



The Gold in Garbage: Implementing a Waste Segregation and Recycling Initiative

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ABSTRACT

Generally, ORs produce approximately one-fifth to one-third of all waste in a hospital. Before our quality improvement project was performed in our tertiary care facility, all OR waste was disposed of as clinical waste. Disposal of clinical waste is more costly than disposal of general waste. Therefore, accurately segregating waste can have significant financial incentives. Our quality improvement project involved the implementation of processes that segregated general waste in the OR from clinical waste and translated to an almost 60% reduction of waste disposal costs for OR waste. Further, we implemented a recycling program that reclaimed a portion of the general waste. In total, our efforts reduced the amount of clinical waste produced by the OR by 82%, and the amount of total OR waste was reduced by more than 50%. *AORN J* 103 (March 2016) 316.e1–316.e8. © AORN, Inc, 2016. <http://dx.doi.org/10.1016/j.aorn.2016.01.014>

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Hospitals are resource-intensive facilities generating a large amount of waste that is typically divided into two categories: clinical and general waste.¹⁻⁴ Clinical waste has the potential to cause disease and may be contaminated with human tissue or body fluids. Clinical waste includes regulated medical waste (infectious or pathogenic), sharps, pharmaceutical material (eg, cytotoxic contaminated items), and radioactive material.¹⁻⁴ General waste is defined as anything other than regulated or clinical waste.¹⁻⁴ In recent years, there has been an increased focus on waste management at the hospital level to support environmentally sustainable health care. Despite increased awareness, most health care systems in Australia have only a rudimentary recycling system

in place. One Australian survey found that nearly 80% of local public hospitals have only a basic recycling system or none at all.⁵ Operating rooms produce approximately 20% to 33% of all waste in a hospital,^{6,7} and general waste accounts for more than 50% of total OR waste.^{7,8} Research shows that more than 70% of general OR waste, which is potentially recyclable, is incorrectly disposed of as clinical waste.^{7,8} Two of these studies^{6,7} date from 20 or more years ago; however, there has been a surge in medical waste in recent years because of the increased use of disposable medical supplies in response to concern about the transmission of infectious diseases.^{3,9} The increase in waste affects the environment, and there are high costs associated with its disposal.

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SETTING

Princess Alexandra Hospital (PAH) is a 780-bed, public, tertiary hospital in the southeast region of Queensland, Australia, that provides services in most major adult specialties. It is nationally recognized for expertise in major trauma management and organ transplantation. Approximately 22,000 surgical procedures are performed annually in the 21 ORs in the central perioperative department. The perioperative multidisciplinary team of surgeons; anesthesiologists; preoperative, intraoperative, and postoperative care nursing staff members; and unlicensed OR assistants explored opportunities to optimize patient care in a financially conservative health care environment.

BACKGROUND

The OR department of PAH generated more than 20,000 kg of waste per month before the waste management initiative began in 2009. All waste was disposed of as clinical waste because no resources or guidelines were in place to support waste segregation. Specialized clinical waste disposal methods are expensive in relation to general waste disposal costs.^{2,3} With a 7:1 ratio cost difference between clinical and general waste disposal at our institution, a review of waste management processes identified an important economic driver that provided the impetus to investigate the potential for waste segregation and recycling. Two studies have quantified OR waste,^{5,8} and international studies have demonstrated financial benefits from waste management.^{10,11} To our knowledge, no Australian study and only a small number of international studies have shown the potential for reducing OR waste and the subsequent financial benefits. As part of a larger quality improvement (QI) program, a waste management initiative was introduced in PAH's ORs by instituting waste segregation and recycling.

PROJECT AIMS AND QUESTIONS

The aims of this QI initiative were to

- evaluate the proportion of general OR waste, clinical OR waste, and recyclable OR waste after the implementation of a waste segregation and recycling program and
- determine the effect of waste management in the OR department on the overall cost of waste disposal.

REVIEW OF EVIDENCE

Health care waste is often hazardous and requires specific disposal methods to reduce infectious or toxic exposure. To encourage environmentally sustainable practices and rationalize the cost of waste disposal, the OR department

reinforced compliance with the hospital's waste management guidelines. These guidelines had been developed previously to enable staff members to distinguish the various types of waste and to implement waste segregation that complied with legislative and evidence-based practice.¹ Other guidelines were reviewed to ensure our practices followed the ethos of waste management: reduce, reuse, recycle, rethink, research, and advocate.^{2-4,12} To ensure the sustainability of our waste management initiative, we studied evidence for factors that drive QI projects. Studies have suggested that behavioral change theories directed at both the organizational and individual levels could drive the management of health care waste.¹³⁻¹⁵ These theories provided a framework for the training of managers and staff members with a focus on education regarding environmental issues, waste management, and cost savings.¹⁵

INSTITUTIONAL APPROVAL

According to PAH's policy informing the ethical approval requirements for proposed studies, this project met the criteria for a QI activity and was exempt from ethics review.

WASTE MANAGEMENT INITIATIVE

A waste management initiative commenced in PAH's ORs in 2009; the initial focus was the implementation of waste segregation. To enhance the link between our waste management initiative and waste audits, we used the simple yet efficient Plan-Do-Study-Act (PDSA) model for improvement to drive small steps of change in the OR department.^{16,17} We informed key stakeholders, including the directors and supervisors of all perioperative services. Representatives from OR nursing staff members, surgeons, anesthesiologists, OR assistants, and waste management staff members formed a project team. The team communicated regularly to review implementations and make appropriate adjustments. The project's aims and objectives were communicated to the perioperative multidisciplinary team. Educational sessions for OR staff members were scheduled regularly to promote awareness and provide opportunities for discussion to ensure workplace health and safety, and statutory requirements were followed.² Also, the project team positioned posters throughout the ORs to remind staff members to differentiate between clinical and general waste. Waste management change champions volunteered to support clinicians' decisions throughout their daily work activities.

In September 2009, we collected baseline data and measured the amount of waste produced by ORs over a four-week period. Waste was weighed daily throughout the four-week

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