



CASE STUDY

The University of Maryland Medical Center: Reusable Textiles in the OR



Demographic Information:

The University of Maryland Medical Center (UMMC) is an academic medical center located in Baltimore, Maryland. The Medical Center is part of the University of Maryland Medical System, which is a private, not-for-profit healthcare network. UMMC provides a full range of health services to the Maryland and Mid-Atlantic community. The medical center is a 757-bed facility, has a staff of 7,500 employees, and has 1,135 attending physicians. The University of Maryland Medical Center has 31 Operating Rooms (OR), 500 perioperative employees, and performed 21,500 surgical procedures in 2010.¹

As one of the first teaching hospitals in the United States, UMMC highly values education, research, and innovation in healthcare. UMMC has received national recognition for patient safety and quality of care. In 2010, the Medical Center received the Trailblazer Award from Maryland Hospitals for a Healthy Environment for its pharmaceutical waste program, which protects patients, employees, and the environment from hazardous substances. UMMC has a full-time sustainability manager who helps the organization integrate a comprehensive set of sustainable healthcare practices across the enterprise.²

Executive Summary Statement:

The University of Maryland Medical Center (UMMC) has been using reusable gowns and basins in their Operating Rooms for 15 years. In 2007, the UMMC staff started a "green team" who works towards decreasing the negative impact that the facility has on the environment. Through green initiatives, the green team aims to help UMMC conserve, reduce, reuse, and recycle. The same year, in an effort to reduce waste and the cost of waste disposal, hospital administrators began to scrutinize the sustainability of the practices throughout the facility. A detailed review of the waste disposal system at the hospital led administrators to find numerous ways to greatly reduce the amount of waste the facility generates.

The sustainability initiative has helped the hospital reduce the amount of waste it generates and has helped divert waste from medical waste incineration. When waste generated by healthcare facilities is disposed of through incineration, harmful pollutants enter the community, contributing to the incidence of chronic illness.³ Through examination of the lifecycle

Leaders who support sustainable health care practices at UMMC include:

- *Vickie Stewart, MBA, Director of Business Operations*
- *Leonard Taylor, AIA, Vice President of Facilities*
- *Denise Choiniere, MS, RN, Sustainability Manager*



Perioperative staff at the University of Maryland Medical Center.

of the products and supplies used at the facility, UMMC staff found that reusable textiles decreased the waste generated in the operating room and reduced the cost of waste disposal, a win-win for the organization.

The Problem:

In 2007, UMMC performed a waste audit and found that the facility produced 10 million pounds of waste annually. They were spending \$1.35 million dollars on waste disposal. In an effort to reduce the cost of waste disposal, hospital administrators began to take a closer look at the waste system in place at the hospital. Around the same time, Victoria Stewart, the Director of Business Operations for Perioperative and Endoscopic Services at UMMC, started a green team, which aimed to improve the environmental footprint of the hospital. The green team conducted a literature review of waste in healthcare facilities and found that a large majority of a hospital's waste comes from the OR. During surgical procedures, items such as gowns, basins, towels, blue wrap,

and canisters get thrown away. With thousands of surgical procedures per year, the hospital produces millions of pounds of waste from the OR alone.

Over the last two decades, there has been a shift to the use of disposable products in healthcare facilities. Partly due to efforts to reduce exposure to Human Immunodeficiency Virus (HIV) and to prevent healthcare-associated infections (HAIs), many hospitals moved away from reusable products.⁴ Today, there are companies that provide reusable textiles, reusable products, and medical supplies to healthcare facilities and specialize in sterilizing the products to protect users from the transmission of disease. Since disposable items often cost less upfront, many healthcare facilities choose to use disposable items and are not aware of the benefits of reusable products. Stewart noted that when they took an in-depth look at the lifecycle cost of reusable textiles, they found that reusable textiles actually cost less than disposables.

Strategy & Implementation:

In 2006, a disposable textiles vendor approached UMMC to try and pitch them on a transition to disposable textiles and medical products. At the time, UMMC was purchasing reusable surgical gowns, drapes, table covers, and basins. Stewart evaluated the proposal and found that when the avoided cost of waste disposal and the cost savings from the return of discarded instruments from the reusable textile company were factored in, the reusable items cost the hospital essentially the same as disposables. However, cost savings from the return of discarded instruments provided UMMC with a significant financial benefit. The reusable products provided the quality and safety factors the organization cared about, while offering a cost differential. Newly armed with a definitive business case, UMMC made the decision to stick with reusable textiles.

UMMC staff considered other factors when evaluating reusable textiles vs. disposables, including staff satisfaction with the comfort of the gowns, as well as the quality and safety of the gowns. The OR staff had been using the reusable gowns for years and they felt confident about the level of

barrier protection and safety the gowns provided. The staff also wanted to do what was right for the environment. UMMC staff realized that the use of reusable items helped reduce the amount of waste the hospital generated and helped divert waste from medical waste incineration. In an interview, Vickie Stewart noted that “with a mission to heal, teach, and discover, UMMC could not contribute to long term chronic illness.”

UMMC collaborates with a service provider to obtain reusable textiles. UMMC uses a company called SRI Surgical (SRI), which provides reusable products and supplies to healthcare facilities and sterilizes and repackages the products at a local plant. The company provides UMMC with surgical gowns, drapes, stainless steel cups, basins, and bowls. The company provides custom made OR packs to UMMC that contain the supplies that physicians prefer for various procedures. SRI delivers items to UMMC daily and picks up used items at the same time. Used items are returned to the plant where they are sorted, cleaned, packaged, and sterilized.⁵

UMMC purchases three different types of reusable surgical gowns. The three types of gowns offer varying levels of protection that adhere to the Association for the Advancement of Medical Instrumentation (AAMI) standards for liquid barrier performance for protective apparel and drapes.⁶ Gowns are selected based on the type and length of surgery and according to the safety guidelines established by AAMI. Each year, UMMC staff reviews the OR packs to ensure that all items in the packs are being used. If items are not being used, they work with the company to remove the unnecessary items and streamline the kits.

In 2010, UMMC avoided disposal of 138,748 pounds of waste as a result of using reusable supplies. The majority of disposable gowns and textiles would have ended up in the regulated medical waste stream. Using the average cost of RMW of \$0.28 per pound,⁷ this amounts to an approximate savings of \$38,800 annually in avoided waste disposal fees. Working with a reusable textile service provider not only reduced the cost of waste disposal, but it also provided the

Factors considered when comparing reusable textiles to disposables:

- *Cost of product*
- *Cost of disposal of product*
- *Staff satisfaction with comfort, quality, and safety*
- *Appropriate barrier protection*
- *Capture of lost instruments*

benefit of the retention of instruments that were mistakenly sent out with the reusable textiles. When hospitals use disposable textiles in the OR, many of these instruments are wrapped in disposable fabric and make their way into the medical waste stream. In UMMC’s case, their vendor is able to collect those instruments and return them to the hospital, providing an estimated savings of around \$39,000 per year.⁸

Benefits:

- Drives staff satisfaction while benefiting patients, employees, and public health.
- Decreased medical waste—diverting 138,748 lbs from medical waste incineration in 2010.
- Generates cost-savings in the form of avoided waste disposal dollars.
- Allows for the collection and return of lost medical instruments—also a hard dollar savings.

Using reusable gowns and basins:

- *138,748 pounds of waste diverted in 2010*
- *1.5 million pounds of waste diverted since 2000*
- *Estimated savings of \$38,800 in avoided waste costs in 2010⁸*
- *Estimated savings of \$722,250 in avoided waste disposal costs since 2000⁸*
- *Average of \$39,000 dollars in returned instruments per year⁹*

A PROGRAM TO ENCOURAGE STAFF:
UMMC offers the “Green on Greene Street” Program to employees. All UMMC employees who take the Green on Greene Street Pledge to go green and to support environmentally sound principles are entered into a monthly drawing to win a stainless steel water bottle

Challenges and Lessons Learned:

UMMC has been using reusable gowns and supplies for 15 years. The 2007 review only reinforced the organization’s decision to stick with reusable products. In fact, having found that reusable textiles in the OR has had such a significant impact on the hospital’s budget, UMMC is currently looking into converting to reusable textiles in the Labor and Delivery Unit, Interventional Radiology, the Catheterization Lab, and the Electrophysiology Lab. The hospital is also looking into changing to reusable isolation gowns. While waste reduction has been a big focus for the organization, Stewart acknowledges that these efforts need to be backed up by environmentally preferable purchasing, focusing on what kind of supplies are coming into the facility, as well as what leaves as waste. UMMC is also interested in working with their supply chain vendors to reduce packaging on the front end, which will also have an impact on the facility’s environmental footprint.

Endnotes

- 1 University of Maryland Medical Center (UMMC). (2011). About the University of Maryland Medical Center. Retrieved February 2011, from http://www.umm.edu/center/fact_sheet.htm
- 2 UMMC. (2010). UMMC goes green. Retrieved March 2011, from <http://www.umm.edu/green/trailblazer10.htm>
- 3 Koch, C. (2006). Do no harm. Retrieved September 1, 2010, from Google Scholar database.
- 4 Tieszen, M.E. & Gruenberg, J.C. (1992). A quantitative, qualitative, and critical assessment of surgical waste: Surgeons venture through the trash can. *The Journal of the American Medical Association*, 267, 2765-2768.
- 5 SRI Surgical. (n.d.). Reusable surgical gowns. Retrieved March 2011, from http://www.srisurgical.com/solutions/sol_reusable_gowns.php
- 6 Association for the Advancement of Medical Instrumentation (AAMI). (2011). About AAMI. Retrieved March 2011, from <http://www.aami.org/about/>
- 7 Conrardy, J., Hillanbrand, M., & Nussbaum, G.F. (June 2010). Reducing Medical Waste. *Association of Perioperative Registered Nurses Journal (AORN)*, 6, 711-721.
- 8 Cost-savings estimated using average cost of RMW at \$0.28 per lb per Conrardy, J., Hillanbrand, M., & Nussbaum, G.F. (June 2010). Reducing Medical Waste. *Association of Perioperative Registered Nurses Journal (AORN)*, 6, 711-721.
- 9 Personal Communication, SRI Surgical. March 21, 2011.

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The Greening the OR™ Initiative is defining best practices in the OR to reduce environmental impact, reduce cost, increase efficiency, and improve worker and patient safety. Practice Greenhealth is grateful for the support of a number of sponsors of the Greening the OR™ Initiative. For a complete list, please visit: www.GreeningTheOR.org

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