



Fundamentals of Sustainable Health Systems

Cases & Faces of Sustainable Healthcare

Hotspot: Operating Room (OR)

Case study: Red Bag Initiative, Carolinas Medical
Centre (Charlotte, North Carolina)

Setting: Carolinas Medical Center (Charlotte, North Carolina)

- Not-for-profit teaching hospital
- Flagship institution of Carolinas HealthCare System (which has 39 affiliated hospitals in North and South Carolina and an annual revenue of over \$6 billion).
- Busiest tertiary surgical and Level I trauma facility in the state – over 17,000 inpatient surgeries performed annually

At the Carolinas Medical Centre (CMC), a group of surgeons and nurses established a Green Operating Room Committee (GORC) comprised of members from corporate leadership, anesthesia, surgery, nursing, research, administration, and environmental services in 2008. GORC’s goal was to find ways to make the OR (and ultimately the hospital itself) an environmentally sustainable workplace. Recognizing that hospital administrators were unlikely to approve any changes that would result in increased OR costs, GORC sought to develop sustainability interventions that would not only be cost-neutral, but actually produce downstream improvements in cost-efficiency.

Upon its formation, GORC instituted a green mission statement, and encouraged every employee working in the OR to feel a sense of ownership over/responsibility to this mission. Individual contributions and

initiatives were solicited. These initiatives were subsequently grouped into four Green OR Campaigns, including Solid Waste Reduction, OR Recyclables & Reusables, Energy & Water Reduction, and Charitable Donations. Quarterly meetings were held to review the progress of these campaigns, and discuss new ideas.

Since its formation in 2008, GORC has diverted a significant amount of medical waste through a variety of its Campaign interventions, including recycling single-use devices, replacing disposable foam padding with reusable gel pads, donating or redistributing previously discarded batteries, powering down lights and equipment when not in use, and converting from soap to an alcohol-based waterless scrub. Each of these interventions has resulted in significant cost savings (see Table 1, from Wormer et al, 2013, below).

Table 1: Green OR Initiatives—Approximate Environmental Impact and Cost Reduction (Wormer et al, 2013)

| Green OR Initiative | Environmental Impact (per year) | Cost Savings (dollars per year) |
|---|---|---------------------------------|
| Recycling SUDs | 12,000 lbs solid waste diverted | 4,000.00 |
| Reducing red biohazard bag waste | 75% decrease red bag waste | 60,000.00 |
| Recycling batteries | 500 lbs alkaline waste diverted | 9,000.00 |
| Reusable gel OR padding | Complete reduction of foam waste | 50,000.00 |
| Power down | CO ₂ emissions down 234.3 tons | 33,000.00 |
| Waterless scrub | 2.7 million liters water saved | 2,000.00 |
| | Approximate total annual savings | 158,000.00 |

Initiatives not listed: charitable donations, basic recyclables, reusable light handles. OR, operating room; SUD, single-use surgical device.

One of GORC's most successful interventions has been the "Red Bag Initiative" – a program geared at reducing the amount of waste that ends up in the red bags designated for biohazardous waste. Disposing of biohazardous materials is costly in both a financial and environmental sense: disposal is 10 times more expensive than regular waste due to incineration and other processing requirements, and incineration releases dioxins, an extremely toxic group of chemicals that are harmful to human health even in very small quantities. Since waste incineration is prohibited in CMC's vicinity due to poor local air quality, red bags have to be driven over 100 miles away for processing, adding to their financial and environmental burden.

Despite these costs, GORC observed that staff were throwing any item that touched a patient into a red bag. In order to decrease the amount of general waste being thrown into these receptacles, GORC took a two-pronged approach. First, the Committee embarked on an educational campaign to ensure staff understood the distinction between general waste and biohazardous materials across the waste stream. GORC made sure staff understood that only heavily soiled and saturated materials containing potential blood-borne pathogens should be placed in red bins, and also explained the differences in the disposal (and associated costs) of general vs. biohazardous waste.

Second, custodial staff spearheaded a change in the size and placement of the red bags. The trash cans holding the red bags went from being the largest to the smallest bins in the room, and they were placed in the corner so that staff had to purposely walk over to them to dispose of waste. The custodial staff suggested that this increased effort to reach the red bags would remind staff that they should only be used for very heavily soiled items.

GORC regularly collected data on how much waste was placed in the red bags both prior to and after the intervention. These figures indicate that as a result of the Red Bag Initiative, CMC has seen a 75% reduction in red bag waste, amounting to approximately \$60,000 saved annually; according to GORC's Dr. Heniford, they also energize people "because they see that they can make a difference."

Sources

Peregrin, Tony. May 1, 2015. Strategies for sustainability: Going green in the OR, in Bulletin of the American College of Surgeons.
<http://bulletin.facs.org/2015/05/strategies-for-sustainability-going-green-in-the-or/>

Wormer, Blair, et al. 2013. The Green Operating Room: Simple Changes to Reduce Cost and Our Carbon Footprint. The American surgeon. 79. 666-71.

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