

# CUTTING COSTS IN SURGERY

## *Rationalizing the Use of Surgical Instruments Can Help Hospitals Stay Competitive*

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**T**oday's health care organizations operate, with limited resources, in an increasingly competitive world. Many try to reduce expenses by eliminating procedures and services that do not cover their own costs. Some organizations cannot do this, however. Catholic health care facilities, for example, are often prevented by their missions from cutting services and procedures. Such facilities must look elsewhere to reduce costs.

This was the situation at a facility we will call Regional Hospital in 1995. Although Regional had recently purchased two other local hospitals, it found itself with limited finances and facing strong continuing competition. The hospital, attempting to stay true to its mission to serve the poor while meeting internal needs, had not raised its patient rates in five years. Regional's leaders hoped to continue its high quality of care and community services without raising prices. To do so, however, the leaders had to scrutinize the hospital's processes and eliminate those that did not add value proportionate to their costs.

Those efforts have paid off. The proportion of hospital income derived from surgery rose from 5.3 percent in 1995 to 9 percent in 1998. Although much of this increase may be attributed to increased patient volume, a good portion was the result of cost-reduction efforts. This article describes two cost-reduction opportunities Regional identified in its surgical facility. It also describes physicians' resistance to the changes required in realizing such cost reductions, the hospital's efforts to neutralize this opposition, and the ultimate implementation of the cost-cutting measures. All cost figures used in the article are actual costs for 1998.

### CONVERTING TO REUSABLE INSTRUMENTS

Over the past 25 years, most hospital operating rooms (ORs) have steadily increased their use of disposable surgical instruments. Such instruments:

- Enable hospitals to more efficiently track the cost of surgery
- Help hospitals improve OR antisepsis
- Make the postsurgical cleanup of instruments unnecessary
- Ensure that the instruments themselves never become obsolete

But the adoption of disposable instruments has increased costs tremendously. Disposable instruments are not cheap. Their price, generally from 25 percent to 35 percent more than that of reusable ones, does not include the cost of disposing of them safely. In addition, the use of disposable instruments tends to encourage a great amount of waste.

Regional's leaders decided to fight such waste by replacing disposable instruments with reusable versions. One such instrument was the *trocar*.\* Trocars are devices used in laparoscopic surgery to give the surgeon access to the abdominal cavity. The physician first lances the patient's skin with a scalpel and then pushes the trocar through the incision into the abdomen. Three to five trocars are typically used in each procedure. These devices must be sharpened each time they are used. A dull trocar may require the surgeon to use force in inserting it, thereby risking damage to the patient's abdomen.

Trocars are used at Regional in four surgical

\*For simplicity's sake, this article focuses on the trocar. However, Regional has realized considerable additional savings by replacing other disposable surgical instruments—for example, scissors, graspers, and babcocks—with reusable versions.

procedures: the laparoscopic-assisted vaginal hysterectomy (LAVH), laparoscopic appendectomy, laparoscopic cholecystectomy, and pelviscopy. Before converting to reusable trocars, the hospital used only the disposable variety.

Regional's surgeons spent approximately 10 weeks evaluating five different trocars before choosing the one that met the majority's needs. The trocar selected was a "hybrid," with both disposable and reusable components: The blade is disposable, but the sleeve containing it is made from reusable titanium. (The trocar's manufacturer gave the sleeves to Regional, which performs many surgical procedures; because they make so much money on a hybrid trocar's disposable component, manufacturers commonly do not charge for the reusable one.)

But Regional could not begin converting to hybrid trocars until it had overcome the reluctance of its surgeons to employ reusable instruments. All doctors are concerned about the quality of the instruments they use. At Regional, some physicians feared that reusable trocars might be insufficiently sterile or break during surgery. They also argued that the time and effort spent cleaning reusable trocars might interfere with surgery.

Like other professionals (attorneys, for example) surgeons tend to be slow to change the way they do things. A new system—even one that seems more efficient, less costly, and less traumatic for patients—will not be implemented unless the physicians involved agree to the change. Knowing that surgeons resist change, hospital leaders do not like to propose alterations in surgical operations. As a result, relatively few hospitals have switched from disposable surgical instruments to reusable ones.

Surgeons' conservatism is, in this instance, reinforced by the companies that manufacture disposable trocars. In 1993, for example, one manufacturer sponsored the publication of a Deloitte & Touche report arguing that reusable instruments were less economical than hospitals believed.<sup>1</sup> According to the report, reusable trocars have hidden costs—including instrument repair costs, labor costs, and OR time lost because of instrument failure—that make them, in fact, more expensive than the disposable variety.

# Regional's leaders persuaded its surgeons to convert to reusable trocars.

Regional's leaders addressed these issues in two ways.

**Safety Issue** They promised that if the hybrid trocar selected should increase OR time, have a high failure rate, or generally fail to perform as well as the disposable instrument, the hospital would cease using it.

**Economy Issue** They argued that the average \$6,912 saved annually by using reusable, rather than disposable, tro-

cars would exceed the cost of cleaning and sterilizing the instruments.

Regional's leaders persuaded the surgeons to convert to reusable trocars. Having accomplished that, the leaders then had to ensure that the other members of the surgical staff could work with the new system. The staff received extensive training in the hybrid trocar, including the protocols governing their cleaning and inspection. Once staff members were fully trained, the hospital was ready to switch to the hybrid system.

The conversion proved to be a success. In its first year, Regional saved \$128,304 (see **Table 1**, p. 40).

## STANDARDIZING SURGICAL INSTRUMENTS

Having persuaded its surgeons to adopt reusable trocars, Regional's leaders decided to campaign for standardized ones.

Standardization is a vital component of cost cutting. We can demonstrate the truth of that statement with a hypothetical case. Assuming for the moment that all trocars are disposable, we can say that only two surgical specialties—general surgery and gynecology—require their use. There are two major manufacturers of trocars and about eight minor manufacturers. Prices range from \$25 to \$90. Each manufacturer makes two or three styles, and each style comes in three sizes (5-, 10-, and 12-millimeter). Let us say that our hospital must stock enough trocars to cover three to four days' worth (called the "par level") of surgical procedures. If the facility stocked fewer trocars, it would risk a situation in which a surgeon might not have his or her instrument of choice available.

Let us say, moreover, that 30 surgeons are associated with our hypothetical hospital. Given a full range of choices, they require it to stock trocars made by six different manufacturers, in two

styles and three sizes. The cost to the facility of maintaining that par level of trocar inventory would be \$43,920. In addition, the hospital would need to pay the costs of educating the surgical staff on 11 different systems, storing the 672 trocars, and monitoring the inventory.

Another real (but difficult to quantify) cost is incurred when—as sometimes happens—a surgical team member inadvertently unwraps and exposes the wrong instrument. Mistakes such as this are usually corrected when the surgeon arrives in the OR. They can be expensive, nevertheless, because of lost surgical time and the costs involved in disposing of unused trocars. What is worse, these errors can increase the patient's risk. A hospital that stocks many different styles of the same instrument increases the likelihood that such mistakes will occur.

By contrast, a hospital that standardizes its instrument system—stocking only three styles of a particular trocar, for example—can both greatly reduce costs and increase patient safety. A standardizing hospital can also benefit from many manufacturers' practice of giving discounts to those who purchase in large volume. This would further increase the hospital's saving. (As an added inducement, some manufacturers also offer training in the instrument's use.)

If our hypothetical hospital were to reduce its trocar systems from 11 to three, it could cut its inventory costs by \$26,280 (see Table 2, p. 41). It would also reduce the time and money needed to train nurses in instrument use.

Most important, standardization would reduce lost surgical time. A minute lost during a surgical procedure might seem insignificant. But when one considers the costs involved in maintaining an OR—especially surgeons', anesthesiologists', and nurses' fees and salaries—one sees that those dollars can mount very quickly. And, of course, a lost minute can have an incalculable cost for a surgical patient.

Nevertheless, the standardization of instruments also has its downside. The chief obstacle,

as it is with substituting disposable trocars with reusable ones, is opposition from surgeons. Persuading surgeons to use a system that offers them only a few instrument choices is very difficult. Indeed, in some cases surgeons have gone so far as to transfer patients from a hospital with a rationalized instrument system to one providing the traditional wide choice of instruments.

What can hospitals do when confronted by such strong resistance? First, hospital leaders must remember that staff physicians are (along with patients) the facility's *customers* and do everything within reason to keep them happy—or else suffer the consequences. One likely consequence of making surgeons unhappy is losing their services. Departing surgeons will take their patients with them. The hospital's patient volume will suffer accordingly.

To avoid losing physicians, many facilities have instituted a consulting fee for those affected by an instrument change. This fee, paid to physicians for their assistance in the standardization effort, is based on the savings that result from the change.

Regional's leaders decided against adopting this tactic because of various legal issues it raised. To reward its surgeons for accepting standardization, Regional reduced patients' surgical charges. Like many other hospitals, Regional bases patient charges on the cost of the products used in their care. The billing department uses a formula that automatically marks up the price the hospital paid for a particular product and adds that figure to the patient's bill. By reducing the marked-up cost of a product, a hospital can significantly reduce the total on a patient's bill. (A \$100 reduction in the cost of a product with a 50 percent markup could, for example, result in a \$150 reduction in a patient's charge.) Reducing patient charges is good for surgeons because it helps lower the average cost (the "per case cost") of their surgical procedures, which is monitored closely by insurance companies.

If, for example, Physician A performs a diagnostic laparoscopy for \$1,800, whereas Physician B can perform the same procedure for \$1,600, an insurer will take the price difference into account when choosing physicians for its provider network. Regional's leaders had learned, during the implementation of several earlier product changes, that few physicians want to be known as high-cost providers. The leaders accordingly compiled and distributed to area physicians confidential information demonstrating the link between low patient charges and insurer preferences. This information proved to be an effective tool in generating support for standardized products. Physicians who were already low-cost

Table 1

**Current Annual Cost of Disposable and Reusable Trocars**

<b>Surgical Procedure</b>	<b>Cost of Disposable Trocars</b>	<b>Cost of Reusable Trocars</b>
LAVH	\$ 85,200	\$24,960
Laparoscopic Appendectomy	4,560	2,496
Laparoscopic Cholecystectomy	76,000	41,600
Pelviscopy	52,400	20,800
<b>Total</b>	<b>\$218,160</b>	<b>\$89,856</b>

providers looked for ways to cut costs even further; those who were higher-cost providers, unwilling to be left behind, began to make cuts of their own.

To ease physician and staff discomfort associated with standardization, Regional's leaders have been introducing standardized products one at a time. A given product must go through an evaluation period before full implementation takes place. Indeed, the first step in the standardization process is the selection of a product for evaluation. Physicians and other staff participate in product selection, which helps ensure their "buy-in." Once the selection team has made its choice, it trains the surgical staff in the product's use. Once training is complete, the evaluation process can begin.

Successful evaluations can require as much as a month and as little as a week, depending on the product's complexity and the frequency with which it is used. Regional's evaluation team decides in advance how long an evaluation will last and shares this information with physicians and staff. A representative of the manufacturer, expert in the product's design and use, is present to answer any questions or concerns that may arise. Once the evaluation has been completed, the team surveys the opinions of staff and physicians. A product that receives a positive evaluation will be the standard instrument used in future surgical procedures.

At Regional, three steps have proved to be vital to the successful evaluation and implementation of a standard product:

- **Education.** Every physician and staff member should be shown, first, why it is necessary to standardize an instrument, and, second, how the standardized instrument functions.
- **Support.** Both the hospital's leaders and the instrument's manufacturer must support the standardization process. The manufacturer can show its support best by lending an expert to the evaluation process.
- **Availability.** The product must be available in sufficient quantities to meet the needs of surgeons and staff.

### CONTINUING SAVINGS

A hospital can realize significant cost savings by adopting the use of reusable and standardized surgical instruments. Replacing disposable instruments with reusable ones can have significant and immediate financial benefits. Standardization, on the other hand, offers cost savings that will have a positive impact on the facility's costs for years to come. A hospital that successfully standardizes its instruments will reduce inventory and training costs, increase staff com-

Table 2

### Unstandardized Trocar Inventory


Manufacturers	Styles	Costs	Par Level All Sizes	Inventory Costs
1	A	\$85	96	\$ 8,160
1	B	90	48	4,320
2	C	75	96	7,200
2	D	70	48	3,360
2	E	85	48	4,080
3	F	50	96	4,800
3	G	40	48	1,920
4	H	25	48	1,200
5	I	75	48	3,600
6	J	65	48	3,120
7	K	45	48	2,160
Total			672	\$43,920

### Standardized Trocar Inventory

Manufacturers	Styles	Costs	Par Level All Sizes	Inventory Costs
2	C	\$70	120	\$ 8,400
2	E	80	48	3,840
3	F	45	120	5,400
Total			288	\$17,640

petence and manufacturer support, and cut mistakes in surgical procedures. All these changes will translate into lower operating expenses in the surgery department.

For at least one Catholic hospital, these processes have been invaluable. Because competing area hospitals continue to reduce their costs, Regional must either reduce its own costs or lose patient volume. Through standardizing surgical instruments and replacing disposable ones with reusable versions, Regional has found another way to remain competitive. □

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### NOTES

1. Deloitte & Touche, "Economic Impact of Laparoscopic Surgery," New York City, 1993.

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