



CASE STUDY

Inova Fairfax Hospital: Regulated Medical Waste Reduction and Minimization



Demographic Information:

Inova Fairfax Hospital is a 900-bed Trauma 1 community hospital located in Falls Church, Virginia. The hospital is part of the Inova Health System, a large integrated delivery network of 5 hospitals with 1,700 beds and 16,000 employees. Inova Fairfax has received the prestigious Magnet status for nursing excellence and was recently named one of the "50 best" hospitals in the nation for 2010 by HealthGrades. Located on the Inova Fairfax campus, the Inova Fairfax Hospital for Children offers a level 3 Neonatal Intensive Care Unit and a full range of specialized health services for infants, children, and adolescents. Inova Fairfax has received national recognition for providing excellent and innovative medical care in a wide range of health areas.¹ Inova Fairfax has 29 operating rooms and performed 19,402 inpatient and 16,362 outpatient surgeries in 2010.²

Executive Summary Statement:

Since 2007, a cultural shift has taken place at Inova Health System. Dr. Ravi Gupta, a physician at Inova Fairfax Hospital, recognized the impact that the healthcare industry has on the environment and human health. He felt concerned about the excess waste and improper disposal of waste at the hospital and encouraged Inova leadership to pay closer attention to the impact their facilities had on the environment. With Dr. Gupta's encouragement, and support from the Chief Executive Officer (CEO), leaders and staff at Inova Health System began a journey that has completely transformed the culture of Inova Health System to one of environmental consideration. A combination of efforts, such as creating a position dedicated to sustainability, starting a system-wide environmental committee, and starting "green teams", led to the successful change of the hospital's culture. Through the implementation of practices that focus on waste minimization and proper segregation of waste, along with green practices such as Environmentally Preferable Purchasing (EPP), recycling, and Health Information Technology (HIT), Inova Health System has reduced over 1 million pounds of regulated medical waste from 2009 to 2010, saving over \$200,000, and has become a sustainable healthcare leader.

PROJECT CHAMPIONS:

- *Seema Wadhwa, Sustainability Manager*
- *OR Directors and Leaders*
- *Environmental Services*
- *Green Team*

The Problem:

Regulated medical waste (RMW) has to be treated in order to meet safety requirements established by regulatory agencies before it can go to a land-fill.³ Various waste treatment technologies, such as chemical treatment or incineration, can have significant negative impacts on the environment and human health by contributing to pollution. The disposal of RMW not only has the potential to produce harmful effects on the environment and human health, but it also costs 6-10 times more than the disposal of regular solid waste.⁴ While proper treatment of RMW is necessary to ensure safe waste disposal, many non-infectious items such as computer paper, cardboard boxes, clean medical supplies, packaging, and even unused supplies end up in RMW containers.⁵

In 2007, Dr. Ravi Gupta noticed that there were many ways that Inova Fairfax could cut down the amount of waste generated at the facility. At the time, the hospital had not yet begun a recycling program. Many recyclable items were ending up in both solid waste and regulated medical waste streams—driving up the cost of waste disposal. Administrators at Inova Health System knew that they needed to focus on appropriate waste segregation and that the organization had lots of opportunity to remove non-infectious items from the infectious waste stream. Inova Fairfax staff was unaware of how improper segregation of waste impacted the hospital's budget, the environment, and public health.

Strategy & Implementation:

When leaders at Inova Health System became aware that they needed to begin to focus on reducing the organization's environmental footprint and decrease the amount of waste the

facility generated, they realized that this would require a culture change at the organization. In order to change the culture of the entire health-care system, they needed to create a position specifically dedicated to environmental sustainability. The organization brought Seema Wadhwa on board as a consultant in 2008 to lead the transformation to a sustainable organization.

Setting the foundation for the sustainability initiatives at Inova Fairfax, in 2007, Dr. Gupta and Randy Kelley, the CEO of Inova's Loudoun Hospital, started a system-wide environmental committee. The environmental committee members, including Cindy Kilgore, the Assistant Vice President of Materials Management, were dedicated to raising awareness of healthcare-related environmental issues and facilitating efforts to "go green". In addition to the environmental committee, Inova has green teams at each hospital who help engage employees in sustainable healthcare practices. As part of the waste reduction and minimization efforts, Inova Fairfax implemented a recycling program in the OR and educated staff about proper waste disposal and segregation. Seema noted that the implementation of the single-stream recycling program was key to employee engagement.

One of Seema's early targets was the Operating Room (OR). She chose the OR as a starting place for several reasons, including the fact that, conveniently, all of the waste from the OR goes to one place, the OR is a manageable size, and research demonstrates that a large percent of a hospital's overall waste comes from the OR.⁶ Seema began by holding an In-Service for the OR staff to raise awareness about the impact of OR waste on the environment.

The implementation of sustainable practices in the Inova Fairfax OR began with a survey of the OR environment. Seema talked to staff to understand how logistics worked in the OR. She spent time in the OR to survey practices and procedures, to decide where recycling containers could be placed, and to analyze how the recycling program would work.

Next, Inova Fairfax conducted a detailed audit of Regulated Medical Waste (RMW) coming out of the OR. During the waste audit, the contents of the RMW bags were analyzed. Seema found that the RMW bags contained, predominantly, packaging material. When they weighed the waste coming from the OR, they found that the OR produced over 900 lbs of RMW daily. Inova Fairfax had learned from Practice Greenhealth (PGH) that 15% RMW was the industry best practice for RMW as a percent of total waste. Seema knew that the OR's RMW percentage was higher than it needed to be.

After analyzing the waste coming from the OR, Seema began an education campaign for staff. Seema held an In-Service to educate the OR staff about how their waste disposal practices impacted the hospital's budget, the environment, and human health. The In-Service pointed out to staff why they should care about the waste they generated. Referencing research that demonstrates a direct link between healthcare practices and chronic illness in humans, the short training enlightened the OR staff about the impact their practices had on human health. The In-Service included a review of the facility's waste disposal policy, which describes where staff should put each type of waste: RMW (red bag waste) and regular solid waste. The training pointed out that non-infectious items were ending up in RMW containers. The In-Service enlightened staff about the cost savings that recycling offers. Lastly, it included a call to action and a reminder that the OR staff are the last line of defense for the segregation of waste.

Auditing waste from the OR prior to implementing waste minimization and segregation practices:

- 907 lbs of RMW from the OR daily.
- The cost of RMW from OR was \$85,000 annually.⁷

Auditing waste from the OR after implementing waste minimization and segregation practices:

- 738 lbs of RMW from the OR daily.
- 170 lbs per day drop in 6 months.
- Cost savings of over \$15,000

Three to six months after the In-Service, Seema followed up with the OR staff and re-analyzed the waste coming from the OR. She found that there was a 19% reduction of RMW. The education of staff helped decrease the amount of packaging in RMW containers and decreased improper disposal of items in RMW containers. The recycling program had helped divert non-infectious waste from RMW. Additionally, the OR staff had begun to collect clean, unused supplies for donations to charity.

Benefits:

- Reduction of red bag waste by 19%
- Decreased over 1 million pounds of RMW across the system from 2009-2010



During a waste audit of the OR, Inova Green Team members highlight items unnecessarily placed in the red bag.



Many of the items identified in red bag waste during the waste audit were packaging.



ORs at Inova Fairfax are now equipped with containers for solid waste (clear), linen (blue), regulated medical waste (red) and recycling (green).

IMPROVING THE ACCOUNTABILITY OF OR STAFF:

As a way to improve the proper segregation of waste, the Green Team members from the OR (using proper personal protective equipment) pulled out recyclable items from the regular solid waste containers to show the staff what items could have been recycled.

A PROGRAM TO ENCOURAGE STAFF:

*To improve waste minimization and segregation efforts, Inova started **The Oscar Award Program**. Designed to encourage staff to properly segregate waste, the program involved weighing carts of Regulated Medical Waste from each department of the hospital. The staff that had been the most compliant with waste segregation won the Oscar Award—a stuffed Oscar the Grouch.*



Challenges and Lessons Learned:

Creating and sustaining change at Inova Fairfax required communication, auditing, monitoring, process improvement, and education. Changing the overall culture of the organization was key to the successful implementation of sustainable practices. Seema noted that challenges of the waste minimization and segregation project included the consideration of all waste disposal regulations and ensuring that hospital policies were updated and clarified to outline the new practices.

Endnotes

- 1 Inova Health System. (2011). *Inova Fairfax Hospital*. Retrieved March 2011, from <http://www.inova.org/patient-and-visitor-information/facilities/inova-fairfax-hospital/index.jsp>
- 2 Best Hospitals-Inova Fairfax Hospital. (2011). US News and World Report. Retrieved on March 20, 2011 at: <http://health.usnews.com/best-hospitals/inova-fairfax-hospital-6340490>
- 3 EPA. (2011). *Waste Disposal*. Retrieved March 2011, from http://www.epa.gov/region7/waste/solidwaste/waste_disposal.htm#medical_waste
- 4 Hospitals for a Healthy Environment. (2003). *Regulated medical waste reduction: 10 steps to implementing a regulated medical waste reduction plan*. Retrieved March 2011, from <http://www.h2e-online.org/docs/h2e10steprmw20103.pdf>
- 5 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
- 6 Conrardy, J., Hillanbrand, M., & Nussbaum, G.F. (June 2010). Reducing Medical Waste. *Association of Perioperative Registered Nurses Journal (AORN)*, 6, 711-721.
- 7 Wadhwa, S. (2011). Regulated Medical Waste Segregation in the OR. Greening the OR PowerPoint presentation.

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