



Reusable vs. Disposable Surgical Gowns

PLAYBOOK



Agenda

-  Summary and Overview
-  Client Personas
-  Fact Check
-  Appendices

Summary

- Reusables and disposable surgical textiles have come a long way in the past decades.
- Technology in surgical barrier has evolved to provide viral level protection, at the same time allowing the textile to breathe.
- Standards have also evolved to level the playing field for reusable and disposable surgical barrier.
- Both reusable and disposable provide protection, based on their defined level, however when evaluating cost, environmental impact and comfort factors, reusables stand alone.



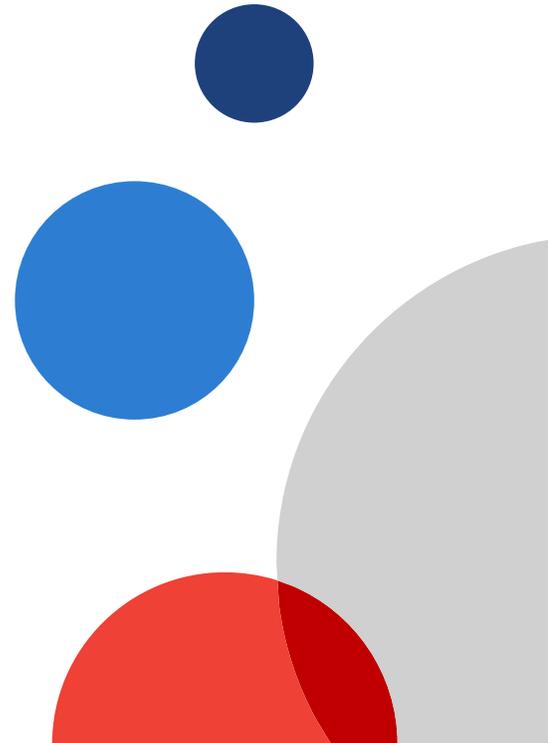
Summary

- Both are readily available in the market today.
- Studies demonstrate that reusable surgical textiles are superior to the products of 20 years ago.
- Disposable surgical products end up in a landfill, or are incinerated, while reusables end up back at the Laundry to be washed for additional use > Environmental benefit.

Environmental benefit:

- 64% reduction in natural resource energy consumption
- 66% reduction in greenhouse gas emissions
- 87% reduction in total water consumed.
- 84-87% reduction in solid waste generation at the healthcare facility
- Source: AORN March 2020 Issue – An Environmental Analysis of Reusable and Disposable Surgical Gowns.

Client Personas





TAYLOR

The Influencer

Surgeons

Nursing

Infection Prevention
and Control / Occ.
Health

Medical Device
Reprocessing Dept.

Likes

Sterile Field Integrity

Comfort

Waste Reduction

Price

Infection Prevention and Control

Dislikes

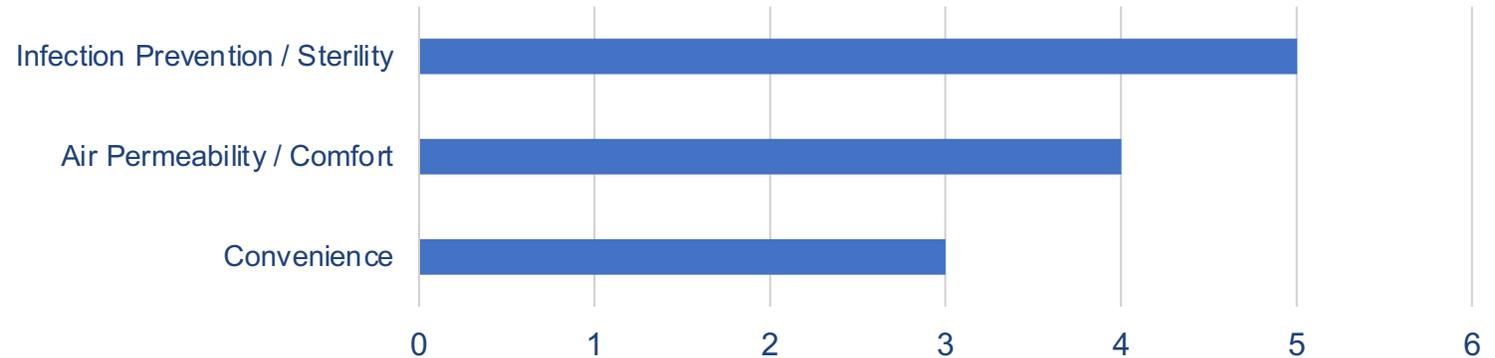
Less convenient

Fewer options

Cleanliness of a reusable

Ease of handling

Main Focus



Talking Points

As technology has advanced, laminate surgical barrier has allowed industry to provide all levels of barrier protection.



Reusable surgical gowns are built for the health care practitioner (nurses and surgeons), and patient, with superior protection and increased comfort, without the waste and expense of disposables.

Reusable surgical gowns reduce solid waste, save water, and lower carbon emissions, in relation to the manufacturing and consumption of single use surgical gowns.

Fact Check



Reusable surgical gowns are more comfortable than disposable surgical gowns because the MVTR (moisture vapor transfer rate) is far greater for reusable gowns vs. the equivalent single use gown.

Objection:

Disposable surgical gowns breathe better than reusable gowns.

Fact Check

Objection:

Disposable gowns are much easier to handle, and more convenient. All we do is bunch them up and throw them in the garbage!



When changing the OR over, staff can bunch up the reusable gowns WITH the other reusable OR linen and throw them in the soiled linen bags instead of having to separate the disposable gown from the linen. This becomes a 1 step process, not 2!

*Ask your laundry provider
for their requirements.*

Fact Check

Objection:

Disposable Gowns are Safer.



Reusable gowns are safer, as they are inspected over a light table for holes stains and imperfections, each time before they are used.

*Ask your laundry provider
for their requirements.*

Fact Check



There are strict compliance to standards in the laundry industry, and quality control where each item is inspected for defects, before each use.

Objection:

Disposable gowns are more sterile / cleaner as they are used only once.



ALEX

The Decision Maker

OR Clinical Manager

Procurement Manager /
Materials Management

MDRD

Finance

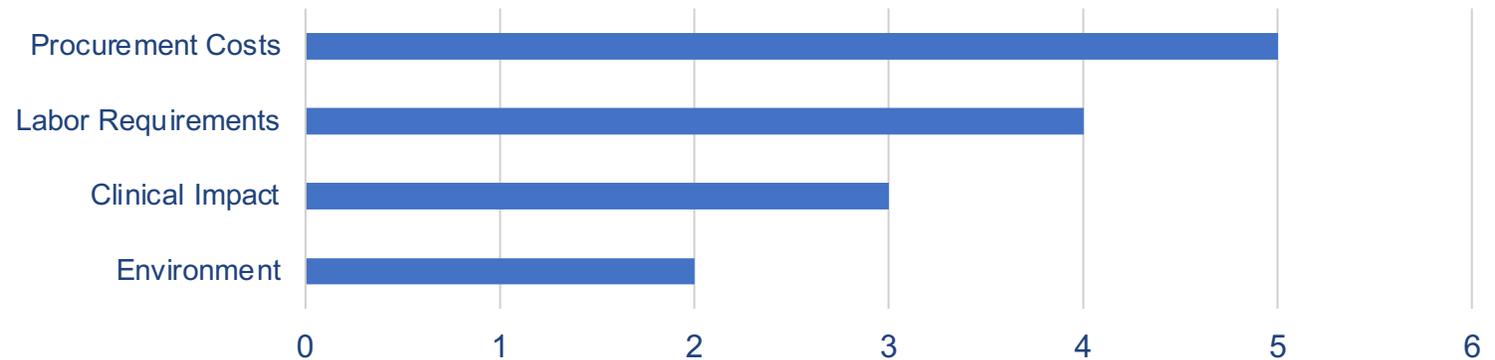
Likes

- Sterility and Efficacy
- Right Product/Right Use – Customized Use
- Distribution/Storage Optimization
- Handling / Logistics
- Workflow
- Efficiencies
- Fill Rates
- Price

Dislikes

- Labor Requirements
- Procurement Costs
- Consumption (Units used / Proper Use)
- Storage
- Waste Management

Main Focus



Talking Points

Your facility may have turned to disposable surgical gowns because they were unaware of improved reusable solution.

Unfortunately, while these are functional, their limited performance came at a high cost.



Reusable surgical gowns are specifically designed to protect the OR practitioner, surgical patient and provide superior protection without the waste and expense of disposables.

Protecting patients, protecting the environment, and protecting budgets.

Fact Check



Reusable gowns are 15-20% less expensive, cost per use, than the disposable equivalent. This cost does not include the additional cost for medical waste disposal resulting from the disposable waste stream.

Objection:

Reusable surgical gowns are more expensive than disposable gowns.

Fact Check



Life Cycle Assessments, like the ARTA / IAHTM Surgical Gown LCA, validate that reusable surgical gowns consume less water, produce less waste and reduce carbon emissions than the disposable equivalent.

Objection:

Disposable surgical gowns consume less water, because they are not laundered multiple times.

Fact Check



Reusable surgical programs require less inventory, can adapt quicker due to proximity to end user, and more flexible to changes in custom packs, because they are made locally.

Objection:

Disposable Surgical Programs are more flexible, and efficient to manage.

Fact Check



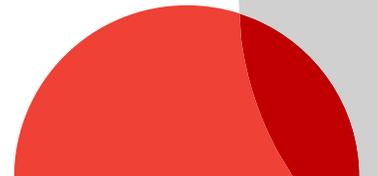
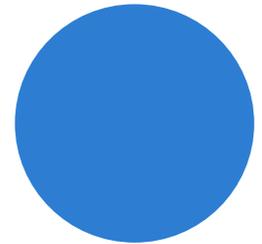
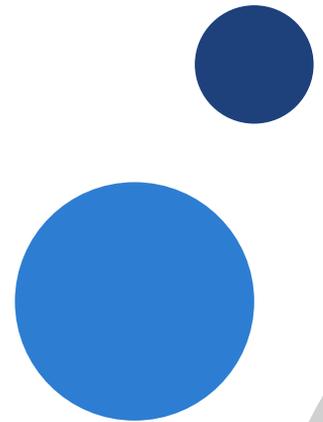
Disposable surgical programs take up a significantly larger supply chain footprint due to the need to have multiple days on site at the hospital, at the warehouse, on the water, and at the manufacturing facility overseas. Reusable products delivered daily, JIT.

Objection:

Disposables and reusables take up the same amount of storage space in the hospital.

*Ask your laundry provider
for delivery options*

Appendices



References & Links

- **Appendix 1:** https://drive.google.com/file/d/1UNLeo8FRqNgTsee7X-euhJs9a_gxpnPr/view?usp=drive_link
- **Appendix 2:** https://docs.google.com/document/d/13rE_Vh3SCCuV2am5qsjRVtl2Rdv7wPK07WmjxEnX83o/edit?usp=drive_link
- **Appendix 3:** https://docs.google.com/document/d/1kky9wPD5058K3p6q6MvHMkkAaAhncKoPZ85r9pybFwc/edit?usp=drive_link
- **Appendix 4:** https://drive.google.com/file/d/1jHTeisAdKPTkIKbKKfKrl7VBEusBS5_P/view?usp=drive_link
- **Appendix 5:** https://drive.google.com/file/d/1TYhGdEx3z5t18GIAQVeNvPNIQdJg7aDD/view?usp=drive_link
- **Appendix 6:** https://drive.google.com/file/d/16QqVmk5Cko2tlyt5lsRhH_pkSXfAu9v1/view?usp=drive_link
- **Appendix 7:** <https://www.trsa.org/certification/hygienically-clean-certification/>
- **Appendix 8:** https://docs.google.com/spreadsheets/d/18qE6tD0byD5r5iFbyP4tk0dXsL-032VB/edit?usp=drive_link
- **Appendix 9:** https://drive.google.com/file/d/15lJF4topuEMGWpK4X5n5pzeKBw-c_elz/view?usp=drive_link
- **Appendix 10:** https://drive.google.com/file/d/1LYvNdod714-SOeJamd3p45TwaDEJ-At4/view?usp=drive_link
- **Appendix 11:** https://drive.google.com/file/d/1Uc813XP244dqsGqdStJoUKOqRbjn4J0J/view?usp=drive_link
- **Appendix 12:** https://drive.google.com/file/d/1-VFkwr_YatmUht1T-T17i4H0BBnyUa4K/view?usp=drive_link
- **Appendix 13:** https://drive.google.com/file/d/1XZj6enHMPeZgH91m0932QaRjFcLcuCGb/view?usp=drive_link
- **Appendix 14:** https://docs.google.com/spreadsheets/d/1RPUKq9WPQJXBHJk4KApbLivDJTt80msv/edit?usp=drive_link
- **Appendix 15:** https://drive.google.com/file/d/1vRBpB_ctueMxZh4ls3jn64fWr1blkcO4/view?usp=drive_link

Appendix 1

Reusable Surgical Gowns Position Statement (Excerpt)

Reusable sterile surgical gowns are safe, effective, and have a lower environmental impact than disposable gowns

Royal Australasian College of Surgeons

https://www.surgeons.org/-/media/Project/RACS/surgeons-org/ESSPWP/2023-11-08_Reusable-Gowns-Position-Statement_Final.pdf?rev=053c9618a6e14e5c9794297f69e083cb&hash=821106F31401321C701130E2A26340EB

iv) **Comfort**

The comfort of surgical gowns is an important consideration for perioperative staff in choosing between reusable and disposable gowns. In 2010, Conrardy et al conducted a study to assess surgeons' attitudes towards reusable and disposable gowns (Conrardy 2010). Specifically, surgeons were asked to rate comfort, ease of use and protective properties reusable compared with disposable gowns. Overall, surgeons clearly preferred the reusable gowns, based on assessment of comfort, ease of use and protection. Similarly, in a study of reusable isolation gowns in an ICU staff, 82% rated the reusable gowns as 'comfortable' or 'very comfortable' and 74% felt they offered superior protection to a disposable gown (Angelopoulos 2022).

Appendix 2

Air Permeability

WHAT IS MVTR?

MVTR = Moisture Vapor Transmission Rate

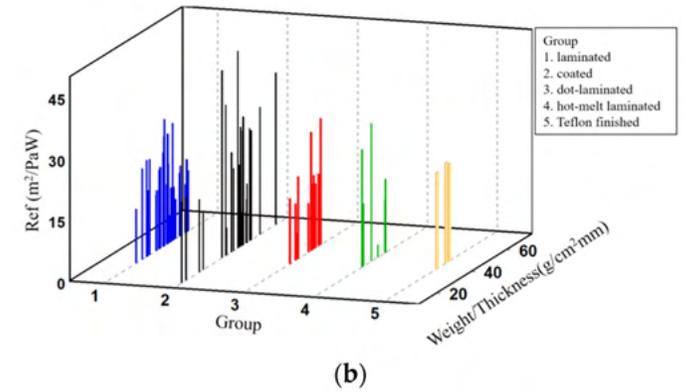
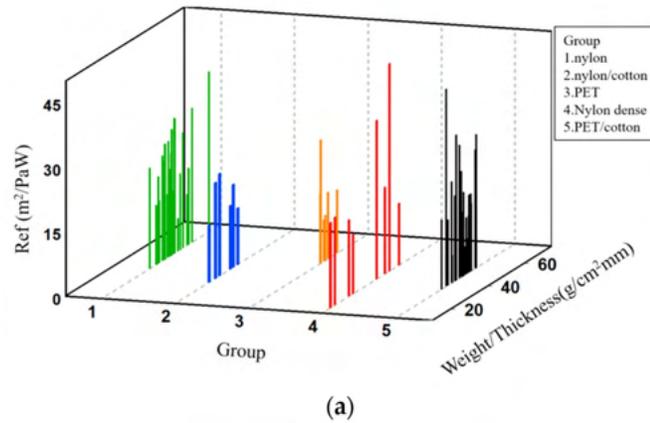


MVTR < 10.000 g/m²/day
Around the camp

MVTR > 10.000 g/m²/day
Hiking, trekking etc.

MVTR > 15.000 g/m²/day
Mountaineering etc.

MVTR tells us how much moisture (perspiration) can pass through the fabric from the inside out in g/m²/day



Appendix 3

Air Permeability

Know Your Breathability

Characteristic	Standard PTFE Reusable Surgical Gown	Microfiber	Cotton	Nonwoven	Standard Disposable Gown Fabric
Breathability (g/m ² 24 h) - the higher , the better	3000	8000	8000	8000	100-1500
Breathability (Ret) - the lower the better	< 20	< 5	< 5	< 5	> 50
Comfortable conditions for wearer	GOOD	VERY GOOD	VERY GOOD	GOOD	POOR

Appendix 4

Clinical Support

CMAJ – People, plant and profits, the case for greening operating rooms.

Published in 2012, this peer reviewed article, provides the roadmap for environmental sustainability on the OR theater, including how materials are handled.

Key Points:

Provision of health care results in waste production that has substantial effects on human health, the environment and institutional costs

Operating rooms contribute disproportionately to this waste and represent a high-yield target for change

Several innovative strategies and technologies have emerged to substantiate more sustainable operating room practices without compromising patient care

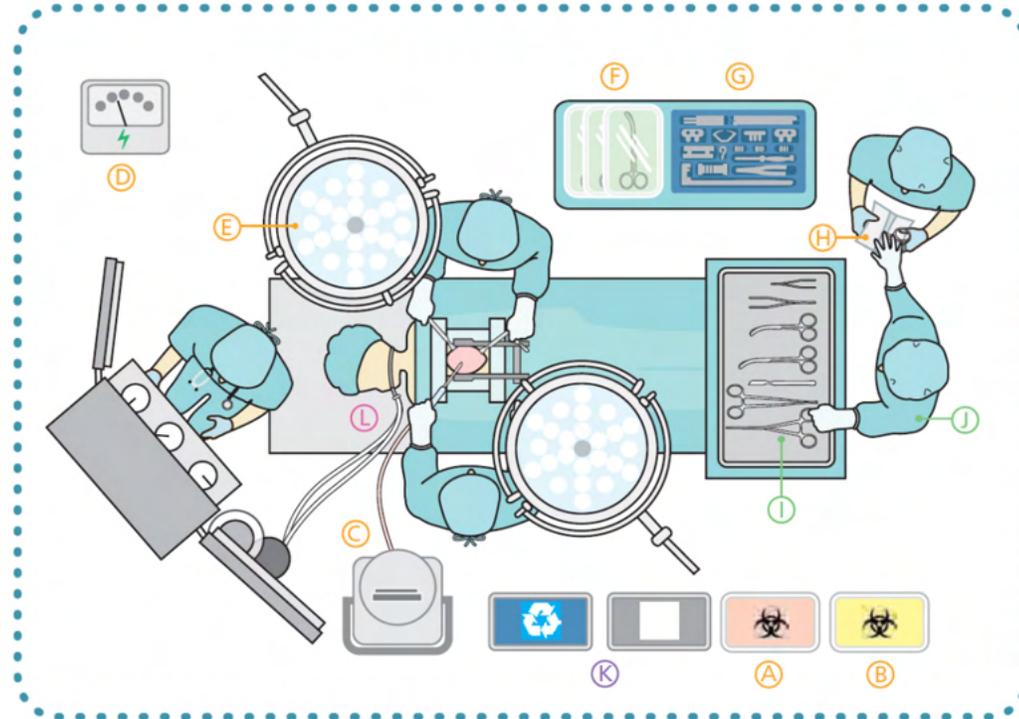
Ensuring the long-term environmental sustainability of our healthcare system will require collaboration.

<https://www.cmaj.ca/content/184/17/1905>

Appendix 4 Cont'd

Clinical Support

CMAJ – People, plant and profits, the case for greening operating rooms.



REDUCE

- (A) Proper waste segregation
- (B) Reusable sharps container
- (C) Fluid waste management
- (D) Energy expenditure
- (E) LED surgical lamps
- (F) Greener equipment packaging
- (G) Reusable hard case
- (H) Just-in-time model to reduce overage

REUSE

- (I) Reprocessing of single-use devices
- (J) Reusable surgical linens

RECYCLE

- (K) Recycle clean plastic and paper

RETHINK

- (L) Anesthetic gas reclamation

Appendix 5

Processing S.O.P.'s

1.0 PURPOSE

The purpose of this procedure is to outline the specific standards and inspection process for surgical gowns including storage protocols after inspection and the temperature settings for patching.

2.0 SCOPE AND APPLICABILITY

This procedure applies to the surgical textile preparation room.

3.0 DEFINITIONS

N/A

4.0 RESPONSIBILITIES

The supervisor of the Surgical Pack Room is responsible for ensuring this procedure is implemented.

All employees in the Surgical Pack Room preparation room are responsible for following this procedure.

5.0 PROCEDURE

The following section outlines each type of linen and is set up with the following information in each section as applicable to each linen type:

- Linen Specification – i.e., standard size
- Inspection process
- Storage quantities (if applicable)
- Temperature settings for patching

5.1 SURGICAL GOWNS (MICROFIBRE GOWN) LEVEL 2

5.1.2 Standard Sizes

XL Gown L-2 – Neckline has light green bias

5.1.3 Inspection Process for Surgical Gowns Level 2

- Inspect gown over light table
- Open the gown and lay it face side up.

Appendix 6

HLAC Standards:
<https://hlaacnet.org/standards/>



Healthcare Laundries Accredited for Patient Safety
Inspecting, Accrediting for 10+ Years

[Home](#) [At A Glance](#) [Why Accredit](#) [Why HLAC](#) [Standards](#) [Accredited Laundries](#) [Start Here](#)

STANDARDS - STANDARDS DOCUMENTS

ACCREDITATION STANDARDS

The Accreditation Standards for Processing Reusable Textiles for use in Healthcare Facilities, 2016 Edition, cover the complete textile processing cycle, from handling and transporting soiled healthcare textiles, to in-plant processing and delivery back to the customer.

The Standards also cover many basic considerations, such as facility layout, personnel training, and customer service. Special attention has been directed to OSHA required practices, including Bloodborne Pathogen Exposure Control Standards.

A Part III of the Standards, address the surgical pack assembly room and its activities. This section is based on the American National Standards Institute (ANSI)/Association for Advancement of Medical Instrumentation (AAMI) reference regarding reusable surgical textiles processing.

The 2016 HLAC Accreditation Standards have been released and went into effect as of January 1, 2016

With the 2016 revision, the HLAC Accreditation Standards continue to heighten awareness and increase understanding of the infection prevention and safety culture in the laundry personnel for healthcare textiles where programs, policies, procedures, and practices are common concepts and language.

Conventional washer extractors are included for the first time in these HLAC Accreditation Standards. The central focus of health care is the patient followed by the healthcare personnel.

The elements of laundry processing are specific operations involving procedures, facilities, administrative activities, equipment, personnel, quality monitoring, and advanced technologies as appropriate. This revision presents verb changes, clarifications, and updated citations, appendices, and references.

Links:

[2016 Standards Manual](#)

[2016 Standards Checklist](#)

[Sample Policy & Procedures](#)



[Download HLAC Standards PDF](#)

- [How It Works](#)
- [Standards Documents](#)
- [Inspection Agreement & Guide](#)

Appendix 7

<https://www.trsa.org/certification/hygienically-clean-certification/>



Hygienically Clean

Verifying Best Management Practices,
Quantifying Cleanliness Outcomes

ABOUT US | WHY CERTIFY | WHY USE A CERTIFIED LAUNDRY
TRENDING | FAQs | CONTACT US

HYGIENICALLY CLEAN
FOOD SAFETY

HYGIENICALLY CLEAN
FOOD SERVICE

HYGIENICALLY CLEAN
HEALTHCARE

HYGIENICALLY CLEAN
HOSPITALITY

INSPECTIONS & TESTS

PROGRAM COMPARISON
MATRIX

CERTIFIED TEXTILE
SERVICES FACILITIES

HYGIENICALLY CLEAN
E-LEARNING PROGRAMS

TRENDING

IN THE NEWS

PRESS RELEASES

RESOURCES / MEDIA

REGISTERED SERVICE

Hygienically Clean Healthcare



Hygienically Clean Healthcare certification reflects laundries' commitment to best management practices (BMPs) in laundering as verified by third-party inspection and their capability to produce hygienically clean textiles as quantified by ongoing microbial testing. A laundry's dedication to compliance and processing healthcare linens and garments using BMPs as described in its quality assurance documentation (QA) is confirmed. QA is the focus of inspectors' evaluation of critical control points to minimize risk.

Application

Standard

The independent, third-party inspection confirms essential evidence that:

- Employees are properly trained and protected
- Managers understand legal requirements
- OSHA-compliant
- Physical plant operates effectively

Laundries pass three rounds of outcome-based microbial testing, indicating that their processes are producing Hygienically Clean Healthcare linens and garments and zero presence of harmful bacteria. To maintain certification, laundry plants must pass quarterly testing to ensure that as laundry conditions change, such as water quality, textile fabric composition and wash chemistry, laundered product quality is consistently maintained.

This process eliminates subjectivity by focusing on outcomes and results that verify textiles cleaned in these facilities meet appropriate hygienically clean standards and BMPs for hospitals, surgery centers, medical offices, nursing homes and other medical facilities.

Hygienically Clean Healthcare certification acknowledges laundries' effectiveness in protecting healthcare operations through testing and inspections that scrutinize quality control procedures in textile services operations related to the handling of textiles containing blood and other potentially infectious materials.

Hygienically Clean Healthcare certified laundries use processes, chemicals and BMPs acknowledged by the federal Centers for Disease Control and Prevention (CDC), Centers for Medicare and Medicaid Services, Association for the Advancement of Medical Instrumentation, American National Standards Institute and others. Introduced in 2012, Hygienically Clean Healthcare brought to North America the international cleanliness standards for healthcare linens and garments used worldwide by the Certification Association for Professional Textile Services and the European Committee for Standardization.

Objective experts in epidemiology, infection control, nursing and other healthcare professions work with laundriers to ensure the certification continues to enforce the highest standards for producing clean healthcare textiles.



The AORN Seal of Recognition communicates to the perioperative and health care community that Hygienically Clean Healthcare certification is dedicated to excellence in patient care (see below).

Appendix 8

Cost Savings

Cost Benefits Analysis Reusable vs. Disposable Surgical Gowns

Cost Savings Example

	Reusable	Disposable
<i>Initial Purchase Price</i>	\$75.00	\$4.50
<i>Estimated # of Uses</i>	75	1
<i>Waste Disposal Costs</i>	\$0.05	\$0.25
Total Fixed Costs	\$1.00	\$4.75
<i>Cost of Laundering</i>	\$1.25	\$0.00
<i>Cost of Sterilization</i>	\$0.65	\$0.00
<i>Cost of Transportation</i>	\$0.21	\$0.00
<i>Cost of Distribution</i>	\$0.00	\$0.00
Total Cost Per Use	\$3.11	\$4.75

Appendix 9

Published in January 2024, the NHS (National Health Service) of England identified significant cost savings, emissions savings and waste reduction from converting from disposable to reusable sterile surgical gowns.



NHSE modelling of savings based on the published research by the University of Sheffield³ and Rizan et al⁴ found that sterile reusable gowns saved a hospital site with 35 operating theatres and over 1,000 beds, annually approximately:

- **100 tonnes of carbon dioxide equivalent (CO2e)**
- **20 tonnes of waste**
- **500m³ water**
- **£100,000 in procurement and clinical waste costs**

Overall, another NHS data source shows that switching to sterile reusable gowns can result in 45% cost savings (data on file NHSE data sources).

The NHSE Net Zero and Sustainable Procurement team has worked with three trusts that are using reusable gowns as case studies to understand the realised benefits. The three trusts operate different laundry service models and offer a broad insight into the opportunities to expand the use of reusable gowns:

Appendix 10

A Case Study on How to Move Back to Reusables in the OR: An Implementation Module

IMPLEMENTATION MODULE:

Moving (Back) to Reusables in the OR

Revisiting Reusables

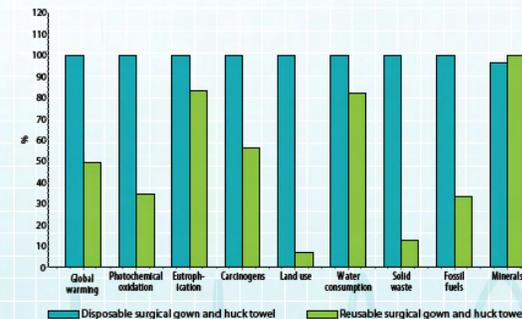
When considering how to reduce the environmental footprint of the operating room, it makes sense to first revisit the old adage of Reduce-Reuse-Recycle. This common sense approach relies on the concept of avoiding use of materials or supplies that are not needed to protect or ensure patient or worker safety (reduce), using a reusable, preprocessed or reposable 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



Appendix 11, 12

<https://aornjournal.onlinelibrary.wiley.com/doi/10.1002/aorn.12885>

The ARTA – IAHTM Surgical gown LCA substantiates the environmental benefits of reusable surgical gowns vs disposable surgical gowns through the six stages of the life cycle and identified that:

- Reusable surgical gowns consumed less energy
- Reusable surgical gowns had a reduced global warming potential
- Reusable surgical gowns consumed less blue water
- Reusable surgical gowns produced less solid waste

RESEARCH

An Environmental Analysis of Reusable and Disposable Surgical Gowns

Eric Vozzola, BSChE; Michael Overcash, PhD; Evan Griffing, PhD

ABSTRACT

Surgical gowns help protect patients from exposure to microorganisms and serve as personal protective equipment for perioperative staff members. Medical textiles, including surgical gowns, are available as reusable and disposable products. Health care facility administrators and leaders who endeavor to use environmentally sustainable practices require current data for decision making. This study analyzed all activities from the extraction of fossil materials from the earth to the end-of-life disposal of reusable and disposable surgical gowns. The researchers included calculations for laundry and wastewater treatment operations and compared the environmental effects of the two surgical gown systems. The study results showed that selection of reusable gowns rather than disposable gowns reduced natural resource energy consumption (64%), greenhouse gas emissions (66%), blue water consumption (83%), and solid waste generation (84%). Perioperative nurses can use this information to assist facility leaders as they make informed decisions related to gown system selection.

Key words: surgical gown systems, medical textiles, health care environmental sustainability, life cycle assessment, cradle-to-end-of-life.

Medical textiles comprise many patient care items, including bed linens, personal protective equipment, dressings, and implantable surgical devices (eg, suture, mesh).¹ Reusable and disposable surgical gowns protect perioperative personnel from microorganisms and contamination related to the patient's body fluids. The gowns also protect patients from microbial contamination by surgical personnel. When making decisions to purchase reusable or disposable materials, perioperative leaders should consider such factors as cost,² clinical usability,² contractual agreements,² and environmental sustainability.^{1,3} Perioperative nurses should work with facility leaders to address "perioperative practices that negatively affect the environment."⁴ To realize quantifiable environmental improvements, nurses and other health care professionals require data to support their decisions.² Researchers use life cycle assessments (LCAs) to quantify and standardize the effects of products on the environment.

PURPOSE OF THE STUDY

The purpose of this study was to evaluate reusable and disposable surgical gowns to provide transparent, scientific, and complete environmental comparisons. We designed the study with the goal of attaining comprehensive results with which reusable and disposable suppliers could agree. The detailed objectives of the study were to

- quantify and compare the environmental impacts of surgical gown systems (ie, manufacturing, processing, and disposal of reusable and disposable surgical gowns) in the North American market;
- quantify the importance of activities within the life cycle; and
- analyze the results for better understanding about the important parameters (ie, reusable and disposable gown weight, laundry energy, blue water recovery).

<http://doi.org/10.1002/aorn.12885>
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AORN Journal | 315

THE ARTA-IAHTM LIFE CYCLE ASSESSMENT OF SURGICAL GOWNS REUSABLE & DISPOSABLE

SURGICAL GOWN LIFE CYCLE ENVIRONMENTAL RESULTS

Environmental analysis study results continue the conclusions from six other reusable/disposable gown overall studies that show reusables provide a significant improvement in energy, environmental footprint, blue water*, and energy-associated emissions, and energy-associated emissions.

*Blue water represents water that is used and not returned to the source, and thus represents depletion of a fresh water source.

WHAT IS A SURGICAL GOWN LIFE CYCLE ASSESSMENT?

Surgical gowns were studied thoroughly from material extraction from the earth, to the manufacture of the gown product, to use including laundry and sterilization, to final end-of-life. This scope and the results emphasize transparent, science-based life cycle assessment.

BONUS: MEDICAL INSTRUMENT RECOVERY

Medical laundry operations find and return a significant amount of lost surgical instruments to healthcare facilities. The instruments are often found wrapped in surgical drapes and would otherwise have been lost to a landfill. The value of these items was found (in other studies) to be in the thousands to tens of thousands of dollars per year.

REUSABLE SURGICAL GOWNS DRAMATICALLY REDUCE ENVIRONMENTAL FOOTPRINT

When you choose reusable surgical gowns instead of disposable alternatives you achieve:

- 64% Reduction in natural resource energy consumption
- 66% Reduction in greenhouse gas emissions (measured as CO₂ eq emissions)
- 83% Reduction in total water consumed (blue water*)
- 84%-87% Reduction in solid waste generation at healthcare facility

End users can count these improvements as a credit toward improving their sustainability programs.

Study funded by the ARTA Life Cycle Assessment Committee
The American Reusable Textile Association (ARTA) mission is to promote greater appreciation for reusable textiles.
www.ARTA1.com

Appendix 13

A picture says a thousand words...

The math is simple — 60 disposable gowns or one reusable gown?

When you choose reusables, you reduce waste and waste costs!

Reusables are the smart and responsible choice.



*Photo courtesy of The American Reusable Textile Association (ARTA).
www.ARTA1.com*

Appendix 14

Environmental Impact Calculator

<https://aornjournal.onlinelibrary.wiley.com/doi/10.1002/aorn.12885>

LCA Analysis Tools

Calculating Carbon Footprint

	<i>Annual Gown Consumption, units</i>	<i>Wt. / Unit (lbs.)</i>	<i>Total Weight (lbs.)</i>	<i>CO2 Eq (kgs./lb. processed or used)</i>	<i>Total Carbon Footprint (kgs./year)</i>
<i>Reusable Surgical Gown</i>	100,000	1.04	104,000.00	0.54	56,160.00
<i>Disposable Surgical Gown</i>	100,000	0.49	49,000.00	3.3	161,700.00
Carbon Footprint Savings Annually					-105,540.00

Calculating Water Savings

	<i>Annual Gown Consumption, units</i>	<i>Wt. / Unit (lbs.)</i>	<i>Total Weight (lbs.)</i>	<i>Water (kgs./lb. processed or used)</i>	<i>Total Water Footprint (kgs./year)</i>
<i>Reusable Surgical Gown</i>	100,000	1.04	104,000.00	0.14	14,560.00
<i>Disposable Surgical Gown</i>	100,000	0.49	49,000.00	1.05	51,450.00
Water Savings Annually					-36,890.00

Calculating Solid Waste Savings

	<i>Annual Gown Consumption, units</i>	<i>Wt. / Unit (lbs.)</i>	<i>Total Weight (lbs.)</i>	<i>Solid waste at hospital, kgs</i>	<i>Total Solid Waste Footprint (kgs./year)</i>
<i>Reusable Surgical Gown</i>	100,000	1.04	104,000.00	0.034	3,536.00
<i>Disposable Surgical Gown</i>	100,000	0.49	49,000.00	0.54	26,460.00
Solid Waste Savings Annually					-22,924.00

Step 1. Enter the quantity of Reusable Surgical Gowns into cell B7 and Disposable Surgical Gowns consumed annually into cell B9. The spreadsheet will auto calculate your carbon, water and solid waste savings annually. Step 2. Goto <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator> to calculate your impact of reduced carbon footprint.

Appendix 15

Circle of the Surgical Gown Supply Chain

