Going Green in the Emergency Department

Sara Wohlford, MPH, RN
Carilion Roanoke Memorial Hospital, Roanoke, VA

Carilion Roanoke Memorial Hospital

One of the largest hospitals in the state, Carilion Roanoke Memorial Hospital (CRMH) is a 703-bed hospital with an additional 60-bed Neonatal Intensive Care Unit. Now in its second century of providing premiere healthcare services, CRMH also features a Level I trauma center. A three-time Magnet® designated facility, CRMH employs approximately 1800 nurses in acute and ambulatory settings with over 400,000 admissions and visits annually.

Background & Significance

There is a growing recognition that community and environmental health are interrelated. By improving environmental health, hospitals can help fulfill their mission to improve the health of the communities they serve. Research demonstrates options for going green in hospitals[1]; however, there was no literature on how to implement change into the high turnover, fast paced environment of the emergency department.

In an 80 bed, Level 1 Trauma Emergency Department (ED) with 85,000 visits annually, opportunities to reduce waste, improve energy efficiency, and improve cost effectiveness became evident. Products which could be changed to more environmentally preferable options, and waste reduction programs that could be executed while maintaining and improving the quality of patient care and patient experience were identified.

A nurse champion for environmental sustainability led four projects that led to improvements (NK4EO): a pilot of biodegradable bedside products, a regulated medical waste reduction program, a switch from single use, disposable pillows to reusable pillows, and a switch from single use, disposable pulse oximeters to reusable pulse oximeters.

Printed on 40% Post-Consumer Recycled Paper

Contact: Sara Wohlford
Efficiency and Sustainability Officer, Carilion Clinic
sewohlford@carilionclinic.org

Biodegradable Bedside Product Pilot

Situation: CRMH's ED utilizes approximately 26,000 disposable plastic bedpans, wash basins and urinals annually.

Method: To gauge staff reaction, product quality and patient perception, the ED researched alternative solutions and piloted biodegradable bedside products to reduce plastic waste. The products were made of pulp molded from post-consumer recycled newspaper and phonebooks. These products were 100% biodegradable and non-toxic to our environment.

Results: At the end of the trial, a survey was sent to staff. With 77 respondents, results were as follows:

	Agree or Neutral
After receiving an explanation about the product and using the product, the patient's perception of the biodegradable product was positive	81%
Utilizing biodegradable products over single use disposable plastics would be a positive change for our department	83%
I support changes in the workplace that promote environmental sustainability	99%

Next Steps: Full implementation of the system involves installation of equipment to macerate the urinals and bedpan liners to flush them out via existing sewage lines. When used in conjunction with macerators, the system minimizes the potential for environmental contamination, inadvertent staff exposure to human waste and associated costs of cross contamination and infection. This would eliminate close to three tons of plastic waste from Virginia landfills annually.

Disposable to Reusable Pillows

Situation: The ED used single-use disposable pillows. This resulted in 30,000 disposable pillows per year with an annual expenditure of over $62,000.

Method: Decrease the number of single-use disposable pillows used and instead utilize reusable pillows.

Results:

	Annual Period ending Jun 30, 2014	Annual Period ending Jun 30, 2015	Annual Improvement
Total Number Disposable Pillows	30,000	0	↓ 30,000
Contribution to Waste Stream	22,875 lbs	0 lbs	↓ 22,875 lbs
Disposable Pillows Cost	$62,000	$0	↓ $62,000
Annual Savings (Less Cost of Reusable Pillows)			↓ $19,925

Disposable to Reusable Pulse Oximeters

Situation: The ED placed disposable pulse oximeter probes on almost all patients despite acuity. This resulted in 46,554 disposable probes per year with an annual expenditure of over $405,000**.** For most patients, continual pulse oximetry monitoring via a disposable probe was not needed.

Method: Decrease the number of single-use disposable pulse oximeter probes used and instead utilize reusable probes. The decision was made to continue applying disposable probes to:

- Acute patients requiring ICU admission/care
- Patients with excessively traumatic injuries
- Patients for whom the reusable probe is not appropriate (not reading well, not tolerated by patient)

Results:

	Annual Period ending Jun 30, 2014	Annual Period ending Jun 30, 2015	Annual Improvement
Total Number Disposable Pulse Oximeters	46,554	16,775	↓ 29,779 (64%)
Contribution to Waste Stream	2,037 lbs	734 lbs	↓ 1,303 lbs
Disposable Pulse Oximeter Cost	$405,140	$146,165	↓ $258,975
Annual Savings (Less Cost of Reusable Pulse Oximeters)			↓ $252,600

Regulated Medical Waste Reduction

Situation: Excessive amounts of Municipal Solid Waste (MSW) were being disposed in the red bags allocated for Regulated Medical Waste (RMW)

Method: A comprehensive program was created to educate staff on the importance of proper sorting and methods to ensure compliance

Results:

	09-2013	05-2014	Annual Improvement
Total annual weight RMW	25,687 lbs	20,066 lbs	↓ 5,621 lbs
MSW	41.73%	25.47%	↓ 16.26%
Phantom Weight	33.65%	31.28%	↓ 2.37%
Total content other than RMW	75.38%	56.75%	↓ 18.63%
Total annual cost RMW	$10, 062	$7,192	↓ $2,870

Implications for Nursing

Analyzing the ecological footprint of health care and nursing reveals astounding figures. Every day, hospitals produce 33 pounds of waste for every patient. Across the nation, this equates to more than 6,000 tons per day[2]. Additionally, according to the EPA, inpatient healthcare ranks as the second largest commercial energy user after the food service industry[3]. With 3.1 million registered nurses nationwide[4], we have the opportunity to reduce these numbers and improve practices with the commitment of our peers. It is essential that the nursing workforce understands the environmental impacts of healthcare and nursing practice, and be equipped with skills and knowledge to affect change to a more environmentally sustainable healthcare system.

References

1. Boone, T. 2012. *Creating a culture of sustainability: Leadership, coordination and performance measurement decisions in healthcare.* Available at: https://noharm-uscanada.org/sites/default/files/documents-files/70/Creating_a_Culture_of_Sustainability.pdf Accessed August 17, 2015.
2. Practice Greenhealth. 2015. *Waste*. Available at: https://practicegreenhealth.org/topics/waste Accessed August 3, 2015.
3. U.S. Department of Energy. 2012. *Energy characteristics and energy consumed in large hospital buildings in the United States in 2007.* Available at: http://www.eia.gov/consumption/commercial/reports/2007/large-hospital.cfm Accessed August 3, 2015.
4. Health Resources and Services Administration. (September 2010). *The Registered Nurse Population: Findings From the 2008 National Sample Survey of Registered Nurses.* Washington, DC: U.S. Department of Health and Human Services.