



How to Reduce Waste by Increasing Use of Reusable Medical Textiles

Isolation gowns, surgical packs, gowns, and drapes can reduce waste and save dollars

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It's an honest mistake. All of us have been well trained to use disposable items, from paper wipes to isolation gowns to surgical gowns and drapes. In fact, for the most part, we are a generation that has only known disposable single-use items in the OR and many other areas of the hospital.

But for hospitals that seek ways to reduce waste and costs, there is an easy solution—look for ways to increase the use of reusable textiles and garments in your organization. Specifically, consider increasing the use of or switching to reusable isolation gowns, surgical packs and surgical gowns, and drapes.

Both the Association for the Healthcare Environment (AHE) and Practice Greenhealth recommend that members increase the use of reusable textiles in order to minimize waste. And, the textile services industry now has life cycle analyses that prove reusable textiles are the environmentally preferable choice over single-use disposable items.

The Problem of Disposable Waste

As stated by Practice Greenhealth, a nonprofit association dedicated to help hospitals operate in more sustainable ways:

“The culture of waste in the OR is driven in large part by the increasing volume of disposable medical supplies on the market today. Many hospitals—after jumping on the disposables bandwagon—are beginning to rethink the use of reusable textiles and supplies in the OR. Reusable surgical textiles are demonstrating increased clinician satisfaction while also providing comparable barrier protection. And reusable table and mayo stand covers, surgical towels, and basins are common sense switches that drive down costs by reducing the volume of waste generated.”

According to a survey of 114 member hospitals, Practice Greenhealth finds that hospital patients in the U.S. generate about 33.8 pounds of waste each day. As of 2008, there were

951,045 staffed hospital beds in the U.S., according to the American Hospital Association. Therefore, we can conservatively calculate that hospitals in the U.S. produce nearly six million tons of garbage each year!

In addition, 78% of hospitals designate medical waste as infectious; 53% of medical waste is comprised of single-use disposable items;¹ and, the biggest source of medical refuse—the operating room, churns out roughly 20% to 30% of a hospital's waste.

The Reusable Textile Solution

Hospitals that switch from disposable to reusable isolation gowns, surgical packs, surgical gowns and drapes are able to reduce both the volume of waste and the high costs associated with disposal of medical waste. The following research and case studies prove these points. Indeed, when laundry operations and linen inventory are well managed, reusable medical textiles are not only environmentally preferable over disposable items, reusables can cost less than disposables.

FACT: Reusable Textiles Are a Cost-Effective, Safe, and Sustainable Option

Those of us who have worked in healthcare for more than 30 years may remember the reusable gowns and drapes used before disposables were introduced. But today's reusable healthcare linens, gowns, and drapes are dramatically superior to those used in the 60s. Indeed, reusable gowns and drapes meet or exceed AMMI² barrier protection standards required in the healthcare environment for Level 1 to Level 4 gowns. And reusable gowns and drapes often offer a more comfortable alternative to single-use disposable gowns and drapes.

In addition, several life cycle analyses have confirmed that reusable surgical gowns and drapes are environmental preferable over single-use disposable products.

The 2009 life cycle assessment study conducted by the University of Minnesota Technical Assistance Program (MnTAP) examined three areas: cost, environmental impact, and infection prevention. In summary, the research conducted at the University of Minnesota Medical Center³ (2,000 beds and 20,000 surgical procedures a year) found that reusable medical textiles (chemo, isolation, and surgical gowns) provided:

- Cost savings of \$360,000 per year
- Reduced waste by 254,000 pounds per year
- CO2 emissions three times less than disposables
- Carcinogenic emissions 16 times less than disposable (i.e., Arsenic, Chromium, Lead)
- No difference in infection prevention attributes

Earlier studies conducted in 2008 by the Textile Rental Association of Australia⁴ and in 2000 by the European Textile Services Association confirmed similar findings.⁵

Reusable Isolation Gowns Can Reduce Waste by 80% and Can Cost Up to 50% Less than Disposables

Reusable isolation or barrier gowns are engineered using microfiber technology that produces 100% polyester, tightly woven, and fluid-repellent fabric made of continuous filament threads. Isolation gowns:

- Protect healthcare workers from blood and bodily fluids
- Provide comfort and allow for sterilization
- Are available in several levels of protection

On the other hand, single-use, disposable isolation gowns generate five times more solid waste than a reusable product. Consider this case study on isolation gowns in Indianapolis: United Hospital Services (UHS) in Indianapolis persuaded the 30-plus hospitals it serves to keep reusable isolation gowns instead of switching to disposables. The result? A savings to the hospitals of at least \$1.4 million a year.⁶

How was this possible? The independent laundry cooperative processes nearly 20,000 isolation gowns a day, six days a week, 52 weeks a year. That equates to nearly six million isolation gowns a year.

Because disposable, single-use isolation gowns are 25% to 50% more than the cost to lease a reusable gown, hospitals can realize significant savings through a reusables program. And, this does not take into account the annual disposal costs and environmental impact of six million disposable isolation gowns!

Reusable Surgical Packs Decrease Waste and Costs

If you are currently using disposable surgical packs and throwing lots of items in trash, consider asking your laundry for custom packs (sterile or non-sterile) or ask them to customize your disposable packs by inserting specific reusable items (a hybrid disposable/reusable pack).

But while hybrid surgical packs and increased recycling of items is helpful, even reprocessed disposables must eventually be thrown away. According to Dr. Rafael Andrade, a general thoracic surgeon at the University of Minnesota Medical Center, Fairview, the bigger goal is to resume the old practice of relying on permanently reusable equipment. "We're just trying to undo a lot of the damage we've done," Dr. Andrade said. He recommends streamlining packaged surgical kits.

To that end, in 2009, Dr. Andrade and a nurse, Lynn Thelen, started an OR Green Team at Fairview. With input from colleagues, they reviewed 38 types of operating room packs, identified which supplies were never used (like plastic basins,

catheters, syringes, and dressings), and asked their medical product vendor to remove them. One kit for implanting an intravenous port in chemotherapy patients contained 44 items, but the Green Team downsized it to 27 items and switched disposable gowns and linens for reusable ones. This effort eliminated a pound of trash and \$50 in supply costs per procedure. In the first year, the various kit reformulations eliminated almost 8,000 pounds of waste and saved \$104,658.⁷

Increase Use of Reusable Surgical Gowns and Drapes When It Makes Sense

The surgical textiles manufactured in the 21st Century bear little resemblance to medical textiles 50 years ago. Today's surgical textiles provide comfort, flexibility, breathability, safety, fluid barrier performance, strength and durability, and low rates of particle release (linting).

Upfront costs for switching to or increasing your use of reusable gowns and drapes can seem expensive, but case studies show a well-managed program is actually more cost effective than using disposables. As a bonus, when hospitals switched to reusable gowns and drapes, they saved substantial sums by retrieving lost surgical instruments that would have been thrown away. Consider these case studies:

- A study in the *Journal of the American Medical Association* reports that about 80% of surgical drapes and gowns now used in hospitals are disposable. It estimates that by using reusable linen products and recycling other items as able, hospitals can reduce surgical waste by 73% in weight and 93%* in volume.⁸
- A study in *The American Surgeon* compared costs incurred by two similar hospitals - one used disposable gowns and the other reusable gowns. Annual expenditures were \$66,000 and \$25,000 respectively.⁹
- Winter Haven Hospital, Winter Haven, Florida, converted to a reusable surgical textile program in 2001. Within five years, the cost savings were found to total \$625,000.¹⁰
- The University of Maryland Medical Center (UMMC) moved to reusable textiles in the OR more than 15 years ago, and utilizes a vendor to provide clean, sterilized surgical textiles. In 2010, UMMC avoided the creation of 138,748 pounds of waste as a result of using reusable textiles in the OR, which correlates to estimated cost savings of nearly \$39,000 in disposal costs and an estimated \$39,000 in returned instruments, (which would have been thrown away if the hospital was using disposable gowns and drapes in its OR).¹¹
- Kaiser Permanente's use of reusable surgical gown and basin sets reduced the organization's regulated medical waste by 30 tons, at a savings of 3.8% in 2010, according

to Andrew Knight, Senior Sourcing Director of Kaiser Permanente in San Diego.¹²

Change Is Hard; Start Small!

It is likely that your staff is happy using disposable products. Some might balk at any change, let alone a switch to more reusable textile items. But you can successfully introduce a change to include more reusable textiles through education and by introducing the change gradually. Start by having a conversation with your laundry provider, who can help with training, service, inventory control, and product selection. Ask your laundry provider to help educate staff and implement processes for handling soiled items and preventing textile losses.

If staff is worried about the cleanliness of reusable medical textiles, ask your laundry provider to become accredited (if they are not already). Any laundry accredited by the Healthcare Laundry Accreditation Council (HLAC) has met or exceeded the highest standards of laundering textiles. For more information on HLAC, www.hlacnet.org. ■

FOOTNOTES

- 1) Tieszen ME, Gruenberg JC, A quantitative, qualitative and critical assessment of surgical waste. *JAMA* 1992;267:2765-8.
- 2) Association for the Advancement of Medical Instrumentation. 2005, P 957-958. Selection and use of protective apparel and surgical drapes in healthcare facilities. Arlington, Va.
- 3) University of Minnesota Technical Assistance Program (MnTAP), Catherine Zimmer and A.J. van den Berghe, 2009.
- 4) Life Cycle Assessment Comparing Laundered Surgical Gowns with Polypropylene Disposable Gowns, The Australian Textile Rental and Laundry Association, prepared by the Centre for Design at RMIT University, Andrew Carre, 2008.
- 5) Life Cycle Assessment of Surgical Gowns, Anders Schmidt, PhD, dk-TEKNIK Energy & Environment, April, 2000.
- 6) United Hospital Services in Indianapolis, IN, 2008, GM Ed McCauley.
- 7) Dr. Rafael Andrade, surgeon, University of Minnesota Medical Center, Fairview, speaking at CleanMed 2010, organized by Practice Greenhealth, quoted in *New York Times*, June 5, 2010 issue, reporter Ingfei Chen.
- 8) Tieszen ME, Gruenberg JC, A quantitative, qualitative and critical assessment of surgical waste. *JAMA* 1992;267:2765-8.
- 9) Cost Containment in the Operating Room, TAS, Oct. 1992.
- 10) Winter Haven Hospital Case Study, Conversion to Reusable Surgical Textiles, Winter Haven, Fla., 2006.
- 11) Reusable Textiles in the OR, The University of Maryland Medical Center, Baltimore, MD, Case Study, Guidance Documents, Greening the OR, Practice Greenhealth, 2011.
- 12) Regulated Medical Waste Reduction and Minimization, Inova Fairfax Hospital, Case Study, Guidance Documents, Greening the OR, Practice Greenhealth, 2011.