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Bariatric Surgery Holds Promise for Patients and for Payors

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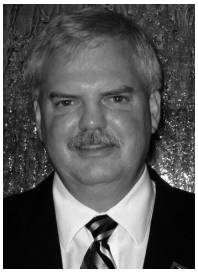

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Introduction

Obesity's impact on health care spending in the United States will soon exceed the impact of tobacco use. The prevalence of morbid obesity, which generates even higher costs, is growing faster than obesity itself. For many morbidly obese patients, diet, exercise and behavior modification alone are not sufficient to achieve and maintain a healthy weight.

Clinical evidence suggest that bariatric (weight loss) surgery can be effective in addressing morbid obesity and reducing future health care costs. However, such procedures are currently excluded from many health care plans.

In this paper we review new evidence that suggests that because bariatric surgery reduces future health care costs in many instances, the cost of bariatric surgery can be viewed as an investment with high likelihood of financial return over a relatively short time frame.

It may be time to reconsider the value of including bariatric surgery as a covered health plan benefit.

The Toll of Obesity in America

The National Institutes of Health estimate approximately one-third of the U.S. adult population is now obese, with a body mass index (BMI) greater than 30, measured as weight in kilograms divided by height in meters squared. From 2000 to 2005 alone, the obesity rate increased by 24 percent. Growth in morbid obesity (BMI>40) has been even more alarming, increasing by 50 percent in that time.[1]

Health care costs for the morbidly obese are 81 percent above costs for those who are not obese and 47 percent above costs for the non-morbidly obese population,[2,3] largely because serious comorbidities often accompany morbid obesity, including type 2 diabetes mellitus, osteoarthritis and gallbladder disease. [4,5]

By 2006, obesity accounted for nearly 10 percent of all medical spending in the United States and nearly 13 percent of total medical spending by private payors, and was rising by more than 9 percent annually.[6]

The Rise of Bariatric Surgery as a Solution

As early as 1998, the National Heart, Lung and Blood Institute recommended bariatric surgery as a treatment option not only for morbidly obese patients but also for select at-risk patients with a lower BMI of 35 or more.[7]

From 1997 to 2008, as surgical techniques advanced, clinical studies in peer-reviewed journals documented bariatric surgery's enhanced safety and efficacy.[8, 9, 10]

1 Sturm, Roland. 2007. Increases in Morbid Obesity in the USA: 2000–2005. *Public Health* 121(7):492–496.

2 Flegal K.M., Carroll M.D. and Oden, C.L. 2002. Prevalence and Trends in Obesity among U.S. Adults, 1999–2000. *Journal of the American Medical Association* 288(14):1723–1727.

3 Arterburn, D.E., Maciejewski, M.L. and Tsevat, J. 2005. Impact of Morbid Obesity on Medical Expenditures in Adults. *International Journal of Obesity* (Lond) 29(3):334–339.

4 National Heart, Lung and Blood Institute. 2000. *The Practical Guide: Identification, Evaluation and Treatment of Overweight and Obesity in Adults.* Online at http://www.nhlbi.nih.gov/guidelines/obesity/prctgd_c.pdf. Accessed June 12, 2007.

5 Hensrud, D.D. and Klein, S. 2006. Extreme Obesity: A New Medical Crisis in the United States. *Mayo Clinical Proceedings* 81(10)(suppl):S5–S10.

6 Finkelstein, Eric A., Trogdon, Justin G., Cohen, Joel W. and Dietz, William. 2009. Annual Medical Spending Attributable to Obesity: Payer-And Service-Specific Estimates. *Health Affairs* 28(5):w822–w831 (July 27). Online at http://content.healthaffairs.org/cgi/content/abstract/28/5/w822. Accessed Nov. 30, 2009.

7 National Institutes of Health. 1998. *Clinical Guidelines on the Identification, Evaluation and Treatment of Overweight and Obesity in Adults.* National Institutes of Health Publication #98-4083.

8 Encinosa, William E., Bernard, Didem M., Du, Dongyi and Steiner, Claudia A.. 2009. Recent Improvements in Bariatric Surgery Outcomes. *Medical Care* 47:531–535.

9 Flum, David. 2009. Perioperative Safety in the Longitudinal Assessment of Bariatric Surgery. *New England Journal of Medicine*.361:445–454.

10 Sjöström, Lars, et al. 2007. Effects of Bariatric Surgery on Mortality in Swedish Obese Subjects. *New England Journal of Medicine* 357:741–752.

The American Society for Metabolic and Bariatric Surgery estimates that the number of bariatric procedures rose from just over 20,000 to 220,000 [11, 12] during this time, some covered by medical insurance and some not.

To Cover or Not to Cover

Very little, if any, actuarial analysis has been published on the economic impact of bariatric surgery.

In practice, health plan coverage for bariatric surgery diverges widely. Blue Cross and Blue Shield of Florida excluded coverage in 2004. Starting in 2006, Medicare recipients could obtain coverage for bariatric surgery procedures that met National Institutes of Health criteria. Regional commercial insurers such as Kaiser Permanente and TRICARE routinely offer coverage in their master plan contracts. And while policies of national insurers including Aetna, CIGNA, Humana and United Healthcare typically exclude bariatric surgery in standard coverage specifications, customers may purchase coverage through a policy endorsement or rider.

Economic Analysis of Bariatric Surgery

In 2008, Crémieux et al. published an economic analysis that quantifies the economic impact of bariatric surgery on direct medical costs, calculating the return on investment associated with its use in morbidly obese patients.[13]

The analysis is uniquely designed, using actual patient-level cost data for 3,651 obese patients who underwent a bariatric surgery procedure such as gastric restriction with bypass (73 percent), gastric restriction without bypass (11 percent) or a laparoscopic procedure with (12 percent) or without bypass (4 percent).

The study drew upon a privately insured administrative claims database involving 31 large employers and 5,472,542 lives covered under employment-based health plans from 1999 through 2005. The dataset included 36,384 covered lives with at least one morbid obesity diagnosis. Thus, the analysis is based on a sufficiently large employer-based dataset to offer statistical credibility.

The study matched each bariatric surgery patient with a control subject who was morbidly obese and did not undergo a bariatric procedure during the period of interest. The pairs were observed for six months prior to surgery and afterwards for an average of 17 months for the bariatric group and 18 months for the control group.

The Crémieux et al. study found that payors recover their initial investment in bariatric surgery in as little as two to four years, depending on the surgical approach used. Additionally, the cost savings for bariatric surgery patients relative to control patients continue after the initial investment is recovered.

Using this dataset, we compared the annual cost-per-patient for morbidly obese patients versus the average patient. As shown in Chart 1, the average health care cost for a morbidly obese patient was higher than for the average patient, and was generally increasing more quickly, except in the last year of the study.

The Crémieux et al. dataset as illustrated here provides a benchmark for health plans to assess their own experience with morbidly obese populations.

The Crémieux et al. data also revealed that a significant number of morbidly obese patients receive care that seems to address vague symptoms rather than underlying causes. Table 1 illustrates the percentage of morbidly obese patients that received care in

Very little, if any, actuarial analysis has been published on the economic impact of bariatric surgery.

[11] García-Zakzuk, Boris. 2005. Medical and Rx Technologies—What's in the Pipeline? *Society of Actuaries Record* 31(2).

[12] The American Society for Metabolic and Bariatric Surgery. 2009. Fact Sheet: Metabolic and Bariatric Surgery. Online at http://www.asmbs.org/Newsite07/media/asmbs_fs_surgery.pdf. Accessed Nov. 16, 2009.

[13] Crémieux, P.Y., Buchwald, H., Shikora, S.A., Ghosh, A., Yang, H.E. and Buessing, M. 2008. A Study on the Economic Impact of Bariatric Surgery. *The American Journal of Managed Care* 14(9):589–596.

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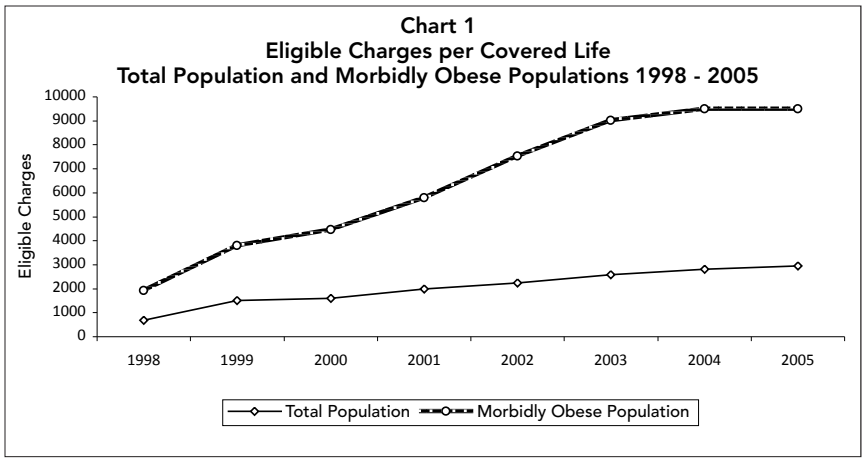

2005 for selected diagnoses included in the *Signs, Symptoms and Ill-Defined Conditions* diagnostic group.

Table 1 suggests that claims for ill-defined conditions are quite common among the morbidly obese. Services to address these diagnoses are often costly but provide limited value to the patient. Bariatric surgery may be an opportunity to redirect these claim dollars to more effective care for these patients.

Table 1
Selected Signs, Symptoms and Ill-Defined Conditions in 2005

ICD-9 Diagnosis Codes and Definitions	Percent of Morbidly Obese Patients
786.50 – Chest pain NOS	33.0%
789.00 – Abdominal Pain, Unspecified Site	30.9%
780.79 – Malaise and Fatigue NEC	24.8%
786.05 – Shortness of Breath	21.8%
786.09 – Other Respiratory Issues	20.1%

Note: ICD-9 Codes per the Centers for Disease Control and Prevention International Classification of Diseases, 9th Revision

Is the Study Reliable?

Validating the cost effectiveness of a surgical procedure is challenging. The Crémieux et al. research methodology and design differ from prior studies of bariatric surgery in several ways.

- First, the study determined cost and savings by comparing bariatric surgery patients to control group patients who did not have the surgery. Surgery patients were matched to non-surgery (control group) patients on the basis of the relevant data (demographics, diagnoses, pre-surgery cost, etc.).

- Second, the study used robust statistical analysis to estimate expected cost savings, and presented statistically valid confidence intervals to quantify the uncertainty associated with the return on investment estimate.

- Third, health care costs were normalized to one standard date to remove the possible distortions caused by medical inflation. This enabled the economists to study the impact of surgery unencumbered by the influence of trend. It also results in valid return on investment estimates and confidence intervals in the context of increasing health care costs.

- Finally, the Crémieux et al. analysis included all medical costs before, during and after bariatric surgery. There was no attempt to segment non-surgery-related claims from the study, so the impact of comorbid conditions and surgical complications was explicitly included.

By considering all costs, including the cost of complications, the Crémieux et al. study showed that savings did emerge, that savings were not eliminated by the cost of complications, and that even with complications, the average return on investment time frame was relatively short.

The authors note that viewing bariatric surgery as an investment—with high likelihood of financial return over a relatively short time—suggests that

health plans that cover this surgery could experience lower claim costs over a reasonably short time frame. In addition to setting frequency and per unit cost assumptions, financial models should include implicit or explicit savings assumptions consistent with the return on investment horizon demonstrated in the Crémieux et al. study.

Conclusion

Obesity exacts its costs: from employers, from insurers and from individuals who pay the price in daily suffering from chronic disease. Our review of economists' findings suggests that bariatric surgery promises a meaningful solution both for health plans and for their members.

The authors recommend further review of the medical literature to help inform benefit design. While Crémieux et al. did not specifically investigate the impact of bariatric surgery Centers of Excellence or participation in an appropriate pre- and post-surgery care management program, the authors suggest that these may be important considerations to include in effective coverage for bariatric surgery. ■