

Five Minutes with...

The Economic Impact of Bariatric Surgery Study Investigators

In a recent issue of the *American Journal of Managed Care (AJMC)*, a study was published that finds for the first time that bariatric surgery is cost effective and that insurers are able to recoup the procedure's costs within two years—even after accounting for complications. The study finds that healthcare costs for morbidly obese patients who had the surgery were \$900 lower per month than their counterparts who did not have surgery. Additionally, the study found that the complete cost of surgery, including complications, was fully recovered after 25 months. These findings are sure to offer hope to the two-thirds of overweight Americans and the more than 15 million morbidly obese Americans, and should bode well for improvement in the manner in which insurers and healthcare professionals approach bariatric surgery. If insurers fully recover the costs of laparoscopic bariatric surgery in about two years and in about four years for traditional, open bariatric surgery, and reductions in costs associated with prescription drugs, physician visits, and hospital services offset the average costs of both laparoscopic surgery and traditional, open bariatric surgery, what more do they need to know? Read on to see. Speaking with the lead economist and author of the report, Dr. Pierre Crémieux of Analysis Group, as well as the additional collaborators, *Bariatric Times* gets down to the basics of the study and what you need to know—What do these findings really mean? How might they affect the field of bariatric surgery? What is the potential future impact on your practice? Most importantly—How will all of this affect the patient?



What are the key findings from your study? Why is this relevant, and who should pay attention to the results?

Our study shows that even if one ignores the clinical benefits and quality-of-life improvements that result from bariatric surgery, there are savings for the payers that occur as early as 2 to 4 years following surgery. This is because of the lower cost of care following bariatric surgery relative to similar morbidly obese patients, even after accounting for potential complications from the surgery. This is relevant for payers and the healthcare system in general because it suggests that not covering bariatric surgery is a sure way to increase healthcare costs. Payers, patients, physicians, and surgeons should take note of this result and be reassured to find an intervention for morbid obesity that rewards good clinical practice with cost savings.

Bariatric surgery has been a proven tool in curing comorbidities such as diabetes. It seems to be a powerful procedure that positively impacts quality of life beyond weight loss. How do you respond to those who believe that a purely economic study, such as a return on investment,

is not the best way to measure the success of this surgery?

We agree. In an ideal world with no resource constraints, the decision to cover bariatric surgery would be based solely on health benefits. For most lifesaving interventions, that is in fact the standard adopted. However, in a world of limited resources, any new intervention is assessed relative to its benefits. Here we go one step further and show that even if the surgery offered no benefits for the patient, payers would still have a purely economic incentive to cover the surgery. Of course, quality-of-life benefits for the patients are just an added bonus. Hence, our goal is not to advocate return on investment (RoI) as the guiding principle for coverage, but to merely highlight the economic benefits of covering bariatric surgery in addition to its clinical benefits. Of course, the reason for the rapid economic return is that the clinical condition of the surgery patient improves rapidly relative to the clinical condition of the control group that did not receive the surgery.

Over the years, there have been a few high profile cases in which bariatric surgery has led to death. Additionally, complication rates seem to be a

concern for many individuals contemplating having bariatric surgery and insurance companies debating whether to cover it. How do you address these concerns? How do you factor in the costs of these adverse events into your study?

Our analysis is an economic analysis. Hence, we did not focus specifically on the patients who may experience serious adverse events. However, all costs associated with these adverse events for the bariatric surgery patient are included in our analysis and are more than offset by the cost incurred by control patients who did not have bariatric surgery. We also find that the return on investment associated with later surgeries (2003–2005) was higher than in the earlier period (1999–2002). This likely reflects the improvements in surgery that translate into a faster RoI of 49 months for open surgeries performed between 2003–2005 compared to 77 months for open surgeries performed between 1999 and 2002. Other research also shows that death occurs in less than one percent of surgeries, not unlike the average death rate for surgeries in general. We have conducted additional analyses not shown in our paper that indicate that the prevalence of adverse events in

our study sample is similar to that reported in the existing academic literature. Our analysis also confirms that the prevalence of adverse events has decreased over time.

This surgery is expensive. Many would argue there are cheaper ways, such as diet and exercise, to combat obesity. How would you respond to these criticisms?

There are many other options to combat obesity. However, most have limited to no long-term success. Of course, alternatives to surgery may be cost effective as well, but the first condition for cost effectiveness is ...*effectiveness*. In the absence of effective alternative approaches to significant weight loss for morbidly obese patients, bariatric surgery offers a cost-effective alternative.

The full return on investment for the laparoscopic population occurs in a little over two years. These results are striking, especially because the results are based on a little over 1.5 years' worth of data. Do you believe these results to be robust? What assumptions are you making to forecast a 2- to 4-year return on investment with the data you have available?

Any statistical analysis implies

inherent uncertainty resulting from sampling error. That is why, along with our laparoscopic RoI point estimate of 25 months, we also report the 95-percent confidence interval—16 to 34 months. Since our publication, we have received a significant update to our claims database resulting in an additional 1,200 surgery patients and an additional year (2006) of study data. This extends our postoperative data for laparoscopic surgery patients up to two and a half years and up to seven years for the open surgery patients. When we repeated our analysis, we found the RoI to be 29 months for laparoscopic surgery and 44 months for the open surgery patients—well within the range of values reported in our paper. This additional validation of the original results enhances the robustness of our finding.

In your paper, you differentiate between time periods and types of surgery and get varying results depending on these factors. How do you explain the difference in outcomes for surgeries that occur between 1999 and 2002 and those that occur from 2003 to 2005? Likewise, how do you explain the better outcomes for laparoscopic patients?

Bariatric surgery was still a relatively rare procedure at the beginning of our study. As the procedure has become more popular, surgeons have improved techniques and gained more experience in performing the surgeries. The emergence of Centers of Excellence has further improved the outcomes and decreased the complication rates associated with bariatric surgery. The results for laparoscopic patients can in part be attributed to fewer complications and infections following the surgery.

Your study looks at costs relative to a control population. Are the cost savings discussed in your paper resulting from controls becoming more expensive over time or bariatric surgery patients becoming cheaper?

Both. Bariatric surgery, like all other preventive therapies, is good at preventing sick patients from getting even sicker. Frequently the benefits of bariatric surgery are evaluated by looking at costs before and after surgery, as in the graph presented in the editorial that accompanied our paper, to determine cost savings associated with the surgery. However, the right question to ask is not whether patients who receive the surgery cost less than they did before (which they do), but whether they cost less than they would have had they not received the surgery. Our

analysis shows that the morbidly obese patient population continues to get sicker in the absence of surgery and, although the surgery patients are not cheap, on average, they are significantly cheaper than their matched counterparts who do not undergo the surgery, thereby resulting in real cost savings.

Dr. Crémieux, you were funded by Johnson & Johnson's Ethicon Endo-Surgery, Inc. Were you doing independent research prior to receiving their funding? How would you characterize the company's involvement in your study?

I was independently interested in bariatric surgery and wrote a paper on the clinical benefits of bariatric surgery that is currently under review well before meeting up with Ethicon Endo-Surgery, Inc. The Editor-in-Chief of the *American Journal of Managed Care* stated in the *Wall Street Journal*, "I won't deny that I would rather this be funded by some other organization, but there is no bias in the methodology." The fact is that this type of research could not be done without industry support. Ethicon Endo-Surgery, Inc. has been completely hands off throughout this process and I stand fully behind the integrity of my results. The paper was carefully peer reviewed and we conducted many sensitivity analyses, all of which confirmed our results. I encourage others in the field to continue research on this topic and welcome any challenge to our methods, data, and results.

With regard to methodology, what happens if patients change insurance plans mid-analysis? What if some morbidly obese patients die? Would utilization of services decrease cost in these situations?

If a patient changes jobs and moves to an employer not covered by our database, then we follow the patient until the switch occurs. A similar effect is observed for patients who die. We do not have enough information in our database to differentiate between these two events. We do not eliminate patients based on how much data we have on them. Hence, our results take death rates into account and are unlikely to be biased by dropout rates, as they are similar in the control and the surgery groups.

Were there regional differences in the sample?

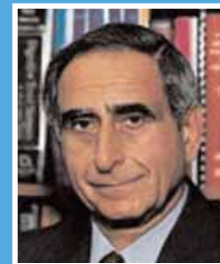
We do not know. The analysis pertains to the United States as a whole and our sample is too small to yield statistically meaningful results for specific regions.

Time's up! ■

The Investigators



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