

Environmental issues

Going green in the OR brings financial, environmental gains

The OR generates more than 40% of a hospital's revenue and between 20% and 30% of its total waste volume, according to Practice Greenhealth, a nonprofit organization dedicated to environmental sustainability in health care. Given those numbers, it's no wonder that being environmentally friendly or "green" doesn't just benefit society—it hits the bottom line.

In April 2010, Practice Greenhealth launched the "Greening the OR" Initiative, which provides data, tools, and resources to support best practices for a green OR. As of March 25, 2011, 100 health care organizations have endorsed the initiative.

A recent article in *Archives of Surgery* examined some of those best practices.

After reviewing 43 studies of hospitals' environmental practices, the authors of "Green surgical practices for health care" convened a panel of experts who developed 5 practical strategies:

- operating room waste reduction and segregation
- reprocessing of single-use medical devices
- environmentally preferable purchasing
- energy consumption management
- pharmaceutical waste management.

Or to sum up: reduce, reuse, and recycle.

Reduce

"Any time you reduce waste, you save money," says Vickie Stewart, MBA, director of business operations for perioperative, endoscopy, and rehabilitation services at the University of Maryland Medical Center (UMMC) in Baltimore, which has 31 ORs and performs 21,000 cases a year.

OR managers should seek waste reductions in 3 areas: regulated medical waste (RMW), supplies not used, and energy consumption.

One of the quickest ways to save money and enhance green practice is to reduce the amount of RMW, also called "biohazardous," "infectious medical," or "red-bag" (after the container it's placed in) waste.

RMW is the part of the waste stream that may be contaminated by blood, body fluids, or other potentially infectious materials such as tissue that pose a risk for transmitting infection.

In addition to each state's RMW requirements, the Occupational Safety and Health Administration has regulations designed to protect workers, such as putting RMW in containers that are constructed to contain all contents and prevent leakage of fluids during handling, storage, transport, or shipping.

Too much red-bag waste

As much as 90% of red-bag waste doesn't belong there according to the authors of "Green surgical practices for health care." For instance, Foley bags and catheters, ventilator tubing, masks, dressings, suction tubes, and IV bags are typically not biohazardous materials unless they are caked with blood or body fluids, but they often end up in a red

bag.

"If you don't segregate waste properly, it causes unnecessary incineration," says Stewart.

Conduct a 'mini-audit'

Cecilia DeLoach Lynn, MBA, LEED AP, director of sustainability education and training for Practice Greenhealth, says ORs can work with their environmental services (EVS) department to conduct a "mini-audit" of how much RMW the OR generates. In collaboration with EVS, the amount of RMW being generated by the OR can be weighed over a set period of time—such as several days—using a freight or linen scale. That number can then be projected to get a sense of monthly or yearly tonnage. The data can also be used to estimate the OR's contributions to the facility's overall RMW generation.

"RMW should be about 15% or less of the total waste stream," she says. "The best performers are generating less than 10% as RMW, but being at 35% isn't atypical if you haven't looked at this before," Lynn says.

She suggests OR staff use a clear trash bag to divert solid waste during surgical setup and close it before surgery starts. Anything opened before surgery typically isn't infectious and can often be recycled or disposed of as solid waste.

"Use training and signage that clearly states which materials need to go into the red bag, and let staff know how they are doing at waste segregation," she says.

Re-evaluate supply packs

Keeping a vigilant eye on supplies is another strategy for reducing waste.

"An easy greening strategy is to standardize and reevaluate your packs on a regular basis," says Denise Choiniere, MS, RN, sustainability manager at UMMC. "You're probably doing this already, and all it costs is the time."

Therese Chlebeck, BAN, RN, nurse manager for the OR at University of Minnesota Medical Center/Fairview (UMMC/Fairview), Minneapolis, which has 19 ORs and does 14,000 cases a year, agrees with Choiniere. "It's easy for the packs to become too generalized," she says. Just removing small items, such as an extra cup in a port placement pack, saves money.

"It really helps to have a surgeon champion," Chlebeck adds. When light handles were removed from the laparoscopy packs, the surgeon helped ease the transition among his peers.

Conserve energy

Reducing energy consumption also saves money. That includes using energy-efficient heating, venting, air conditioning, lighting, and sterilizing systems.

"Our facility managers are constantly looking at our energy consumption," says Stewart, who adds that it's important to target central sterile processing (CSP), which "uses a lot of water and steam." For example, steam valves in CSP and the rest of the



The perioperative staff at the University of Maryland Medical Center have aided an effort that has diverted almost 1.5 million pounds from the waste stream since 2000.

Partnering with vendors

Hospitals can partner with vendors in green efforts, suggests Cecilia DeLoach Lynn, MBA, LEED AP, of Practice Green-health.

"Share your goals with your vendors and talk about how you are trying to increase efficiency, reduce costs, and reduce waste," she says. "They can be very good collaborators." Hospitals and group purchasing organizations (GPOs) should develop green-friendly purchasing policies and approaches. For example, the hospital might create a list of preferred vendors.

Factor in disposal costs

Environmental consideration should be part of the value analysis process for a product, Lynn says. When considering whether to purchase a disposable item over a nondisposable, says Vickie Stewart, MBA, of the University of Maryland Medical Center (UMMC) in Baltimore, "Look at the unit price but then factor in how much it will cost to dispose of it. It's not OK to use something today that will hurt someone later as it builds up in the environment."

Therese Chlebeck, BAN, RN, of the University of Minnesota Medical Center/Fairview, Minneapolis, says the next step for the hospital system's green group is to meet with manufacturers about their products to reduce waste. This might include folding gloves to reduce package size or eliminating specimen cups in Foley insertion kits used in the OR. "We rarely send a urine specimen when inserting a Foley, so we don't need the cups."

facility are checked for leaks.

Choiniere says some ORs reduce the frequency of air exchanges at night, when the ORs are unoccupied. "If you need to use the OR, you can bump the exchanges back up to what you need for an occupied room." In some ORs, sensors automatically detect when someone is in the room.

Reuse

Reusing surgical gowns, drapes, table covers, and other items significantly reduces waste. UMMC contracts with a reprocessing firm that picks up, cleans, and returns the materials. One often-overlooked savings is recovery of instruments that are accidentally thrown away. Instead of heading out the door in the trash, the instruments are found and returned. "You can save anywhere from \$25,000 to \$100,000 in instrument costs a year," Stewart says. She adds that when comparing costs between disposables and reusables, overall costs often end up being "about even" between the two. "It's then about the environment, and the environment wins."

Choiniere estimates that since 2000, UMMC's waste management and reuse programs have diverted almost 1.5 million pounds from the waste stream. Given that the market rate for disposal is about 28 cents per pound, hospitals can save significant amounts of money.

Surprise: Reuse sharps containers

OR managers might be surprised at what supplies can be reused, such as sharps containers.

"A machine empties the needles and the box is resterilized," Stewart says. "Clinicians like them because they are sturdier (than standard boxes) and we've saved about \$70,000 per year."

Lynn adds that fluid management systems with reusable or integrated canisters can decrease the volume of RMW while also dramatically reducing supply costs for disposable containers. Systems for the OR require an upfront capital investment, but payback periods are typically short, and satisfaction is high. Canisters are cleaned for reuse, and there is no link to patients that could cause disease transmission.

Reprocessing

"Reprocessing (single-use devices) gives you big savings," says Choiniere. "You can pay as much as 50% less than full price." For instance,

laparoscopic shears may cost \$120 new, compared to \$55 for the same reprocessed item. More than 70% of US hospitals reprocess some or all of their eligible medical devices.

"Everyone wants to do what's best," adds Chlebeck. "The trick is to make it easy." One of the ways UMMC/Fairview does that is by working with SterilMed, a reprocessing company. SterilMed set up the process and provided a list of what can be reprocessed, so Chlebeck says, "We don't have to worry about what can and what can't be reprocessed. We don't have to ask, 'Can a clip applier with only 7 clips be reprocessed?'"

SterilMed picks up the material and provides quarterly reports on how the OR is doing; the report includes environmental and dollar savings opportunities.

"It might say you diverted 5,000 devices from the landfill and shows how many tons of waste that is," says Chlebeck. "You can then show the report to staff so they can see what they have accomplished."

Reprocessing safeguards

A third-party reprocessing company inspects, tests, packages, and sterilizes the product so that the device remains safe and effective for future use. "It's a rigorous process," says Lynn. "Every item has to be function tested, whereas original manufacturers (those who first manufactured the device) can often use batch testing, according to a 2008 US Government Accountability Office (GAO) report."

Some original manufacturers seem to view reprocessed products as a threat and take actions to impede their use. The manufacturer, not the Food and Drug Administration (FDA), decides whether to label a device "for single use," and, according to the GAO, manufacturers may choose not to conduct the studies needed to show the item can be reused.

The Association of Medical Device Reprocessors (AMDR) has addressed common myths and misconceptions associated with reprocessing. It points out that reprocessing companies must register with the FDA, which regulates the industry, and meet strict requirements. In addition, reprocessed devices haven't been reported to be associated with patient harm.

AMDR provides a list of questions for hospitals to ask before choosing a reprocessing company, such as, "Are biological indicators used to monitor routine sterilization?" (The complete list of questions is at www.amdr.org/?s=Are+biological+indicators+used+to+monitor+routine+sterilization.)

"Reprocessing has little if any upfront cost," says Lynn, which makes it ideal for organizations of any size. Rewards can be substantial. For example, the medical device reprocessing company Ascent reports that in 2009 some of its hospital partners saved more than \$600,000 per year. Ascent also diverted an estimated 5.3 million pounds of total waste from landfills.

Recycle

Blue wrap, the plastic-based product used to wrap and store sterilized instruments trays, makes up a significant portion of OR waste, so hospitals like UMMC are working on eliminating it.

"It takes time because you need capital funds to get enough (rigid) metal containers to hold the instruments so you can get rid of the blue wraps," says Stewart, "but it pays for itself in 3 or 4 years." Savings come from blue-wrap costs, costs from reprocessing damaged packs, and reduction of waste. While reducing blue wrap, ORs can engage in another strategy for a green OR—recycling.

In addition to blue wrap, medical plastics are well suited for recycling. Practice-Greenhealth notes that at an average cost of \$121 per ton for solid waste disposal and

a price tag of \$68 per ton for recycling the same material, a hospital might pay nearly twice the price for medical plastics disposal if the facility doesn't recycle.

As part of another recycling program at UMMC, Stewart says clean, unused medical supplies are given to the medical school for training purposes or to staff going on missions in developing countries.

Staff can participate in recycling, too. Chlebeck says many OR staff no longer use disposable plates or coffee cups but bring their own.

It takes commitment

Having a team of eager, committed members to regularly examine green practices is helpful to start the effort and maintain momentum. Hospitals of any size can go green.

"It can start as a grassroots movement," Choiniere says. "Find the champions who believe in it and have a passion for it."

Ultimately, the OR manager needs to commit some hours to greening the OR. Chlebeck has a staff nurse who works one day a week on department and systemwide initiatives. She says most staff are "very enthusiastic" about the green efforts. "Many do things like this in their own lives."

Green practices have become part of the culture at UMMC/Fairview. For example, instead of discarding a container used to drain a Foley bag, staff send it with the patient so it can be reused. "It's important to measure achievements," adds Chlebeck.

"You can start without executive team support as a grass roots initiative, but you'll need it for the long term," adds Stewart. "Once people understand that it saves money and it's the right thing to do, it's not hard to get support." In fact, UMMC has Sustainability Principles that the executive team signed.

"It's a great win-win," says Stewart. "You're helping the environment, helping the patient, and saving money." ❖

—Cynthia Saver, MS, RN

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Reference

Kwakye G, Brat G A, Makary M A. Green surgical practices for health care. *Arch Surg.* 2011;146(2):131-136.

Going green

Resources to help your OR be more environmentally conscious.

Practice Greenhealth

Includes the Greening the OR Initiative. You do not have to be a member to access many of its resources.

Practice Greenhealth has a "virtual tour" of a green OR. The Greening the Operating Room Checklist helps identify opportunities for improving environmental practices.

—www.greeningtheor.org

Premier Green Resources

Includes a self-assessment tool and information on environmentally preferable purchasing.

—www.premierinc.com/quality-safety/tools-services/safety/topics/epp/program-resources.jsp

Green Guide for Health Care Center for Health Design

Two resources for integrating environmental practices into design and construction of health care facilities.

—www.gghc.org/
—www.healthdesign.org

State-by-state regulated medical waste resource locator

Find information about your state's requirements for regulated medical waste.

—www.hercenter.org/rmw/rmw-locator.cfm

OSHA Standards for Blood-borne Pathogens

—www.osha.gov/SLTC/bloodbornepathogens/index.html