

Enhanced recovery program for colorectal surgery patients can save money for hospitals

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The cost of implementing an innovative quality improvement program that helps colorectal surgery patients recover faster is more than offset by savings from their reduced lengths of stay at hospitals of any size. The patient-centric program incurs sizable upfront investments in patient educational materials, dedicated time for frontline providers to develop and implement the pathway and develop a framework for measuring their performance. However, such programs can produce significant savings for hospitals of various sizes with varying volumes of colorectal surgery, according to new study results published online as an "article in press" in the *Journal of the American College of Surgeons (JACS)*. The study will appear in a print edition of *JACS* later this winter.

The researchers from Johns Hopkins Medical Institutions, Baltimore, analyzed the lengths of stay and costs documented in six published reports of Enhanced Recovery After Surgery (ERAS) programs that were implemented in U.S. hospitals for patients undergoing colorectal procedures between 2003 and 2015. Data from these reports were used to generate a financial model that reflects the net financial impact of implementing ERAS.

The data included implementation costs, reductions in length of stay and the per day reductions in direct variable costs associated with shorter hospital stays, as well as annual surgical caseload. This study is believed to be one of the first to project costs and potential savings associated with ERAS program implementation in the U.S. The information provided in the article may be helpful for clinicians considering adopting

this approach to clinical care as a tool to facilitate conversations with senior hospital leadership about the investment.

ERAS programs create evidence-based protocols that promote the adoption of a standardized approach to adoption of evidence based perioperative care. Key elements include preoperative counseling about expectations for the procedure and hospitalization for patients and their families, optimizing preoperative and postoperative nutrition, minimizing the use of narcotic pain management, and promoting a culture of early mobility after surgery.

In previous studies, ERAS protocols have reduced complications, hospital stays, and costs, and improved the patient experience, according to lead study author Elizabeth Wick, MD, FACS, a colorectal surgeon at The Johns Hopkins Hospital, and associate professor of surgery at Johns Hopkins School of Medicine. "However, ERAS programs require initial investments in materials, clinician time and personnel, and capital equipment, which can be difficult for surgeons to justify to their hospital leadership. With the model described in this study, surgeons can plug in their case volumes and current length of stay and cost metrics and determine the potential [cost-savings](#), based on published U.S. studies, they might expect at their hospital. The model gives surgeons a framework for having a sophisticated discussion about how to initiate these types of programs with hospital administrators and what type of return on investment can be anticipated. Hopefully it can be used to promote collaboration between surgeons and hospital leadership to really improve the quality, value and patient experience," Dr. Wick said.

The researchers used information from six ERAS program sites to develop a the model for this study to compare median length of stay with direct variable costs to the hospital, which includes laboratory, pharmacy, radiology, and respiratory care materials and services before and after ERAS implementation. From these data, researchers generated

a conservative and an optimistic estimate of cost savings. A conservative one-day reduction in length of stay could save about \$1,897 in direct variable costs, while an optimistic three-day reduction in hospital stay could save about \$2,240 in direct variable costs.

Using the model, the researchers were able to adjust cost estimates by caseload. For hospitals with an assumed annual number of 100 colorectal procedures, the cost would be \$117,875 for implementation of ERAS in the first year and \$107,875 in annual maintenance costs. Implementation of ERAS in a hospital performing 250 colorectal procedures a year would cost \$325,000 in the first year and \$216,300 in annual maintenance. A large colorectal surgical program performing 500 procedures per year would cost \$552,783 initially and \$356,944 annually thereafter.

These costs are more than offset by net savings. At The Johns Hopkins Hospital ERAS protocols reduced length of stay on average by 1.9 days (26.4 percent) and direct variable costs by \$1,897 per patient. With an annual caseload of 500 patients, ERAS protocols yielded a total cost savings of \$948,500. Subtracting the \$552,783 cost of implementing the ERAS program, net annual savings totaled \$395,717.

A sensitivity analysis predicted cost savings in 20 of 27 scenarios (74 percent). Net costs were higher in the seven scenarios that were associated with conservative one-day reductions in lengths of stay. Scenarios associated with reductions of 3.0 days in length of stay were associated with savings of \$107,130 to \$1,322,220. The Johns Hopkins Hospital scenario showed a net saving of \$159,720 to \$634,720 depending on the daily length of stay cost saving.

"According to this model, ERAS is a beneficial program for any size hospital. There is no excuse for saying 'our [hospital](#) only does a few cases, so it's not worth it for us to invest in these protocols.' The benefit

is there, even for a small surgery program," Dr. Wick concluded.

Provided by American College of Surgeons

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