

IMPLEMENTATION MODULE:

Moving (Back) to Reusables in the OR

Revisiting Reusables

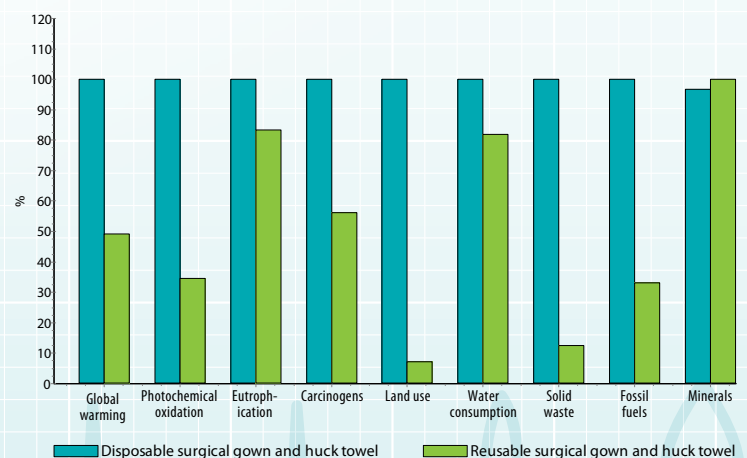
When considering how to reduce the environmental footprint of the operating room, it makes sense to first revisit the old adage of Reduce-Reuse-Recycle. This common sense approach relies on the concept of avoiding use of materials or supplies that are not needed to protect or ensure patient or worker safety (reduce), using a reusable, preprocessed or reusable option where a product must be used, and where no reusable option is available ensure the product is recyclable. The most environmentally unfriendly option is a single-use, disposable product that cannot be recycled at the end of use. When undertaking a comparative analysis, surgical services managers need to consider the lifecycle costs of disposable items beyond first cost.^{1,2}

Much of the waste generated in the operating room (OR) is due to the myriad of disposable products and packaging used for surgery. Perioperative professionals today primarily use disposable basins, towels, surgical drapes, table covers and gowns,³ in addition to a variety of other single-use, disposable medical supplies—many or all of which inevitably end up in the waste stream. Though surgical linens and basins were historically reused and reprocessed or laundered onsite, concerns about quality and appropriate levels of barrier protection largely transitioned the market to disposable textiles and basins. Surgical gowns and textiles can be classified as either single-use (disposable) or multi-use (reusable) and are classified as medical devices by the US FDA.^{4,5} Surgical gowns, drapes, sheets, table covers and mayo stand covers can be classified by the Association for the Advancement of Medical Instrumentation's (AAMI) liquid barrier performance standard (AAMI PB 70)⁶ for protective apparel and drapes into four levels of barrier performance. Both reusable and disposable product manufacturers can utilize this standard for classifying the level

of performance for their products and both offer products which meet all levels. A variety of factors are now leading hospitals to reconsider the use of reusable surgical gowns, surgical textiles and basins.

Disposable surgical gowns, towels, back table and mayo stand covers are routinely disposed of as regulated medical waste after a single surgical procedure as opposed to reusable textiles which create very limited packaging waste and are typically reused 75 times or more.⁷ One study found that when these disposables were replaced with reusable products, there was an average of 64.5% reduction in surgical waste generated.⁸ An Australian life cycle assessment from November 2008 demonstrated the environmentally intensive footprint of disposable versus reusable textiles (see Figure 1).

Figure 1: Comparison of life cycle factors of disposable textiles compared with reusable textiles.⁹



Beyond their environmental impact, disposable gowns and drapes often get negative feedback from surgeons and surgical technologists for thermal comfort issues, tearing—as in the case of the back table cover where surgical techs often use an extra drape to prevent tearing on the back table,¹⁰ and size—disposables are often smaller than reusable products which can lead to additional draping to weigh down the edges.¹¹ When surgeons were asked in a 2010 study to rate gown comfort, ease of use and protective properties of reusables versus disposables, they found surgeons clearly preferred the reusables:

Figure 2: Surgeons’ Preference for Disposable and Reusable OR Supplies¹³

	Superior	Good	Fair	Poor
Gown Comfort				
Disposable	6%	38%	23%	33%
Reusable	86%	10%	4%	0%
Ease of Towel/Gown Use				
Disposable	33%	47%	19%	1%
Reusable	87%	11%	2%	0%
Protective Properties of Gowns				
Disposable	30%	45%	20%	5%
Reusable	96%	6%	2%	0%

The same study found that the process to order and deliver sterile disposable products actually had six additional handling steps as opposed to using a service provider to deliver reusable products.¹⁴ While reusable textiles typically have a higher first cost than disposables, perioperative services should be evaluating all of the steps in the supply chain as well as waste disposal costs in order to look at a one-to-one comparison. When you consider all the data, the cost-benefit for reusables becomes clearer.

For perioperative professionals that have been in the business for awhile, talking about reusable surgical gowns may conjure up images of the once-tried and true cotton and poly-cotton gowns laundered onsite. But today’s reusable textiles are not those of twenty years ago—they are technologically advanced textiles that have been tested to meet barrier performance standards and refined to provide optimal clinician comfort and ease of use. How then does a facility make the case to transition back to reusables utilizing a service provider, and operationalize the change? There are several finite steps an organization can follow to make a move to reusable surgical gowns, towels, sheets, back table and mayo stand covers and basins.

Reusables: In-House or Vendor?

There are some significant differences between choosing to utilize a vendor to provide reusable textiles, and choosing to go back to laundering and sterilizing reusable textiles in-house. The environmental impact of laundry operations can be significant. If a hospital is not able to upgrade aging infrastructure for its laundry operations to take advantage of water and energy efficiencies, as well as transitioning to more environmentally friendly laundry chemicals, the environmental impacts of the laundry operation can sometimes challenge the environmental preferability of reusable surgical textiles. Pair this with the fact that hospitals then become responsible for ensuring that surgical textiles are all classified correctly, sterilized appropriately, and repaired or replaced in a timely manner and the business case can be complicated. When paired with an environmentally progressive laundry operation and top-notch SPD staff, reusable surgical textiles processed in-house can make sense but one definitely needs to take additional factors into consideration. This implementation module focuses specifically on making the business case for the use of reusable surgical textiles and basins via a vendor rather than processing reusables in-house—with additional research to come on identifying the right mix of factors to champion onsite processing of reusable surgical textiles.

Step 1. Identify your Allies: Infection Prevention

Changing practices sometimes means changing minds. Before you work on rolling out reusable surgical gowns, towels, sheets, back table and mayo stand covers and basins, think about what the arguments against a transition to reusables might be. Reach out to your Infection Preventionist (IP). Share the literature available demonstrating that reusable surgical linens meet the AAMI liquid barrier performance standards for protective apparel and drapes. Understand any concerns your organization’s IP may have and address them one at a time, gathering data from Practice Greenhealth, reusable textile vendors, the American Reusable Textile Association or others. IPs can be your greatest ally in this transition as patient safety concerns trump just about any other issue. Reach out to OR leadership and let them know you are trying to learn more about the benefits of reusable textiles and ask if they will support you in gathering additional information for consideration.

Step 2. Develop a Baseline for Use of Disposables

Before being able to make the case for a transition to reusables, it is important to be able to quantify how disposables are impacting the OR and the environment. You're going to want to understand:

- **What is the volume of custom packs that the OR uses each month?** Materials Management or OR management should be able to provide you with data on the number and kinds of custom OR packs being utilized by the department.
- **What disposable textile products are part of each kind of custom pack used by the OR?** You may have to audit different packs in order to correctly identify disposable textile components in each pack. You'll want to quantify disposable surgical gowns (by performance level), towels, back table and mayo stand covers, sheets and basins in each kind of pack.
- **How much do the disposable textiles and basins found in each pack weigh?** Once you have itemized the contents of each kind of pack, gather a sample set of disposable textile supplies and basins and gather using the different combinations just gathered for the different custom packs, weigh the number of disposable textile and basin items in each pack. Multiply these weights times the number of that kind of pack utilized each month by the OR. This data should provide you with a fairly accurate assessment of the volume of disposable textiles (in pounds) leaving the hospital each month.
- **How are disposable textiles currently being disposed of?** Also relevant to this baseline is determining whether all disposable textiles and basins are currently being disposed of as regulated medical waste—as is often common practice. If your organization has a strong RMW segregation program and is segregating disposable textiles and basins as solid rather than medical waste, it will impact your baseline cost assessment. Reach out to Environmental Services and determine what the hospital is spending per pound to dispose of RMW and/or solid waste. Multiply your total weight of disposable textiles and basins each month by the cost per pound to dispose of it to get a total waste management cost of disposable textiles for the OR. This is the money the organization will avoid spending on waste disposal if it moved to reusable surgical textiles and basins.
- **What are the line item costs for disposable textiles in custom packs—if available?** In order to do a comparison, you need to have a sense of how much the disposable textiles and basins are costing your organization. Because there are other disposable products in the custom packs that won't be eliminated by a transition to reusable textiles and basins, it is important to try and identify pricing for just the disposable textiles and basin items rather than estimate the total cost of

the custom pack. Be sure to capture any handling, packaging or sterilization costs that may be added following the line item pricing. Multiply the cost for disposable textiles in each pack by the number of packs of that type utilized by the OR each month to get a total supply cost for disposable textiles in the OR. Also be sure to understand if there are common practices that would add to that supply cost, e.g. staff double drape the back table for each procedure or are lining the back table with towels to prevent holes, and have ordered extra back table covers or towels separately for this purpose. These additional supply costs should be figured in to the total.

- **Are there any other factors to consider about current use of disposable textiles?** Inquire with staff whether they have any ongoing concerns about the use of disposable textiles in custom packs. Do the gowns make them too hot—requiring additional cooling for the OR? Too cold—requiring reheat for the OR? Are they uncomfortable? Reach out to Central Supply or Sterile Processing to determine how many steps your organization currently has in place to order, receive, handle and deliver sterile disposable supplies to the OR.
- **Determine total costs for use of disposable textiles in the OR each month.** Add the total waste management costs for disposable textiles to the total supply costs for disposable textiles to get the total current baseline cost for the use of disposable textiles in the OR. Make a note of other intangible drawbacks or benefits to the use of disposable textiles in custom packs and keep supply handling steps for disposable textiles for comparative purposes.

Step 2. Reach out to Reusable Surgical Supply Vendors/Reprocessors

The next step is to understand what alternatives are available to replace the use of disposable textiles and basins in custom packs. Get a sense of what different vendors are offering. Understand if they provide their reusable textiles as a stand-alone offering or if they partner with a disposable kit manufacturer to also provide custom packs. Some reusables vendors/reprocessors have unique partnerships with disposable custom kit manufacturers where reusable textiles are provided as part of a disposable custom kits.¹⁵ Are they able to deliver the sterile reusable surgical textiles to your OR each day? Determine the steps that would need to be taken by the Sterile Processing Department or Central Supply to order, receive, handle and deliver sterile reusable supplies to the OR. If providing just-in-time inventory, what is the back-up plan were a truck to be delayed or diverted? Get pricing estimates for similar volumes of reusable textiles to replace the disposable textiles currently being used. Ensure any additional hauling or fuel surcharges are captured in the total price point.

Step 3. Compare Disposable vs. Reusable Textile Costs and Process

Line up the baseline supply costs for disposables against the projected costs for the replacement reusables. Factor in waste disposal costs for disposables. While the costs for disposing of disposable textiles does not usually show up in the budget of the OR (as waste management costs are typically charged centrally to Environmental Services), it is a cost to the bottom line of the organization. See sample cost comparison below.

Disposable Surgical Textiles and Supplies	Reusable Surgical Textiles and Supplies
Total Supply Cost for Disposable Surgical Textiles and Supplies in existing OR custom packs monthly	Potential Supply Costs for Reusable Surgical Textiles and Supplies to replace Disposables
Any additional supply costs for a la carte disposable textiles, basins, pitchers for OR monthly	Any additional supply costs for a la carte reusable textiles and supplies for the OR monthly
Total pounds of waste generated by disposable surgical textiles and supplies from OR monthly	Savings from recovered instruments—estimated for a typical hospital at upwards of \$20,000 per year.
Total costs for managing disposables as RMW or solid waste each month	\$0
Total Costs of Using Disposable Surgical Textiles and Supplies	Potential Costs of Using Reusable Surgical Textiles and Supplies

You should now be able to lay out the case for why a transition to reusable surgical gowns and textiles makes sense financially and environmentally. The next step involves getting feedback from staff on the comfort, ease of use and protective qualities of disposable versus reusable textiles in the OR. Note: the cost-benefit analysis might be so compelling at this point that OR leadership might be willing to consider a transition. If you have a sense that there may be clinician resistance to a transition, include Step 4.

Step 4. Pilot Reusable Surgical Textiles

To allay any concerns about transition to a new product in the OR, it makes sense to pilot new products before moving forward with a full-scale roll-out. Pull together a small team to work on running the pilot project and get approval from surgical services leadership before proceeding. Based on initial cost-comparison numbers, they will likely agree to support a pilot. Determine a reasonable pilot period—one to three days midweek would likely hit many of the surgeons on staff as well as other clinical staff.



Perioperative staff utilizing reusable surgical gowns to perform surgery.

Work with a reusables vendor to provide product for pilot period. Determine questions you will be asking OR staff after the using the reusable products and document in a simple questionnaire. Work with a small team to set up exact pilot procedure. A 2010 study highlighted in the AORN Journal¹⁶ provides a good working model to start from. Pilot steps include:

1. Announce the pilot project and let surgical staff know they are being asked to participate and provide feedback.
2. From baseline development in Step 2, you should already have weights for disposables in each custom kit. This will be the amount of waste avoided when reusables are used.
3. Replace all disposable textiles and previously agreed upon disposable supplies (e.g. basins) with reusable versions.
4. After surgery, ensure reusable textiles and supplies are captured for reuse.
5. Provide each surgical team with review questions. (Referenced study asked surgeons to rate gown comfort, gown and towel ease of use and gown protective properties. Simultaneously, they were asked to rate the disposable products they typically work with).
6. Allow space for other kinds of feedback and commentary about pros or cons of reusables versus disposables.
7. Tally results and write up for management review.

If your results are similar to other studies, you should see increased clinician satisfaction and positive feedback. This, in addition to the cost-benefit analysis, should be the linchpin in moving the organization to reusable surgical textiles and supplies. Be sure to utilize other factors in your case for reusables including improved surgical supply inventory process and lost instrument return—the latter a huge cost-savings for the organization.

Step 5. Coordinate Chain of Custody for Reusables

Once the transition to reusables has been approved by OR leadership and a vendor has been selected, it is critical to work with the vendor/reprocessor, materials management, central supply and/or the sterile processing department to determine the appropriate chain of custody for the reusable textiles and supplies. Sterile reusables packs configured per the hospital's requirements should arrive in SPD each day. SPD personnel pull packs for case carts which then make their way down to the ORs. Unlike disposables, these products do not leave the OR in waste receptacles. Instead, the vendor should supply liquid-proof, color-coded bags or totes in which used reusable items should be placed after surgery. The bags or totes of used reusable surgical products are then moved to a predetermined designated pick-up point for vendor to transport to reprocessing plant. Because these steps have not previously been utilized with the disposable products, it is important to ensure that all of the details are addressed and a plan is in place for handling the soiled products before training the OR and SPD staff.

Step 6. Train OR Staff on Use and Collection of Reusables

Once the supply handling and collection procedure has been finalized, it is time to educate perioperative staff on appropriate practices for using reusables. Education should be provided on the differences between the levels of protection for the different reusable products, and which products should be used for which procedures. Surgical set-up should remain consistent, but breakdown after the surgery will require some practice changes. Hold In-Services to educate staff about the new reusable products being rolled-out. Ensure they understand the collection procedure for these reusable items and the need to sort reusable items from the disposable items. Help staff understand that throwing out reusable products will not be considered acceptable as this runs counter to the idea of reducing waste and adds to the overall cost. Hold a more in-depth training and troubleshooting session with a volunteer from each shift to ensure each knows collection procedure inside and out and can guide other members of the surgical team on the correct procedure if need be. Partner with the vendor to provide the most comprehensive and useful training. Vendor training capacity and support should be written into the sales contract where possible.

Step 7. Collect Post-Implementation Evaluation and Address Concerns

It may be meaningful to consider doing an evaluation about a month or two after implementation of the reusable textiles and supplies. This could be as informal as asking around or as formal as a short written feedback request asking again about comfort, ease of use, protective properties and any other benefits and/or concerns. Be sure to check in with SPD as well as OR staff. Carefully review concerns. Expect that there will be some negative feedback—as is typical in any major product transition. Do your best to determine whether these are isolated complaints or a consistent theme that needs to be addressed. Troubleshooting is part of any product replacement.

Step 8. Track Savings and Environmental Benefits and Celebrate Success

Tracking cost-savings and waste avoidance provides a way to demonstrate the benefits of the transition back to the organization. Some vendors will actually track avoided costs of disposables and waste generation for you. They can compare the volume of products you are currently using to the weight and costs of the disposable alternatives and provide you with accurate benefit figures. In other cases, you may need to collect some of this data yourself. Reach out to EVS and see if they have a way to track RMW reductions in the OR. Use purchasing records to determine supply costs. Be sure to share positive data with staff. You can also use this as an opportunity to share positive feedback from the post-implementation survey. Make sure the organization's sustainability leader or green team (if applicable) knows about the success the OR is having, and includes it in any award applications or recognition opportunities. It is important to let staff know that they are making a difference—not only in the financial viability of the organization, but also by better protecting the environment—which is intrinsically connected to human health. Success in one arena can often build momentum to tackle the next—seemingly more difficult—challenge.

For More Information: Go to www.GreeningTheOR.org for a list of key resources that can assist you in this program area. Because this list is updated often, we keep it online, so as not to date this implementation module. Also available are case studies on replacing disposables with reusables in the OR. Learn from your peers!

Endnotes

- 1 Laustsen, G. Reduce—Reuse—Recycle: guidelines for promoting perioperative waste management. *AORN J.* 2007; 85(4):717-728.
- 2 Fisch, S. *Safety and hygiene of surgical gowns and surgical drapes.* Clinicum Expertise. Published by Medizin Medien Austria. December 2010. Accessed on February 28, 2011. Available at: http://www.medizin-akademie.at/mm/mm020/Expertise_hygiene_engl_cc1210_low.pdf
- 3 Conrardy, J et al. *Reducing Medical Waste.* AORN Journal. Volume 91, No.6. June 2010. Pp: 711-721.
- 4 Ibid.
- 5 Medical devices: General and Special Controls. US Food and Drug Administration. Accessed March 12, 2011. http://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/Overview/GeneralandSpecialControls/default.htm#class_2.
- 6 American National Standards Institute (ANSI)/Association for the Advancement of Medical Instrumentation (AAMI). PB70:2003-Liquid barrier performance and classification of protective apparel and drapes intended for use in health care facilities. 2003. Accessed on March 20, 2011.
- 7 Personal Communication, SRI. 2011.
- 8 Conrardy, J et al. *Reducing Medical Waste.* AORN Journal. Volume 91, No.6. June 2010. Pp: 711-721.
- 9 Fisch, S. *Safety and hygiene of surgical gowns and surgical drapes.* Clinicum Expertise. Published by Medizin Medien Austria. December 2010. Accessed on February 28, 2011. Available at: http://www.medizin-akademie.at/mm/mm020/Expertise_hygiene_engl_cc1210_low.pdf
- 10 Conrardy, J et al. *Reducing Medical Waste.* AORN Journal. Volume 91, No.6. June 2010. P714.
- 11 Fisch, S. *Safety and hygiene of surgical gowns and surgical drapes.* Clinicum Expertise. Published by Medizin Medien Austria. December 2010. Accessed on February 28, 2011. Available at: http://www.medizin-akademie.at/mm/mm020/Expertise_hygiene_engl_cc1210_low.pdf
- 12 Ibid.
- 13 Conrardy, J et al. *Reducing Medical Waste.* AORN Journal. Volume 91, No. 6. June 2010. Pp: 718.
- 14 Ibid.
- 15 Cardinal Health, *SRI Surgical Sign Five-Year Agreement For Surgical Kits.* Cardinal Health. Web. Accessed on March 7, 2011. Available at: <http://ir.cardinalhealth.com/phoenix.zhtml?c=105735&p=irol-newsArticle&ID=1230979&highlight=>
- 16 Conrardy, J et al. *Reducing Medical Waste.* AORN Journal. Volume 91, No. 6. June 2010. Pp: 716.



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Practice Greenhealth • 12355 Sunrise Valley Drive, Suite 680 • Reston, VA 20191 • Ph: 888-688-3332
E-mail: greeningOR@practicegreenhealth.org • www.practicegreenhealth.org



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