

CASE STUDY

University of Minnesota Medical Center, Fairview: OR Kit Reformulation



Demographic Information:

The University of Minnesota Medical Center, Fairview (UMMC), located in Minneapolis, Minnesota, is an academic medical center that offers a full spectrum of health programs and services. The hospital is licensed for nearly 2,000 beds (staffing 887), has 21 operating rooms, and performed 6,135 surgeries in 2010. Through partnership with the University of Minnesota Medical School, UMMC works to provide excellent patient care and to make advancements in the medical field. The staff at UMMC values innovation and strives to provide care for the whole person.¹

Executive Summary Statement:

Dr. Rafael Andrade, a surgeon at UMMC, has recognized the strong link between human health and the health of the environment. Aware of the fact that waste generated from healthcare facilities contributes to pollution, Dr. Andrade was very concerned when he observed that much of the waste from the operating room was unused disposable items. Through the establishment of a voluntary OR green team, Dr. Andrade has been dedicated to improving the health of the environment by working to reduce the amount of waste his procedures generate. Through the systematic reformulation of operating room kits, the team has significantly reduced the unnecessary waste produced during surgical procedures. Reformulation of the OR kits has reduced 5,332 pounds of waste annually, saved the hospital \$81,278 per year and an additional \$1,333 in avoided regulated medical waste disposal costs.

Problem:

Healthcare facilities operate 24 hours a day, 7 days a week, and 365 days a year, generating tons of waste annually. Some hospitals utilize medical waste or solid waste incinerators to treat their waste. The process of waste incineration generates a range of harmful pollutants that can impact human health.² While some waste production is inevitable, much of the waste generated by operating rooms (OR) is unnecessary. Within the tons of trash that accumulate each year there are thousands of unused disposable items.³

THE PROJECT CHAMPIONS:

- *Dr. Rafael Andrade, Thoracic Surgeon*
- *Lynn Thelen, OR Nurse*
- *Crystal Saric, Coordinator of Waste Services and Waste Reduction*
- *Catherine Zimmer, Healthcare Specialist, Minnesota Technical Assistance Program*

Packaged surgical kits containing supplies and equipment for various surgical procedures often contain items that are not used by the OR staff during the operation. Each physician has his or her own preference for which supplies and equipment to use for any given surgery. Beyond surgeon preference for certain items, premade OR kits often contain a variety of items that are not needed. Once the sterile OR kits are opened, unused items from the kits can no longer be considered sterile and are thrown away. These unused items fill waste containers in ORs, add to the cost of waste disposal, and contribute to the environmental impact of the healthcare organization.⁴

Strategy & Implementation:

To reduce the amount of unnecessary waste generated by the OR, Dr. Andrade looked for ways to reduce the use of disposable items in OR kits. The first OR kit Dr. Andrade reviewed was a kit for a port placement procedure for chemotherapy patients. UMMC surgeons perform this procedure over 200 times per year. After reviewing the kit, he reduced the necessary items in the kit from 44 to 27 items. He found that this reduction eliminated 1 pound of waste per case, and saved \$50 per case. The kit reformulation reduced both the cost of supplies and the cost of waste disposal.

In addition to reducing unnecessary items in OR kits, Dr. Andrade has also implemented waste reduction strategies such as using smaller bottles of surgical prep solution and using smaller bottles of sterile saline, which provide the necessary amount of saline for the procedure. These strategies reduce an additional pound per port placement procedure. Dr. Andrade performs around 40 port placement procedures a year. In a year, the OR kit reformulation and waste reduction strategies saved \$2,000, 80 pounds of waste, and 64 pounds of CO₂ emissions.

After realizing the significant impact of OR kit reformulation, Dr. Andrade presented the information to UMMC OR staff, which led to the start of the hospital's first green team in 2009. Dr. Andrade, Lynn Thelen, RN, Catherine Zimmer, who worked with the Minnesota Technical Assistance Program, Crystal Saric, the Coordinator for Waste Services and Waste Reduction at Fairview, and green team members systematically reviewed 38 additional OR kits and identified items that were not used such as gauze dressings, plastic basins, styrofoam trays, plastic cups, and syringes. They collaborated with the vendors of the OR kits and asked them to remove the items.

Saric says that the collaboration with vendors went very smoothly. After identifying the unnecessary items in the OR kits, the team found the representative from the vendor company who handled the OR kits, invited him to a meeting, and let him know that they didn't need certain items. Saric states that the vendor was eager to provide the hospital with what they needed and adjusted the kits accordingly. He was also able to reduce the pricing for certain packs as a result.

Andrade, Thelen, Saric, and the staff were excited to see the huge impact of OR kit reformulation. Reformulation of a thoracotomy pack reduced 606 pounds of waste per year and saved \$12,040 per year. Further review of items in 2010 reduced an additional 1,137 pounds of waste and saved an additional \$10,680 per year. In total, the OR kit reformulation produced a 5,332 pound waste reduction, saved the hospital \$81,278, and an additional \$1,333 in avoided regulated medical waste disposal costs.

EXAMPLE OF OR KIT REFORMULATION:

Neuro Minor Pack

- *Eliminated 5 items*
- *890 pounds of waste reduced per year*
- *\$3,313 saved per year⁵*

When the hospital-wide green team was formed in 2009, members specifically called out the OR as a key target area to reduce environmental impact. Overarching goals for the hospital included: energy reduction, water reduction, waste and raw materials reduction, toxic/hazardous substance reduction, sustainable facilities design, responsible purchasing, and sustainable food systems. The OR kit reformulation project met the green team's goal to reduce waste.

In the past, the supply chain or materials management reviewed the OR kits each year to decide what supplies were needed for each procedure. For this project, Andrade, Thelen, and the green team took the initiative to review the kits. They utilized input from colleagues to make decisions about revisions to the OR kits. The team calculated the savings by physically weighing each and every item on a gram scale to collect waste avoidance data. Next, they compared the cost of the old kit versus the new kit to derive the cost savings.

In addition to the OR kit reformulation, the green team had a nonprofit company called Minnesota Waste Wise come to the hospital to do an audit of hospital-wide waste. The company sorts through a day's worth of waste to evaluate what a facility is actually throwing away. The company pointed out ways that UMMC was missing out on recycling. Following the audit, the green team initiated a recycling program to improve the reduction of waste throughout the hospital.⁶



Items removed from thoracotomy pack as part of kit reformulation process.

Benefits:

- OR kit reformulation at UMMC demonstrated significant cost savings.
- Total cost savings through March 2011 on OR kits (combining University and Riverside Campus) = 10,553 pounds of waste per year and \$116,215 per year directly from OR kit reformulation.
- Reduces the negative impact that the OR has on the environment by preventing 10,553 pounds of waste from being incinerated or sent to a landfill.



Orderly Batal Abdelouahe, OR nurse Lynn Thelen and surgeon Rafael Andrade (left to right) highlighting items recycled by the OR.

Challenges and Lessons Learned:

Although the OR kit reformulation at UMMC produced major savings and greatly reduced the impact of the facility on the environment, the project was not free of frustration. It took a full year for the first pack changes to be put into use. Also, while many calls with vendors were quite productive, other calls, aimed at improving the system ("green calls"), occasionally wound up being a sales call in which vendors would try to sell the OR on a new item. Clearly stating the purpose of these calls up front helped to allay some of these concerns.

With evidence of such success with the OR kit reformulation project, UMMC has begun to look at kits in other areas of the hospital, such as the Women's Center. They have also looked at kits at the hospital's Riverside location.

Endnotes

- 1 University of Minnesota Medical Center, Fairview (UMMC). (2010). *Providing world-class care*. Retrieved February 2011, from http://www.uofmmmedicalcenter.org/fv/groups/internet/@ummc_website/documents/web_assets/c_788376.pdf
- 2 Koch, C. (2006). Do no harm. Retrieved September 1, 2010, from Google Scholar database.
- 3 Chen, I. (2010). In a world of throwaways, making a dent in medical waste. *The New York Times*. Retrieved February 2011, from <http://www.nytimes.com/2010/07/06/health/06waste.html?pagewanted=all>
- 4 Wastage of Supplies and Drugs in the Operating Room: Reduce, Reuse, Recycle, and Restrict. *Medscape*. Retrieved March 2011, from http://www.medscape.com/viewarticle/710513_2?src=emailthis
- 5 Reducing OR Pack Waste PowerPoint Presentation. (April 2010). *Greening the OR Symposium*.
- 6 University of Minnesota. (2009). *Minnesota Technical Assistance Program: Reducing waste from the operating room*. Retrieved March 2011, from <http://mntap.umn.edu/health/resources/142.html>

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