

CASE STUDY



Reusable Trocars

Demographic Information

Beaumont Health System's Royal Oak Hospital is an academic hospital located in Royal Oak, Mich. The hospital is a 1,070-bed major academic and referral center with Level 1 trauma status. A second Beaumont Hospital, Troy, opened in 1977 and today has 418 beds. In 2007 the provider acquired a third community hospital in Grosse Pointe with 250 beds. There are 91 medical and surgical specialties represented on the Beaumont medical staff and more than 3,100 physicians. A major teaching facility, Beaumont has 39 accredited residency and fellowship programs with more than 441 residents and fellows. Beaumont is also the exclusive clinical partner for the Oakland University William Beaumont School of Medicine, with more than 1,500 Beaumont doctors on faculty.

Beaumont excels in research and innovation and was ranked among the nation's "Best Hospitals" by *U.S. News and World Report*. The Beaumont Research Institute has more than 900 laboratory and clinical studies, involving 81,000 participants. Beaumont's Heart and Vascular Services is a world leader in research, diagnosis and treatment of cardiac conditions; one of the nation's best orthopedic programs, and surgical services offer minimally invasive treatments, including advanced endoscopic, robotic and laparoscopic procedures in all major disciplines of surgery with an emphasis in the treatment of complex surgical conditions.

Beaumont's Green Team leaders and 225 green officers are committed to implementing cost-effective solutions to reduce waste and conserve energy, while providing education to employees about environmental issues. Through efforts to reduce energy and water consumption, Beaumont saves a minimum of \$1.3 million each year. In 2011, Beaumont saved \$83,000 from recycling paper, plastic, glass and other materials. Beaumont is recognized as one of the 101 Best and Brightest Sustainable Companies through *Corp! Magazine* and named a 2012 Michigan Green Leader by the *Detroit Free Press*.

Executive Summary

In 2007, Beaumont Royal Oak started a green team lead by Kay Winokur, vice president of Quality and Professional Services, to work toward becoming a more sustainable facility and decrease its environmental impact. Among its sustainable initiatives, such as energy savings and green technology, Beaumont worked with suppliers to reduce excess packaging and materials to achieve less waste. Its green team members lead initiatives to help conserve, reduce, reuse and recycle. In 2013 Beaumont Received a Partner for Change award from Practice Greenhealth, the nation's leading health care membership community. Today Beaumont is a leader in sustainable health care in Michigan.

Its sustainability initiatives have helped the hospital reduce waste in many areas including the operating room. The hospital works with Surgitech Services, an on-site resource that manages laparoscopic and arthroscopic instrumentation used in procedures. Working alongside of the hospital's Central Processing Department Surgitech staff collect, decontaminate, inspect, and wrap the laparoscopic instrument trays for sterilization per the hospital's policies.

The Problem

Since implementing its green team in 2007, Beaumont is continually looking for ways to divert waste from landfills. The operating room creates an average of 30 percent of a hospital's overall waste. A single hospital can produce more than eight tons of regulated medical waste (red bag waste) per year. In an effort to reduce waste in the operating room, Beaumont and Surgitech Services began to look at ways in which the hospital could reduce its environmental footprint by using more reusable surgical instruments.

Before 2011, Beaumont Royal Oak was using disposable trocars in all 25 operating room suites. In one week the hospital would perform an average of 30 laparoscopic surgeries and each surgery used approximately three disposable trocars, averaging \$64 in price. (Beaumont uses trocars in different diameters—5mm, 10mm, and 12mm—to accommodate different surgical instruments.) It is estimated that the hospital was spending more than \$300,000 a year on the purchase and use of 4,700 disposable trocars. Each disposable trocar weighs 0.1 pounds. In Michigan, the cost of disposing red bag waste costs approximately .28 cents per pound. When Beaumont took a look at the total cost savings of introducing a reusable trocar used in laparoscopic

surgery, it found substantial cost savings were possible. The average upfront cost of one reusable trocar is \$300, but the reusable trocar can last for at least 100 uses if properly cared for, making the per-procedure cost \$3.00 (plus the time to clean after each use and the sterilization on-site). The hospital could also divert 100 disposable trocars from the waste stream by purchasing and using just one reusable trocar. The cost savings of using one reusable trocar versus disposable trocars is estimated at \$191.49 a year by Alan Strickling, director of sales at Surgitech Surgical Services.

Strategy & Implementation

In 2011, Aesculap, Inc., a medical device manufacturer and division of B.Braun, developed a new lightweight, low profile reusable trocar made of stainless steel. Aesculap's reusable trocar provides a cost-effective alternative to traditional, single-use, disposable trocars. Aesculap approached Beaumont Health System and Surgitech Services to try the new product during surgical procedures. The trocar has a flip top modular construction, which makes the trocar easy to clean; and its color-coded components are easy to identify. "Aesculap's reusable trocars can be sterilized right in the hospital by

central sterile staff," notes Jen Berno of Surgitech. The low-profile design of 3.5mm and 5mm sizes is ideal for single port procedures and its lightweight balances the trocar when inserted into the abdomen.

Surgitech analyzed whether the trocars provided an environmental and cost benefit to the OR. In 2012, the hospital trialed the Aesculap reusable trocars and out of approximately 25 laparoscopic surgeons, six switched to using the brand. Jen Berno of Surgitech notes many of the younger doctors gravitated toward using the reusable while more experienced surgeons preferred to stick with the disposable. Her conclusion is that it's difficult to change the culture in the hospital, but she believes the switch even for the small percentage of doctors is worth it. Surgitech handles the collection, cleaning, and sterilization of Aesculap trocars. Based on 48 weeks (given the doctors take 4 weeks of vacation a year), using the reusable trocars saves the hospital \$275,745.60 savings per year.

Factors considered when comparing reusable and disposable trocars

- Cost of product
- Cost of disposal of product
- Staff satisfaction with comfort, quality, and safety

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Benefits

- Doctor satisfaction offers doctors another option in the OR
- Reduces cost and waste per case compared to fully disposable trocars
- Decreased medical waste
- Generates cost savings in the form of avoided waste disposal dollars
- Rapid payback provides a high return on investment

Beaumont Royal Oak Hospital

Number of operating suites in North Tower: **25 (64 ORs on Campus)**

Laparoscopic surgeries per week: **30**

Trocars used per surgery: **3 (5mm, 10mm, and 12mm)**

Number of surgeons: **25**

Number of surgeons who switched to reusable trocars: **6**

Disposable Trocars

Estimated annual cost of disposable trocars before adoption: **\$300,000**

Estimated annual RMW waste from disposable trocars: **470 pounds**

Estimated annual RMW waste cost from disposable trocars: **\$132**

Results

Waste Diverted in 2012: **470 pounds of regulated medical waste**

Breakeven point: **occurs after 3.5 surgeries**

Cost savings: **begins on fourth surgery**

Estimated Annual Cost Savings: **over \$275,000**

Estimates and Averages	Disposable Trocar	Reusable Trocar (100 uses)
Trocar Purchase Cost	\$64	\$300
Trocar Purchase Cost Per Surgery	\$192	\$9
Waste Amount Per Surgery	0.3 pounds Regulated Medical Waste	Zero pounds
Waste Disposal Cost per Surgery (for trocars only)	8.4 cents	Estimated 0.5 cent or less (solid waste or recycling)