bone density scan should be considered. Assess 25-hydroxy vitamin D levels, PTH, and alkaline phosphatase annually.	Avoid oral bisphosphonates if possible because the reduced pouch size increases the risk of ulceration. Alternative treatments for osteoporosis in this population include raloxifene for women and calcitonin for the general population.

Disease/Condition	Issues	Assessment/Surveillance	Medical / Medication Considerations
Oral Thrush	Oral thrush infections can occur after bariatric surgery when the immune system is weakened and oral intake is minimal. Additional risk factors include: wearing dentures, having other health conditions, such as diabetes or anemia, taking certain medications, such as antibiotics, or oral or inhaled corticosteroids and having a dry mouth for an extended period of time (xerostomia).	Signs and symptoms may develop suddenly and can include: Creamy, white lesions on your tongue, inner cheeks and sometimes on the roof of your mouth, gums and tonsils Lesions with a cottage cheese-like appearance Pain Slight bleeding if the lesions are rubbed or scraped Cracking at the corners of mouth Reports of a cottony mouth feeling Loss of taste	Instruct and encourage patient to: Hydrate between meals Practice good oral hygiene. Brush at least twice a day and floss at least once. Replace toothbrush frequently until infection clears up. Avoid mouthwash or sprays — they can alter the normal flora in the mouth. Use warm saltwater rinses. Dissolve 1/2 teaspoon (2.5 milliliters) of salt in 1 cup (237 milliliters) of warm water. Swish the rinse and then spit it out. Treat patient with an antifungal medication, which is available in several forms, including lozenges, tablets or a liquid.
Obstructive sleep apnea	Sleep apnea is a common comorbidity in overweight/obese patients that often improves with weight loss.	Patients who use CPAP or BiPAP can undergo a repeat sleep study at 6 months post-surgery to titrate pressure or discontinue.	Treat patient according to results from repeat sleep study.
Excess Skin	This is a common problem after significant weight loss. Excess skin is usually a cosmetic issue; however, in some cases, skin ulceration or infection may result. Excess skin can have a considerable impact on function and quality of life.	Evaluate for skin ulceration and infection and degree of impairment, or see if patient is having difficulty walking or moving because of excess skin.	Good hygiene practices, topical and/or oral anti-bacterials, and anti-fungals when needed. Consider for excess skin removal on a case-by-case basis.

Nutrition Guidance

Bariatric surgery becomes a less effective tool for losing weight if post-operative dietary guidance is not followed. Patients planning surgery often consult with a dietitian before and/or after surgery. General nutrition advice suitable for the general population is NOT suitable for the post-bariatric patient. VA Nutrition and Food Services has developed a series of patient handouts regarding the post-bariatric surgery diet. These excellent resources are available on the Nutrition and Food Services Intranet site.

The focus soon after surgery is on maintaining adequate fluid and protein intake. Patients begin on a clear liquid diet and gradually progress through various stages (opaque liquids/liquid foods, pureed foods, soft foods, foods with regular texture). Patients usually begin oral intake within 1 or 2 days after surgery. From NPO, they start with water and ice chips, progress to a clear liquid diet, and gradually proceed through the other stages. A conservative progression would involve 1-2 weeks of liquids followed by 1-2 weeks of pureed foods, then foods with soft texture, and finally, foods with regular texture. The rate of progression through these stages will vary from patient to patient. The next section gives an example of the typical dietary progression for an "average" post-bariatric patient.

Typical Diet Following Bariatric Surgery

Advance to the next stage in texture only if the patient is ready. Introduction of new foods or textures too early can contribute to discomfort and intolerances.

Stage 1: Water and Clear Liquids
Patient sips up to 32 oz. of fluid per day. Patient should sip 2 to 3 oz. per hour of unsweetened, decaffeinated clear liquids (e.g., water, sugar-free gelatin, sugar-free lemonade, unsweetened decaf tea, Crystal Light®, sugar-free Tang®, sugar-free Koolaid®, clear low-sodium broth, sugar-free popsicles, low-calorie/low sugar non-carbonated flavored waters).

Stage 2: Clear and Full Liquids
Continue clear liquids while gradually adding opaque liquids/liquid foods as tolerated. New items should be added one at a time. As with Stage 1, these items are to be slowly sipped. Patient should eat or drink something every hour. After opaque liquid/liquid food is consumed, the patient should wait 30 minutes before beginning to sip clear, unsweetened, decaffeinated fluids. At least 6 cups of fluid must be taken in per day to avoid dehydration. Examples of full liquid items include: non-fat milk (Lactaid® or soy milk may be better tolerated), Carnation Instant Breakfast® (no sugar added), sugar-free pudding made with non-fat milk, non-fat Greek style yogurt or non-fat, artificially sweetened yogurt, smooth cooked cereals (e.g., cream of wheat, cream of rice or blenderized oatmeal), low fat strained or pureed cream soups, tomato juice, V-8® juice.

Stage 3: Pureed Foods
Patient should consume no more than 2-3 oz or 4-6 tablespoons of pureed food at a time, 3-6 meals per day, created from a variety of the foods listed below (high protein food must be included in each meal and eaten first):

High protein food (1 oz.): strained baby food meat; cooked, pureed skinless turkey or chicken legs or thighs or lean cuts of beef, pork, veal, or lamb (meat can be baked, broiled, boiled, or stewed and then pureed); flaky fish such as salmon or tuna; scrambled pureed eggs or egg substitute; low fat cottage cheese; tofu.

Vegetables: vegetable juice from Stage 2 can be continued; pureed/soft-cooked vegetables such as broccoli, string beans, carrots, or cauliflower (boil, steam, or microwave and then puree).

Starches/whole grains: unsweetened or artificially sweetened cooked cereal made with nonfat milk; unsweetened dry cereal mixed with nonfat milk; mashed potato made with nonfat milk; skinless soft-baked white or sweet potato.

Nonfat milk: sugar-free pudding made with nonfat milk; nonfat, artificially-sweetened yogurt.

Fruit: baby-food fruit or pureed fruit; if canned fruit is used, it must be packed in light syrup or natural juices. Fruit juice should be avoided.

Clear, unsweetened, decaffeinated liquids can be continued. Liquids should not be combined with meals, but they can be consumed 30 minutes before or after meals. Patient should consume six to eight 8-oz. glasses of fluids per day to avoid dehydration.

Stage 4: Soft Diet
Patient should consume no more than 2-3 oz. (4-6 tablespoons) of food at a time, 3-6 meals per day, created from a variety of the below foods (high protein food must be included in each meal):

High protein foods: lean meats; soft poultry without skin; shellfish; soft, flaky fish like tuna; eggs and egg substitutes; tofu and soy protein products; lowfat or nonfat cheese, cottage cheese, or ricotta cheese; beans cooked without added fat.

Vegetables: vegetable juice from Stage 2 can be continued; soft-cooked vegetables; lowfat cream soups with soft-cooked vegetables.

Starches/whole grains: cooked, unsweetened or artificially sweetened cereal made with nonfat milk; unsweetened, dry cereal mixed with and softened by nonfat milk; mashed potato made with nonfat milk; skinless, soft, baked white or sweet potato; lowfat crackers; graham crackers; corn tortillas; bread as tolerated (Toast is usually better tolerated.)

Milk: nonfat or lowfat milk; sugar-free pudding made with nonfat milk; nonfat, artificially sweetened yogurt

Fruit: pureed fruit; soft fresh fruits such as banana; soft, unsweetened canned fruits

Clear, unsweetened, decaffeinated liquids can be continued. Liquids should not be combined with meals, preferably separated by 30 minutes (before and after). Six to eight 8 oz. glasses of fluids/day needed to avoid dehydration.

General Reminders for Patients

The following is a list of practical tips. Following these principles will assist in a successful post surgical recovery.

- Measure portions.
- Chew solid foods thoroughly (25 chews/bite), take small bites, and slow down the pace of eating (30 minutes to eat).
- Avoid constant nibbling.
- Avoid drinking liquids just before, during, or just after meals (wait 30 minutes).
- Sip fluids; do not gulp fluids.
- Do not use a straw.
- Avoid foods or liquids with added sugar or fat or those high in sugar or fat.
- Avoid carbonated beverages.
- Avoid alcohol.
- Lactaid® or calcium-fortified soy milk can be substituted if cow's milk is not well tolerated.
- Remove all fat and skin before cooking poultry.
- Trim all visible fat from veal, beef, lamb, and pork before cooking; use lean cuts.
- Avoid breaded foods.
- Bake, broil, roast, grill, boil, stew, poach, or microwave instead of frying.
- Use a rack when baking, broiling, or roasting to allow fat to drain from meat.
- Cook with little or no added fat.

Post-Surgery Food Intolerance

Intolerance of certain foods is common and can vary widely from patient to patient. Food diaries can help the post-op patient identify specific food intolerances. With experience, patients will learn what foods they can and cannot tolerate. Foods that are often poorly tolerated include red meat; nuts and seeds; popcorn; fresh coconut; dried fruit; peels, skins, membranes, seeds, or cores of fruit; chips; cheese; pizza; salad dressings, mayonnaise, and creamy sauces; dry or tough poultry or pork; bread or doughy-textured starches; pasta; vegetables containing a lot of fiber; and ice cream and frozen yogurt. Common postoperative problems associated with food and/or liquid intake and potential treatment/solutions to these problems are included in Table 11-6.

Supplementation

After some types of bariatric surgery, consumed food bypasses areas of the lower stomach and parts of the small intestine, which can lead to vitamin, mineral, and protein deficiencies and bone demineralization from secondary hyperparathyroidism. Patients with malabsorptive or malabsorptive/restrictive procedures (e.g., RYGB), special dietary restrictions (e.g., vegetarians), food intolerances (e.g., lactose), or rapid weight loss (> 20lbs/month) are all at higher risk of nutritional deficiencies. Most of these nutritional deficiencies will not manifest until 1-5 years post-surgery. These problems occur with much less frequency in purely restrictive procedures.

A diet that includes foods from a variety of plant and animal sources plus a daily multivitamin and mineral (MVI) supplement is generally sufficient to prevent most nutritional deficiencies. **At a minimum**, a lifelong daily supplement of an MVI containing 100 percent of the daily value for at least two-thirds of essential nutrients is recommended for ALL patients regardless of the type of procedure. A complete MVI formula, with at least 18 mg iron and 400µg of folic acid, should be chosen. Additionally, calcium citrate (1500 mg) with 400-800 IUs of Vitamin D3 should be taken each day. For RYGB, BPD/DS, and gastric sleeve procedures, the supplement should comprise 200 percent of the daily value.[16] Some patients may be able to tolerate only a liquid or chewable format initially. Reinforce with post-bariatric patients the importance of regularly taking prescribed vitamin/mineral supplements for the rest of their lives.

Key Point: Supplementation beyond the current recommendations may be indicated based on type of procedure, patient's clinical condition, or health status. Based on the surgery type, individual patient differences, and other factors, the needed amount of supplementation and surveillance for deficiencies will vary.

Depending on the type of surgery performed and presence of other medical conditions, some patients may also require additional calcium, iron, vitamin B12, folic acid, thiamin, fat-soluble vitamin (A, D, E, K), electrolyte and/or "high-protein" supplementation. Laboratory monitoring of nutrient values can help identify a need for additional supplementation. Note that some facilities may not provide high protein liquid supplements, and patients will need to purchase the supplements.

No single approach to supplementation and nutritional surveillance has been demonstrated to be more effective than any other. Intensity of monitoring and supplementation should be tailored to the individual and influenced by the patient's procedure type, health status, diet, and comorbidities. General guidance on deficiency monitoring and supplementation is summarized in Table 11-5.

Key Point: Consider nutritional deficiencies in the differential diagnosis of newly developed or otherwise unexplainable signs or symptoms, such as unusual rashes, easy bruising, fracture, or compromised vision.

Table 11-5 Nutrient Deficiencies and Suggested Supplementation[17, 18]

Nutrient	Issues	Surveillance	Vitamin/Mineral Prophylaxis	Additional Treatment Notes
Multivitamin with Minerals	A lifelong daily supplement of a high-potency multivitamin (MVI) with minerals, containing 100% of the daily value for at least two-thirds of essential nutrients, is recommended for **all** patients regardless of type of bariatric procedure (see Prophylaxis by procedure-specific recommendations)	Signs/symptoms: may present in a variety of ways; see specific nutrients	**High-potency MVI/mineral supplement** containing a minimum of 100% of daily recommended value for at least two-thirds of essential nutrients. Choose a formula with at least 18 mg iron and 400µg folic acid. **Prophylaxis by procedure:** **AGB:** 100% daily value **RYGB** & **BPD/DS**: 200% daily value	Do not mix multivitamins containing iron, with calcium-instruct patient to take supplements at least 2 hours apart.
Folic Acid (B9 or Folacin)	In all types of bariatric surgeries, folic acid deficiencies may be as high as 38%. It is thought to be secondary to decreased intake.	Signs/symptoms: anemia, abnormal CBC Labs: serum folate Lab interval: consider yearly	**High-potency MVI** w/minerals (as outlined above)	**For deficiency** (low red blood cell folate): Give 1 mg/day or 1000 µg /day for 3 months. Note that intake of >1000 µg/day can mask B12 deficiency
Iron	Iron deficiency occurs in approximately 30%-50% of RYGB and is even more common in menstruating women. Deficiency is thought to be secondary to decreased absorption from small intestine and a reduction in stomach acid.	Signs/symptoms: anemia Labs: CBC, ferritin, iron, TIBC Lab interval: q4 months for 1st year post-operative, then yearly	**High-potency MVI /mineral supplement** (as outlined above) containing at least 18 mg iron; Provide additional iron to patients undergoing **RYGB, gastric sleeve, and BPD/DS,** as follows: 1. Add a minimum of 27 mg/day elemental iron (135 mg FeSo4/day) 2. Add 65-130 mg/day elemental iron for menstruating females or patients at risk of anemia (325-650mg FeSo4/day)	500 mg vitamin C should be taken with iron to maximize absorption Avoid taking iron with antacids and milk products **For deficiency**: Add up to 300 mg/day elemental iron; when oral treatment fails or in cases of severe anemia, consider IV iron infusion

Nutrient	Issues	Surveillance	Vitamin/Mineral Prophylaxis	Additional Treatment Notes
Vitamin B12	B12 deficiency occurs in 30%-64% of RYGB patients and is a result of reduced intrinsic factor. It often does not present until 1-9 years post-surgery due to extensive stores within the body. This deficiency is thought to be secondary to decreased ability to cleave vitamin B12 from protein sources in a low-acid environment.	Signs/symptoms: anemia, neuropathy, abnormal CBC Labs: serum vitamin B12 Lab interval: consider yearly	**High-potency MVI w/minerals** (as outlined above) **RYGB, gastric sleeve, and BPD/DS**: Add 350-500 µg oral crystalline B12/day OR Add 1000 µg intramuscular (IM) injection/mo.	B12 is available as tablets, liquid drops, mouth spray, or nasal gel/spray; SL; and IM injections **For deficiency**: Give IM 1000 µg/wk x 8 wks then 1000 µg/mo IM for life **OR** 350-500 µg crystalline B12/day orally for life
Thiamine (B1)	Thiamine deficiency is a relatively rare deficiency resulting from either decreased food intake or frequent vomiting. Consider prophylaxis for patients with persistent vomiting.	Signs/symptoms: Wernicke-Korsakoff syndrome, neuropathy, CHF Labs: serum thiamine Lab interval: as necessary with signs or symptoms	**High-potency MVI w/minerals** (as outlined above)	**For deficiency:** Give 100 mg/day IM for 7 days followed by daily oral dose of 50mg/day; with advanced neuropathy or protracted vomiting give 50-100 mg/day IV or IM
Calcium (Citrate form) with Vitamin D	Deficiency occurs in 50%-80% of RYGB patients and is secondary to decreased absorption in the gut and in some cases, decreased intake due to dairy intolerance. It often does not present until 9-24 months after surgery. 19	Signs/symptoms: osteomalacia, osteoporosis, fractures, serum chemistry abnormalities Labs: screening tests (e.g., bone alkaline phosphatase); consider DEXA scan (q2 yrs postop); diagnostic tests—total and ionized serum Ca,, 24-hr urine Ca, 25-OH-vitamin D, PTH, Phos, Mg Lab interval: consider yearly	**High-potency MVI w/minerals** as above, with the following additions: **AGB**: Add 1500 mg calcium citrate containing 400–800 IU vitamin D3 **RYGB and gastric sleeve:** Add 1500–2000 mg calcium citrate containing 400–800 IU vitamin D3, evenly distributed in 3-4 doses/day **BPD/DS**: Add 1800-2400 mg calcium citrate containing 400–800 IU vitamin D3, evenly distributed in 3-4 doses/day	Use citrate form of calcium Do not mix multivitamin containing iron with calcium—instruct patient to take supplements at least 2 hours apart. **For deficiency** (if 25-OH vitamin D level is <30): give vitamin D2- 50,000 IU Ergocalciferol, orally or IM once a week, for 6-8 weeks or until vitamin D levels normalize

Nutrient	Issues	Surveillance	Vitamin/Mineral Prophylaxis	Additional Treatment Notes
Fat-Soluble Vitamins (A, E, K) **Vitamin D listed above**	These deficiencies are rare in RYGB and purely restrictive surgeries. They result from fat malabsorption and are typically only seen in patients who've had older, malabsorptive procedures (such as BPD) which are now rarely performed. Vitamin E deficiency is very rare; thus routine surveillance is generally not warranted.	Signs/symptoms: vitamin A, vision and skin/hair problems; vitamin E, various symptoms; vitamin K, easy bruising and/or bleeding Labs: serum vitamin A, PT/INR(for vitamin K) Lab interval: consider yearly for patients with malabsorptive procedures	**High-potency MVI w/minerals** (as outlined above) **BPD/DS:** Add A, D, E, K tablets containing 4000 IU vitamin A (palmitate), 3 mg beta carotene, 400 IU cholecalciferol, 150 IU vitamin E (succinate), 0.15 mg vitamin K	**For deficiency:** Vitamin A without corneal changes, 10,000-25,000 IU/day orally 1-2 wks; Vitamin A w/corneal changes, 50,000-100,000 IU IM for 3 days followed by 50,000 IU/d IM for weeks. Vitamin K: 1-2 mg/day orally OR 1-2 mg/wk parenterally; Vitamin E: 800–1200 IU/d Vitamin D: (if 25-OH vitamin D level is <30): give vitamin D2-50,000 IU Ergocalciferol, orally or IM once a week, for 6-8 weeks or until vitamin D levels normalize (see info on Ca+,Vit D above)
Protein	This deficiency is seen mostly with malabsorptive procedures (like BPD/DS). Patients who have had any type of procedure with rapid or extraordinary weight loss should be monitored closely for this deficiency.	Signs/symptoms: excessive weight loss (> 20 lbs/month); muscle wasting, and hyperphagia Labs: serum albumin, prealbumin Lab interval: as often as monthly during phase of rapid weight loss if hx of deficiency	Advance diet with an early focus on high-protein food and ways to maintain protein intake	Referral to a dietitian Consider alternative sources of protein (eggs, fish, poultry, soy, or dairy) Consider liquid protein supplementation (15-30 gm/serving)

Symptoms and Complications

Symptoms after bariatric surgery should be taken seriously and promptly evaluated to rule out more serious conditions. In addition to surgical complications, bariatric surgery carries the risk of short-term food and/or liquid intake difficulties as well as long-term medical complications. Common symptoms and complications after surgery are presented in Table 11-6.

Table 11-6 Common Postoperative Side Effects/Complications (up to 6 months)

Complication	Possible Causes	Evaluation/Diagnosis	Treatment/Solution
Nausea/vomiting	1. Improper eating: associated with overeating, eating too quickly, or consuming foods high in fat or sugar 2. Bowel obstruction: presents with vague cramping and abdominal pain 3. Stomal stricture stenosis: presents with cramping and abdominal pain, and/or intolerance for solid food intake 4. Nausea: may be associated with cholelithiasis	1. Symptoms improve between meals; no abdominal pain 2. UGI series or CT with contrast 3. Upper endoscopy to evaluate for strictures and stenosis if vomiting is particularly severe or if problem develop 6 months or later post-surgery 4. Cholelithiasis work-up	1. Instruct patients to eat smaller portions, chew foods thoroughly, eat slowly, avoid consuming liquids and solid foods at the same time, introduce new foods one at a time, and avoid foods that precipitate symptoms. 2. Consult surgeon. 3. Consult surgeon. May need therapeutic dilation of stricture. 4. Cholecystectomy or nonsurgical treatment (e.g., Ursodiol 300 mg bid for first 6 months post-op or lithotripsy)
Diarrhea or frequent bowel movements	1. Pseudomembranous colitis: caused by C. difficile (usually occurs within the immediate post-operative period) 2. Steatorrhea: caused by decreased fat absorption after combined restrictive/malabsorptive procedure 3. Improper eating: excessive intake of simple sugars, fats, or food/drinks with laxative-like effects (excessive fiber/caffeine) 4. Lactose- intolerance	1. Test for C. difficile toxin 2. Malodorous, oily, floating stools 3. Diagnosis based on symptoms and/or intake record/reports to identify trigger foods or eating habits 4. First eliminate all milk and milk products from the diet for a short time to see if the symptoms resolve. Testing may be necessary to provide more information. The test commonly used for adults is the **Hydrogen Breath Test** which is used to measure the digestion of	1. Metronidazole or vancomycin 2. Decrease fat content in food 3. Eliminate dietary intake of simple sugars, fats, or food/drinks with laxative-like effects (excessive fiber/caffeine); eliminate known trigger foods; consume liquids separately from meals, wait at least 30 minutes before or after a meal before drinking liquids 4. Use lactase enzyme supplements and/or substitute Lactaid or soy-based products for regular dairy

Complication	Possible Causes	Evaluation/Diagnosis	Treatment/Solution
		lactose. This may not be well tolerated due to the fluid amount needed for testing.	products.
Constipation	1. Dehydration: from reduced fluid intake, diuretic use 2. Improper eating: low fiber diet, poor fluid intake	1 & 2. Diagnosis based on symptoms	Increase fluid intake, use stool softeners, discontinue diuretics, and/or increase dietary fiber
Dehydration	1. Improper eating/fluid intake 2. Vomiting and/or diarrhea	1 & 2. Diagnosis based on symptoms	Sip fluids constantly throughout the day; IV rehydration if necessary
Dumping Syndrome	Results from eating foods high in fat or refined or simple sugars; occurs in approximately 50% of all RYGB patients; symptoms resolve within 2 hours.	Diagnosis based on symptoms, which may include postprandial light-headedness, syncope, diaphoresis, abdominal cramping, nausea, vomiting, and/or diarrhea	Avoid foods that precipitate symptoms. Consult dietitian.
Postprandial abdominal pain	1. Food intolerance: common side effect experienced during the immediate post-op period 2. Cholelithiasis: present in approximately 30% of patients 6 months after surgery; associated with postprandial nausea, right upper quadrant pain, and nausea. Prophylactic cholecystectomy is sometimes performed before at time of surgery.	1. Pain is associated with eating red meats, milk products; pain in the epigastrium. 2. Cholelithiasis work-up.	1. Avoid foods that precipitate symptoms; consult dietitian. 2. Cholecystectomy or nonsurgical treatment. (e.g., Ursodiol 300 mg bid for first 6 months post-op or surgery/lithotripsy in symptomatic cases)[20]
GI Bleeding (melena, hematochezia, or hematemesis)	Bleeding at anastamosis: can occur in a variety of locations; gastrojejunal anastomosis, jejunal anastomosis, or at the edges of the remnant stomach or mesentery	CBC Upper endoscopy CT may be required Consider NSAIDS and/or ETOH use	Consult with surgeon Surgical re-exploration may be required If the surgery was recent, do not place a nasogastric tube without fluoroscopic or endoscopic guidance
Weight Regain	1. Liquids with meals. 2. Consuming of high-fat and/or high-sugar liquid calories 3. Eating too frequently during the day 4. Consuming larger portions of moist foods	1 – 4. Diagnosis based on weight gain and evaluation of dietary intake	1 – 4. Consult bariatric or registered dietitian to provide nutrition therapy and education, incorporating motivational interviewing techniques to support appropriate behavior change

Physical Activity

Patients recover from surgery at different rates depending on their baseline health, the type of procedure received, and surgical complications. Walking or other forms of light-to-moderate activity can begin within days of surgery and can gradually be increased each day. As the weight comes off, activity will become easier and the patient's endurance will improve. Building regular physical activity into the daily routine is an essential component of post-operative bariatric care.

People who have had uncomplicated laparoscopic procedures can typically go back to work and resume most of their normal activities within 3-4 weeks, sometimes sooner. Patients who have had open procedures often need a longer recovery time. The surgical health care team should provide individualized advice to each patient on returning to work, driving, and heavy lifting.

Psychological Effects

Few large, multisite, systematic examinations of the psychological complications of bariatric surgery have been performed; however, we know that after bariatric surgery, patients can be expected to undergo significant changes in their physical presentation. For some patients, this may produce unanticipated changes in self-image, interpersonal relationships, and other aspects of psychosocial functioning. Many studies have found a positive impact on perceived self-control (particularly for self-control of eating), self-esteem, and health-related quality of life. Some negative psychological consequences also sometimes arise, including non-adherence to the post-bariatric regimen (especially around recommended exercise or dietary intake), depression, sexual concerns, and relationship problems. For example, many extremely obese patients report that they feel invisible to others with regard to romance. Consider how different it might be to suddenly become the object of attention after many years of "invisibility." Although many lifestyle changes related to bariatric surgery are positive, all change (even positive change) is typically associated with some level of personal stress.

As obesity is a multifaceted problem, recovery from obesity is also a complex, multifaceted process. Over both the short and long term, support from staff (including behavioral health professionals, if necessary) can help the patient cope with changes, complications, and maintenance. In general, bariatric surgery results in health risk reduction and improved mental health functioning and quality of life in the majority of individuals. Paradoxically, however, more than one study has shown increased risk for suicide following bariatric surgery. VA health care staff members need to be sensitive to all of these behavioral issues and should be prepared to support patients directly or by referral for behavioral health counseling.

Key Point: Studies examining post-bariatric surgery mortality have found an increased risk for death by suicide in those who have undergone bariatric surgery. This suggests that follow-up should include assessment of the patients' general well-being in addition to physical functioning. When appropriate, referrals to mental health practitioners should be made.

This chapter was reviewed and edited by the following VA clinical staff:

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11
Appendix

Appendix 11–1
Pre-Operative Psychological Evaluation

The psychological evaluation generally consists of a review of the medical record (including any separate mental or behavioral health records), a targeted clinical interview, and several psychological screening instruments. The American Society of Bariatric Surgery has also published a pamphlet entitled "Suggestions for the Pre-Surgical Psychological Assessment of Bariatric Surgery Candidates," available online at http://www.asbs.org/html/pdf/PsychPreSurgicalAssessment.pdf.

A targeted clinical interview should cover the following areas:

- Active psychosis and alcohol or substance use disorders
- Other mental health illness (active, inactive, hospitalizations)
- Borderline personality disorder
- Social/family situation and supports
- An appraisal of the patient's ability to form a working relationship with the MOVE! team and bariatric surgery team
- Discussion of alternative plans should patient be turned down for surgery
- Follow up of "abnormal" psychological screening results

In addition to evaluating for presence of mental health conditions, the evaluator should assess whether the patient has realistic expectations about what the surgical procedure and recovery process entail, as well as the patient's ability and willingness to comply with the recommended post-bariatric diet. Additionally, the evaluator should assess the stability of the home environment, presence of social supports, and ability to adhere to medical recommendations (e.g., taking medications, keeping follow-up appointments, agreeing to lab testing).

A key element in the assessment is an appraisal of the patient's ability to form a working relationship with the MOVE! Team. Patients will need to have a positive working relationship with the team should there be post-surgical complications. As bariatric surgery is simply a tool that assists in weight loss, the patient will need to make permanent changes in diet, physical activity, and behavior to sustain the initial weight loss. The experiences of bariatric surgery and MOVE! teams have shown that a strong pre- and post-surgical therapeutic alliance with the patient is critical for patient success in maintaining the health behaviors associated with maintenance of weight loss. Many teams have reported that in particular, a perception that patients are "bullying" the team to perform the surgery is a poor prognostic indicator.

Appropriate follow-up should be arranged for patients with mental health or behavioral concerns identified during this evaluation, regardless of the decision for surgery. The psychological evaluation should help to classify patients into one of the following groups:

- Not a surgical candidate on the basis of current serious active psychopathology and/or evidence of repeated poor adherence with medical regimens, appointment keeping, and/or follow-up instructions. Examples include uncontrolled schizophrenia or alcohol/substance use disorders within the past year, severe borderline personality disorder, history of multiple suicide attempts, or history of no-shows for 50 percent or more of appointments in the last year.

- Decision on acceptability for surgery should be delayed pending response to further psychological evaluation and/or treatment. Examples include poorly controlled OCD, depression, anxiety, bipolar disorder, or PTSD; suspected dementia; severe binge eating disorder; suicide attempt within past 5 years, unstable social environment (homelessness, lack of kitchen access); very low self-efficacy/self-motivation.

- Considered psychologically acceptable for surgery, but should be provided with ongoing psychological treatment before and after surgery. Examples include mild to moderate binge-eating disorder; well-controlled schizophrenia, OCD, depression, anxiety, bipolar disorder, or PTSD; past history of alcohol or substance use disorders; remote history of an isolated suicide attempt.

- Considered psychologically acceptable for surgery; provide psychological treatment on an as-needed basis. Example: any patient that does not fall into one of the above categories.

The rest of this section provides an introduction to the psychological instruments recommended for use as part of the pre-operative psychological evaluation.

Alcohol Use Disorder Test-Core (AUDIT-C)

This instrument is widely used within VA for screening for problem alcohol use in primary care and other settings, and providers are likely already very familiar with this instrument. The instrument, including scoring guidelines, is provided within CPRS/VISTA. It consists of 3 items and generally takes less than 4 minutes to administer and score.

Drug Abuse Screening Test (DAST©)

Background

DAST© is a 20-item instrument to screen for problem substance use other than alcohol. It includes measures of problem severity, diminished control over drug use, and

neuroadaptive symptoms of drug dependence. It is completed via self-administered paper or online format OR interview format and generally takes less than 7 minutes to administer and score. No special training is required to administer or score; however results should be interpreted and followed up by a qualified behavioral health professional. Paper and online versions of the DAST© are available on the MOVE! website. Note: Permission to reproduce and use the DAST© within VA facilities has been obtained from the copyright holders by the VA National Center for Health Promotion and Disease Prevention.)

Guide to Administration

The interview format is recommended for patients with low literacy. For other patients, provide either the paper format, with a pen or pencil, or access to a computer for the online version. Instruct patients to read instructions thoroughly before completing. Score instrument according to instructions below and provide results to the interpreting psychologist or psychiatrist.

Scoring

The instrument consists of 20 yes/no items. Two items are negatively keyed such that a "NO" response rather than a "YES" response is in the direction of a drug problem. The negatively keyed items are items 4 and 5.

Sum the total number of "YES" responses to all Items except 4 and 5 _____
Sum the total number of "NO" responses to Items 4 and 5 _____
Add for the total score +_____
_____

Scoring Range is 0-20

Guide to Interpretation
Scores of 6 or greater indicate higher risk of problem use. Patients who score at or above this level should be interviewed further to ascertain presence of an active substance use disorder.

Note that the DAST© focuses mostly on problems within the past 12 months; however some "positive" tests may result from past substance use and will require further interviewing to differentiate current from past use.

Developed by H. Skinner at the Addiction Research Foundation at the University of Toronto. [21, 22]

Appendix 11–2
Millon Behavioral Medicine Diagnostic (MBMD™)

Background

The MBMD™ is a 165-item (true/false) instrument that assesses psychological factors that can influence the course of treatment of medical patients. It identifies patients who may have significant psychiatric problems and recommends specific interventions. It can pinpoint personal and social assets that may facilitate adjustment to physical limitations or lifestyle change. It identifies individuals who may need more communication and support in order to comply with prescribed medical regimens. Lastly, it can help structure post-treatment plans and self-care responsibilities in the context of the patient's social network.

The MBMD™ was specifically designed for and normed on "medical" patients as opposed to "psychiatric" patients. It can be used for patients ages 18-85 with a 6th grade reading level. The MBMD™ has 29 clinical scales, 3 response pattern scales, one validity indicator, and 6 negative health habit indicators. The MBMD™ is self-administered via the VISTA mental health software package; it is not available via hard copy. The MBMD™ is a proprietary instrument owned by NCS, Pearson, Inc., so any reproduction or use outside of what is licensed and available on the VISTA mental health package is prohibited.

Guide to Administration

Provide access to the VISTA mental health package (usually through a secure desktop) and instruct patients to read instructions and complete items as indicated. No special training is required to administer or score the instrument. Provide results to an interpreting behavioral health professional.

General Guidelines for Interpretation

Below are presented general interpretation guidelines, adapted from the Trial Package for MBMD™ Millon Behavioral Medicine Diagnostic, available at www.pearsonassessments.com. For suitability for bariatric surgery, empirical evidence suggests that severe psychiatric illness, poor configuration of coping styles, stress moderators (liabilities >> assets), and treatment prognostics indicating problematic compliance, utilization excess, medication abuse and interventional fragility are red flags and should be considered evidence for poor candidacy. Exact cut-points in prevalence scores that are predictive of poor or good outcomes are not available at this time.

1. Assess the overall validity and reliability of test results using the MBMD validity indicator and response patterns:
Validity Score of 0 indicates test results are probably valid.

Validity Score of 1 indicates test results are questionable
Validity Score of 2 indicates test results are invalid

Disclosure (Scale X), Desirability (Scale Y), and Debasement (Scale Z) are classified as unlikely, possible, or likely problem areas.

2. Note the psychiatric indications likely to complicate treatment. Consider further evaluation and treatment for any of the following areas with prevalence scores of greater than 75.

Anxiety-Tension (Scale AA)
High scorers may suffer from numerous somatic disorders.

Depression (Scale BB)
High scorers are likely to intensify the discomfort of their real physical and psychological problems.

Cognitive Dysfunction (Scale CC)
High scorers may not be able to recall past experiences, think abstractly, or represent events and interrelate and process them.

Emotional Lability (Scale DD)
High scorers have clinical features akin to borderline personality disorder such as dysregulation of affect and instability of moods manifested by repetitive suicidal thoughts and self-mutilation; spells of anger, anxiety or euphoria or periods of dejection and apathy.

Guardedness (Scale EE)
High scorers display mistrust and edgy defensiveness; may also exhibit irritability and suspiciousness and provoke annoyance, if not exasperation, on the part of health care providers.

3. Review the configuration of Scales 1-8B to assess coping styles likely to influence response to illness/treatment.

Introversive (Scale 1)
High scorers are colorless, emotionally subdued, quiet and untalkative; may appear unconcerned about their problems; communicatively vague and difficult to pin down concerning symptoms; may be passive with regard to taking care of their physical needs.

Inhibited (Scale 2A)
High scorers may be hesitant with others, often shy and ill-at-ease; quite sensitive and often concerned that others may do them harm. May try to keep their physical discomfort to themselves.

Dejected (Scale 2B)
High scorers are persistently disheartened, unable to experience the pleasures or joys of life, notably glum and pessimistic; easily disposed to give up trying to work through emotional or physical problems.

Cooperative (Scale 3)
High scorers are eager to attach themselves to a supportive health care professional and will follow medical advice closely; usually do NOT take the initiative to seek treatment and will need to be told exactly what to do. May be inclined to overlook or deny the existence of real problems. May become dependent on their caretakers and resist suggestions that call for routine efforts on their part.

Sociable (Scale 4)
High scorers are outgoing, talkative and charming but may be changeable in their likes and dislikes. Usually very cooperative when following a treatment plan but this may be short-lived. Concerned with appearing nice and attractive but may be disinclined to face their problems. Largely, these patients are easy to treat and are quite sturdy and resilient.

Confident (Scale 5)
High scorers are self-assured and confident; however they are easily upset by physical ailments and will be motivated to follow regimens they believe will ensure well-being. May act as if they expect to be given special treatment by personnel and will take advantage of opportunities that may improve their condition. Need to be treated in a courteous and professional manner.

Nonconforming (Scale 6A)
High scorers are somewhat unconventional if not arbitrary; occasionally inconsiderate in their manner. Somewhat skeptical about the motives of others and tend to act insensitively and impulsively at times.

Forceful (Scale 6B)
High scorers are domineering and tough-minded. May be distrustful and may not follow regimens well.

Respectful (Scale 7)
High scorers are likely to be responsible, conforming, and cooperative. Keep their feelings to themselves and try to appear controlled, diligent and serious-minded. Do not like to be seen in the patient role; but are usually compliant.

Oppositional (Scale 8A)
High scorers are the opposite of high scorers on Scale 7; they are often unpredictable and difficult and may be erratic in following a regimen. Often seem displeased and dissatisfied with their physical and psychological state.

Denigrated (Scale 8B)
High scorers habitually focus on the most troublesome aspects of their lives; behaving as if they deserve to suffer.

4. Review elevations and configurations of Scales A-F to assess stress moderators that may influence patient response to treatment. Low scores on these scales represent stress moderating assets (presented in parentheses).

Illness Apprehension (vs. Illness Acceptance) (Scale A)
High scorers focus on and have high awareness of changes in their bodies such as tension/relaxation and arousal/fatigue. This characteristic may on the one hand influence their ability to monitor and report significant changes in sensations and symptoms but on the other hand may cause them to attend to less important sensations in such a way that they either ruminate excessively about their physical state or overuse medical services.

Functional Deficits (vs. Functional Competence) (Scale B)
High scorers perceive that they are unable to carry out the vocational and avocational activities, roles, and responsibilities of daily life; this scale focuses specifically on patient's sense of loss of independence and freedom.

Pain Sensitivity (vs. Pain Tolerance) (Scale C)
High scorers tend to be overly sensitized and reactive to mild to moderate pain; assesses the degree to which pain is likely to dominate the clinical picture and potentially affect adjustment and recovery following treatment.

Social Isolation (vs. Social Support) (Scale D)
High scorers are more prone to suffer physical and psychological ailments and poor adjustment to hospitalization due to feelings of isolation and perceived lack of social support.

Future pessimism (vs. Future Optimism) (Scale E)
High scorers do not anticipate a productive life and consider their medical state serious and potentially life-threatening. High scores usually reflect a patient's response to current medical problems rather than a lifelong tendency to be pessimistic (as assessed by the Depression and Dejected Scales). This characteristic may influence adherence to and confidence in medical regimens and emotional reactions to test results and possibly the actual course of disease.

Spiritual Absence (vs. Spiritual Presence) (Scale F)
High scorers may lack religious or spiritual resources for dealing with the stressors, fears, and uncertainties of their medical condition.

5. Treatment Prognostics. These scales should be viewed as separate indices, review elevations.

Interventional Fragility (vs. Interventional Resilience) (Scale G)
High Scorers may have trouble adjusting emotionally to the demands of physically and psychologically stressful medical protocols and forecast the route of decompensation that they are likely to present if they become overwhelmed by these stressors.

Medication Abuse (vs. Medication Conscientiousness) (Scale H)
High scorers may have problems with or will misuse prescribed medication. This may take the form of changing doses, combining medications inappropriately, or using outdated prescriptions.

Information Discomfort (vs. Information Receptivity) (Scale I)
High scorers may not want specific details about diagnostic, prognostic and treatment procedure and outcomes, low scorers may want to know as much as they can about their medical condition and prognosis.

Utilization Excess (vs. Appropriate Utilization) (Scale J)
High scorers may be excessively demanding, insisting on attention from specialists, annoying staff, and taking up their time unjustifiably. This scale assesses the likelihood that patients will use medical services more than the average patient with a similar medical condition.

Problematic Compliance (vs. Optimal Compliance) (Scale K)
High scorers may not follow home-care advice, adhere to nutritional instructions or keep and be on time for appointments. They may exhibit a seeming contempt for health care personnel.

6. Management Guides. Integrate the interpretation from the prior scales and draw conclusions relevant to the management guides domain as measured by the scales below:

Adjustment Difficulties (Scale L)
High scorers are likely to experience treatment complications due to specific coping style, current psychological issues, available resources for managing stress, and his/her risk of engaging in unhealthy behaviors. This scale identifies patients that are likely to need the services of psychologist and behavioral medicine specialists.

Psych Referral (Scale M)
High scores may benefit from psychosocial intervention and are likely to respond well to a specific type and form of intervention.
Developed by T. Millon and colleagues. [23, 24]

Appendix 11–3
Multidimensional Health Locus of Control (MHLC)

Background

The MHLC is an 18-item instrument that assesses the degree to which a patient believes he/she is in control of or responsible for his/her own health. The MHLC has three locus subscales:

- Internal: assesses degree to which patients believe they are in control of their own health.
- Chance: assesses degree to which they believe chance, luck, or fate plays a role in their health.
- Powerful Others: assess degree to which they believe others (specifically, health care professionals, doctors, and family/friends) have control over their health.

The MHLC can be self-administered via CPRS/VISTA; paper forms are available on the MOVE! website. No explicit permission is needed to use or reproduce paper copies of the MHLC.

Guide to Administration

The interview format is recommended for patients with low literacy. For the software version, provide access to a VistA computer and instruct patients to read instructions thoroughly before completing the questionnaire. Scoring is automatic. If using the hard-copy format, score the instrument according to the instructions below. Provide results to an interpreting behavioral health professional.

Scoring

There is no "overall score" for the MHLC; rather, scores are calculated for each of the three subscales:

Internal subscale:

Sum the values circled for items 1,6,8,12,13,17
(possible range is 6-36)

Internal subscale score____

Chance subscale

Sum the values circled for items 2,4,9,11,15,16
(possible range is 6-36)

Chance subscale score_____

Powerful Others subscale

Sum the values circled for items 3,5,7,10,14,18
(possible range is 6-36)

Powerful Others subscale score____

Guide to Interpretation

To date, no set criteria have been established interpreting MHLC scores in relation to suitability for bariatric surgery, but limited experience suggests the instrument may have some utility. Interpretation of MHLC involves interpreting three subscales. All three subscale scores range from 6-36. Scores closer to 6 are low and scores closer to 36 are high; the midpoint score is 21.

Empirical evidence suggests that ideal candidates for bariatric surgery will probably be those who score high on the Internal subscale and low on the Chance and Powerful Others subscales (see below).

Candidates who score low on the Internal subscale or high on the other two subscales should not necessarily be excluded from surgery on these grounds alone; but scores should be taken into consideration when evaluating overall suitability for surgery.

Interpretation of MHLC Scores and Suitability for Bariatric Surgery

Subscale	Ideal Candidate	Good Candidate	Fair Candidate	Poor Candidate
Internal	High	Mid-High	Mid-Low	Low
Chance	Low	Mid-Low	Mid-High	High
Powerful Others	Low	Mid-Low	Mid-High	High

Because the MHLC is not a personality test, beliefs can and do change over time. It may be possible prior to surgery to increase self-efficacy and sense of personal control through therapy in patients who score in the mid or low range.

Developed by K. Wallston at Vanderbilt University. [25, 26]

Appendix 11–4
Questionnaire on Weight and Eating Patterns-Revised (QWEP-R©)

Background

The QWEP-R© is a 28-item instrument; however, the first 6 items are related to demographics and are omitted from the version we recommend for use within VA because patient demographics data are already available. When supplemented with a brief clinical interview, the QWEP-R© assesses DSM-IV criterion for Binge Eating Disorder (BED) and is the only "diagnostic" instrument available for BED. The QWEP-R© also assesses historical variables of interest such as age at first overweight, lifetime maximum weight, and so forth. Limitations of the QWEP-R© are that it only assesses for criteria within the last 6 months relevant to a diagnosis of BED and does not capture other relevant eating patterns, such as binge-eating or overeating. Furthermore, it may fail to detect some clinically significant cases that don't meet strict DSM criteria or sub-threshold cases.

The QWEP-R© is completed via self-administered hard-copy format, with confirmation of results by clinical interview. A hard-copy version of the QWEP-R© is available on the MOVE! website. No special training required to administer or score the instrument; however results should be interpreted and followed up on by a qualified behavioral health professional. Blanket permission to reproduce and use the QWEP-R© within VA facilities has been obtained from the copyright holders by the VA National Center for Health Promotion and Disease Prevention.

Guide to Administration

Use the interview format for low literacy patients. Provide the hard-copy instrument and a pen or pencil to the patient. Score the hard-copy instrument according to the scoring instructions below.

Provide the results to a qualified behavioral health professional for interpretation.

Scoring

Diagnosis of BED requires the following responses:

Item	Response
Q4 AND Q5	Response = 1 (Yes)
Q6	Response = 3, 4, or 5 (at least 2 days per week for 6 months)
Q7a-Q7e	Three or more items checked as "Yes" (three associated symptoms during binge eating episodes)
Q9 OR Q10	Response = 4 or 5 (marked distress regarding binge eating)

--AND--

Absence of bulimia (purging or non-purging)

Diagnosis of bulimia requires the following responses:

Item	Response
Q4 AND Q5	Response = 1 (Yes)
Q6	Response = 3, 4, or 5 (at least 2 days per week for 6 months)
Q11	Response = 3 or 4 (overvaluation of weight/shape)

For diagnosis of purging bulimia, diagnosis of bulimia PLUS:

Item	Response
Q12 OR Q13 OR Q14	Response= 3, 4, or 5 (purging at least twice/ week for 3 months)

--OR--

For diagnosis of non-purging bulimia, diagnosis of bulimia PLUS:

Item	Response
Q12 AND Q13 AND Q14	NO Response to 3, 4, or 5 (purging at least twice/ week for 3 months)
Q15 OR Q16 OR Q17	Response= 3, 4, or 5 (compensatory non-purging behavior)

Guide to Interpretation

To date, no set criteria have been established as to interpreting QWEP-R© scores in relation to suitability for bariatric surgery, but limited experience suggests the instrument may have some utility. Scores on the QWEP-R© indicating possible BED or bulimia should be investigated further through a clinical interview. The QWEP-R© does not assess severity of these disorders per se, although the frequency of various binging behaviors and the extent to which binge eating causes distress may be indications of severity.

Developed by Spitzer R. et al.
Questionnaire on Eating and Weight Patterns Revised (QWEP-R©) (1994).[27-29]

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Links

For your convenience, the links from this chapter are listed below:

VA National Center for Health Promotion and Disease Prevention
http://www.prevention.va.gov/

Veterans Health Administration Office of Patient Care Services
http://www.patientcare.va.gov/index.asp

Weight Management Program for Veterans (MOVE!®)
http://www.move.va.gov/

NIH Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report (1998)
http://www.nhlbi.nih.gov/guidelines/obesity/ob_gdlns.htm

Screening and Interventions for Obesity in Adults: Summary of the Evidence for the US Preventive Services Task Force (2003)
http://www.annals.org/content/139/11/933.full.pdf+html

Screening for Obesity in Adults (2003)
http://www.annals.org/content/139/11/930.full

Handbook 1101: Managing Overweight and/or Obesity for Veterans Everywhere (MOVE!) Program
http://www.move.va.gov/download/Resources/1101.1HK3_27_06.pdf

Joint Veterans Affairs/Department of Defense Clinical Practice Guideline for Screening and Management of Overweight and Obesity (2006)
http://www.healthquality.va.gov/obesity/obe06_final1.pdf

VHA Handbook on Bariatric Surgery (No. 1102.6)
http://www.move.va.gov/download/Resources/BariatricSurgery/BariatricSurgeryHandbook.pdf

Pre-Surgical Psychological Assessment of Bariatric Surgery Candidates
http://www.asbs.org/html/pdf/PsychPreSurgicalAssessment.pdf

Millon Behavioral Medicine Diagnostic (MBMD™)
www.pearsonassessments.com

VA Medical/Surgical Services website
http://www.medicalsurgical.va.gov/

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