Obesity is a growing health problem in the United States. As the incidence of obesity has increased, so have the health problems associated with it. These health problems place financial strain on the health-care system. When traditional methods such as diet and exercise are unsuccessful, some obese individuals may turn to bariatric (weight loss) surgery. Bariatric surgery is experiencing explosive growth fueled by this increasing obesity in the United States. Recent studies demonstrate that bariatric surgery offers health benefits to many morbidly obese individuals, forcing increasing numbers of plan sponsors to consider covering it as part of the group medical plan. However, plan sponsors covering bariatric surgery should consider limiting their coverage to include only proven centers of excellence, as explained in this article.

**OBESITY CHALLENGE TO CORPORATE AMERICA**

Obesity is measured using Body Mass Index (BMI), a number calculated utilizing a person’s height and weight. A BMI of 25 to 29.9 is considered overweight while a BMI of 30 to 39.9 is considered obese (Centers for Disease Control 2009).
A BMI of 30 to 39.9 is a weight of 203-270 pounds for a person of 5 feet 9 inches. A BMI over 40 is defined as morbidly obese (also known as class 3 obesity). This is a weight of 271 pounds or more for a person of 5 feet 9 inches (HealthGrades 2009). Approximately 30 percent of U.S. adults are obese and the prevalence of obesity has increased rapidly in recent decades. Increasing numbers of children are overweight, which contributes to the high projections of obese adults in the future (National Business Group on Health 2009). If current patterns continue, projections indicate 43 percent of U.S. adults will be obese by 2018 (Thorpe 2009).

Obesity poses significant challenges to plan sponsors. A recent study from a prominent obesity researcher found that 30 percent of medical cost increases during the past 15 years is due to obesity (Thorpe, et al. 2007). The average obese individual costs $1,429 per year in additional medical expenses (Finkelstein 2009). This figure does not include the value of substantial lost worker productivity. Including lost worker productivity, obesity costs plan sponsors $45 billion annually (National Business Group on Health 2009).

Obesity leads to 30 percent to 50 percent more chronic medical problems than heavy smoking or drinking (National Business Group on Health 2009). It contributes to coronary artery disease, cancer (breast, cervix, colon, esophagus, kidney, pancreas, prostate and uterus), diabetes, hypertension, pancreatitis, gall bladder problems, gout, infertility, liver problems and stroke. Obesity alone causes 100,000 cancers each year in the United States (American Institute for Cancer Research Policy and Action for Cancer Prevention 2009). It saps worker productivity. Finkelstein and Brown found that, on average, surgery-eligible obese employees missed 5.1 more work days than normal-weight employees (2005). Obesity cannot be ignored if plan sponsors are to manage medical costs.

**BARIATRIC SURGERY**

The world of bariatric surgery has changed remarkably over the past decade. In 2009, there were more than 250,000 bariatric surgeries in the United States — more than a 10-fold increase since 1998 (The Leapfrog Group 2009). Many plan sponsors who decided not to cover bariatric surgery have reversed course due to new evidence of better outcomes, health-status improvement and member demand. The risk of bariatric surgery complications has significantly dropped, especially when performed by experienced surgeons in hospitals that do high volume.

The National Institutes of Health’s guideline for bariatric surgery requires a BMI of at least 40 or a BMI of at least 35, together with weight-related problems such as diabetes and heart disease (2009). Many bariatric surgeons and health plans follow the NIH guidance. Today, about 5 percent of Americans meet the NIH criteria of a BMI over 40 (National Business Group on Health 2008). It’s intuitive that we plan toward the NIH criteria for bariatric surgery being liberalized given the recent positive outcomes from bariatric surgery.
and new evidence that bariatric surgery will aid diabetics with BMIs exceeding 30 who have difficulty controlling the condition.

TYPES OF BARIATRIC SURGERY

Gastric bypass is the most common type of bariatric surgery, with Roux-en-Y being the most commonly performed gastric bypass surgery. Roux-en-Y gastric bypass (RYGBP) reduces stomach size, so patients feel full after eating small amounts of food. The RYGBP creates a small stomach pouch which bypasses part of the small intestine called the duodenum and attaches to the middle of the small intestine. Bypassing the duodenum causes fewer calories to be absorbed, but also greatly decreases the amount of iron and calcium absorbed so dietary supplements must be taken after surgery for the patient’s lifetime, (The American Society for Metabolic and Bariatric Surgery 2005, 2008). On average, patients shed 63 percent of their excess weight with gastric bypass surgery during the first 12 months (National Business Group on Health 2008). Surgeons can perform Roux-en-Y gastric bypass (RYGBP) on an open or laparoscopic basis. Laparoscopy allows physicians to operate using small incisions causing less trauma to the patient during surgery and a shorter hospital stay. While laparoscopic gastric bypass surgery has become more common than the open surgery, not all bariatric surgery patients are candidates for laparoscopic surgery, thus surgeons still perform open gastric bypass surgeries (National Business Group on Health 2008).

Laparoscopic adjustable gastric banding (LAGB) is the second most popular type of bariatric surgery. In this surgery, a silicone band encircles the upper portion of the stomach reducing stomach size. Similar to gastric bypass, patients eat less because they feel full more quickly due to their reduced stomach size. The band is attached to a saline-filled balloon that can be adjusted to further reduce or increase the size of the stomach (The American Society of Metabolic and Bariatric Surgery 2008). The number of LAGB procedures has grown in recent years because it is less complex than RYGBP, enables quicker recovery and is easier to reverse. On average, patients lose 40 percent of their excess weight at 12 months with gastric banding (National Business Group on Health 2009).

Two less common bariatric surgeries are Vertical Sleeve Gastrectomy and Biliopancreatic Diversion with duodenal switch. Vertical Sleeve Gastrectomy removes a portion of the stomach thus reducing stomach size and decreasing the amount of food a patient can consume. In some patients, a bypass surgery follows the sleeve gastrectomy procedure to enhance weight loss (National Business Group on Health 2008). A study of vertical sleeve gastrectomy as an initial weight loss procedure found that patients who underwent vertical sleeve gastrectomy lost 46 percent of their excess weight at 12 months (Cottam 2006).

Biliopancreatic diversion with duodenal switch removes a portion of the stomach. This smaller stomach pouch bypasses the duodenum and is then connected to the
small intestine. Reducing stomach size and bypassing the duodenum decreases the number of calories absorbed. On average, patients lose 63 percent to 75 percent of their excess weight within 12 months of surgery (National Business Group on Health 2008).

Table 1 describes the advantages and disadvantages of these four bariatric surgery procedures:

THE ECONOMIC AND HEALTH BENEFITS OF BARIATRIC SURGERY
On average, medical costs for the morbidly obese population are 81 percent higher than the non-obese population. Plan sponsors and health plans must weigh the economic and health benefits of bariatric surgery when making the decision to provide coverage. Pierre-Yves Cremieux and colleagues reported in the American Journal of Managed Care that open surgery costs about $26,000 and laparoscopic surgery costs about $17,000. Cremieux’s study found that third-party payers recover these costs within four years for open surgery and within two years for laparoscopic surgery. This does not take into account quality-of-life and length-of-life benefits. Cremieux states that these relatively short periods in which third-party

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Advantages</th>
<th>Disadvantages</th>
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<tbody>
<tr>
<td>Roux-en-Y Gastric Bypass (RYGBP)</td>
<td>• More sustainable weight loss</td>
<td>• Nutritional deficiencies</td>
</tr>
<tr>
<td></td>
<td>• More clinical experience</td>
<td>• Dumping syndrome (involuntary vomiting or defecation)</td>
</tr>
<tr>
<td></td>
<td>• Non-adjustable and difficult to reverse</td>
<td>• Non-adjustable and difficult to reverse</td>
</tr>
<tr>
<td>Laparoscopic Adjustable Gastric Banding (LAGB)</td>
<td>• Least invasive procedure</td>
<td>• Risk of band slippage or band erosion into stomach</td>
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<tr>
<td></td>
<td>• Shorter inpatient hospital stay</td>
<td>• Additional surgeries necessary if band displacement occurs</td>
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<tr>
<td></td>
<td>• Adjustable and reversible</td>
<td>• Less initial weight loss than other procedures</td>
</tr>
<tr>
<td></td>
<td>• Lower risk of nutritional deficiencies than with gastric bypass</td>
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</tr>
<tr>
<td></td>
<td>• No dumping syndrome</td>
<td></td>
</tr>
<tr>
<td>Vertical Sleeve Gastrectomy</td>
<td>• No device implanted inside the body</td>
<td>• Slightly higher surgical risk than gastric banding</td>
</tr>
<tr>
<td></td>
<td>• Lower surgical risk than gastric bypass</td>
<td>• Non-reversible</td>
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<td></td>
<td>• More rapid weight loss than gastric banding</td>
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<td></td>
<td>• Fewer food intolerances</td>
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</tr>
<tr>
<td>Biliopancreatic Diversion with Duodenal Switch</td>
<td>• Greater food intake allowed</td>
<td>• Nutritional deficiencies</td>
</tr>
<tr>
<td></td>
<td>• More rapid weight loss than gastric banding</td>
<td>• Dumping syndrome</td>
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<td></td>
<td>• Fewer food intolerances</td>
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Sources: National Business Group on Health, American Society of Metabolic and Bariatric Surgery and University of California San Diego Medical Center.
payers receive return on investment (ROI) is attributable to increasing surgeon experience and improving technology. He offers that the increasing prevalence of centers of excellence may also be contributing to the ROI periods, although his study did not research these effects (Cremieux, et al 2008).

While ROI and decreasing complication rates of bariatric surgery are important issues, plan sponsors should also consider the surgery’s positive health benefits. Eric Finkelstein argues that plan sponsors should not focus solely on ROI when deciding to cover the surgery. Rather, plan sponsors should evaluate whether bariatric surgery is a cost-effective treatment for their employee population. Finkelstein argues that, since ROI analysis is not used to evaluate coverage of conditions such as diabetes or heart disease, it should not dominate the decision to cover bariatric surgery. Obesity is a health problem that must be taken seriously and treated appropriately (Finkelstein 2008).

Studies have found bariatric surgery to have more positive health impacts on many obesity-related diseases than traditional weight-loss tactics. Lars Sjostrom and colleagues followed two groups of obese populations for 10 years; the surgical group received bariatric surgery and the control group did not. As reported in the *New England Journal of Medicine*, the surgical cohort experienced greater weight loss and physical activity while decreasing their food intake, as expressed in kilocalories per day. Obese individuals with diabetes, high blood pressure, high levels of uric acid and other obesity-related conditions who received bariatric surgery showed greater improvement in these co-morbidities at two and 10 years than those who did not receive surgery (2004). Plan sponsors should consider these improvements in lifestyle and overall health due to bariatric surgery when considering whether they should cover the procedure. Such improvements should lead to higher worker productivity.

**BARIATRIC SURGERY AND DIABETES**

In January 2009, the American Diabetes Association for the first time added bariatric surgery to its recommended treatment options for Type 2 patients who meet NIH criteria (American Diabetes Association 2009). This endorsement will undoubtedly spur demand. Bariatric surgery has been shown to be the best treatment for some obese individuals with Type 2 diabetes.

In December 2009, the Diabetes Surgery Summit Consensus Conference made new recommendations regarding the use of bariatric surgery in the treatment of Type 2 diabetes. One significant recommendation is that bariatric surgery be used as a secondary intervention for Type 2 diabetic individuals with a BMI of 30-35 who have failed to control diabetes using conventional methods (Barclay 2009).

Surgery may succeed where pills, insulin shots and glucose monitoring fail. A study published in *The Journal of the American Medical Association* found that Type 2 diabetics who underwent laparoscopic adjustable gastric banding successfully controlled their diabetes at a rate five times greater than those
who did not at the two-year follow-up point (Dixon, et al 2008). Another study reported that 86.6 percent of Type 2 diabetics receiving bariatric surgery saw improvements or complete remission of their diabetes (American Society for Metabolic and Bariatric Surgery 2009). Bariatric surgery performed by experienced surgeons in high-quality hospitals — as measured by low rates of mortality, complications and re-admissions — can extend the life expectancy of some diabetics and others who suffer morbid obesity. Hospitals that consistently demonstrate high-quality outcomes in bariatric procedures are commonly called centers of excellence.

If the BMI requirement for bariatric surgery in Type 2 diabetics is lowered, demand for the surgery could explode, making it even more crucial for plan sponsors to carefully consider how they might improve the odds of a non-complicated, cost-effective procedure.

DISPARITY IN QUALITY OF SERVICE AT VARIOUS INSTITUTIONS

Bariatric surgery is no longer an uncertain procedure with expected complications. Many institutions and surgeons boast mortality rates of less than .5 percent. The Agency for Healthcare Research and Quality study found that the average rate of post-surgical complications in patients declined 21 percent between 2002 and 2006. Hospital readmissions from complications have also dropped (2009).

HealthGrades released The Fourth Annual HealthGrades Bariatric Surgery Trends in American Hospitals Study in July 2009. This study of 153,355 bariatric surgeries in 19 states found large disparities in cost and quality for bariatric surgery. The researchers conducted statistical tests and used a five-star rating system to rank hospitals. A five-star rating means the institution was statistically above what was predicted, a three-star rating means the institution performed as expected and did not have statistically significant results and a one-star rating means the institution was statistically below what was predicted. The HealthGrades report links five-star hospitals to better outcomes. Patients treated at five-star hospitals were 67 percent less likely to experience one or more surgical in-hospital complication than patients treated at one-star hospitals and 44 percent less likely than patients at three-star hospitals. The report links high-volume institutions to better outcomes. On average, five-star hospitals performed 540 bariatric surgeries over three years while one-star hospitals performed 292 bariatric surgeries over three years. Hospitals with more than 375 cases throughout the three-year study had 8 percent fewer complications than expected while hospitals with less than 75 cases over the three years had 35 percent more complications than expected (HealthGrades 2009).

Lower complication rates are largely due to a combination of three factors — increased use of laparoscopy (allowing physicians to operate through small incisions); increased use of banding procedures without gastric bypass, such as lap band; and increased surgeon experience.
Despite clinical outcomes improvement, bariatric surgery is not without risk. Common risks include infection, ulcers, dumping (involuntary vomiting or defecation), hemorrhage, wound reopening, blood clots, heart attacks and hernias.

Experience and proven outcomes are essential components for a successful surgical program. While one of the most important determinants of high-quality bariatric surgery outcomes is experience, there exists a huge range of experience between hospitals and surgeons. With many new start-up programs in place, it is not uncommon to find hospitals that have hosted thousands of bariatric surgeries located near hospitals with a track record of fewer than 50 or 100 procedures. Similarly, experienced surgeons may have done hundreds of procedures compared to others who have performed only 5 to 10. It is crucial to evaluate available outcomes data when selecting institutions for bariatric surgery.

Along with differences in outcomes by hospital, cost varies by hospital as well. Our experience reveals that costs typically range from $16,000 to $30,000 with variation depending upon the hospital and surgeon. It is interesting to note that the HealthGrades study also found that more expensive institutions tended to have higher complication rates (2009). Both cost and quality of service should be taken into consideration.

CENTERS OF EXCELLENCE

Increasing demand for bariatric surgery has created a rapid expansion in supply. Many hospitals and surgeons have begun to offer this lucrative service. There is a learning curve for this complicated surgery and new programs cannot be expected to have the same quality outcomes as mature programs. Because there can be large disparities in quality and cost among hospitals, it is imperative that payers be very selective when choosing which institutions and surgeons are covered for bariatric surgery under their plans. One avoided bariatric surgery with complications will improve the patient's quality of life and save significant money. It is important to keep in mind that the largest financial risk with bariatric surgery is complications, which can be 10 times or more costly as uneventful surgery.

Two organizations, the American College of Surgeons (ACS) and the American Society for Metabolic and Bariatric Surgery (ASMBS), designate bariatric surgery centers of excellence. While they have many criteria for bariatric surgery centers of excellence, the following are some of the most important criteria necessary to be certified by the ASMBS:

- The institution must perform at least 125 bariatric surgeries per year.
- Bariatric surgeons must perform at least 50 bariatric surgeries per year.
- Bariatric surgeons must have performed at least 125 bariatric surgeries in the past.
- The institution must have a multidisciplinary team consisting of experienced surgeons, nurses and medical consultants along with the ability to report long-term outcomes.
WHAT PLAN SPONSORS CAN DO

Self-funded plan sponsors have the option of dictating that a limited list of institutions and surgeons be used in order to obtain coverage for bariatric surgery. In other words, plan sponsors can – and should - require bariatric surgery to be performed at proven centers of excellence. Plan sponsors have the option of creating their own center of excellence at which they will cover bariatric surgery. Although the HealthGrades study found that ASMBS Centers of Excellence were more likely to receive five-star ratings, only 29.5 percent of the 190 ASMBS Centers of Excellence studied received five-star ratings.

While studies have found volume to be an important factor in determining outcomes, volume should not be the only factor considered when evaluating institutions. The entire range of services a hospital offers should be assessed. A bariatric surgery center of excellence is not only a high-volume institution, but it also provides all of the ancillary services required to care for obese patients. Obesity is a complicated medical condition and morbidly obese individuals have special needs. Morbid obesity places stress on the heart and lungs. Obese patients are usually high-risk patients who are susceptible to serious complications during surgery. Institutions need experienced bariatric surgical teams and post-surgery support staff to care for the complex needs of morbidly obese patients. In addition to skilled surgeons, bariatric surgery programs need a comprehensive team of clinical professionals who play a prominent role in pre- and post-surgery activities. In short, plan sponsors advance their own economic interests while achieving higher patient quality of life by insisting on bariatric surgery centers of excellence.

As demand for bariatric surgery surges, it is an ideal time to explore key foundations to a successful benefit. As a benefits or HR professional, you should consider the following questions:

- If bariatric surgery is not covered, are you aware of new evidence which demonstrates its value when performed in high-volume institutions by experienced surgeons?
- Do you know that bariatric surgery can make the difference between life and premature death for some morbidly obese individuals?
- If covered, does the plan design require use of a center of excellence for bariatric surgery?
- Has a comprehensive study been performed recently of the surgical outcomes and costs of competing bariatric surgery programs in the region?

At a minimum, every plan sponsor offering bariatric surgery coverage should limit coverage to procedures performed at a proven bariatric surgery center of excellence. There is substantial risk of mortality, complications, lost productivity and diminished quality of life if patients select inexperienced hospitals and surgeons who join this lucrative line of business.
CONCLUSION

Bariatric surgery is growing in popularity and the expansion of clinical indications will lead to higher demand. The financial ROI for bariatric surgery creates a compelling business case for plan sponsors who have never covered the surgery. New evidence of quality and cost disparities across hospitals and surgeons argue for restricting coverage to centers of excellence selected only after a multiyear review of surgery volume, complications, readmissions, mortality and costs.

Plan sponsors may be motivated to contract directly with select, proven bariatric surgery programs using a pay-for-performance approach that shifts financial risk for complications or poor outcomes to the hospitals and surgeons. Clinical outcomes and cost transparency should rule. This is one medical benefit where less choice is better – limit coverage to the highest performing programs and spare members the anguish of uninformed selection of unproven hospitals and surgeons.

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