

University of Missouri Health System

Missouri Bariatric Services

Guidelines Before & After Roux-en-Y Gastric Bypass

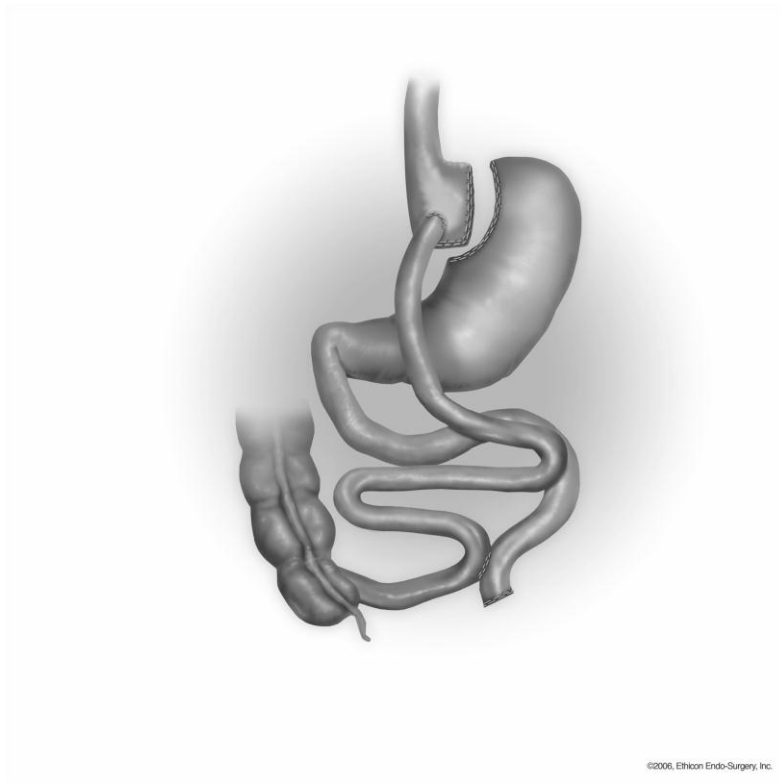


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Risk and Benefits of Weight Loss Surgery

All surgery, no matter how minor, carries some risk. Weight loss surgery is major surgery; you are put to sleep with a general anesthetic, carbon dioxide is blown into your abdominal cavity, and we work around the major organs and operate on the stomach and intestines (this area of the body is known as the gastrointestinal tract). National statistics report there is a one to two percent risk of dying after Roux-en-Y gastric bypass. Nationally, the risk of dying after adjustable gastric band surgery is less than one percent. At Centers of Excellence the risk of death after any surgery is less than 0.1%. Missouri Bariatric Services is a Center of Excellence.

Risks can be divided into two categories. There are risks associated with having just weight loss surgery and there are risks associated with having any type of abdominal surgery.

Risks Associated with Weight Loss Surgery	Risks Associated with any Abdominal Surgery
Anastomatic leaks Sepsis Abscess Ulcer Stricture Bleeding Cholecystitis	Deep Vein Thrombosis (DVT) Pulmonary Embolism (PE) Pneumonia Atelectasis Abdominal adhesions Small bowel obstruction

Anastomatic Leaks

Anastomatic leaks generally occur where body tissue, specifically the stomach and intestines, has been divided and brought together by a staple line. Leaks occur when gastrointestinal fluids and/or food and fluid make their way outside of the gastrointestinal tract. “Leaking” of this fluid in a warm moist environment facilitates the opportunity for bacterial growth. The bacteria can spread throughout your body and lead to sepsis, which is an overwhelming infection throughout the entire body. Leaks are more common with the Roux-en-Y gastric bypass, vertical sleeve gastrectomy, or revisional surgeries because they occur along staple lines connecting body tissue; however, a perforation (or creation of a hole) in the wall of the stomach or esophagus can occur when placing the laparoscopic band, thus, resulting in a leak. Treatment options are the same for both surgeries. Roux-en-Y gastric bypass, vertical sleeve gastrectomy, and revisional procedures patients will have drains placed in surgery to assist with any intestinal drainage outside of the gastrointestinal tract.

Most of the time, a leak will close up or seal on its own and the medical team won’t have to do anything so long as the drain is already in place. Should an anastomatic leak not heal on its own, some patients will require a return to the operating room to fix the leak. Additional medical treatment for an anastomatic leak may include antibiotics and/or placement of a feeding tube. Fluid and nutritional alimentation will be added through other means. If surgical intervention is required, patients generally

will not be able to take anything by mouth until the site is completely healed. Diet, once resumed, will be reduced to the liquid stage. Progression of diets will depend on the patient's personal recovery.

Sepsis and Abscess

The abdominal cavity is a vascular, warm, moist environment and a very good place for bacteria to grow causing infection. Bacteria that has leaked out of the gastrointestinal tract can often enter into the blood stream providing an opportunity for infection and sepsis to occur. Should sepsis occur, antibiotics and hospitalization will be required. Sepsis can be overwhelming to the patient and may result in death.

An abscess occurs when bacteria stay in a localized area and the infection does not spread throughout the blood stream. An abscess will need to be drained. Rehospitalization, an extended hospital stay, antibiotics, and other supportive therapies may be required.

Ulcers

Ulcers may occur in the lining of the gastrointestinal tract after surgery, most commonly where the stomach and intestine have been stapled/sewn together. An ulcer is an opening in the tissue and can cause a lot of pain. Acids from the stomach come in contact with the open area. Symptoms of ulcers include stomach pain, nausea, vomiting, regurgitation of acid into the esophagus, and loss of appetite. Ulcers can also bleed and cause blood to appear in the stool. In the worst cases, an ulcer will perforate, or cause a hole in the lining of the stomach. This requires surgery to repair. Ulcers are typically treated with medication and surgical intervention is generally not required. Ulcers generally take an extended period of time to heal.

The most common causes of ulcers after weight loss surgery can be associated with smoking tobacco, using non-steroidal anti-inflammatory medications (NSAIDS,) use of other medications known to cause ulcers, excessive alcohol usage and drinking excessive amounts of coffee. Patients who do not take the prescribed medications to prevent ulcers after surgery are also at higher risk for ulcer development (see Ulcer Preventative Medications section). Medications are prescribed after surgery and should be taken a minimum of six months to help promote healing of the staple lines.

Ulcers will be treated with a course of medications. In addition to taking medications, those who experience ulcers will need to eat adequate amounts of protein, avoid the use of NSAIDS, quit smoking tobacco, and limit coffee and alcohol intake in order to treat the current ulcer and prevent future ulcers from developing.

Strictures

Most strictures in weight loss surgery patients occur where the new stomach pouch and the intestine are sewn together. This site is called an anastomosis. The average opening between the new stomach and the intestine is roughly the size of a dime. In patients with strictures this area becomes even smaller. For some people, extra scar tissue can develop along this staple line causing a narrowing of the passage between the stomach and the intestine. This results in foods, and sometimes liquids, from being able to pass through. Common symptoms include vomiting foods, fluids, and even, in extreme cases,

saliva. This can very easily lead to dehydration and malnutrition. Reflux or acid in the esophagus is also possible. Strictures may also develop at the connection between the esophagus and stomach and where the intestine is connected back on itself, but these are less common.

Strictures are generally treated on an outpatient basis with an upper endoscopy and balloon dilation. During the endoscopy, an instrument will be placed through the esophagus to the area of the narrowing and a small balloon is inflated at the stricture site. Multiple dilations may need to be done to keep the anastomosis open. Should the dilations not provide sustained relief, a placement of a stent and/or revision of the anastomatic site may be required. A stent is a tube-like structure that is placed at the site of the stricture and left in place for approximately two to six weeks with the hope that the stricture, once the stent has been removed, does not reoccur.

Bleeding

Bariatric surgery occurs near some very large vessels and vascular organs, including the aorta, spleen, splenic artery, and the vena cava. Should any of these vessels be injured during surgery, massive bleeding can occur and may be fatal. This is extremely rare. Most lacerations can be repaired without incident. During operation on the stomach, any of these areas may bleed. Complete blood counts will be monitored after surgery. If blood levels fall, transfusions and/or reoperation may be required.

Cholecystitis/ Cholelithiasis/Gallstones

Cholecystitis is inflammation of the gallbladder and is common among people who are obese. If you experience gallbladder problems we can evaluate the function of your gallbladder. Because a low percentage of patients actually experience gallbladder problems after bariatric surgery, we do not routinely remove the gallbladder. If you have problems with your gallbladder after surgery, you may have your gallbladder removed with any of our surgeons or go to any skilled laparoscopic surgeon in your area to have this taken care of. Having your gallbladder removed will not generally be hindered by your weight loss surgery. Weight loss surgery takes place in the left upper part of the abdomen. Your gallbladder is on the right side of the abdomen. Having the gallbladder removed will not generally interfere with your weight loss surgery.

Deep Vein Thrombosis and Pulmonary Embolism

When you walk, your calf muscles relax and contract forcing blood back to your heart. This prevents blood from pooling in your legs. When you are on the operating room table you are immobilized and there are no muscular contractions. While you are immobilized, whether on the operating room table or lying still in bed after surgery, the blood can pool and clot in your legs (known as deep vein thrombosis [DVT]). If those clots break free and move to your heart or lungs, it is called a pulmonary embolism (PE). Death may be instant if a PE occurs. DVTs and subsequent PEs are the leading causes of death after surgery. Those who are obese are at a greater risk for developing DVTs or PEs. To prevent clotting, all patients are given a blood thinner before and after surgery. Inflatable compression stockings will be

placed on your legs during surgery and will remain in place while lying in bed after surgery to help imitate walking.

When lying flat, before and after surgery, it is important that you point and flex your feet to mimic walking. This helps assist the blood supply back to your heart. You should do this exercise as often as possible while you are awake. A good rule of thumb is to do the exercise every time you are visited by your nurse. These foot exercises are extremely important; our surgeons strongly believe that these exercises help our patients' rate below national average for developing blood clots after weight loss surgery. Walking after surgery, whether in the hospital or at home, will also help prevent clots from forming.

Pneumonia and Atelectasis

The lungs are like a sponge. Little air pockets throughout the lungs are inflated when we take big breaths. After surgery, many people take short, shallow breaths. This is caused by lying flat or in some cases from pain and is called splinting. The issue with splinting is that the air pockets in the lungs start to collapse, this is called atelectasis. When these air pockets collapse, the smallest portions of your lungs stick together and create a warm, moist environment which is an excellent place for bacteria to grow. A hospital acquired pneumonia can develop. This type of pneumonia is significant because it can be resistant to many types of antibiotics.

To prevent atelectasis and pneumonia, use the spirometer (a device where you will inhale and monitor how strong your inhale is) provided by the hospital. Use this machine at least 10 times an hour while you are awake and in bed. Walking is the best and most effective way to prevent atelectasis and pneumonia.

Adhesions and Small Bowel Obstruction

After any abdominal surgery, adhesions can occur. Adhesions are a scar tissue on the inside of your abdomen and form fixed points in the abdomen. The small bowel can adhere to itself, to the abdominal wall or fuse to an organ. Intestines are constantly in motion; this constant motion is called peristalsis. When adhesions are present and the bowel is in motion, kinking of the intestine can occur. This may be referred to as a small bowel obstruction.

A small bowel obstruction means there is a blockage in the intestine. Nothing will move beyond the point of blockage. While many people will stop eating and drinking when they feel something is wrong, we still swallow saliva and make digestive juices. The abdomen becomes distended and painful as these fluids collect. Vomiting is a common symptom associated with a small bowel obstruction. If this occurs many people will feel the need to go to the nearest Emergency Room. Admission to the hospital is normal with this diagnosis. Do not become alarmed if it seems as though nothing is done for the first 24 hours. Peristalsis, the event that helped to kink your intestine, may also help to resolve it. After 24 hours, if your symptoms have not resolved, surgery may become necessary. The adhesions that are the cause of the problem will be cut; however, because this is another surgery, more adhesions could develop.

A nasogastric tube is often used to let the air out of the abdomen. Should a nasogastric tube become necessary, please re-inform the physician that you have had weight loss surgery. Your pouch is very small and can easily be punctured by this tube due to its diminished size. Fluoroscopy may be necessary to insert this tube.

Nutritional Deficiencies

Nutritional deficiencies can occur with poor nutritional habits and/or non-compliance with your supplement regimen. Nutritional supplements will be required for life. Vitamin B₁₂, thiamin, calcium, and iron deficiencies are commonly seen in weight loss surgery patients. These deficiencies can be fatal. It is much easier to prevent a nutritional deficiency than to treat an existing one.

You will be required to get yearly lab work. We will certainly obtain these at your yearly visit; however, if you want to do them in your hometown that is perfectly acceptable. Please be sure you forward our office a copy of these results. It is important to establish a good relationship with your primary care physician so that he or she can monitor labs with you.

Laparoscopy (Minimally Invasive Surgery)

Laparoscopy is the goal of every surgery. In the event of difficulties with the laparoscopic approach, an open procedure may be required. All consents will read with the “possibility” of an open procedure. Our goal is to keep your operating time to a minimum and to decrease your risk factors and post-operative complications.

Band Specific Complications

Because adjustable gastric bands (AGB) are mechanical devices, they can fail. Reoperation rates are higher in AGB patients due to this fact. Bands can slip from their placed locations, erode through the stomach wall, or even become infected. In most cases, reoperation to repair the issue will be required. In some cases, the band may even need to be removed. Replacement of the band will be done on a case-by-case basis after a complete medical evaluation has been performed. Your insurance company must also be contacted before any additional operation to your band for approval. Your health is our primary concern. Treatment will be provided if your situation is emergent. Insurance issues can be addressed at a later date if any emergency does occur.

Guidelines for Your Hospital Stay, Self-Care & Medications

Day of Surgery Expectations

The day of surgery is always a busy one. While most of your papers will be signed before your arrival, there will be a few left for you to sign the day of surgery. Several employees will ask you why you are at the hospital and what surgery you have planned. This is done in multiple locations for your safety. The hospital is well aware of your admission and has been planning for your arrival.

Preoperative Holding Area (a.k.a. DOSA)

Your family may stay with you in the preoperative holding area until you are taken back into the operating room (OR). While there, you will be given an IV along with medications to help you relax. Once you are taken to the OR, we ask that you have your family go to the surgical waiting area during your operation.

Operating Room

While in the operating room, routine monitoring equipment will be applied and will remain on you until you are safely placed in the nursing unit. Some patients will have this equipment for the remainder of their stay depending on their health conditions.

Most patients remember going back into the OR; however, remember little after that until they are in their room. General anesthesia is done for all bariatric surgery patients. **If you have had trouble with anesthesia in the past**, please let them know when you visit the anesthesia department prior to surgery. They will also let you know which medications you may or may not take on the day of your surgery. All Roux-en-Y divided gastric bypass, vertical sleeve, and revision patients will have a foley catheter placed while you are back in the OR. Adjustable gastric band patients may or may not have this catheter placed. If one is placed, it is generally removed the day after surgery providing you are not experiencing any problems.

Surgical Waiting Area

Your family should stay in the surgical waiting area a minimum of two hours after they leave you in the preoperative holding area. Your surgeon will come to see them in this waiting area after your surgery is completed. Please tell your family that should they decide to leave during this time frame they may miss the visit from the doctor. Your surgery generally will not take two hours to complete; however, the time to prepare you for surgery, perform the surgery, and transfer you to the recovery unit will.

What to Expect During Your Hospital Stay

Ambulation

Once you are placed in your room, please look at the clock. It is our goal to have you up and walking approximately four hours after you are placed in your room. If your nurse does not ask you to walk, at the end of four hours please put on your call light and ask for assistance. We know early walking is the key to your successful recovery.

The First Night

The first night is always restless. Please feel free to bring magazines, books, or any other materials you see fit to keep you occupied. As your surgery provided you a big nap during the day it is likely that you will be awake most of the first night in the hospital. You may bring items for your personal comfort as well. If you must have your “special” pillow to sleep, bring it along to help make you more comfortable. The nursing staff will be checking your vitals and blood sugars frequently throughout the evening and night as well.

Pain

You are having major abdominal surgery, so pain should be expected. All Roux-en-Y divided gastric bypass, vertical sleeve, revision patients, and some adjustable gastric band patients will be provided with a Patient Controlled Anesthesia (PCA) pump when you arrive on the floor. This method of pain control is used to help reduce your pain. Please do not expect the PCA to cure or relieve all of your pain. It will not relieve chronic pain issues you have. If you feel your pain is not controlled well enough to cough, walk, sleep, and take deep breaths without extreme difficulty, please let your nurse know.

Most pain experienced is in the upper portion of your abdomen where the surgery is performed and/or your shoulders. The shoulder pain is common after laparoscopic surgery due to the gasses used during surgery working their way out of your body. This pain generally lasts two to three days after surgery. After passing your gastric leak testing you will be switched over to oral pain medications which most patients find more helpful than IV form.

Diagnostic Testing

Patients are tested several times after their weight loss surgery for gastric leaks. For adjustable gastric band patients, the final test and upper GI may be done prior to discharge. For Roux-en-Y gastric bypass, vertical sleeve gastrectomy, and revision patients, two of these tests will be done while on the nursing unit. The first test is referred to as an upper GI or gastrograffin swallow study. You will be taken to radiology to complete this test and asked to swallow contrast solution. Films are taken immediately after the contrast is consumed. The contrast should remain in the GI tract, if it does not, it is referred to as a leak. If the upper GI test is negative for a leak, then a methylene blue test will be performed. Nursing will bring you blue ice chips to suck while lying in bed. Thirty minutes to one hour after the ice chips have been consumed they will assess your drain site for blue dye. If no blue dye is present, the

test helps to confirm that you do not have a leak. For all patients, you will know if you are considered “leak free” when you receive a tray for lunch or dinner.

Dietary

On a rare occasion wrong dietary trays can be delivered to your room. If you receive a tray that does not appear to have the bariatric-appropriate items such as broth, sugar-free jell-o, sugar-free popsicles, etc. please let your nurse know that you need the correct tray. Eating or drinking any other food or beverage at this point can be fatal.

Length of Stay

Most patients receiving an adjustable gastric band can expect an overnight hospital stay. For vertical sleeve gastrectomy, Roux-en-Y gastric bypass, or revision patients you can expect a two-night stay in the hospital. If you suffer with diabetes it is possible that one extra night in the hospital may be required. As always, these are only guidelines based on our experience. Your health and personal recovery will ultimately drive your discharge date.

Taking Care of Yourself at Home

When to Call Us after Surgery

Your discharge instructions will contain a complete list of the things to call us about after surgery. A few important things should also be highlighted:

1. **Vomiting:** Vomiting is not considered normal. (You may vomit if you eat too quickly, too much, or do not chew your food adequately and this is to be expected.) If you are vomiting and cannot figure out why, it is important to notify our office. Most patients experience nausea (or a sour stomach) after surgery. You will be sent home with a medication to help with this symptom. It may not totally relieve your nausea but it should help to control it.
2. **Drain Site:** You may or may not be sent home with a drain. If you are sent home with a drain, the nursing staff on the floor will give you detailed instructions on how to care for your drain at home. With a drain, there are two things you should keep in mind. First, the drain site may have a little bit of redness to it where it goes into the abdominal wall. This is considered “normal” irritation from the tube. Should the redness increase in size, become more painful or appear to have pus at the site, please let us know. The second thing of importance regarding your drain is your drainage. The drainage may appear bloody, pink, brown, yellow, or anything in between. These are all considered normal findings. Should your drain contain any food particles from anything you have consumed, call us immediately. Should you notice fluid or food particles please do not eat or drink anything else and notify us at once.
3. **Diarrhea:** This is common the first week after surgery. If you experience this more than five or six times per day, please notify our office. Dehydration can occur if diarrhea is experienced more frequently than this.
4. **If you develop chest pain or shortness of breath, please do not call us- call 911.**

Wound Care

For all patients, except adjustable gastric banding, you may be sent home with a drain and staples. It is important you obtain 4x4 gauze pads, large band-aids and paper tape before going to the hospital. While the hospital and nursing staff will take care of your drain in the hospital you will be required to do this for yourself at home. The hospital will not send you home with enough supplies to care for your drain while you are at home. You should change your dressing at least two times per day and as needed if increased drainage is noticed. Your drain and staples will be removed at your first office visit after surgery which is generally 7 to 10 days after your surgery. You should have your first after-surgery appointment date and time set when your surgery is scheduled; however, if you do not, they will confirm it for you at the time of discharge from the hospital.

Follow-Up

Follow-up in our office is required one week (7 to 10 days), one month, three months, and one year after surgery. We also need to see you yearly for a total of five years after your surgical procedure. As a program, your health and success directly affect us and we really do strive to help you be the most successful patient you can be. *When you come, you can expect to see not only a physician but also participate in a class specially designed for those who have had weight loss surgery.* This class will update you on the latest and greatest in the bariatric literature specific to your postoperative period and help to keep you informed and knowledgeable about maintaining your health. *Total office visit time will take approximately two hours.* As we must enter your health information to a database, all missed appointments will be contacted for rescheduling. Please keep your contact information up-to-date with our program. Should you be unable to reschedule your appointment in a timely fashion, please ask the office staff at the time of the phone call to speak with one of the nurses so they can gather information about your current health. A shortened form of the class can be reviewed at the time of the call.

Reoperation

In the event you are in need of an abdominal operation after bariatric surgery, you are more than welcome to see your hometown general surgeon for your issue(s). For your first abdominal reoperation after your bariatric surgery, we do recommend that you come back to us. Patients, especially those who lose an excessive amount of weight (more than 100 pounds) may develop hernias internally that are difficult to find and diagnose. As most general surgeons do not routinely care for the bariatric patient, they are often unaware that these hernias exist. By coming to us for the first surgery after your bariatric procedure, we will take the opportunity to look for these specific hernias and repair them at the time of your operation. Hopefully this will prevent an additional trip to the operating room in the future.

General Medication Issues

Upon discharge from the hospital you may take whole pills. Large pills should be taken by themselves. You may take a couple of small pills at a time. DO NOT crush your pills. Liquid forms of your home medication ARE NOT required after surgery. Restrictive and malabsorptive procedures, such as Roux-en-

Y divided gastric bypass, can decrease the absorption of extended-release, delayed-release, enteric- or film-coated medication. If possible, immediate-release forms of medications should be substituted whenever possible. Dosage of medication(s) should be closely monitored after your surgery. Please DO NOT take prenatal or children's chewable vitamins after surgery. Take only the vitamins that have been recommended by our program. If given prescriptions for liquid forms of ulcer prevention medications or stool softeners please do not fill them. These medications can be taken in the pill form or obtained over the counter.

Psychiatric Medication Issues

If not restarted in the hospital, please start taking your psychiatric medications the day you get home from surgery. Withdrawal from these medications can be significant. Weight loss surgery does not cure mental health issues. Please do not spontaneously stop taking these medications without first consulting a physician. As depression is common after surgery, it is recommended that you stay on these medications for at least six months after your bariatric procedure. When you are ready to stop taking these medications, please consult your primary care physician for the most appropriate way to taper these drugs. If starting psychiatric medications for the first time after surgery, please be sure to ask your psychiatrist or primary care doctor for medications that do not promote weight gain. If your mental healthy symptoms recur, become worse, or you experience side effects from your psychiatric medication, please contact your providing prescriber for an adjustment.

Ulcer Prevention Medication

You will be provided, at the time of discharge, with a prescription for Pepcid. This is an over-the-counter medication. If you are currently on the medications for gastroesophageal reflux disorder (GERD), commonly referred to as "reflux", heart burn or on the following medications for ulcer prevention, continue taking the medication after surgery. These medications include drugs such as: H₂ Blockers, such as Zantac or Pepcid; or Proton Pump Inhibitors (PPI), such as Prilosec, Nexium, Protonix, Prevacid, or Zegrid. You do not need to fill the prescription for Pepcid if you already have one of these medications. **We recommend that you stay on these medications for at least six months after surgery.**

NSAIDS, Arthritis-type Medications, or Other Medications That are Known to Cause Ulcers

After surgery and for the rest of your life these types of medications should be avoided. Ulcers can be serious and difficult to treat, especially, in Roux-en-Y divided gastric bypass patients. Examples of these types of medications are aspirin, Ibuprofen, Excedrin, corticosteroids, oral bisphosphonates (such as Fosamax and Actonel), etc. Muscle relaxants, Tylenol, and most narcotics are safe to take. Your primary care doctor will be sent a packet of information regarding acceptable medications to prescribe after surgery for pain. Should you change physicians, please notify our office and we will be happy to send a "Postoperative Physician" packet to your new primary care provider.

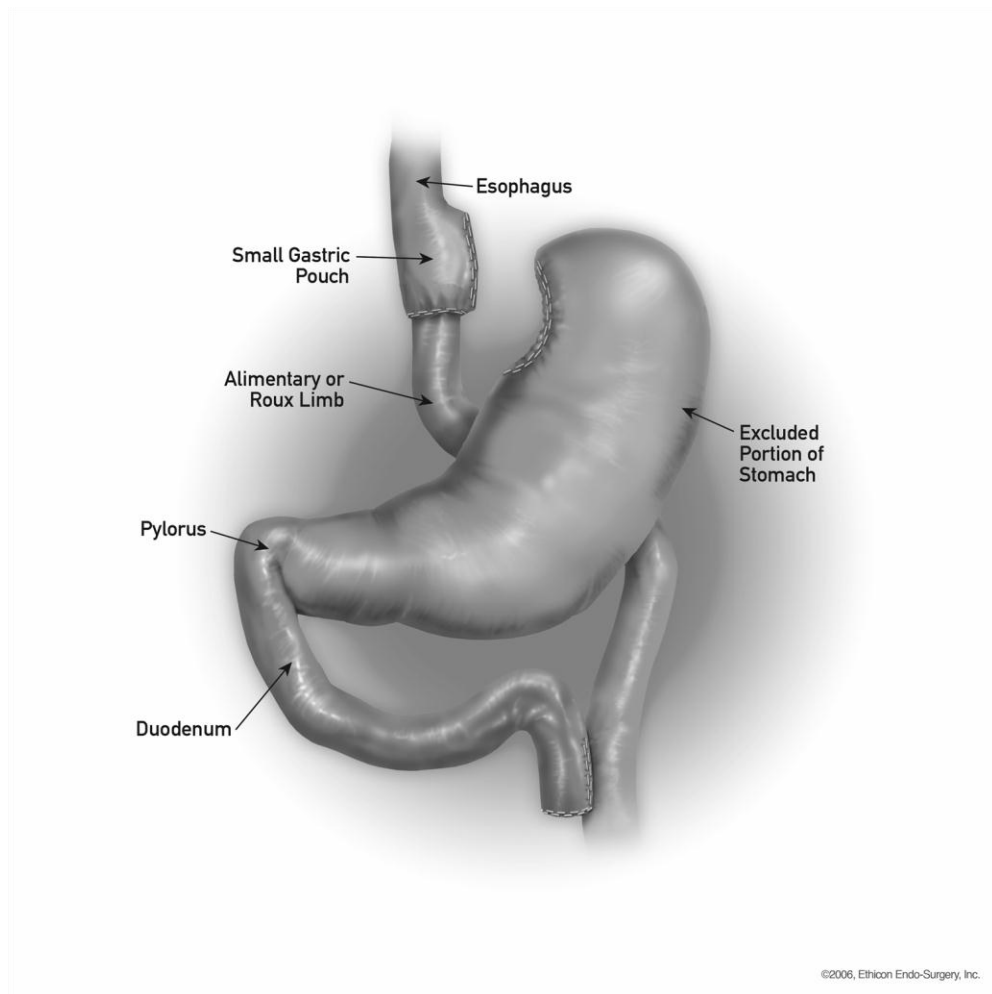
Nasogastric Tubes

Nasogastric tubes are tubes that are inserted through the nose and are ultimately placed in the stomach for patients who experience difficulties, for whatever reason, with vomiting after surgery. These tubes in themselves are not harmful; HOWEVER, no tube should be placed without first contacting our physicians. Failure to do so can cause an emergent surgical operation to repair the stomach. At the time of your preoperative education class you will be provided a card noting this guideline. Please carry this card with you at all times.

Safety First

No two bariatric programs are alike. We believe, based on the current literature and our experience, that our recommendations are safe. Please do not follow information and/or instructions that you find in other literature or on the internet without consulting our program. Your safety and success are the focus of our program.

Nutrition Guidelines Before & After Roux-en-Y Gastric Bypass



Bariatric surgery is an effective, lifelong tool for dealing with morbid obesity. *Roux-en-Y gastric bypass* is a restrictive and malabsorptive procedure. The amount of food you can eat after surgery is restricted because a small portion of the upper stomach is separated from the stomach as a whole. Malabsorption is a condition in which you cannot absorb all the nutrients you eat. With gastric bypass surgery your intestines will be rerouted and the most absorptive part of the intestine is bypassed which limits how much of the nutrients you can absorb. Your current stomach is the size of a football, but after gastric bypass surgery the stomach will be about the size of an egg. Some behaviors will need to be modified in order to achieve and maintain desired weight loss. These changes will include changing how you eat, how much you eat, and what you eat after weight loss surgery.

This education booklet contains necessary information to help you achieve success. **It is a good idea to read over this booklet several times before and after your surgery.** You will probably notice new things each time you read it!

Basic Nutrition Information All Patients Should Know

With bariatric surgery, health care professionals will talk a lot about nutrients. A nutrient is a substance your body needs but cannot make on its own. The nutrients have to come from a source outside your body, like food. There are six main groups of nutrients: protein, carbohydrates, fat, vitamins, minerals, and fluid. Nutrients are a source of energy, hydration, vitamins, and minerals.

Protein, carbohydrates, fats, and fluids are often called *macronutrients* ('macro' means large) because your body needs larger amounts (in terms of weight) of these three nutrients than other nutrients, like vitamins and minerals. Protein, carbohydrates, and fats contribute calories (a measure of energy); whereas, vitamins, minerals, and water do not contribute calories to the diet.

Protein	4 calories per gram
Carbohydrates	4 calories per gram
Fat	9 calories per gram

Vitamins and minerals are often called *micronutrients* ('micro' means small) because your body needs small amounts of these (in terms of weight). Never-the-less, don't let 'small' fool you- vitamins and minerals are still very important to your body.

Understanding Protein, Carbohydrates, and Fat

All foods can be categorized as a protein, carbohydrate, fat, or a combination of any three of these nutrients. After surgery, it is important to identify what types of nutrients you will get from individual foods.

This section will contain food lists to help you identify food groups. Not all the serving sizes listed will be appropriate after surgery. Use these serving sizes as a starting point to help you determine the nutrient content of your food.

Protein

Protein is the building block of our bodies, helping us make and repair small items like cells to larger items like muscles and skin. After weight loss surgery, protein becomes the most important nutrient you can eat. You will need to eat a source of high-quality, low-fat protein first at each meal to insure you get adequate protein.

Daily Minimum Protein Goal	
Women	65 grams protein
Men	80 grams protein

Protein helps heal wounds, maintain and build muscle mass (think about your skeletal muscle, as well as, your heart and diaphragm), make hormones and enzymes, blood clot, maintain blood pressure control, and maintain a healthy immune system.

Choose foods from the “Lean Protein Sources” and “Meat Substitutes” lists (see page 20) as your source of protein at each meal.

Carbohydrates

Many foods provide carbohydrates to our body, including:

- **Starches** like bread, rice, pasta, starchy vegetables, cooked beans, peas, and lentils
- **Fruits**
- **Milk**
- **Nonstarchy vegetables**
- **Sweets and desserts**

Carbohydrates are the body’s preferred source of energy because they can be broken down quickly. While many people think carbohydrates are “bad,” that is not actually the case. Healthier carbohydrates are important sources of vitamins and minerals and include a substance called fiber which can help slow down how quickly the food is absorbed, help you have regular bowel movements, and lower cholesterol. These types of healthier carbohydrates are often called “*complex carbohydrates*.” Starches and nonstarchy vegetables are considered complex carbohydrates.

“*Simple sugars*” digest much faster than complex carbohydrates. Some sources of simple sugars are found naturally in food and are healthy, like fruits and low-fat milk. These are considered healthy because they are good sources of vitamins and minerals. Fruit is also a source of fiber and milk is a good source of protein. However, many simple sugars are added to food like sweets and desserts and are unhealthy choices because they do not provide our body’s with anything other than calories- no vitamins, no minerals, and no fiber. The following are types of added simple sugars should be avoided:

Table sugar	Brown sugar
Cane sugar	Sugar-in-the-Raw
Invert sugar	Maple syrup
Molasses	Malt
Confectioner’s sugar	Corn sweeteners
Turbinado sugar	Sucrose
High-fructose corn syrup	Maltose
Dextrose	

There are two types of *fiber*: soluble and insoluble. *Soluble fiber* can be found in oats and the inside of many fruits and vegetables, like apples. Soluble fiber dissolves in your gastrointestinal (GI) tract and becomes gummy. Once it is a gummy texture, the fiber binds with fatty substances that are also in the

GI tract and promotes the excretion of the fatty substances as waste. This is how soluble fiber helps to lower cholesterol levels.

Insoluble fiber does not dissolve in the GI tract. Instead, it acts like a broom sweeping along your GI tract combining with water and solid waste. Insoluble fiber helps to keep your bowel movements regular and prevent constipation. Good food sources of insoluble fiber are whole grain products and many fruits and vegetables.

In addition to naturally-occurring carbohydrates in foods, there are also *artificial sweeteners* on the market. Artificial sweeteners were designed to help reduce cavity production caused by sugar and help diabetics maintain blood sugar control. Some artificial sweeteners are calorie free and can help with weight loss.

Sugar alcohols are primarily used as artificial sweeteners that do not cause cavities or raise blood sugar, but can be used as fat replacers in foods as well. Sugar alcohols are also called *polyols*; sugar alcohols are not calorie free. Sugar alcohols have 4 calories per gram; the same amount of calories found in other carbohydrates. The most common sugar alcohols are xylitol, sorbitol, and mannitol. For some people, sugar alcohols may cause gas, bloating, or have a laxative effect.

Sugar substitutes are artificial sweeteners that are calorie-free, do not cause cavities, and do not raise blood sugar. Many myths are out there suggesting that sugar substitutes are harmful to the body, but they are just that, myths. Numerous scientific studies prove that these substances are safe for human consumption. Common sugar substitutes are listed below:

- Aspartame (brand names NutraSweet® and Equal®)
- Saccharin (brand names Sweet' N Low® and Sugar Twin®)
- Sucralose (brand name Splenda®)
- Stevia (brand names Truvia® and Sweet Leaf®)

When weight loss surgery patients choose to eat carbohydrates, most often these carbohydrates should come from *nonstarchy vegetables* (see page 21 for a list of nonstarchy vegetables.)

Fruit can be a healthy part of a bariatric diet when eaten as part of a meal. Fruit should only be consumed if you have eaten protein first. (see page 22 for a list of fruits)

Starches should be the last food eaten on your plate after weight loss surgery. Do not eat more than one serving of any kind of starch at a meal. There are many kinds of starches, including bread, cereals and grains, starchy vegetables, and crackers and snacks. (see pages 23 thru 25 for lists of starchy foods)

Fat

Fat has more calories than either protein or carbohydrates, and it is important to consume a low-fat diet as part of a healthy lifestyle to help with weight control. Too much fat often gets blamed for chronic diseases like heart disease, but really that isn't always the case. Certain fats, like saturated fats and *trans* fats, do raise cholesterol levels which can increase one's chance of developing heart disease. However, other kinds of fats, called *unsaturated* fats, when eaten in moderate amounts, can actually help lower cholesterol levels and decrease the risk for heart disease.

Fat serves several important functions in the body. Fat helps to produce hormones, give us energy, and transport fat-soluble vitamins (vitamins A, D, E, and K) from food into our blood stream. Although these functions are important, it does not take a lot of dietary fat to help your body perform these functions.

If you don't eat enough fat, you can give yourself a fatty acid deficiency. Symptoms of fatty acid deficiency include: hair loss and/or dry, stiff hair; dry, flaky and/or thickened skin; diarrhea; fatigue; acne; and poor wound healing.

Unsaturated fat is primarily found in plant products, including olive oil, canola oil, tub margarine, nuts, and seeds. *Monounsaturated* fat and *polyunsaturated* fat are the two different kinds of unsaturated fats and both are good for you; both can also be found on the nutrition facts label. Unsaturated fats are often a good source of *omega-3 fatty acids* which are beneficial in preventing fatty acid deficiency and heart disease. Besides plant sources, certain fish are excellent sources of omega-3 fatty acids, including salmon, albacore tuna, mackerel, sardines, halibut, trout, and herring. Choose unsaturated fats most often.

Saturated fat is primarily found in animal products, including the fat trim on meats, butter, and lard. Certain tropical fruit products, like coconut, coconut butter, coconut oil, and palm kernel oil, are also high in saturated fat even though they are plant sources. Choose to eat sources of saturated fats less often.

Trans fat is a manufactured fat that sneaks its way into many food sources, including stick margarine, commercial baked goods and snack crackers/cookies, commercial fried foods, and partially hydrogenated oil. *Trans* fat acts much the same way in your body as saturated fat and can raise cholesterol levels. Avoid *trans* fats.

The best sources of fat you can "add" (in controlled quantities) to your diet are listed on page 26; these are unsaturated fats. You will also get some fat from the meat and dairy foods you choose. The amount and type of fat will depend on which types of meats and dairy you choose.

Combination Foods

Not all foods fit nicely into one category. Some foods are sources of both fat and protein (like most cheese) while others are good sources of both carbohydrate and protein (like milk and beans).

Combination foods should be used very rarely as the primary source of protein at a meal. Instead, use the foods as side dishes. For long-term weight loss and weight maintenance, most meals should include a serving from the “Lean Protein Sources” and “Meat Substitute” lists as the main source of protein. The nutrition information for these foods is listed on page 27. You should also read the nutrition facts labels of these foods for more exact information

Protein

Lean Protein Sources: Each serving from this list has 0 grams of carbohydrate, 0-3 grams of fat, 7 grams of protein and 45 calories.

Protein	Serving Size
Beef: select or choice grades trimmed of fat: ground round, roast (chuck, rib, rump), round, sirloin, steak (cubed, flank, porterhouse, T-bone), tenderloin	1 ounce
Cheese with 3 grams of fat or less per ounce	1 ounce
Cottage cheese	¼ cup
Egg* (high cholesterol)	1
Eggs substitutes, plain	¼ cup
Egg whites	2
Fish, fresh or frozen, without breading or condiments: catfish, cod, flounder, haddock, halibut, orange roughy, salmon, tilapia, trout, tuna	1 ounce
Lamb: chop, leg, or roast	1 ounce
Hot dog with 3 grams of fat or less per ounce	1 hot dog
Organ meats: heart, kidney, liver (high in cholesterol)	1 ounce
Oysters, fresh or frozen	6 medium
Pork, lean: Canadian bacon, rib or loin chop/roast, ham, tenderloin	1 ounce
Poultry, without skin: chicken, Cornish hen, domestic duck or goose (well-drained of fat), turkey	1 ounce
Process sandwich meats with 3 grams of fat or less per ounce: chipped beef, deli thin-sliced meats, turkey ham, turkey kielbasa, turkey pastrami	1 ounce
Salmon, canned	1 ounce
Sardines, canned	1 ounce
Sausage with 3 grams of fat or less per ounce	1 ounce
Shellfish: clams, crab, imitation shellfish, lobster, scallops, shrimp	1 ounce
Tuna, canned in water, drained	1 ounce
Veal: loin chop, roast	1 ounce

Modified from *Choose Your Foods: Exchange Lists for Weight Management* 2008

* Indicates food has 7 grams of protein, 4-7 grams of fat, 0 grams of carbohydrate and 75 calories per servings. Choose these foods less often.

Meat substitutes

Food	Serving Size	Carbohydrate (grams)	Fat (grams)	Protein (grams)	Calories
Tofu	4 ounces (½ cup)	0	4-7	7	90
Tofu, light	4 ounces (½ cup)	0	0-3	7	45

Nonstarchy Vegetables

Each 1 cup serving of raw vegetables or each ½ cup serving of cooked vegetables contains 5 grams of carbohydrate, 2 grams of protein, 0 grams of fat, and 25 calories.

Artichoke	Salad greens (chicory, endive, escarole, lettuce, romaine, arugula, radicchio, watercress. 2 cups of salad greens is equal to 1 serving of raw vegetable)
Asparagus	Mushrooms, all kinds
Baby corn	Okra
Bamboo shoots	Onions
Bean sprouts	Pea pods
Beans (green, wax, Italian)	Peppers (all varieties)
Beets	Radishes
Broccoli	Rutabaga
Cabbage (green, bok choy, Chinese)	Sauerkraut
Carrots	Soybean sprouts
Cauliflower	Spinach
Celery	Squash (summer, crookneck, zucchini)
Coleslaw, packaged, no dressing	Sugar snap peas
Cucumber	Swiss chard
Eggplant	Tomato (fresh, canned, or sauce)
Gourds (bitter, bottle, luffa, bitter melon)	Vegetable juice
Green onions or scallions	Turnips
Greens (collard, kale, mustard, turnip)	Water chestnuts
Jicama	Yard-long beans
Kohlrabi	
Leeks	
Mixed vegetables (without corn, peas, or pasta)	

Modified from *Choose Your Foods: Exchange Lists for Weight Management* 2008

Fruits

Each serving has 15 grams of carbohydrate, 0 grams of protein, 0 grams of fat, and 60 calories. If a weight is provided, it includes the weight of the skin, core, seeds, and rinds.

Fruit	Serving Size
Apple, unpeeled, small	1 (4 ounce)
Apples, dried	4 rings
Applesauce, unsweetened	½ cup
Apricots	
Canned	½ cup
Dried	8 halves
Fresh	4 whole (5.5 ounces)
Banana, extra small or ½ of large (approximately 3 to 4 inches)	1 (4 ounces)
Blackberries	¾ cup
Blueberries	¾ cup
Cantaloupe, small	⅓ melon or 1 cup cubed
Cherries	
Sweet, canned	½ cup
Sweet, fresh	12 (3 ounces)
Dates	3
Dried fruits (blueberries, cherries, cranberries, mixed fruit, raisins)	2 tablespoons
Figs	
Dried	1 ½
Fresh	1 ½ large or 2 medium
Fruit cocktail	½ cup
Fruit Juices	
Apple, apple cider, grapefruit, orange, or pineapple juice	½ cup
Grape juice, prune juice, or fruit juice blend (made with 100% juice)	⅓ cup
Grapefruit	
Large	½ (11 ounces)
Sections, canned	¾ cup
Grapes, small	17 (3 ounces)
Honeydew melon	1 slice or 1 cup cubed
Kiwi	1 (3.5 ounces)
Mandarin oranges, canned	¾ cup
Mango, small	½ fruit (5.5 ounces) or ½ cup
Nectarine, small	1 (5 ounces)
Orange, small	1 (6.5 ounces)

Fruit	Serving Size
Peaches	
Canned	½ cup
Fresh, medium	1 (6 ounces)
Pears	
Canned	½ cup
Fresh, large	½ (4 ounces)
Pineapple	
Canned	½ cup
Fresh	¾ cup
Plums	
Canned	½ cup
Dried (prunes)	3
Small	2 (5 ounces)
Raspberries	1 cup
Strawberries	1 ¼ cup whole berries
Tangerines, small	2 (8 ounces)
Watermelon	1 slice or 1 ¼ cup cubes

Modified from *Choose Your Foods: Exchange Lists for Weight Management* 2008

Starches

Breads, Crackers, and Snack Foods: Each serving on this list has 15 grams of carbohydrate, 0-3 grams protein, 0-1 gram of fat, and 80 calories.

Starch: Breads, Crackers & Snack Foods	Serving Size
Bagel, large (about 4 ounces)	¼ (1 ounce)
Biscuit, 2.5 inches across	1
Bread	
Reduced-calorie	1 slices (1.5 ounces)
White, whole-grain, pumpernickel, rye, unfrosted raisin	1 slice (1 ounce)
Chapatti, small, 6 inches across	1
Cornbread, 1 ¾-inch cube	1 (1.5 ounces)
English muffin	½
Hot dog bun or hamburger bun	½ (1 ounce)
Pancake, 4 inches across, ¼ in thick	1
Pita, 6 inches across	½
Roll, plain, small	1 (1 ounce)
Stuffing, bread	⅓ cup

Starch: Breads, Crackers & Snack Foods	Serving Size
Taco shell, 5 inches across	2
Tortilla, corn or flour, 6 inches across	1
Waffle, 4-inch square or 4 inches across	1
Crackers, whole-wheat lower fat or crispbreads	2-5 ($\frac{3}{4}$ ounce)
Graham cracker, 2.5-inch square	3
Melba toast, about 2-inch by 4-inch piece	4 pieces
Oyster crackers	20
Popcorn, no fat added or lower fat	3 cups
Pretzels	$\frac{3}{4}$ ounce
Rice cakes, 4 inches across	2

Modified from *Choose Your Foods: Exchange Lists for Weight Management* 2008

Cereals and Grains: Each serving on this list has 15 grams of carbohydrate, 0-3 grams protein, 0-1 gram of fat, and 80 calories.

Starch: Cereals & Grains	Serving Size
Barley, cooked	$\frac{1}{3}$ cup
Bran, dry	
Oat	$\frac{1}{4}$ cup
Wheat	$\frac{1}{2}$ cup
Bulgur (cooked)	$\frac{1}{2}$ cup
Cereals	
Bran	$\frac{1}{2}$ cup
Cooked (oats, oatmeal)	$\frac{1}{2}$ cup
Puffed	1 $\frac{1}{2}$ cups
Shredded, wheat, plain	$\frac{1}{2}$ cup
Unsweetened, ready-to-eat	$\frac{3}{4}$ cup
Couscous	$\frac{1}{3}$ cup
Granola, low-fat or regular	$\frac{1}{4}$ cup
Grits, cooked	$\frac{1}{2}$ cup
Millet, cooked	$\frac{1}{3}$ cup
Muesli	$\frac{1}{4}$ cup
Pasta, cooked	$\frac{1}{2}$ cup
Polenta, cooked	$\frac{1}{3}$ cup
Quinoa, cooked	$\frac{1}{3}$ cup
Rice, white or brown, cooked	$\frac{1}{2}$ cup
Tabbouleh (tabouli), prepared	$\frac{1}{2}$ cup
Wheat germ, dry	3 tablespoons
Wild rice, cooked	$\frac{1}{2}$ cup

Modified from *Choose Your Foods: Exchange Lists for Weight Management* 2008

Starchy Vegetables: Each serving on this list has 15 grams of carbohydrate, 0-3 grams protein, 0-1 gram of fat, and 80 calories.

Starch: Starchy Vegetables	Serving Size
Corn	½ cup
on cob, large	½ cob (5 ounces)
Hominy, canned	¾ cup
Mixed vegetables with corn, peas, or pasta	1 cup
Parsnips	½ cup
Peas, green	½ cup
Plantain, ripe	⅓ cup
Potato	
Baked with skin	¼ of large (3 ounces)
Boiled, all kinds	½ cup or ½ medium (3 ounces)
Mashed, with milk and fat	½ cup
French fried (oven-baked)	1 cup (2 ounces)
Pumpkin, canned, no sugar added	1 cup
Spaghetti/pasta sauce	½ cup
Squash, winter (acorn, butternut)	1 cup
Succotash	½ cup
Yam, sweet potato, plain	½ cup

Modified from *Choose Your Foods: Exchange Lists for Weight Management* 2008

Fats

Unsaturated Fats: One serving of fat contains 0 grams carbohydrate, 0 grams protein, 5 grams of fat, and 45 calories.

Fat	Serving Size
Avocado, medium	2 tablespoons (1 ounce)
Margarine: lower-fat spread (30-50% vegetable oil, <i>trans</i> fat-free)	1 tablespoon
Mayonnaise, reduced- fat	1 tablespoon
Nut butters (<i>trans</i> fat-free): almond butter, cashew butter, peanut butter (smooth or crunchy)	1 ½ tsp.
Nuts	
Almonds	6 nuts
Brazil	2 nuts
Cashews	6 nuts
Filberts (hazelnuts)	5 nuts
Macadamia	3 nuts
Mixed (50% peanuts)	6 nuts
Peanuts	10 nuts
Pecans	4 halves
Pine nuts	1 tablespoon
Pistachios	16 nuts
Walnuts, English	4 halves
Oil: canola, corn, cottonseed, flaxseed, grape seed, olive, peanut, safflower, soybean, sunflower	1 teaspoon
Olives	
Black (ripe)	8 large
Green, stuffed	10 large
Salad dressing, reduced-fat	2 tablespoons
Seeds: flaxseed (whole), pumpkin, sunflower, sesame	1 tablespoon
Tahini or sesame paste	2 teaspoons

Modified from *Choose Your Foods: Exchange Lists for Weight Management* 2008

You might be surprised to see nuts and seeds on this list as many people think of these foods as a source of protein. The fact is a majority of the calories in nuts and seeds come from fat. There is a small amount of protein and fiber in nuts and seeds, but you would have to eat a large portion for them to contribute a significant amount of protein. Eating a large portion would mean consuming more fat and more calories.

Combination Foods

Food	Serving Size	Carbohydrates (grams)	Fat (grams)	Protein (grams)	Calories
Baked beans	½ cup	15	0-3	7	90
Beans, cooked (black, garbanzo, kidney, lima, navy, pinto, white)	½ cup	15	0-3	7	90
Lentils, cooked (brown, green, yellow)	½ cup	15	0-3	7	90
Peas, cooked (black-eyed, split)	½ cup	15	0-3	7	90
Refried beans, canned, fat-free	½ cup	15	0-3	7	90
Hummus	⅓ cup	15	8	7	160
Edamame	½ cup	6	0-3	7	80
Nuts, seeds, and nut butters	1 serving	0	5	0-4	45-60
Soy nuts	¾ ounce	6	4-7	7	100
Soy-based: “beef” or “sausage” crumbles; “chicken” nuggets; “sausage” patty	1.5-2 ounces	6	4-7	7	115
Meatless burger, vegetable- and starch- based	1 patty (2.5 ounces)	15	3-6	14	180
Cheese with 4-7 grams of fat per serving: feta, mozzarella, pasteurized process cheese spread, reduced-fat cheeses, ricotta, string cheese	1 ounce	0	4-7	7	75
Milk, fat-free, low-fat, 1%	8 ounces	12	0-3	8	100
Yogurt, plain or flavored with an artificial sweetener	⅔ cup (6 ounces)	12	0-3	8	100
Yogurt, Greek, low-fat	6 ounces	7	0	15	90
Soy milk, light	8 ounces	15	2	8	90

Modified from *Choose Your Foods: Exchange Lists for Weight Management* 2008

The Importance of Fluid

On average, an adult's body weight is 55% to 75% water. Fluids, particularly water, serve many important functions. Fluids help to eliminate waste, help transport nutrients throughout the body, and maintain both blood pressure and body temperature. *Drink a minimum of 64 ounces of fluid each day.* All non-carbonated, sugar-free liquids, not just water, count as fluid. This includes protein supplements, sugar-free flavored waters, sugar-free gelatin, and sugar-free popsicles. Ideally, about half your daily fluid should come from water.

Alcohol: A Source of Liquid Calories

Alcohol is not necessary to sustain human life and, therefore, is not considered a major nutrient to the body nor required. However, alcohol still provides the body with calories. Alcohol does not provide important nutrients like protein, fiber, or vitamins and minerals.

You should not drink alcohol during your first 12 months after surgery. You should avoid consuming liquid calories (other than protein supplements and low-fat milk) after weight loss surgery as liquids do not provide a sense of satiety.

After 12 months, alcohol may be reintroduced in moderate amounts. Frequent alcohol consumption should be avoided as it can cause the development of ulcers and/or weight regain.

Your tolerance to alcohol will also be greatly decreased after surgery, so take care.

For general health, women should limit themselves to one drink serving or less per day and men should limit themselves to two drink servings or less per day. One drink serving is approximately 5 fluid ounces of wine, 1.5 fluid ounces of distilled spirits (like vodka, rum, gin, or whiskey), 12 fluid ounces of beer, or 1 fluid ounce of sake. Each serving has approximately 100 calories. One serving of beer also has 15 grams of carbohydrate. Mixed drinks will have more calories and sugar.

Vitamin & Mineral Basics

Water-Soluble Vitamins

B-complex Overview

Vitamin B-complex consists of thiamin (vitamin B₁), riboflavin (vitamin B₂), nicotinic acid (vitamin B₃), pantothenic acid (vitamin B₅), pyridoxine (vitamin B₆), biotin, folic acid (folate), and vitamin B₁₂. Common B-vitamin deficiencies will be discussed in the next few paragraphs. The B-vitamins are extremely important for gastric bypass patients and are routinely given in dosages higher than the RDI (Recommended Daily Intake) for the general population. When evaluating lab tests the B-vitamins should at least be in the normal range but above normal is generally acceptable. Any excess not used by the body is eliminated through the kidneys. B-vitamins are given in adequate amounts in the bariatric specific multivitamin. If deficient, you may need to take an additional B-50 complex vitamin supplement.

Thiamin or Vitamin B₁

Deficiencies may occur following an episode of vomiting, if meals are skipped or if the appropriate vitamins are not taken. Fifteen percent to 29% of patients present with low thiamin levels even before surgery. Deficiencies in thiamin can have some very serious consequences, including an inability to walk, a loss of memory (sometimes permanent), impaired learning, or even coma and death. Some other symptoms of thiamin deficiency include muscle cramps, numbness or tingling in legs or arms, racing heart, and confusion. The normal level of vitamin B₁ is 70 to 180 nmol/L. Gastric bypass patients should take a multivitamin with more than 100% of the daily value for thiamin. Early symptoms of thiamin deficiency can often be resolved by taking oral thiamin doses of 20 to 30 mg per day from a thiamin supplement or a B-complex supplement until symptoms disappear. More advanced neuropathy will require thiamin shots with a physician.

Vitamin B₁₂

Vitamin B₁₂ deficiencies are common with gastric bypass because the small gastric pouch does not produce intrinsic factor necessary for vitamin B₁₂ absorption. Approximately 35% of gastric bypass patients develop a vitamin B₁₂ deficiency after surgery. Deficits in vitamin B₁₂, if left untreated, can cause a number of health problems such as, loss of mental alertness, neuropathies, nausea, muscle weakness, digestive upset, depression, irritability, memory impairment, poor concentration and water retention. The normal level for vitamin B₁₂ is 180 to 914 pg/mL; although, symptoms can start to occur if levels fall below 400 pg/mL. The physicians at Missouri Bariatric Services recommend vitamin B₁₂ levels be greater than 400 pg/mL. Gastric bypass patients need 350 to 500 micrograms of vitamin B₁₂ daily to prevent deficiency. Only 1% of vitamin B₁₂ taken orally is absorbed. Vitamin B₁₂ is best absorbed when taken sublingually (dissolved completely under the tongue) or by injection. If taking an injection, vitamin B₁₂ should be given in a dose of 1,000 micrograms once a month.

Folate

Folate deficiency most often occurs because of inadequate dietary intake and noncompliance with multivitamin supplementation. Malabsorption and certain medications, such as anticonvulsants, oral contraceptives and cancer treating agents, can also be responsible for folate deficiency. Deficiencies have been reported in 6% to 65% of Roux-en Y gastric bypass patients. Folate deficits occur with gastric bypass because the portion of the gut responsible for much of the absorption of this B-complex vitamin has been bypassed by the procedure. Folate deficiencies can increase the risk of heart disease, cause anemia, low prenatal levels in mothers can cause neural tube defects in newborns, irritability, and decrease the body's ability to produce energy. A normal folate level is 280 to 903 ng/mL. Gastric bypass patients should take the equivalent of 800 micrograms of folic acid daily. Correcting a folate deficiency can be as easy as taking your multivitamin regularly or taking up to 1,000 micrograms of folic acid daily over three months.

Vitamin C

Deficiencies in vitamin C lead to scurvy. Symptoms of scurvy include bleeding gums, weakness, irritability, muscle and joint pains, weight loss, tooth loss, and hemorrhages under skin and in thigh muscles. Contrary to popular belief, vitamin C does not prevent the common cold. Vitamin C is not required after gastric bypass surgery, but can help improve iron absorption. A multivitamin or iron supplement with 100% of the daily value for vitamin C is sufficient.

Fat-Soluble Vitamins

Vitamin D

Vitamin D is a fat soluble vitamin and can be made in your skin when exposed to sunlight. Vitamin D is needed by nearly every cell of the body and helps calcium absorb in the intestine. Deficiency can result in skeletal disorders, such as rickets, osteoporosis, and osteopenia. Symptoms of rickets are sleeplessness, constant head movements, and bone bending under the body's weight leading to bow legs. Beyond poor bone health, vitamin D deficiency may increase the risk of developing some of the following chronic diseases: certain forms of cancers, including colon, breast, and prostate; type 1 diabetes mellitus; inflammatory bowel disease; multiple sclerosis; rheumatoid arthritis; metabolic syndrome; hypertension and peripheral vascular disease. Studies have shown that overweight and obese individuals are at higher risk for vitamin D deficiency. A normal range of 25-hydroxy Vitamin D (one form of the vitamin) is 30 to 80 ng/mL. Moderate sun exposure will help your body make its own vitamin D. Gastric bypass patients should take approximately 1,000 to 2,000 IU vitamin D daily through a combination of multivitamin and calcium + vitamin D supplements. Vitamin D deficiency (levels less than 20 ng/mL) will be corrected with a prescription for 50,000 IU vitamin D taken twice weekly for three months.

Vitamin A

Vitamin A deficiency has been reported in 10 to 50 % of gastric bypass patients. Deficiencies in vitamin A lead to night blindness, kidney stones, mild skin problems, and inflamed mucous membranes. These symptoms of deficiency are rare. Since vitamin A is a fat soluble vitamin an excess intake can also be hazardous. Symptoms of excessive intake include loss of appetite, dry skin, hair loss, headaches, and nausea. Gastric bypass patients should take a multivitamin that contains more than 100% of the daily value for vitamin A.

Vitamin E

Vitamin E deficiency is rare after gastric bypass surgery. Vitamin E deficiency in adults can lead to lethargy, apathy, poor concentration, irritability and muscle weakness. Since vitamin E is also a fat soluble vitamin it is hazardous in excess. Excess vitamin E can cause nausea, diarrhea, muscle weakness, high blood pressure, and palpitations. Gastric bypass patients should take a multivitamin that contains at least 100% of the daily value for vitamin E.

Vitamin K

Vitamin K deficiency is rare after gastric bypass surgery. Vitamin K is required for maintenance of normal levels of the blood clotting proteins. Vitamin K is often included in very small doses or not at all in multivitamins due to the fact that it may interfere with anticoagulation medications, such as warfarin. Discuss with your physician an appropriate level of dietary vitamin K if you take anticoagulants.

Minerals

Overview

Vitamins cannot be digested and metabolized without the aid of minerals. Although the body can manufacture a few vitamins, it cannot manufacture a single mineral. All tissues and internal fluids of our body contain varying quantities of minerals. Minerals are constituents of the bones, teeth, soft tissue, muscle, blood, and nerve cells. They are vital to overall mental and physical well-being. Minerals act as catalysts for many biological reactions within the body, including muscle response, the transmission of messages through the nervous system, the production of hormones, digestion and the utilization of nutrients in foods.

Iron

Iron deficiencies occur with gastric bypass surgery because the surgical procedure bypasses the portion of the gut that absorbs iron. Iron deficiency occurs in 20% to 49% of gastric bypass patients. Iron should be taken for life and in a form that is readily absorbable. The most absorbable forms of supplemental iron are fumarate, gluconate or iron chelate. Long-term studies have found that the risk of iron deficits following gastric surgery are NOT reduced over time and may occur even with iron supplementation. Some symptoms of iron deficiency may be weakness, skin pallor, constipation, and anemia. A normal range for serum iron is in males is 31 to 144 mcg/dL and women is 25 to 156 mcg/dL. Ferritin, a storage form of iron in the body is also measured. A normal range for ferritin in males is 23.9 to 336.2 ng/mL and in females 11 to 306.9 ng/mL. The American Society for Metabolic and Bariatric Surgery recommends gastric bypass patients take 36 mg of iron daily. Menstruating women, adolescents, and those with a history of iron deficiency anemia might require an additional 18 to 27 mg of iron daily (a total of approximately 50 to 100 mg daily) to maintain healthy levels. Iron deficiencies will be treated based on severity.

Calcium

Calcium deficiencies occur with gastric bypass patients because the procedure bypasses that portion of the gut where calcium is most readily absorbed, and because the stomach pouch produces little or no acid necessary for optimal calcium absorption. Calcium supplements are, therefore, required of the gastric bypass patient and is most effective in the form of *calcium citrate*, NOT calcium carbonate, phosphate, or coral calcium. For optimal absorption, the calcium citrate should contain vitamin D, ascorbic acid (vitamin C), and/or magnesium. Calcium deficiencies cause bone loss,

irregularities in muscle, heart, or nerve functions, defects in certain hormones, and weight gain. A normal range for serum calcium is 9.0 to 10.5 mg/dL. Serum calcium is not an indicator of calcium in the bones. Gastric bypass surgery increases the risk for developing osteoporosis. Gastric bypass patients should take 1,500 to 2,000 mg of calcium citrate daily. 1,500 mg daily is the minimum amount of calcium known to prevent bone loss after surgery.

Zinc

Zinc deficiency has been reported in 36% of gastric bypass patients. Zinc is an antioxidant nutrient necessary for protein synthesis, wound healing, prostate functions, and male hormone activity. Also, zinc regulates muscle contractility, is important for blood stability, maintains the body's alkaline balance, helps in normal tissue function, and aids in the digestion and metabolism of phosphorus. Symptoms of deficiency may include prolonged healing of wounds, white spots on finger nails, stretch marks, fatigue, decreased alertness, and susceptibility to infections. A normal range for serum zinc is 60 to 120 mcg/dL. Gastric bypass patients should take a multivitamin with 100% of the daily value for zinc. Should deficiency develop, 40 to 60 mg of zinc twice a day for one month will be recommended. High intakes of zinc can interfere with copper absorption and should be avoided long-term.

Magnesium

Magnesium deficiency is rare. Magnesium plays a role in regulating the neuromuscular activity of the heart; maintains normal heart rhythm; necessary for proper calcium and vitamin C metabolism; converts blood sugar into energy. Symptoms of deficiency include calcium depletion, heart spasms, nervousness, muscular excitability, confusion, and kidney stones. Gastric bypass patients should take a multivitamin with magnesium. Taking up to 300 mg of magnesium per day may be necessary to correct deficiency.

Potassium

Potassium works with sodium to regulate the body's waste balance and normalize heart rhythms, aids in clear thinking by sending oxygen to the brain, preserves proper alkalinity of body fluids, stimulates the kidneys to eliminate poisonous body wastes, assists in reducing high blood pressure, and promotes healthy skin. Deficiency may result in poor reflexes, nervous disorders, respiratory failure, cardiac arrest, and muscle damage. Potassium is tightly regulated by the body and should remain in a range of 3.5 to 5.0 mEq/L. If potassium is outside of the normal range you should contact your primary care physician. Potassium is not included in multivitamins due to the risk of creating adverse events.

Selenium

Selenium deficiency is rare after gastric bypass surgery. Selenium is a major antioxidant nutrient that protects cell membranes and prevents free radical generation thereby, decreasing the risk of cancer and disease of the heart and blood vessels. Medical surveys show that increased selenium intake decreases the risk of breast, colon, lung, and prostate cancer. Selenium also preserves tissue elasticity, slows down the aging and hardening of tissues through oxidation, and helps in the

treatment and prevention of dandruff. Deficiency may result in premature aging, heart disease, dandruff, and loose skin. Gastric bypass patients should take a multivitamin with 100% the daily value of selenium.

Copper

Copper deficiency is rare after gastric bypass surgery. Copper is necessary for the absorption and utilization of iron, helps oxidize vitamin C, and works with vitamin C to form elastin, a chief component of the Elastin muscle fibers throughout the body, aids in the formation of red blood cells, and helps proper bone formation and maintenance. Symptoms of deficiency include general weakness, impaired respiration, and skin sores. Gastric bypass patients benefit from taking approximately 2 mg of copper daily.

Manganese

Manganese is another antioxidant nutrient that is important in the blood breakdown of amino acids and the production of energy, necessary for the metabolism of vitamin B₁ and vitamin E, and activates various enzymes which are important for proper digestion and utilization of foods. Manganese stimulates the breakdown of fats and cholesterol, helps nourish the nerves and brain, and maintains sex hormone production. Symptoms of deficiency include paralysis, convulsions, dizziness, ataxia, loss of hearing, and digestive problems. Manganese should be included in the multivitamin.

Chromium

Chromium works with insulin in the metabolism of sugar and stabilizes blood sugar levels, cleans the arteries by reducing cholesterol and triglyceride levels, helps transport amino acids to where the body needs them, and helps control the appetite. Medical research has shown that people with low levels of chromium in their bodies are more susceptible to cancer, heart problems, and diabetes. Deficiency may result in glucose intolerance in diabetics, arteriosclerosis, heart disease, obesity, and tiredness. Chromium should be included in the multivitamin.

Iodine

Iodine deficiency has not been reported after gastric bypass surgery. Iodine aids in the functioning of the thyroid gland, regulates the body's production of energy, helps burn excess fat by stimulating metabolism, and assists mental function and speech. The condition of hair, skin, and teeth depends on a well-functioning thyroid gland. Symptoms of deficiency may include slow mental reaction, enlarged thyroid gland, dry skin and hair, weight gain, and loss of physical and mental vigor.

Guidelines for Success after Surgery

These guidelines are designed to keep you safe immediately after surgery, maintain your nutritional and overall health, AND prevent weight regain in the future.

1. **Foods and beverages need to be low-fat, sugar-free, and no sugar added.**
2. **Drink fluids between meals, not with meals.** Stop drinking fluids 30 minutes before a meal, do not drink during the meal, and do not resume drinking fluids until at least 30 minutes after a meal. This will help you stay full longer and avoid overstuffing the pouch.
3. **Eat *three* meals each day.** Do not skip meals and do not snack or graze between your meals.
4. **Eat protein first at each meal.** Second, eat a nonstarchy vegetable. If you are still hungry, you may have a serving of fruit and/or starch.
5. **Chew food very well.** Food needs to be the consistency of toothpaste before swallowing. You'll need to chew food at least 20 to 30 times.
6. **Eat meals over 20 to 30 minutes.** Consuming meals too quickly will cause discomfort.
7. **Limit caffeine & coffee intake.** Caffeine is a diuretic and can be dehydrating if drank in too large an amount. Drinking large amounts of coffee can produce an ulcer. Limit yourself to 2 cups combined of coffee or caffeinated black tea.
8. **Avoid carbonated beverages** (no regular soda, diet soda, or other carbonated beverages.) Carbonated beverages cause excess gas, reflux, and possible stretching of the pouch.
9. **Limit use of straws.** Drinking through straws causes you to drink too quickly which can cause discomfort in the pouch. Straws will also introduce air into the pouch and cause excess gas. Avoid straws until you are comfortable regulating how quickly to drink.
10. **Avoid alcohol for at least one year after surgery.** Alcohol is full of excess calories and may cause ulcers if consumed in excess. It is okay to take communion with wine after surgery.
11. **Take vitamins and minerals for life.** Refer to the guidelines provided in your preoperative class.

How to Prepare for Surgery

Start preparing for surgery today! Accomplishing just a few of the following suggested changes will make it easier to transition to new eating patterns after surgery.

1. Start taking a multivitamin plus iron *and* calcium plus vitamin D supplements before surgery. This will help you prepare for taking vitamins after surgery and improve your nutritional health.
2. Practice not drinking fluids with your meals.
3. Take small bites and chew very well. Use small plates and utensils and practice eating from these.
4. Reduce your caffeine intake, but do so slowly to avoid harsh withdrawal symptoms.
5. Reduce or give up carbonated beverages. Try to get down to only one carbonated beverage per day before starting the preoperative diet. Once starting the preoperative diet, you are no longer allowed to have carbonated beverages.

6. Carry a beverage container with you at all times. This will help you get in the habit of drinking fluid throughout the day. Do not chug fluids. Practice taking small, frequent sips.
7. Identify your *trigger foods*. Trigger foods are different for everyone. These are foods you turn to when you have cravings, are stressed, bored, etc. Once identified, think of ways to help you handle your triggers better after surgery.
8. Eat more vegetables, fruits, and whole grains to improve your overall health for surgery. Aim to have 1 to 2 cups of fruit, 2 to 3 cups of vegetables, and 3 servings of whole grains each day.
9. Practice eating 3 meals each day. Planning your meals ahead of time is the easiest way to help you change habits. Identify ways to help you avoid skipping meals or grazing between meals.
10. Keep a food record to help you identify ways to improve your current diet and prepare for after surgery changes. Research shows people who write down what they eat and drink lose more weight! After surgery, a food record will help you keep track of how much protein and fluid you are consuming each day.
11. Go shopping. Purchase products you will need for the first couple weeks after surgery.

Portions after Weight Loss Surgery

Practicing portion control early-on after surgery will help you avoid eating too much food which may cause some discomfort. Continuing to practice portion control will help avoid large portions sneaking back up on you. Eating portions larger than what your pouch can hold will stretch your pouch and provide more calories than you need.

Tools you'll need to help monitor portions:

- Measuring cups and spoons
- Food scale
- 6-inch plates and small bowls
- Small utensils, such as baby spoons and shrimp forks

How much you can eat will largely depend on the volume of food that feels comfortable for you, how well you tolerate certain textures and the length of time since your surgery.

During the first weeks to a couple months after surgery, the pouch typically holds about 1 to 2 ounces of food. Eventually the pouch holds about 4 ounces of food. Long-term, six months or more after surgery, the pouch holds about 4 to 8 ounces of food. Everyone's eventual pouch volume is slightly different; however, your pouch will not likely expand beyond the 8 ounce capacity unless you repeatedly overeat. In fact, the pouch size generally remains well intact long after surgery and it is the opening from the pouch to intestine that stretches over time. Overeating is one reason the opening widens. A wider opening will allow food to pass more quickly through the pouch and reduce meal satiety.

Measuring Portion Sizes

Measurement	Equivalent
4 ounces	½ cup 8 tablespoons 4 fluid ounces 112 grams
8 ounces	1 cup 16 tablespoons 8 fluid ounces 224 grams
1 tablespoon	3 teaspoons ½ ounce
1 ounce of meat	2 tablespoons
1 fluid ounce	2 tablespoons ⅓ cup

Estimating Portion Sizes

Sometimes we need to use visual cues to help us control portions. Below are some examples.

Food	Estimated Size
1 ounce of meat	1 matchbox
3 ounces of meat	Deck of cards or bar of soap
4 ounces of meat	A woman's palm
3 ounce fish filet	Checkbook
1 ounce of cheese	4 dice
Medium potato	Computer mouse
2 tablespoons peanut butter	Ping pong ball
1 cup pasta	Tennis ball
Medium apple	Tennis ball

Food Labels

Reading food labels after bariatric surgery is important to make sure the foods you eat contain adequate protein, the right kind of carbohydrates, and not too much fat. Food labels consist of four types of health information and all of them can assist you in making healthy choices.

Nutrition Descriptions

Many foods have descriptions, like “low-fat” or “high in fiber,” on their labels. To find out what those terms really mean, check out the table below.

Label Term	Meaning (per serving)
Free or or	Less than 5 calories Less than 0.5 grams of fat Less than 0.5 grams of sugar
Low or or or or	Less than 40 calories Less than 3 grams of fat Less than 2 gram of saturated fat Less than 140 milligrams (mg) of sodium Less than 20 mg of cholesterol
Lean	Less than 10 grams of fat; less than 4.5 grams saturated fat
Extra Lean	Less than 5 grams of fat; less than 3 grams saturated fat
High	20% or more of the daily value for a particular nutrient
Good Source	10-19% of the daily value for a particular nutrient
Reduced	Contains at least 25% less of a nutrient per calorie
Less	Contains 25% less of a nutrient per calorie
Light or	Contains ⅓ fewer calories and/or 50% less fat Contains 50% less sodium
More	10% more of a nutrient
Healthy	Must be low in fat and contain limited amounts of sodium and cholesterol. Also must contain at least 10% or more of one or more of these nutrients: vitamin C, vitamin A, iron, calcium, protein, or fiber.

Health Claims

The Food and Drug Administration (FDA) has eight approved health claims that can be used on product labels. A *health claim* describes the potential health benefits a food may have:

1. Contains calcium and can prevent osteoporosis.
2. Low-fat and can prevent certain types of cancer.
3. Low in saturated fat/cholesterol and can prevent heart disease.
4. Fiber in fruits/vegetables/whole grain can prevent heart disease and certain types of cancer.
5. Low sodium can prevent high blood pressure.
6. Contains folate and can prevent neural tube birth defects.
7. Dietary sugar alcohols can prevent tooth decay, as opposed to other dietary sugars.
8. Contains soluble fiber and can prevent heart disease.

Nutrition Facts Labels

All packaged food has a nutrition facts label. This label, which can be located just about anywhere on a product, provides specific information about the amount of calories, fat, protein, and carbohydrates in a product. It also includes information on vitamins, minerals, sodium, and fiber. It is important to be able to interpret these labels and make healthy food decisions.

Label reading highlights after weight loss surgery:

1. *Serving size*, located at the top of the label, refers to the amount of that product that should be eaten at one time (Note: not all manufacturers suggested serving size will be appropriate after weight loss surgery). All of the other nutrient information on the label is based on the suggested serving size. So, if you eat or drink half the serving size, you need to half the nutrient content. If you double the serving size, you'll have to double the nutrient content (including calories). *Servings per container*, located under serving size, refers to the number of servings that should be in that package.
2. The *calories* section refers to the number of calories, or energy, provided in one serving. If a food has a lot of calories, it will be important to recognize if those calories are coming from protein, carbohydrates, or fat.
3. *Total fat*, located under calories, refers to the total grams of fat in one serving of the food. Some food labels will also have subcategories of saturated fat, *trans* fat, monounsaturated fat, and polyunsaturated fat. Each subcategory will tell you how many grams of each individual type of fat are in the food. Refer to the "Nutrient Description" section of this booklet to identify low-fat foods.

Nutrition Facts			
Serving Size 1 serving (140g)			
Servings Per Container 1			
Amount Per Serving			
Calories	140	Calories from Fat	70
% Daily Value*			
Total Fat	7g		11%
Saturated Fat	2.5g		13%
Trans Fat	0g		
Cholesterol	25mg		8%
Sodium	300mg		13%
Total Carbohydrate	9g		3%
Dietary Fiber	2g		8%
Sugars	3g		
Protein	8g		
Vitamin A	10%	Vitamin C	20%
Calcium	4%	Iron	10%
* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:			
	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Ingredients: Tomatoes; Chicken; Mushrooms; White Wine; Celery; Onions; Green Bell Pepper; Flour; Butter; Olive Oil; Salt; Black Pepper.

4. *Total carbohydrates*, located under sodium, refers to total grams of carbohydrates (which include the combined amount of starch, sugar, sugar alcohols, and fiber) in one serving.
 - *Dietary fiber*, a subcategory of total carbohydrates, refers to how many grams of fiber from both insoluble and soluble fiber sources are in one serving. Some products will even tell you the grams of insoluble and soluble fiber. A high-fiber food has more than 3 grams of dietary fiber.
 - *Sugars* is a subcategory of total carbohydrates and tells us how many grams of simple sugar, from both natural and added sugars, are in one serving. Use the “Sugar Guidelines” in this book to determine if the food is a good choice.
 - *Sugar alcohols* is a subcategory of total carbohydrates and refers to how many grams of sugar alcohols are in one serving. This is important to note if you are sensitive to sugar alcohols. Sugar alcohols do not cause dumping syndrome.
5. *Protein*, located beneath the carbohydrate information, indicates how many grams of protein are in one serving. Note this on all products so you can keep track of your protein intake. High protein foods and beverages will have more than 15 grams of protein per serving.

After weight loss surgery, it is not important to pay attention to the “% Daily Value” section on the label. This section tells us a percentage an individual nutrient provides to the total amount of that nutrient needed in a 2,000 calorie diet. After surgery, you will not likely eat anywhere close to 2,000 calories per day, and, therefore, these numbers are not important in determining whether a food is an appropriate choice.

Ingredients

Take note of the ingredient section on all foods; this section is the “recipe” of the food. In this list, the ingredients are listed from greatest content to least content. This is a good place to determine if protein, carbohydrates, or fat is one of the main ingredients.

Postoperative Dietary Goals

How to eat around your plate after surgery:

1. Eat a lean source of **protein first** at each meal. Choose foods from the “Lean Protein Sources” and “Meat Substitute” lists. Each section of the diet progression will also indicate your best protein sources. At least half of your meal should be protein.
2. Eat **nonstarchy vegetables second** at meals. Choose foods from the “Nonstarchy Vegetable” list.
3. Eat a small serving of **fruit third** at meals. Choose foods from the “Fruit” list.
4. Eat **starches last** at meals, including starchy vegetables. Choose foods from the “Breads, Crackers, and Snack Food,” “Cereal and Grains,” or “Starchy Vegetable” lists.

The most important nutrient to eat first at your meals will be a source of protein. This will help you reach your protein goal and keep you full for a longer period of time. Eating a nonstarchy vegetable second will help fill you up with nutritious fiber and vitamin and minerals without adding a lot of calories. At breakfast, you may consider having a piece of fruit instead of a vegetable. Avoiding eating large portions of fruit, or fruit only at a meal, because fruits are not filling foods. **Last** eat starches which generally do not provide long-term satiety at a meal.

Protein Goals

To prevent protein malnutrition, you must meet a minimum protein goal each day.

Daily Minimum Protein Goal	
Women	65 grams protein
Men	80 grams protein

Eating protein first at meals will help you reach your goals. For the first several months after surgery, you will need to use a protein supplement between meals to reach your protein goal. Once you are consistently able to consume all of your protein from food alone, you will no longer need additional protein supplements. Aim to eat approximately 20 grams of protein at each meal once you are on regular-consistency foods and are tolerating approximately 4 ounces of food per meal.

If you do not obtain enough protein after weight loss surgery, you can get protein malnutrition. Symptoms of protein malnutrition include: fatigue, hair loss, decreased pigmentation of the hair, loss of muscle strength, fluid retention (especially in your lower legs), and decreased ability to fight infections.

A list of appropriate protein supplements will be provided to you before and after surgery. Good protein supplements use whey, soy, or egg (albumin) as their main protein ingredient. Ensure®, Ensure Plus®, Boost®, Boost High Protein®, Glucerna®, Kellogg’s® Special K Protein Shakes or Protein Waters, Slim Fast®, Slim Fast High Protein®, and Slim Fast Optima® products **are not** appropriate protein supplements for weight loss surgery patients as they are often too high in carbohydrates, sugar, or fat and/or too low in protein.

Using the “Supplement Facts Label,” look for protein supplements which meet the following guidelines:

- 200 calories or less per 8-ounce serving
- 15 grams of protein or more per 8-ounce serving
- Less than 20 grams of carbohydrate per 8-ounce serving (this includes carbohydrates from milk- 1 cup of milk has 12 grams of carbohydrate.)
- Less than 5 grams of fat per 8-ounce serving

Fluid Goals

Getting enough fluid will be very important after surgery. Rapid weight loss along with a protein-rich diet causes the kidneys to work harder to eliminate waste. Drinking plenty of fluid helps the body flush out these waste products and prevents dehydration and poor kidney function.

Drink a minimum of 64 ounces of fluid daily.

All non-carbonated, sugar-free liquids, not just water, count as fluid. This includes liquid protein supplements, sugar-free flavored waters, sugar-free gelatin, and sugar-free popsicles. Ideally, about half your daily fluid should come from water.

Tips to avoid dehydration:

- Do not rely on thirst to tell yourself to drink. If you are thirsty you are already mildly dehydrated.
- Carry a beverage container with you at all times and take small, frequent sips.
- *Aim to drink 4 ounces to 6 ounces an hour for the first month after surgery.* Setting a goal of 4 to 6 ounces of fluid an hour will help you reach your total fluid goal. A couple months after surgery you will likely notice it is easier to drink a greater volume of fluid in one sitting; this is normal.
- Drink water before, during, and after exercise.
- Limit caffeine intake as it acts as a diuretic and is dehydrating.

Be aware of how you feel and be knowledgeable about symptoms of dehydration. If you feel dehydrated, immediately increase your fluid intake. *This may mean replacing food with liquids until hydration is restored.* If symptoms persist longer than 24 hours or become severe, call your physician. If not corrected early, dehydration can become a serious health emergency requiring medical treatment.

Mild symptoms of dehydration include dry mouth, lips and/or tongue; thirst; fatigue; headache; dry skin; constipation; irritability; nausea; and urine that is both dark yellow in color and produced in very small amounts.

Severe symptoms of dehydration include dizziness, flushed and clammy skin, and elevated temperature. To prevent dehydration, you will need to drink fluid slowly throughout the day.

Diet Progression

The diet progression is designed to prepare you for a safe surgery and help you avoid major discomfort or physical harm after surgery. You need to progress with your diet. Do not stay behind in a stage and do not advance your diet before you are advised to do so. Serious consequences may result.

Tips for Adding Foods Back to Your Diet

- Add food back one at a time to assess tolerance.
- Your first meals will only consist of a few bites. Only eat until your first sign(s) of satisfaction or fullness.
- Always eat protein first at meals.
- Moist foods, especially meats, are often better tolerated than dry foods. Use moist cooking methods whenever possible. Moist cooking methods are baking, poaching, steaming, boiling, and slow-cooking.

Preoperative Diet

Start: 14 days before surgery

Duration: 14 days

Diet: Liquid protein supplements and sugar-free, non-carbonated, low calorie fluids. Allowed fluids are listed within the “Stage 1” and “Stage 2” diet.

Goals:

- Women: 65 grams protein daily
- Men: 80 grams protein daily
- Minimum 64 ounces fluid daily

Day of Surgery

Start: Midnight the day of your surgery

Duration: Midnight the day of your surgery until the day after surgery (also known as Day 1)

Diet: NPO (nothing by mouth). No foods and no fluids. Follow instructions given to you at your anesthesia appointment regarding medications.

Stage 1

When do I start this stage? The day after your surgery (Day 1). You will get to start this stage after you pass the upper GI and methylene blue tests.

How long will I be on this stage? Day 1 thru Day 2 (or until discharged from the hospital)

Goals:

- Drink 4 to 6 ounces of fluid per hour.
- Aim for a total of 64 ounces of fluid daily.

Add the following foods/beverages to your diet:

Clear broth or bouillon

100% no-sugar- added apple, cranberry, or grape juice. Dilute with 1 part juice and 1 part water. No citrus juices (i.e. orange juice, grapefruit juice, etc.) Limit to 8 ounces or less per day.

Tea (do not add milk)

Coffee (do not add milk or creamer)

Sugar-free gelatin (any color and flavor)

Sugar-free popsicles (any color and flavor)

Sugar-free flavored beverages (Crystal Light®, SF Kool-Aid®, Propel®, PowerAde Zero®, Vitamin Water 10®, Fruit2O®, Sobe Lean®, etc.)

Artificial sweetener of your choice

Stage 2

When do I start this stage? Day 3 (or once you are discharged from the hospital)

How long will I be on this stage? Day 3 thru day 13

Goals:

- Drink 4 to 6 ounces of fluid per hour.
- Aim for a total of 64 ounces of fluid daily.
- Aim to meet protein goals with liquid protein supplements

Add the following beverages to your diet:

Protein supplements (Water- base or clear supplements may be easier to digest at first while milk-based supplements may feel “heavy” and uncomfortable at first.)

Milk: 1%, skim, light soy, or lactose-free milk

Stage 3

When do I start this stage? Day 14 (2 weeks after surgery)

How long will I be on this stage? Day 14 thru Day 27 (2 weeks)

Goals:

- Drink 4 to 6 ounces of fluid per hour; aim for a total of 64 ounces of fluid daily.
- Aim to meet protein goals with a combination of liquid protein supplements and foods.
- About 1 to 4 ounces of food per meal. Do not eat more than 4 ounces per meal. Only consume the amount of food that is comfortable for you, which may only be one or two bites.

Add the following foods to your diet:

High Protein Foods	Other Foods
Cottage cheese (low-fat or fat-free) Eggs (do not fry)	Yogurt, Greek , low-fat (no chunks) Yogurt, light (no chunks) Pureed beans or lentils (may eat reduced-fat or fat-free refried beans) Ricotta cheese Sugar-free pudding Thin cream of wheat, cream of rice, or Malt-o-Meal® Pureed oatmeal Pureed soups (choose broth-based or reduced-fat cream soups without meat) Potato (mashed, boiled, or baked; do not fry) Pureed cooked vegetables, peeled (no skin, no seeds) Pureed fruit, peeled (no skin, no seeds [no berries], no citrus fruits). May add no added sugar applesauce.

Useful Tip: How to Puree Foods

Pureed foods should be the consistency of applesauce or thin mashed potatoes. To puree foods, place chopped food into a blender or food processor. Add enough liquid to cover the blade(s). Blend until food is smooth and free of chunks. Use broth, fruit juice, or low-fat milk instead of water to puree; water will dilute the flavor of the food. You may use herbs and spices for flavor. Freeze in an ice-cube tray, pop-out and store in a zip-loc bag for convenience. One cube is equal to 2 ounces.

Sample Meals: Meal portions are maximum portions. Only eat the amount that is comfortable.

Meal 1: 4 T. yogurt, light (no chunks) 4 T. pureed oatmeal with cinnamon & Splenda Meal 2: 4 T. cottage cheese, low-fat 4 T. pureed vegetable soup Meal 3: 8 T. refried beans, fat-free	Meal 1: 1 egg, poached 2 T. pureed peaches Meal 2: 4 T. ricotta cheese with salt & pepper 4 T. pureed squash Meal 3: 8 T. pureed cream soup mixed
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Stage 4

When do I start this stage? Day 28 (4 weeks after surgery)

How long will I be on this stage? Day 28 thru Day 34 (1 week)

Goals:

- Drink 4 to 6 ounces of fluid per hour; aim for a total of 64 ounces of fluid daily.
- Aim to meet protein goals with a combination of liquid protein supplements and foods.
- About 1 to 4 ounces of food per meal. Do not eat more than 4 ounces per meal. Only consume the amount of food that is comfortable for you, which may only be one or two bites.

Add the following foods to your diet:

High Protein Foods	Other Foods
Deli-shaved meats	Beans and lentils, cooked
Fish	Yogurt, with chunks
Shellfish	Toast
Tofu	Crackers, less than 3 grams of fat per serving
	Cheese, less than 5 grams of fat per serving
	Cream cheese, reduced-fat
	Nut butters, creamy
	Soups, regular consistency
	Oatmeal, regular consistency
	Vegetables, soft cooked (no skin)
	Fruits, soft fresh (like bananas, peaches, melon, etc.) or canned-in-its-own-juice or canned-in-Splenda® (no skin, no citrus fruits)

Useful Tip: Do not puree foods once you start stage 4

Eating liquid-consistency foods longer than recommended can cause problems long-term, called maladaptive eating. If you only eat very soft, liquid texture foods too long, your pouch may not mature properly and will never allow you to comfortably eat regular textured foods. Also, soft foods do not provide long-lasting satiety like foods you must chew. Satiety is important for long-term weight loss and weight maintenance. Eating protein-rich foods first will help you feel satisfied.

Sample Meals: Meal portions are maximum portions. Only eat the amount that is comfortable.

Meal 1: 8 T. light yogurt & low-fat cottage cheese mixed Meal 2: 2 oz. shrimp 4 T. steamed broccoli Meal 3: 2 oz. tofu, seasoned 4 T. sautéed onions & green peppers (use cooking spray instead of oils)	Meal 1: 1 egg, poached ½ slice toast with sugar-free jelly Meal 2: 2 slices deli-shaved ham 1 slice American cheese made with 2% milk Meal 3: 2 oz. baked salmon 4 T. mixed vegetables
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Stage 5

When do I start this stage? Day 35 (5 weeks after surgery)

How long will I be on this stage? Day 35 thru Day 48 (2 weeks)

Goals:

- Drink 64 ounces of fluid daily.
- Aim to meet protein goals with a combination of liquid protein supplements and foods.
- About 1 to 4 ounces of food per meal. Do not eat more than 4 ounces per meal. Only consume the amount of food that is comfortable for you.

Add the following foods to your diet:

High Protein Foods	Other Foods
Ground beef, lean Ground poultry, lean Ham	Cold cereal with less than 5 grams of sugar per serving (examples: plain shredded wheat, original Fiber One®, Rice Krispies®, plain Cheerios®, corn flakes.) Raw salad greens (lettuce, spinach, etc.) • Use a reduced-fat or fat-free dressing

Useful Tip: How to make your meats moist

Meats are dense sources of protein that may be difficult to digest at first. This is largely due to the fact that the pouch produces little to no stomach acid. In order to digest meats, you will need to cook them using a moist cooking method and chew them very well. Moist cooking methods are poaching, simmering, boiling, stewing, blanching, braising, and steaming. Slow-cookers can be an excellent tool for making moist meats. Baking, roasting, and rotisserie cooking are considered dry cooking methods, but meats cooked with these methods may still be moist enough to chew to a toothpaste-like consistency and digest well for some patients. Other dry cooking methods, like grilling, broiling, and barbecuing are often considered healthy, low-fat cooking methods, but tend to make meats too dry to comfortably digest early out from surgery. Trim fats from meats and always avoid frying meats.

Sample Meals: Meal portions are maximum portions. Only eat the amount that is comfortable.

Meal 1: 4 T. cottage cheese, low-fat 1 peach half canned-in-Splenda® Meal 2: 2 oz. cold shrimp 2 slices tomato, no seeds Meal 3: 2 oz. ham ½ cup salad greens with fat-free dressing	Meal 1: 1 egg, poached ½ slice toast with sugar-free jelly Meal 2: 2 oz. ground turkey, seasoned with taco seasoning ¼ c. shredded lettuce ¼ c. shredded cheese, reduced fat Meal 3: 3 oz. ground beef patty, baked 1 slice reduced fat cheese
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Stage 6

When do I start this stage? Day 49 (7 weeks after surgery)

How long will I be on this stage? Day 49 thru Day 62 (2 weeks)

Goals:

- Drink 64 ounces of fluid daily.
- Aim to meet protein goals with a combination of liquid protein supplements and foods.
- Consume about 1 to 4 ounces of food per meal. Do not eat more than 4 ounces per meal. Only consume the amount of food that is comfortable for you. Do not graze on cheese or nut butters to reach protein goals.

Add the following foods to your diet:

High Protein Foods	Other Foods
Poultry • Choose moist, white meat • Do not fry • Do not eat the skin	Bread, untoasted Tortillas Rice Pasta • Whole grain is preferred • Use a <i>no added sugar</i> red sauce • Avoid high-fat white sauces Raw fruits (no citrus) Raw vegetables

Useful Tip: Knowing what is full vs. too full

After surgery, a sense of fullness will occur in your upper stomach rather than the mid- or lower stomach. Because of this, fullness can often be a sense of pressure located just below the sternum. If you are eating to the point that this pressure is uncomfortable (sometimes discomfort will radiate to your chest or shoulders), you are eating too much and you need to stop before reaching this point. Sometimes sneezing, coughing, or belching will occur just before the discomfort point is reached; these are your personal signals to stop eating. Learn what the sense of *satiety* feels like to you. Satiety is the point at your meal where you don't need to eat any more food and can stop eating.

Sample Meals: Meal portions are maximum portions. Only eat the amount that is comfortable.

Meal 1: 4 T. yogurt, light ¼ small apple, peeled Meal 2: 2 oz. cold shrimp with sugar-free cocktail sauce 2 baby carrots Meal 3: 2.5 oz. chicken, slow-cooked 2 T. asparagus 1 T. steamed rice	Meal 1: Omelet using ¼ c. egg substitute and 1 T. green pepper and 1 T. onion Meal 2: 3 oz. tilapia 1 T. zucchini 1 T. pears Meal 3: 2.5 oz. poached chicken & 2 T. snow peas tossed with 1 T. penne pasta with ¼ cup marinara sauce
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Stage 7

When do I start this stage? Day 63 (9 weeks after surgery)

How long will I be on this stage? Day 63 thru Day 69 (1 week)

Goals:

- Drink 64 ounces of fluid daily.
- Aim to meet protein goals with a combination of liquid protein supplements and foods; more of your protein should be coming from food sources by this point.
- About 1 to 4 ounces of food per meal. Do not eat more than 4 ounces per meal. Only consume the amount of food that is comfortable for you. Do not graze on cheese, nuts, or nut butters to achieve protein goals.

Add the following foods to your diet:

High Protein Foods	Other Foods
No high protein foods added at this stage. Continue to eat protein-rich foods added in previous stages of the diet.	Nuts Nut butters, crunchy Dried fruit (avoid dried fruits with added sugar)

Stage 8

When do I start this stage? Day 70 (10 weeks after surgery)

How long will I be on this stage? Day 70 thru Day 77 (1 week)

Goals:

- Drink 64 ounces of fluid daily.
- Aim to meet protein goals with a combination of liquid protein supplements and foods. At this point, try to have at least half your daily protein from a food source.
- About 2 to 4 ounces of food per meal. Do not eat more than 4 ounces per meal. Only consume the amount of food that is comfortable for you. Do not graze on cheese, nuts, or nut butters to achieve protein goals.

Add the following foods to your diet:

High Protein Foods	Other Foods
Red meat: beef, pork, wild game • Choose lean cuts. Lean cuts have the terms “round” or “loin” in the name. • Do not fry • Trim visible fat before cooking. • Chew very, very well Protein bars, look for: • 200 calories or less per serving • 15 grams of protein or more per serving	Citrus fruits (i.e. oranges, pineapple, grapefruit) Seeds Vegetable juices

After completing the diet progression you may continue to add new foods and beverages to your diet. These foods and beverages must continue to be low-fat, sugar-free, and have no added sugar. You must continue to eat high-protein foods first at meals. Do not eat other foods (i.e. vegetables, combination foods, fruits, and starches) until you have finished your high-protein food. Do not graze or snack between meals. Do not drink fluids with meals.

Digestive Difficulties after Surgery

Dumping Syndrome

After gastric bypass, you will no longer have a sphincter, a “door,” which regulates how much and how quickly food can leave the stomach. Dumping syndrome occurs when foods leave the stomach and enter the intestine too quickly, especially if these foods are high in simple sugars or fat. Once the food is in your intestine, the intestine will pull water from other parts of your body in an attempt to dilute the concentration of sugar or fat in you digestive symptom; this process creates numerous symptoms. Dumping syndrome can occur while you are eating a meal or within five to ten minutes of finishing your meal.

Early signs of dumping syndrome are abdominal fullness, abdominal cramping, and nausea. You may feel warm, dizzy, weak, or faint. You may also experience a rapid heartbeat and break out in a cold sweat. Often dumping syndrome is accompanied by diarrhea, but not always.

Late signs of dumping syndrome are very much like having a low blood sugar and can occur 1 to 3 hours after the original dumping episode. You may feel shaky, weak, or nauseous.

To prevent dumping syndrome, you will need to avoid eating too much simple sugar and/or too much fat at a meal. You must also eat slowly. Approximately 85% of gastric bypass patients experience dumping at some point after surgery.

Each individual will likely tolerate a different amount of simple sugar and/or fat. For this reason, you will need to learn what your own limits are by paying attention to the nutrient content of your meal. See some guidelines below:

- Choose low-fat foods. Refer to the “Nutrition Descriptions” section of this booklet for guidelines.
- Follow the “Sugar Guidelines.”

Sugar Guidelines to Prevent Dumping Syndrome

Step 1: Refer to the nutrition facts label of the product. If the product has *less than 5 grams of sugar*, this will likely be a well-tolerated food or beverage.

Step 2: If the product has *more than 5 grams of sugar*, read the product's ingredient label. *If one of the first five ingredients is an added simple sugar (see list), avoid this product.*

Avoid these added simple sugars:

Cane sugar	Sugar-in-the-Raw	Confectioner's sugar
Invert sugar	Maple syrup	Corn sweeteners
Molasses	Malt	Sucrose
Table sugar	Brown sugar	Dextrose
Turbinado sugar	High-fructose corn syrup	Maltose

Foods and beverages that naturally contain sugar (such as milk, fruit, and starchy vegetables) are typically well tolerated; however, some people do experience dumping syndrome if the portions are too large. Fruit juice should be limited to 8 ounces per day and diluted 50/50 with water.

Sugars and Sweeteners Generally Well Tolerated:

Fructose (from fruit)	Stevia (AKA Truvia®)
Lactose (from dairy products)	Saccharin (Sweet' N Low® or Sugar Twins®)
Aspartame (AKA Equal® or NutraSweet®)	Isomalt
Acesulfame K (AKA Sunett®)	Sucralose (AKA Splenda®)
Sugar alcohols (sorbitol, mannitol, xylitol, maltitol, etc.)	

Nausea and vomiting

One of the main causes of nausea and vomiting after surgery is not following the nutrition guidelines. Any problems with nausea or vomiting should prompt the following questions and necessitates changes to avoid further pain and discomfort:

1. How long am I taking to eat and/or drink?
2. Am I eating and/or drinking slowly enough?
3. Did I drink fluids with my meal or too soon before or after the meal?
4. Am I eating more than I should?
5. Do I continue to eat after I feel satisfied
6. Am I chewing solid foods until they resemble a pureed consistency?
7. Did I lie down too soon after my meal?
8. Did I eat hard to digest foods such as tough meat or untoasted bread product?

9. Did I eat foods from the next stage of the menu plan before being cleared by the physician to do so?

If you vomit, do not eat solid foods. Instead, return to sugar-free, clear liquids (stage 1). If you've said "yes" to any of the questions above, consume liquids until solid food is once again comfortable to eat. Repeated vomiting may cause stress on the new stomach and result in irritation or— even worse— rupture of the staple line. If vomiting persists throughout the day and/or you've answered "no" to all the above questions and the vomiting is not improved by making changes to your diet, call our office and speak to a nurse.

Lactose intolerance

Lactose intolerance is the inability to digest significant amounts of lactose, the major sugar found in milk. Lactose intolerance is caused by a shortage of the enzyme lactase, which is produced by the cells that line the small intestine. Common symptoms of lactose intolerance, which range from mild to severe, include nausea, cramps, bloating, gas, and diarrhea. Symptoms begin about 30 minutes to 2 hours after eating or drinking foods containing lactose. The severity of symptoms depends on many factors, including the amount of lactose a person can tolerate, age, ethnicity, and digestion rate. Most adults do not have to avoid lactose completely, but people differ in the amounts and types of foods they can handle. For example, one person may have symptoms after drinking a small glass of milk, while another can drink one glass but not two. Others may be able to manage aged cheeses, such as cheddar and Swiss, but not other dairy products. People can also tolerate more lactose by having smaller amounts of it at one time. The level of dietary control needed with lactose intolerance depends on how much lactose a person's body can handle.

To avoid symptoms associated with lactose intolerance, use lactose-free low-fat milk or light soy milk instead of low-fat cow's milk. You may also take over-the-counter Lactaid® supplements with a meal containing dairy foods (take as directed by manufacturer).

Constipation

After surgery, given the drastic changes in your eating habits, your bowel habits will change. Be prepared that you will not likely have a bowel movement every day. You will not be eating enough food to require your body to have a bowel movement every day. *Expect to have a bowel movement every 2 to 3 days once you've had surgery.*

If you are struggling with constipation, be sure to get an adequate amount of *fluid* (at least 64 ounces each day) between meals. Increase your *fiber* intake as your diet progresses; ideally, adults need 25 to 35 grams of fiber each day. Your best sources of fiber will be vegetables, fruits, and whole grains. *Exercising* daily will also help prevent constipation and keep your bowels moving.

If the above suggestions do not resolve the problem, you can consider taking a fiber supplement or flaxseed meal. Fiber supplements can be added to food or fluids without changing the taste or consistency. Suggested fiber supplements are Benefiber® or FiberSure®.

Food Intolerances and Taste Changes

Some foods and beverages may not be tolerated after weight loss surgery. Foods may make you nauseous or taste or smell differently after surgery. If a healthy, favorite food tastes different to you or does not sit well after surgery, but you want to add it back to your diet, allow another week or two to go by and try the food again. Common food intolerances are red meats, untoasted breads, pasta, and lactose intolerance. Common taste changes include meats tasting metallic and sweet foods or beverages tasting much too sweet. Some people even feel that water tastes sweet after surgery.

Understanding Vitamins and Minerals after Weight Loss Surgery

Vitamins help to start chemical reactions in your body and regulate different body functions. There are two types of vitamins:

- *Water soluble vitamins* dissolve in water. Some water soluble vitamins are stored in the body in very small amounts while others may not be stored at all. Because you cannot store the vitamins in your body, you need a regular supply of the vitamins from food or supplements. Also, because these vitamins cannot be stored in large amounts they generally are not considered toxic; the body will excrete these vitamins in your urine if you have too much. Water soluble vitamins are vitamin C and the B-vitamins (thiamin, vitamin B₁₂, folate, riboflavin, vitamin B₆, pantothenic acid, and biotin).
- *Fat soluble vitamins* are dissolved in fat and are carried in your blood stream with fats. These vitamins can be stored in the body and can become toxic if you take too much. Fat soluble vitamins are vitamins A, D, E, and K.

Minerals help to start chemical processes and make structural parts of your body, like bones. There are two types of minerals.

- *Major minerals* are needed in large amounts by the body. They include calcium, phosphorus, magnesium, and electrolytes (sodium, potassium, and chloride).
- *Trace minerals* are needed in smaller amounts by the body, but they are just as important as major minerals. They include iron, zinc, selenium, copper, fluoride, manganese, molybdenum, chromium, and iodine.

Everybody needs vitamins and minerals, but weight loss surgery patients need more vitamins and minerals than the average person. Here's why:

- The volume of the stomach is dramatically decreased after weight loss surgery. The amount of food that can be eaten after surgery is also dramatically decreased. This means you simply will

not be able to consume enough healthy food to provide your body with all the vitamins and minerals you need.

- How your GI tract functions changes after surgery. Most notably your new stomach will not produce strong stomach acid. Stomach acid helps to break down protein and convert minerals into a form that can be absorbed. You will have to take the correct form of the mineral without relying on your stomach acid to do the work. Also, certain vitamins require additional helping factors found in the stomach to trigger absorption in the intestines. After gastric bypass surgery, these helping factors are not present in the stomach.
- The route vitamins and minerals take through your body will change. The vitamins and minerals will literally bypass the area of the intestine where most absorption takes place.

You can expect to take the following each day after surgery:

- *Multivitamins* with at least 200% of the daily value for most of your water soluble vitamins, fat soluble vitamins, magnesium, and all of your trace minerals except iron. Missouri Bariatric Services recommends taking a bariatric-specific multivitamin.
- *Calcium citrate plus vitamin D* supplements daily. The citrate form of calcium does not require strong stomach acid. You will need a minimum of 1,500 mg of calcium citrate every day. No more than 600 mg of calcium will be absorbed at one time, so plan to take calcium three to four times each day. Vitamin D will help your body absorb calcium.
- *Vitamin B₁₂* will be taken orally daily or weekly (depending on dose) or with a shot once a month. Vitamin B₁₂ helps you maintain healthy nerve cells and blood cells. You will lose the ability for your body to recognize most vitamin B₁₂ for absorption once you have had your surgery.
- *Iron* will need to be taken daily to prevent anemia. Most patients will need to take 30 mg of iron daily.

Additional vitamin and mineral supplements may be required after surgery if these baseline amounts are not sufficient for you. The type and dose of additional vitamins will be determined by your healthcare team.

A list of appropriate vitamins and minerals will be provided in your preoperative education class and by request at each clinic appointment. Refer to this list when choosing specific supplements.

Tips for Dining Out after Weight Loss Surgery

Dining out after weight loss surgery tends to be more of an inconvenience rather than a convenience. Weeding through all the foods you cannot or should not have after surgery is a pain and unnecessary temptation. Plus, you will be eating so little food that it often doesn't make sense to pay the outrageous

prices for just a bite or two. Nevertheless, in today's society, it is expected that at some point you'll be dining away from home. Follow these tips to help make the best of a hard situation:

1. Plan, plan, plan. Be familiar with the menu before you get to the restaurant. If you plan what you'll eat before going to the restaurant you won't even need to look at the menu; thus, avoiding a lot of temptation.
2. Choose a dish from the "healthy" menu. Many chain restaurants offer a Weight Watchers® menu, which often includes entrees with a lean protein and vegetable side dish.
3. Split the meal with a dining companion. You won't be able to eat a full serving anyway.
4. Order a half-size meal if available.
5. Ask for a to-go-box when you order. Once your food comes, put the portion you know you can't eat away immediately. You'll have another meal or two later.
6. Order a side dish instead of an entrée.
7. At buffets, use a salad plate instead of a regular plate.
8. Fast food restaurants are now offering "healthier" options, like salads and wraps. Buyer beware, healthier doesn't mean that it's not loaded with calories.
9. Ask that your meal not be prepared with added butter or sugar.
10. Skip the breading on sandwiches and focus on the protein and vegetables.

Missouri Bariatric Services can provide a patient dining card at your request. This card informs restaurants that you've had a weight loss surgery procedure that limits how much food you can eat. The card encourages the restaurant to allow you to order smaller portions or items from the children's menu. It is up to the individual restaurant to choose to accept this card.

Food Record

Research shows people who keep a food record lose more weight and keep the weight off. To keep a food record, write down everything you eat or drink. Be sure to describe how the food was prepared or if you added anything to the food. Record the amount of each type of food or fluid you consumed. Record how much protein for each individual food and count up the total at the end of the day. Record the ounces of fluid consumed and record the total at the end of the day. Record what vitamins you took, how much, and when. Record how hungry you were and what mood you were in when you ate. Place your hunger on a scale of 1 to 10. One means you are completely starving and 10 means you are completely stuffed, like on Thanksgiving. Avoid waiting to eat until you can barely think and avoid eating until you are completely stuffed and sick feeling.

At the end of the day, review how well you did. Did you meet your protein goal? Did you meet your fluid goal? Did you get all of your vitamins in? If the answer is "no," think about how you can do better tomorrow. Write down your thoughts. People who write down their goals are more likely to reach them.

	Time	Hunger/Mood	Amount	Food Description	Protein grams
Meal 1					
Meal 2					
Meal 3					
Snack(s)					
Total					

Comments:

Fluids:

Type Amount (oz)

Total:

Did you drink fluids with your meals? Yes / No (circle)

Vitamins:

Brand/Type Dose Time

Abbreviation Key:

BA: Bariatric Advantage®

BB: Building Blocks®

CV: Celebrate® vitamins

Fe: iron

Ca: calcium

B12: vitamin B12

MVI: multivitamin

OTC: over-the-counter

Frequently Asked Questions

1. If I'm tolerating foods well in my current diet stage, can I jump ahead to the next stage?

No. The diet progression has been designed to allow time for your "new stomach" to heal and induce appropriate weight loss. Jumping ahead in your meal plan, unless your doctor or dietitian recommends it, can lead to slowed weight loss and/or poor tolerance to foods.

2. Can I use spices and condiments on foods as I add them back into my diet?

Yes. Condiments and herbs/spices are a good way to add flavor to foods as long as they are used in moderate amounts. Choose low-fat, low-sugar varieties whenever possible. Spray butter or light spreads are preferred over butter. Low-fat or fat free mayo should be used instead of the full-fat version. Be cautious with overly spicy herbs or condiments the first 6 to 8 weeks as they may cause stomach irritation.

3. I cannot find a protein drink I like; can I just try and get my protein through my foods?

No. Given the small amount of food your pouch holds immediately after surgery, it will be nearly impossible to get enough protein from your three meals a day until 3 to 6 months after surgery. If you are having trouble finding a protein drink you can tolerate, refer to the list of suggested protein options provided to you by the clinic or call the dietitian for suggestions.

4. I am sick of how my protein drink tastes; can I add flavorings to it to make it taste different?

Yes! You may add extracts such as peppermint, vanilla, banana, etc. to your protein drinks *as long as they do not add any calories or sugar*. Make sure you read the label before adding anything to your protein drink.

5. Do I have to use liquid protein drinks forever?

No. Once you can comfortably consume enough protein from food sources alone, including protein bars, you no longer need liquid protein supplements every day. The amount of time it takes to get to this point is different for everyone. Most people reach this point between six months to one year after surgery. In fact, long-term use of protein supplements is not recommended because they are "liquid-calories," meaning they provide extra calories without helping you feel full.

6. How long do I need to dilute fruit juice?

You'll need to continue to dilute fruit juice for the rest of your life. High doses of fructose can cause dumping syndrome and for some people increase their tolerance to added sugars.

7. I can't tolerate meat anymore; what can I do?

It is likely that you cannot tolerate certain meats or certain cooking methods. Try meat substitutes and using moist cooking methods to help make the meat easier to chew.

8. How many calories should I have each day?

There is not set standard amount of calories gastric bypass patients should eat daily. After surgery it is much more important to keep track of how much protein you are consuming. Long-term (one or more years after surgery), most gastric bypass patients consume approximately 1,000 to 1,200 calories per day. Those who begin to participate in athletic training may require more calories and should speak with a dietitian regarding their specific needs.

Weight Loss Surgery Patient Resources

For support and general information, you may find the following websites useful:

Missouri Bariatric Services: www.muhealth.org/weightlosssurgery
American Society for Metabolic and Bariatric Surgery: www.asmb.org
Bariatric Eating: www.bariatriceating.com
Gastric Bypass Family: www.gastricbypassfamily.com
Realize: www.realizemysuccess.com
The Obesity Society: www.obesity.org

For support and general information, you may find the following books useful:

Before & After: Living & Eating Well after Weight Loss Surgery by Susan Maria Leach
Eating Well after Weight Loss Surgery by Patt Levine and Michelle Bontempo-Saray
The Real Skinny on Weight Loss Surgery by Julie M. Janeway, Karen J. Sparks, and Randal S. Baker, M.D., F.A.C.S.
The Success Habits of Weight-Loss Surgery Patients by Colleen M. Cook
Walk from Obesity Cookbook by Chef David Fouts

This list is provided for educational purposes only. Missouri Bariatric Services is not endorsing any particular service or product listed above.

Exercise Guidelines Before & After Weight Loss Surgery

Do you have a regular exercise program?

The American Heart Association recommends for **wellness** that you exercise at least **30-45 minutes most days of the week** at a moderate effort to decrease your risk of heart disease and stroke. Exercising **at least 30 minutes** means moving the large muscles groups of your legs and/or arms continuously for bouts of exercise equaling thirty minutes a day. **Most days of the week means six times a week.** **Moderate intensity** means exercising to the point of perspiring and shortness of breath. If you want to improve your **fitness**, take the next step of exercising for **45-60 minutes most days of the week**. For a lifetime of **weight management**, take the extra step of exercising **60-90 minutes most days of the week** to burn calories and maintain your weight loss.

Why should I exercise?

It is an easy way to help you look and feel good. While your body gets in shape on the outside, your heart and health shape up on the inside. This is what happens to those who exercise regularly:

- **the heart pumps blood and oxygen to the body with less effort**
- **high blood pressure lowers**
- **body fat is lost**
- **blood fats get better – good cholesterol, good fat (HDL) increases and bad fat (LDL) and triglycerides decreases**
- **other good blood changes may occur like lower blood glucose, less clotting, less adrenaline**
- **there is less mental stress, depression and anxiety**
- **sleep better**
- **stronger muscles and bones**
- **more energy to do the same work**
- **appetite will be less**
- **an improved self esteem**

Exercise beyond activities of daily living

When you exercise to the point of **perspiration and shortness of breath**, then you are making positive healthy changes within your body. All the organs of your body, down to your cells benefit from the improved blood circulation and oxygenation that exercise brings. Your whole body becomes more efficient and healthy.

What are your exercise goals?

Close your eyes and visualize what you want to be doing a year from now. What have you wanted to do physically but have been unable to do? After your weight loss and regained ability to move your body, imagine yourself feeling better and actively enjoying your life. Write what activity you want to be able to do after your surgery and weight loss.

Short-term goals (3 months after surgery) _____

Long-term goals (1 year after surgery) _____

“Those who think they have not time for bodily exercise will sooner or later find time for illness.”

--Edward Stanley

What to expect during the three exercise phases before and after surgery

Preoperative exercise phase

Now, today is the time to start your regular daily physical activity. The challenge is to begin your exercise program now, so you will be better prepared for your surgery and have fewer complications afterwards. Even three to five minutes of walking, biking or swimming three to four times a day starts you on the path to wellness. Follow the Walking Stages on page 64. It is simple, just get started moving your body today.

Immediate postoperative exercise phase

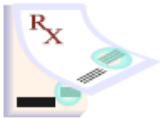
On your **first postoperative day**, you will be getting out of bed and walking in your room and one length of the hallway. Remember to **point and flex your feet** every 15-30 minutes to prevent blood clots from forming in your legs. Use your incentive spirometer to **deep breathe and cough** every hour to expand your lungs and prevent pneumonia. Smoking or being around others who smoke is a health risk that you will want to avoid. On the **second postoperative day** you will be walking the **length of two hallways** or 600 feet. The **third postoperative day** you will be walking the **length of three hallways** or 900-1200 feet and then your doctor will decide if you are ready to go home.

Postoperative recovery exercise phase

During **Week One** at home you can **walk** around your home according to the “Walking Stages” outlined in this section. During **Week Two**, you can walk on a **treadmill** or use a **stationary bike**, slowly progressing your exercise time by adding 1-2 minutes each day. At **One Month**, you will have a follow-up visit to your doctor for a postoperative checkup. There are **no activity restrictions** for your activity or lifting unless your doctor advises you otherwise. If it hurts, don’t do it.

How much exercise is enough?

That depends on your goals. Whether your goal is wellness, fitness or weight maintenance, your health depends on you starting to move your body. American Heart Association recommends that you exercise **most days of the week at a moderate intensity for at least 30-45 minutes.**

 Find an exercise prescription that matches your goals.	
Wellness	Aerobic exercise for 30-45 minutes 3-4 times a week
Fitness	Aerobic exercise for 45-60 minutes 6 times a week
Weight Maintenance	Aerobic exercise for 60-90 minutes 6 times a week

What is a balanced exercise program?

A balanced exercise program includes 3 parts: flexibility, strengthening and aerobic conditioning.

Flexibility

To **begin**, start with some **warm-up exercises** to slowly stretch your muscles starting with your head and shoulders moving down to your arms, back, abdomen and legs. Stretching will increase blood circulation to your muscles getting you ready for moving your body and lessen the chances of an injury. Stretch until you feel slight tension using gentle fluid motion. Hold the position for 10-12 seconds, then relax and repeat. You can stop and stretch in the **middle of an exercise session**. It is also a good idea to **end your exercise session** with some **cool down stretches** to improve your flexibility and lessen muscle soreness.

Strengthening

Strength training will improve your muscle tone, giving your body definition and helping you to look and feel better during your weight loss and weight maintenance. **Start** by **inhaling** during the beginning of a lift, then gradually **exhale** as you finish the lift. Breathing deep gives your body the oxygen it needs to do the lift. Use as much weight or resistance as is comfortable for **8-10 repetitions**. Perform **1-3 sets of ten repetitions**. If you can do this comfortably, increase the weight or resistance. Start by using **stretch bands or hand held weights** and slowly progress by increasing the weight or resistance. **Begin** lifts with your **legs** and move up your body to the smaller muscles in your abdomen and ending with your arms.

Aerobic conditioning

Aerobic exercise happens when you move your muscles in a continuous motion for several consecutive minutes. Your breathing increases and your body begins to perspire as your heart pumps the oxygen rich blood to your muscles. Your goal is to increase your aerobic endurance by walking, biking or swimming for longer periods of time. Start with a time or distance that is comfortable for you and **slowly increase your time by 1-2 minutes every 1-3 days**.

When do I get started exercising?

Today! Start moving your body and make a plan for daily exercise **before your surgery**. Making lifestyle changes takes a little thought and preparation for you to be successful. Plan what time of day fits best into your daily routine to exercise. Make an appointment with yourself; don't cancel unless you have a backup plan to reschedule.

How do I know if I'm exercising enough or too much?

Use the **Talk Test**. If you can comfortably carry on a conversation, you are exercising at the right intensity. Another way to know how hard you are exercising is to calculate your **Target Heart Rate Range**. Your goal is to exercise between 60-80 percent of your maximal Target Heart Rate.

**Use this formula to determine your
Age Predicted Target Heart Rate**

$220 - \text{age} \times 0.60 =$
Low Range of Target Heart Rate

$220 - \text{age} \times 0.80 =$
High Range of Target Heart Rate



Find your pulse in your wrist by your thumb, count your pulse for a minute using a watch with a second hand.

Be safe: Know the signs and symptoms of exercise intolerance

Listen to your body. **Stop exercising** and sit or lie down until the symptoms go away. If the symptoms continue, call 911 for emergency assistance. The symptoms may include lightheadedness, dizziness or fainting, nausea or vomiting, unusual sweating, pain or tightness in your chest, increased or unusual shortness of breath, very fast, slow or irregular heart rate.

10,000 steps a day toward wellness

Use a **pedometer** to count your steps each day toward wellness. Mark the steps or distance on a calendar and watch your improvement week to week and month to month. You'll be surprised how fast the steps add up.

Taking care of yourself

- **Make one simple change each day.**
- **Exercise is a habit. To be successful at maintaining an exercise program means making a change in one habit and substituting it for another habit.**
- **Make it fun.**
- **Add exercise to your daily routine.**

- Make exercise a priority in your life.
- Schedule a specific time in the day and find someone to exercise with you.
- Take the stairs.
- Park your car in the farthest parking space.
- Move around more at work, stretch, pace
- Walk to the farthest bathroom.
- Really clean your house, wash the windows and scrub the floor.
- Turn the music up and dance.
- Park your car in a central location, then walk to and from it as you do errands.
- Ride your bike once a week.
- Go for a swim.
- Walk your dog.
- Lift hand and leg weights or stretch whenever there is a commercial on TV.
- Get out of your chair and stretch every hour that you sit at your computer.
- If driving to work, park a mile away from your building and walk.

Love yourself—it's a lifelong commitment

For further questions please call:

Fit for Life

Cardiovascular and Pulmonary

Rehabilitation and Prevention Services

University of Missouri Hospital and Clinics

Phone 573-882-4283

Email fitforlife@health.missouri.edu

Resources

- American College of Sports Medicine at www.acsm.org
- American Heart Association at www.americanheart.org
- Governor's Fitness Challenge at www.mofitness.org/shapeupmo.htm
- Your Personal Fitness Center at www.justmove.org
- Stretch Bands at www.exercise.about.com/cs/exerciseworkouts/l/blbandworkout.htm

"I have the power to choose a healthy lifestyle. Even though I will encounter challenges and setbacks, I can do this. I am committed to making a difference in my health. I will walk the path toward wellness."

Walk/Bike/Swim Stages

These stages are a guide to help you walk/bike/swim a further distance. Go to the **next stage** when you can do the previous stage without symptoms or stopping to rest. You may be at any particular stage for three days, a week, or more. Your **goal** is to increase your **endurance** by walking/biking/swimming for longer periods of time without stopping to rest. Try adding 2 minutes to your exercise every two or three days. When you are exercising, keep a steady, moderate pace so that you are able to carry on a conversation.

Stage	Time	Frequency
1	3 minutes	3-4 times a day
2	5 minutes	3-4 times a day
3	7 minutes	3 times a day
4	10 minutes	3 times a day
5	15 minutes	2 times a day
6	20 minutes	1-2 times a day
7	25 minutes	daily
8	30 minutes	daily
9	45 minutes	daily
10	60-90 minutes	daily

Ratings of Perceived Exertion scale or RPE scale

The term **perceived exertion** means the amount of tiredness or fatigue you feel throughout your **whole body**, not just your legs or breathing. You should exercise at a level that feels **light to somewhat hard**. Exercising about this level will not make you recover quicker!

Warm up & cool down stretches

Stretching is important to your overall health and decreases your risk of injury. Here are some tips on how and when to stretch.

Why should I do these stretches?

- They promote circulation.
- Stretches will improve your flexibility.
- They can help keep joints, ligaments and muscles loosened.
- Stretches done before and after exercise can decrease the chance of dizziness and irregular heartbeats.
- They feel good!

When should I do these stretches?

- At least once daily
- Before, during and after an activity that increases your heart rate

RPE		Talk Test
6	Very Light	If you are able to sing the alphabet, you are working at too easy of a pace
7		
8		
9	Light	If you can comfortably carry on a conversation, you are exercising at the right intensity
10		
11		
12	Somewhat hard	If you are gasping for breath and can only answer "yes" or "no" then you are exercising at too high of an intensity
13		
14		
15	Hard	
16		
17		
18	Very, Very Hard	
19		
20		

How do I do these stretches?

- Begin with a gentle warm-up walk.
- Stop.
- Breathe normally.
- Start your stretches.
- Use gentle, easy stretching; hold for 10 seconds.
- Don't bounce.
- Don't stretch to a point of pain.
- Repeat each stretch 5 to 10 times.

Who do I call with questions?

- If you have any questions about your exercise program, please call Fit for Life at (573) 882-4283.
- Call your doctor if you have any unusual symptoms or pain that gets worse.

Shoulder Shrug

Bring shoulders up toward ears. Hold and relax.



Neck Stretch

Tuck chin gently and rotate head. Hold and repeat to other side.



Back and Hamstring Stretch

Hold a railing or chair. Bend over. Slowly roll to a standing position.



Hug: Upper Back

Bring arms across chest, trying to reach as far around back as possible. Hold and relax.



Quadricep Stretch

With one hand on railing, place foot on ledge and bend supporting leg until a stretch is felt in front of thigh. Hold. Repeat with other leg.



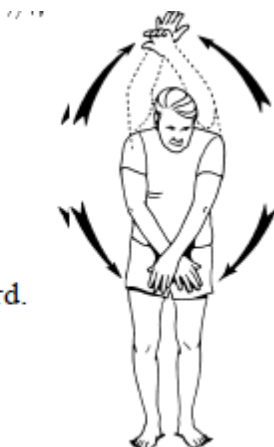
Calf Stretch

While holding a railing or chair, place one foot in front. Keeping both heels on the ground, bend front leg slightly. Hold and stretch. Repeat with other leg.



Feels Good Stretch

Inhale while sweeping arms up. Exhale while sweeping arms downward.



Hamstring Stretch

Place foot on stool. Lean forward and hold. Repeat with other leg.



Home strength training program:

Strength training will . . .

- ♥ *Improve Muscle Tone*
- ♥ *Increase Bone Density*
- ♥ *Improve Circulation*
- ♥ *Increase Metabolism*
- ♥ *Increase Your Work Tolerance*
- ♥ *Decrease Body Fat*
- ♥ *Increase Strength*
- ♥ *Increase Endurance*

Important things to remember

Stretching

Stretch before to . . .

- Prepare joints for movement
- Increase range of motion of muscles
- Help avoid injuries

Stretch afterwards to . . .

- Cool down muscles
- Relax
- Reduce soreness

Stretch until you feel slight tension. Hold position for 10-20 seconds then relax and repeat. Do not bounce or jerk.

Breathing

- Inhale during the beginning of the lift
- Momentarily hold breath at peak of lift
- Exhale gradually as you finish the lift. *Do not hold your breath throughout the entire lift.*

Repetitions

- Use as much weight or resistance as is comfortable for 8-10 repetitions. *Once you are able to perform more than 8-10 repetitions, increase weight or resistance.*
- Perform 1-3 sets of ten repetitions per exercise.

Maintain correct posture

- Shoulders back
- Tummy tucked
- Feet shoulder width apart

Order of lifts

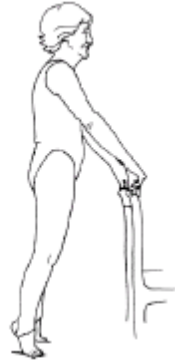
- Begin with large lower body muscles (quadriceps and hamstrings)
- Move to small upper body muscles (abdominals, deltoids, biceps and triceps)

Strength building exercises

Lower Body: Toe Rise

Standing, place feet apart. Hold arms out for balance or use chair. Rise up on toes, hold position for 5 seconds, then lower.

Repeat immediately for another 5 seconds to complete set.



Upper Body: Tricep Extensions

Standing or sitting, bring arm with weight up so elbow is near ear. Support that arm with other hand. Now slowly straighten arm, then bend it. Repeat using opposite arm.



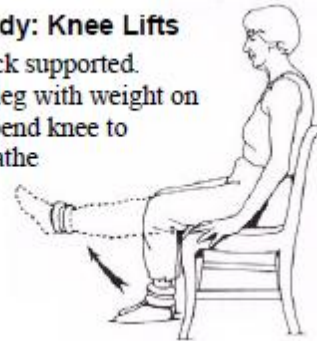
Crunch-Up

Lie on back with knees bent and fingertips touching ears. While breathing OUT, slowly try to lift shoulders about 4" off the floor. Keep small of back against floor. Breathe IN while returning to floor.



Lower Body: Knee Lifts

Sit with back supported. Straighten leg with weight on it. Slowly bend knee to return. Breathe normally.



Upper Body: Arm Curls

In a chair with no arms, place feet far apart. Rest arm holding weight on inner thigh, then raise forearm and slowly "curl" weight to shoulder. Relax arm to starting position. Repeat with opposite arm.



Torso Stabilizer

Lying on floor or hard mattress, bend knees. Breathing normally, tighten stomach muscles. Hold for count of 8.



Stretch band exercises

The Fit for Life staff have recommended that you use a stretch band exerciser. A stretch band uses resistance to help strengthen your muscles. This sheet explains how to use a stretch band and contains instructions for doing exercises.

Why do I need to do these exercises?

Strength is important in many activities of daily life, such as:

- carrying groceries, laundry, children, buckets and tools
- opening windows and unscrewing jar lids
- vacuuming and mopping

Walking will also become easier as your strength increases.

How do I use a stretch band?

- Use a bow or knot to tie the stretch band. Always make sure that the knot is secure before exercising.
- While exercising, try to maintain the natural width of the stretch band. This will keep the stretch band from digging into your hands or sliding up your legs.
- While using a stretch band, work your muscles throughout the full range of motion. Do not lock your joints.
- Control your movements while using the stretch band. Do not allow your arms or legs to move freely. Resist the stretch band.
- Breathe evenly while exercising.
- Do not hold your breath.

Consult your doctor first:

Remember, before starting any exercise program you should check with your doctor.

Shading shows muscles that are used in these lower body exercises.



Shading shows muscles that are used in these upper body exercises.



Chest Pull

- Sit in chair.
- Loop stretch band around each palm.
- Start with arms in front of body and elbows slightly bent.
- Stretch the band to its maximum.
- Return to start position and repeat.



Bicep Curl

- Sit in chair.
- Tie stretch band to chair at knee level.
- Loop stretch band around wrist.
- Start with palm upwards, arm bent at waist height.
- Pull stretch band to shoulder.
- Return to start position and repeat.
- Repeat with other arm when finished with repetitions.



Quadricep Extension

- Sit in chair.
- Tie stretch band around front leg of chair.
- Loop stretch band around ankle.
- Start with knee in bent position.
- Straighten leg.
- Return to start position and repeat.
- Repeat with other leg when finished with repetitions.



Tricep Extension

- Sit in chair.
- Tie stretch band to chair arm.
- Loop stretch band around wrist.
- Start with palm downwards, arm at waist height.
- Straighten arm, pressing stretch band downwards.
- Return to start position and repeat.
- Repeat with other arm when finished with repetitions.



Hamstring Curl

- Lie on stomach, with upper body propped on pillows or arms.
- Tie stretch band around both ankles.
- Start with both legs straight.
- Bend one leg at knee.
- Return to start position and repeat.
- Repeat with other leg when finished with repetitions.



When should I stop my activity?

- **Chest pain, pressure or tightness**
- **Unusual shortness of breath, or**
- **Dizziness.**
- **Call your doctor if you have any unusual symptoms or pain that gets worse.**

Keep your goals in mind

No one says that change is easy. To help yourself, keep in mind the health benefits of exercise. Exercise will:

- help you look and feel better
- improve your attitude
- give you more energy
- develop muscle tone
- improve circulation
- increase strength and endurance

Individualize your exercise program

You may already have a plan for how you are exercising daily. If not, then let's get started. Planning ahead is crucial to your success. Lifestyle is a personal matter. It represents who you are and what stage of life you are in. Make physical activity a habit. Choose activities that are fun for you. Vary the type of exercise you do throughout the week and year. Have an alternate plan to exercise indoors in the summer or winter. Try something new like a jazzercise, Tai Chi, yoga, kick boxing, dancing or water aerobics class. Hop on a treadmill, stationary bike, elliptical, rower or stepper. Remember that all your steps count. Clip on your pedometer and go outside and enjoy the good weather by taking a walk, playing golf or tennis, riding a bike, swimming, moving in the water, or digging in the garden. Be creative. Plan some special activity for the weekend that is different from a weekday. Try different ways to get your 60- 90 minutes of daily exercise. Challenge yourself to exercise every 1-2 hours, like a brisk 10 minute walk, climb 2 flights of stairs or do 10 leg and arm stretches.

Resources in your community:

Find out what resources are available close to your home that you can use to exercise. Enlist your family, friends or pet for support and encouragement.

Psychological Considerations after Weight Loss Surgery

By Nancy Halstenson, PhD

Relapse Prevention

I feel so out of control... Lindsey wrote to me this week. She is a 38-year-old bariatric surgery patient who underwent Roux-en-Y gastric bypass approximately eight months ago. She has received very little help since then and she is beginning to struggle with her eating behaviors.

"Yesterday I hit McDonald's on my way home from work. Fast food was always a big problem for me before my surgery but I thought I was over it. I ate things yesterday I never dreamed I'd go back to. I even felt sick... but I kept eating anyway. I feel so out of control... I don't know what to do. I know you work with other bariatric patients but I don't know if you can help me. How can you say 'No' to yourself when you have an addiction?"

Few morbidly obese people have ever felt "in control" where food and eating are concerned. In some ways bariatric surgery reinforces that out-of-control feeling because patients imagine their surgeon will wave a magic scalpel over them and POOF! everything will be fixed. If patients believe their surgeon is the one who's "in control" then maybe they don't have to be. It's a great fantasy. Later on, when surgeons fade into the background and hunger returns, fear and feelings about losing control threaten the success of many gastric bypass patients.

If Lindsey had been in a good, individual after-care program she would have begun developing relapse prevention strategies months before her hunger returned. But since such programs are few and far between there are thousands of Lindseys around the country struggling to master the tool their surgery provided. If you are one of them don't despair. You simply need to understand what's wrong, and what is needed to help you fix it.

Regaining Confidence

First and foremost, you need to build your confidence. In order to regain your confidence you will need to learn how to talk to yourself positively and understand and practice the basic principles of relapse prevention. Few morbidly obese people enjoy a natural supply of either but it's never too late to learn. Lindsey asked how a person can tell themselves "no" when they have an addiction. It's a great question for two reasons. First, it's one that bothers a great many people, and second, it highlights a big part of what causes difficulty in the first place-the way a person thinks about their problem. For example, the task of eating moderately seems so much harder and so much bigger when we think about eating as addiction. Addictions are commonly viewed as nearly impossible to cure. If you honestly believe you have an addiction and you keep telling yourself it's impossible to cure, you have taken a challenge that should have been a gentle uphill climb, and turned it into a treacherous mountain cliff impossible to

scale. I'm not even sure that compulsive eating is an addiction, but I won't debate that here. I do know that addictions are curable and that people can say "no" to compulsive eating- especially when they have the assistance of a smaller, less hungry gastric pouch to help them.

Simple Remedies

So much of the remedy for feeling out-of-control relies on what you think and what you tell yourself about your 'out-of-control' feelings. If you believe you simply have a small climb ahead of you but plenty of time and energy to "Just Do It!" like the commercial says, you will be able to do it. It seems too simple but it isn't. The big, bad out-of-control feelings make us imagine that the answer to controlling our urges has to be a big, bad answer, big enough, and bad enough to cover every slip-up we make forever. That's not true. You only need to cover one temptation at a time. Every time you "Just Say No" you gain confidence and feel more in-control. Eventually you can become quite expert at keeping yourself on track. The addiction or out-of-control feeling is ultimately cured by the combination of all those little successes rolled into each other. Confidence blossoms as patients grow more and more effective at saying "no" and more and more comfortable about being in-control of themselves.

Is it sometimes hard? Sure it's hard. Who said it was easy? Your surgeon never told you he or she was going to do all the work, did they? Keep in mind when it is hard that every time you "Just do It" it will get easier.

Relapse Prevention

The principles of relapse prevention aren't magic and you don't need to be a rocket scientist to learn them but you do need to practice them over a substantial period of time. It's a little like memorizing the lines to a speech. You have to say them over and over until they come out automatically. Remember that you didn't become morbidly obese overnight.

Relapse prevention is a dynamic process that moves in two opposing directions: a positive, success oriented direction and a negative, failure-oriented direction. In the negative direction little slip-ups tend to spur patient on to bigger slip-ups. Each new slip-up undermines a patient's resolve further. Bigger slip-ups gnaw at confidence even more and eventually lead to full-scale loss of control or relapse.

When the process is moving in a positive direction little slip-ups are prevented or avoided and confidence is generated. Increased confidence helps in avoiding other little or big slip-ups. Slip-ups that are avoided produce no lure toward bigger slip-ups. Avoiding slip-ups will fuel positive feelings, confidence, and self-control. The sustained absence of slip-ups will generate a feeling of mastery over compulsive behavior.

Remember that relapse prevention is a PROCESS. It happens over time and is the result of planning, hard work, trial and error. The pay off is amazing! Patients reap confidence and success- perfect antidotes to fear and failure.

Collecting New Coping Strategies

Another important thing happens as you "Just Do It"- you begin to collect coping strategies that allow you to impose ever better self-discipline; that's how you manage to tolerate your desires while choosing

another course. Patients need a big box full of tools/strategies as they head into long-term recovery from morbid obesity. It's important to gather the tools that will work best for each person. That's how Lindsey can say "no" despite her 'addiction' and that's how most patients build the confidence they need to make their surgical weight loss permanent.

Early in the "My Self Design" program (see www.myselfdesign.com) we work to uncover coping strategies that patients have already used successfully in the past. These strategies can be just as important as their new gastric pouch. Some strategies are interchangeable in a pinch, but most have a preferred use that is quite specific to the challenge, and to the person using it. One patient realized that writing down her feelings and tracking her daily food intake were essential pieces of structure she could use to keep on track, so we made such record keeping an integral part of her new routine.

Another patient felt that writing and tracking overwhelmed him and made him resistant to change, but a modest physical workout three or four times a week provided the perfect amount of structure to keep him on track and feel proud of his accomplishments.

It's vital to find the right tools/strategies for each person. One way we do that at "My Self Design" is an exercise that gives patients a rare chance to put all their old diets to good use. We comb through as many old weight loss efforts as patients can remember and try to determine what worked and why, and what didn't work and why not. This is priceless information patients shouldn't waste. They can use it to begin building a unique library of personal resources. The trials and errors of the past can pave the way for a much smoother future- a future where patients feel confident, and in control, at last. We always come away with a hefty list of do's and don'ts to guide us and we know in advance that they fit just right for that individual.

Source: Signore, Carol. "Psychologically Speaking" *Beyond Change: Information Regarding Obesity and Obesity surgery*. <http://www.beyondchange-obesity.com> 15 Feb 2005 <http://www.beyondchange-obesity.com/psySpeaking/outofcontrol.html>

YOUR CONTROL = FLUID INTAKE + PROTEIN INTAKE + EXERCISE

10 Rules to Ensure Long-Term Success

1. Eat three small meals per day.
2. Eat only good, solid food- protein first.
3. Eat slowly, sense fullness, and then stop.
4. No eating between meals- drink a protein shake instead.
5. Drink NO liquids with your meals.
6. Exercise at least thirty minutes each day
7. Consume your protein!
8. Drink plenty of fluids- MINIMUM of 64 ounces a day
9. Take your vitamins/supplements religiously.
10. Get the support that you need from friends/family/groups. Develop your own personal relapse plan.

My Personal Relapse Prevention Plan

What benefits do I enjoy from my current eating patterns?
1. _____
2. _____
3. _____
How can I achieve these same benefits in non-food related ways?
1. _____
2. _____
3. _____
What are the situations in which I am most likely to overeat/make poor food choices right now?
1. _____
2. _____
3. _____
These are 3 things that I will do to deal with these situations post-surgery.
1. _____
2. _____
3. _____
What emotions trigger me to eat?
1. _____
2. _____
3. _____
Here are 3 things I will do when I have those trigger feelings:
1. _____
2. _____
3. _____

Problem Solving

Step 1: Identify the problem. Be specific.	
Step 2: Brainstorm all possible solutions. No screening!	
Step 3: Evaluate the practicality and effectiveness of each solution.	
Step 4: Choose one or a combination of solutions.	
Step 5: Use solutions to guide your behavior.	
Step 6: Review the outcome and entire problem-solving method.	

Challenging Problem Thoughts

Step 1: Identify the underlying problem thought.	
Step 2: List objective evidence to support.	Step 3: List objective evidence to dispute.
Step 4: Develop a reasoned conclusion based on lists of evidence.	
Step 5: Determine a course of action based on your logical conclusion.	

Daily Food Record

Day _____ Date _____

Time	Food Intake	Location			Situation

Guidelines for Preconception & Prenatal Care after Weight Loss Surgery

Background

Morbid obesity represents a serious medical condition that may cause or contribute to additional disorders such as diabetes, hypertension, and hypercholesterolemia, among others. Weight loss surgery may be part of an overall weight control program in women of reproductive age. Pre-existing medical conditions or physiologic changes following surgery may have clinically significant consequences for women contemplating pregnancy after gastric bypass.

Purpose

These guidelines are intended to foster a team approach to the weight loss surgery patient contemplating pregnancy or already pregnant. Preconception and prenatal concerns are outlined, including recommendations for care.

Return of Ovulation

Due to rapid weight loss immediately following surgery, women who were previously infertile or did not ovulate may quickly regain ovulatory function and fertility.

Recommendations:

1. Reliable contraception should be employed for at least 18 months following surgery, the period of maximal weight loss.
2. The patient should refer to her primary care provider or obstetrician/gynecologist peri-operatively for this care.

Preconception Care for Pre-Existing Conditions

Pre-existing medical conditions such as hypertension and diabetes incur maternal and fetal risk both directly and indirectly through teratogenicity of medications used in their treatment.

Recommendations:

1. Preconception perinatal consultation.
2. Review of medical records and current medications.
3. Review maternal-fetal issues regarding pregnancy after bariatric surgery.
4. Establish pre- and post-conception care plan.

Nutritional Deficiencies Following Surgery

Folic acid, B₁₂ and iron deficiency anemia are not uncommon following surgery. Folic acid deficiency may be associated with an increased risk of fetal open neural tube defects (ONTD's). Children of women following bariatric surgery may also experience an increased frequency of fetal ONTD's.

Recommendations:

1. Folic acid supplements of at least 400 mcg/day orally one month prior to and twelve weeks after conception. Consider increasing this dose to 4 mg orally daily.
2. Iron and B₁₂ supplements as indicated based on red blood cell indices, serum B₁₂, iron, or ferritin levels. Prenatal vitamins usually include 30-90 mg elemental iron and 0.8-1.0 mg folic acid. Additional supplements should take the form of the specific nutrient requiring supplementation. Multiple vitamin pills incur the risk of excessive intake of other nutrients. Consultation with Missouri Bariatric Services dietitian may be of assistance.
3. Vitamin B₁₂ can be administered 500 mcg orally daily or 1000 mcg injection monthly.
4. Avoid more than twice the recommended daily allowance of fat-soluble vitamins A, D, E, and K. Vitamin A in doses of $\geq 5,000$ IU/day may lead to birth defects.
5. If the patient cannot meet the caloric needs of pregnancy by oral intake, IV nutrition may be used to ensure a healthy infant.

Potential Increased Risk for Fetal Open Neural Tube Defects

Recommendations

1. Folic acid supplementation (see above).
2. Maternal serum alpha-fetoprotein screen 15-21 weeks.
3. Targeted fetal ultrasound 18-20 weeks.

Poor Fetal Growth vs. Excessive Fetal Growth

Conception during the period of maximal weight loss may increase the risk of intrauterine growth restriction. Maternal nutritional deficiencies and anemia may add to this risk. On the other hand, obesity in pregnancy can lead to increased frequency of macrosomia (or carrying a large baby) and cesarean delivery.

Recommendations:

1. Monthly growth ultrasound beginning at 24 weeks gestation.
2. Preconception and ongoing nutritional evaluation by Missouri Bariatric Services dietitian.
3. Correction of nutritional deficiencies.

Maternal Dumping Syndrome

High sugar content can cause cramps, diarrhea, nausea, light-headedness, and palpitations.

Recommendations:

1. Avoid one and three hour glucose challenge testing.
2. Instead, perform one week of checking fasting and two-hours after eating finger sticks. Target ranges of ≤ 90 mg/dL for fasting and ≤ 120 mg/dL for after eating, and manage accordingly.

Labor and Delivery

Obesity is associated with an increased risk of cesarean delivery and postoperative morbidity.

Recommendations:

1. Timing and mode of delivery is based on obstetrical indications.
2. Consider antibiotic prophylaxis at cesarean, deep venous thrombosis prophylaxis perioperatively for obese patients.

Breastfeeding

Lactation is compatible with gastric bypass surgery.

Recommendations:

- Notify pediatrician of maternal surgical history due to potential risk of neonatal megaloblastic (or large cell) anemia.

Postpartum Weight Loss

Weight loss after delivery follows the same pattern as in women without a history of bariatric surgery.