

Improving Staff Knowledge of Perioperative Regulated-Waste Management



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ABSTRACT

The mismanagement of regulated waste is a costly issue for many health care facilities. Our facility undertook a quality improvement project to determine whether increasing staff members' knowledge of regulated-waste management would reduce its mismanagement in the surgical setting. I designed a mandatory online learning module for all perioperative staff members and obtained consent from participants to use their test scores. I also designed pre- and posteducation audits to identify the total mass of regulated waste produced in the department and to categorize which items were nonregulated according to facility standards. Personnel achieved a 41% reduction in the total mass of regulated waste sampled and a 77% reduction in nonregulated item mass. The results of the audits determined that perioperative staff members are more likely to improve compliance with the disposal of regulated waste after increasing their knowledge base. *AORN J* 105 (January 2017) 85-91. © AORN, Inc, 2017. <http://dx.doi.org/10.1016/j.aorn.2016.11.005>

Key words: *regulated waste, waste management, education, waste disposal, waste audit.*

The mishandling of the trash generated in a perioperative department increases the disposal cost of regulated waste, which is more expensive to dispose of than nonregulated waste.¹ The cost for disposing of regulated waste can range from five to eight times that of nonregulated waste.¹ Regulated waste is defined by the Occupational Safety and Health Administration as

liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.^{1(p1)}

Personnel at our facility in Dover, Delaware, were incorrectly disposing of some items (eg, disposable packaging, nonsoiled

gowns) in our perioperative department's waste stream. In some situations, OR staff members were using regulated trash receptacles for all waste created after the surgical incision occurred. Conrardy et al reported that the

recommended standard for the percentage of regulated medical waste in health care facilities is 15% or less of overall waste; however, researchers have found that many facilities dispose of up to 70% of waste as regulated medical waste.^{2(p711)}

Knowing how costly excess regulated-waste disposal can be to a facility's budget and the environment, I hypothesized that proper waste management could be significantly improved through education.

In an attempt to determine current staff member compliance with regulated-waste management and disposal, I developed a quality improvement project involving nine OR suites in which staff members performed approximately 600 surgical

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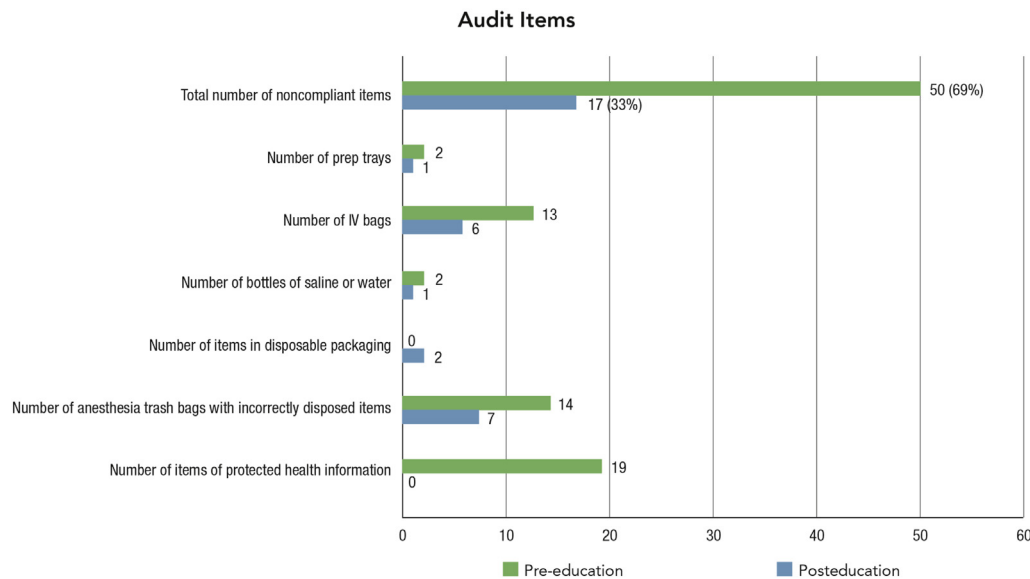


Figure 1. Audit tool used to stratify collected data and track overall staff member compliance per sample taken.

procedures per month. A total of 66 perioperative employees participated in this education and audit process. I created a simple, unit-based interventional audit to determine what percentage of the regulated waste produced was noncompliant with Occupational Safety and Health Administration disposal recommendations and the facility's policies and procedures. I created an online educational module to help staff members define regulated waste and determine which items belong in the regulated-waste containers.

To enact the necessary practice changes, I based the educational module on Kurt Lewin's change model, in which an educator must first *unfreeze* existing knowledge, change the mindset of staff members by providing new knowledge, and then *refreeze* the new knowledge through establishing new standard practices.³ By following this framework, I had the opportunity to assist staff members in learning how to streamline waste management. The goal of this project was to identify whether education on the topic of regulated-waste disposal was effective in creating a change in regulated-waste management.

LITERATURE REVIEW

I performed a brief literature search for documented evidence of other strategies to reduce mismanagement of waste. Key words included *regulated waste*, *waste in the operating room*, *regulated waste and reduction*, *OR*, and *waste management* to search in the Cumulative Index to Nursing and Allied Health Literature (CINAHL) database. This search yielded several quality articles identifying the classification of regulated waste, but it produced little research related to how education may

improve the regulated-waste management process. Many of the articles discussed how improved management of regulated waste is cost-effective for the facility and better for the environment.⁴⁻⁶ Mosquera et al⁷ discussed how hospitalwide education can improve the correct segregation of waste and lead to savings for the facility. Mosquera et al⁷ performed a descriptive analysis of the waste before and after their educational intervention and found that the management of waste was improved after training.

METHODS

During December 2014, I procured a total of 45 bags of regulated waste at different times of the day and on various days of the week to obtain a random selection from the scheduled procedures performed in nine OR suites. Staff members marked the regulated-waste bags with date, time, initials, and OR suite number. I used an unvalidated audit tool to stratify the data collected and track overall compliance per sample taken (Figure 1). Our infection prevention specialist, a former perioperative nurse, created and reviewed the audit tool. I measured regulated waste in both pounds and kilograms and sorted the contents of each bag. I wore personal protective equipment including a gown, gloves, mask, and eye protection and used heavy tongs to handle the waste for added protection against accidental exposure to blood or other body fluids.

To measure the original mass of the bags, I used a scale that was calibrated by a member of the facility's clinical engineering department. I measured each bag and then removed items such as protected health information, plastic bottles for saline or sterile water, IV bags, sterile disposal wrappers, prep trays,

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