

# Society of Surgical Oncology Sustainability Toolkit Series

## Project 1: Cap and Gown Toolkit Initiative

Prepared by the Society of Surgical Oncology Sustainability Committee



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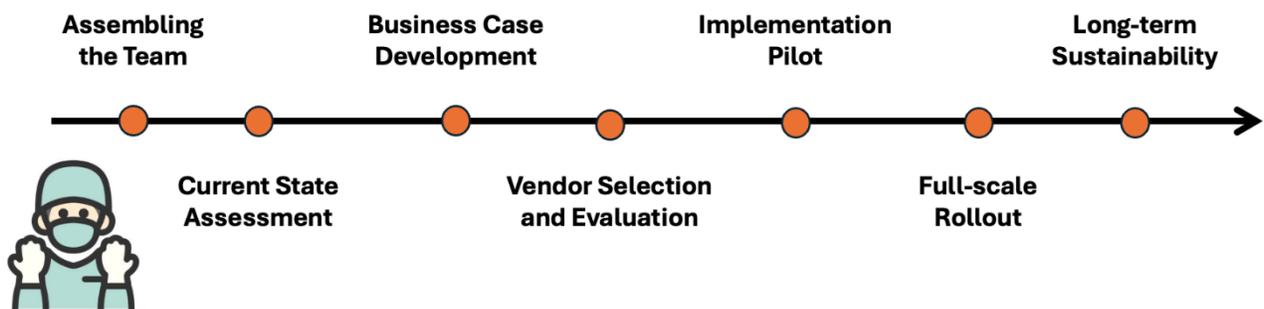
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## Overview:

Health care systems are increasingly called to reduce their environmental footprint, while continuing to deliver high-quality, safe, and cost-effective care. The operating room is one of the most resource-intensive areas of the hospital, generating disproportionate amounts of waste and greenhouse gas emissions, much of it driven by single-use disposable supplies such as paper surgical gowns. Transitioning from disposable to reusable cloth surgical gowns represents a practical, evidence-based opportunity to reduce waste, lower carbon emissions, and achieve long-term cost savings without compromising patient safety or clinical performance.

We aim to support SSO members who are interested in making this transition in their own health care systems by providing clear, actionable guidance that addresses clinical, operational, financial, and cultural considerations—enabling surgical teams to align sustainability with safety, efficiency, and professional responsibility.

This toolkit serves as an introductory guide to the process of creating change in your own organization in a US context. You may need to make adjustments to fit the specifics of your own institution. **Allow yourself 6-12 months to get through this process!** This document will describe how to assess your current process, the financial information you will need, how to engage key stakeholders, plan implementation of the change and evaluate the intervention. These steps may not occur sequentially, and you will likely work on several aspects in parallel.





## **Baseline Analysis**

The first step in this journey is to determine the current state of your institution. Important questions include any history of reusable gowns, factors leading to the transition to disposables, current laundry services, and sterilization services. Determine if there is a sustainability committee and any prior sustainability initiatives. Start with OR and sterile processing department (SPD) leadership, who should have much of this information. A list of questions to consider:

- Are reusable gowns available?
- Who is the current gown vendor?
- Are cloth caps allowed?
- Who wears cloth caps?
- What entity provides laundry services for your hospital (internal vs external)
- Is there capacity with that laundry service to accommodate reusable sterile gowns?
- Is there a sustainability committee in the organization that you can work with?

Gain an understanding of the workflow for your institution in terms of laundry collection, laundering, folding, sterilization and packaging. As you meet with people, you can gauge interest and attitudes towards sustainability initiatives. Discuss with other surgeons and determine if there is broad interest in sustainability, or at least reusable gowns and cloth caps. This information will shape your next steps, clarify what data you should bring to meetings, and potential data and information that will be needed to promote support for this initiative.



## **Stakeholder Engagement**

It will be critical to identify and engage stakeholders throughout this process. Define the vision and clarify the objectives and metrics of success. The objective can be as simple as reducing OR waste, with metrics of waste volume and cost savings from reduced waste. Different stakeholders may align with different angles of the initiative, so be prepared to pivot from sustainability objectives to cost savings, for example. There will be stakeholders at all levels of the organization, and you will need all of them! Take advantage of meetings like department faculty meetings to socialize the initiative and solicit feedback. One-on-one conversations will allow you to assess the degree of support and identify potential hurdles. If there is no sustainability committee in your organization, consider establishing one. A common source of pushback for cloth caps involves guidelines from national societies. Click [here](#) for current AORN guidelines on surgical attire. The organization no longer recommends disposable versus reusable caps, and states that each facility should determine what is acceptable and how reusable caps should be laundered.

### *Hospital Internal Stakeholders:*

- OR team: surgeons, surgical technicians, nurses
- OR leadership
- Clinical educators (RN and MD)
- Surgery Department leadership
- Nursing leadership
- Infection Prevention & Control team
- Environmental Services
- Supply Chain / Purchasing Department
- Sterile Processing Department
- Laundry/Linen Services
- Risk Management / Compliance

External stakeholders will have very different motivations. An independent laundry service that doesn't offer gown sterilization may not see any financial gain to taking on reusable gowns and may not be able to handle the increased volume or additional processes associated with sterile surgical gowns. Regulatory agencies require that reusable gowns provide the same level of protection as disposable gowns, and employers are responsible for ensuring that proper processes are in place. Institutional stakeholders will need to engage with external stakeholders to address these issues.

### *External Stakeholders:*

- Reusable gown manufacturers
- Medical laundry/sterilization service providers
- Local health department or regulatory agencies
- Hospital sustainability networks/groups
- Funding sources/ grant providers for sustainability efforts

Stakeholders' needs and motivations will vary, be prepared to tap into the relevant motivations for each group you speak with. Consider the following:

- Patient safety
- Workflow efficiency
- Evidence-based practices
- Financial implications (capital investment, potential savings)
- Regulatory compliance
- Institutional reputation
- Reliability of vendor(s), product quality



## **Financial and Business Case Development**

There will be data that you will need to collect from your institution, and data that you can bring to the institution regarding cost/savings for this initiative:

- What is the cost of disposable gowns, and are the gowns bundled with other products? Is there a supply chain contract to consider? OR leadership and SPD should have this information.
- What additional infrastructure needs to be developed, including machines and people?
- Consider options of developing capacity internally vs outsourcing laundering/sterilization of the gowns
- Cloth caps can be laundered with other hospital laundry. They should be recognizable and/or labelled with the owner's name

Start with your SPD to understand where current gowns come from (supplier), whether cloth gowns have ever been used and whether there is any capacity to do so. Approximately 80% of surgical gowns today in the US are disposable, thus it is unlikely your SPD will have capacity to take on sterilization of reusable gowns. You should be able to determine the cost per gown for your disposables as well as volume used.

Determine where your hospital laundry goes; there is a wide variety of arrangements for hospital laundry, from internal local operations, external local operations, internal off-site or highly centralized facilities that may be internal or external. You should have a manager for laundry services and executive leadership for this service.

Considerations for the financial plan include the cost of the gowns and a tracking system, often RFID, to monitor the number of uses. Assuming your organization does not currently have the ability to sterilize surgical gowns, there will need to be an initial investment, whether an upgrade to internal laundry or contracting with an external facility. This investment will quickly pay dividends, but hospital and/or system leadership will need to be engaged and supportive. Examples of savings and success stories you can bring to your leadership:

[NOVO Health Services](#)

[Crown Laundry News](#)

[American Reusable Textile Association](#)

[Unitex](#)

You may encounter less resistance with a staged approach to reusable sterile gowns. Reusable isolation gowns are typically offered by the same companies and are easier to manage as they are not sterilized. The cost savings and environmental benefits are just as significant.



### **Vendor Selection**

Identifying the appropriate product for each institution is a personalized process; multiple options are available. Reusable surgical gowns may be purchased from large healthcare suppliers such as Cardinal Health, Medline, SRI Healthcare or Standard Textile. Other companies such as

Harmony Lab may act as a third-party supplier for gowns. Independent garment companies have been developing medical grade products with greater attention to user comfort and sustainability. LaForma Medical, for example, started with performance athletic wear and has diversified into reusable isolation and surgical gowns. With the background of performance athletic wear, the gowns are lightweight, breathable, and still meet all regulatory fluid protection metrics. LaForma Medical will provide workflow development assistance when an institution is transitioning to reusable gowns. Other companies will simply sell the gowns. Most reusable surgical gowns are approved for 75 washes; an RFID system can be used to track the number of washes. Examples of reusable gown suppliers:

[La Forma](#)

[Medline](#)

[Standard Textile](#)

[SRI Healthcare](#)

Vendors for cloth caps are plentiful, and some OR staff make their own. Different sizes, fabrics and styles are available. There is an element of trial and error for people to find a comfortable cap but there is not much variation in price.



### **Implementation**

The implementation plan will depend on the details of your organization and the structure you have developed so far during this process. Allow plenty of time for education of all stakeholders, feedback and adjustments to the process. Hold in-service training sessions for OR staff and surgeons so they can practice donning the gown. Have posters or quick-reference guides in the OR and consider selecting a few “champions” who are available to help and answer questions. Determine what metrics you will follow, such as how many pounds of waste are avoided, cost savings, or even carbon offset. Provide periodic feedback to staff, surgeons, and leadership regarding progress and metrics of success.

- Hold an in-service to showcase the reusable gowns, discuss any changes in workflow and answer questions
- Share safety data and cost savings with all stakeholders
- Pick a target date for implementation and advertise widely and frequently

Consider starting with a pilot. Select a small group of surgeons or an OR area to test the initiative. This will allow all parts of the system to assess their workflow and trouble-shoot.

Once your pilot is successful you can take the next step and roll-out to a larger number of surgeons and ORs. Depending on the size of your organization this may happen in a stepwise fashion to allow for ongoing process adjustment. For example, the main hospital in a multi-hospital system may undertake the transition, with other hospitals following suit in a planned fashion.



### **Measurement, Reporting, and Sustainability**

Evaluation should start at the same time as implementation. A successful initiative to introduce reusable cap and gowns into any health system will require an ongoing and iterative evaluation process consisting of measuring outcomes, reporting these back to stakeholders and ensuring sustainability of the initiative by making the necessary changes prompted by feedback from the evaluation process.

We suggest using the SMART framework (specific, measurable, achievable, relevant, and time-bound metrics) during implementation and maintenance of the program. For an example of a comprehensive evaluation of a successful implementation project, please visit [this link](#) from CASCADES. Possible examples of quantitative metrics include:

- Monthly observations of percent uptake of reusable scrub caps and surgical gowns as measured by observation of a random sample of operating rooms
- Quarterly cost savings generated
- Waste generation by weight in operating room trash bags
- Monthly count of opened disposable gowns from the sterile core.

Qualitative outcomes from the cap and gown program should also be measured. These could be collected by:

- Hosting periodic focus groups (e.g. quarterly) including frontline workers to understand barriers to implementation
- Semi-structured interviews with individuals from the house staff, supply chain, operating room staff, and/or laundry services may provide insight on the process and efficiency

Stakeholders should be updated promptly and regularly on the outcomes of the cap and gown program. Results may be disseminated at:

- Perioperative committee meetings
- Departmental (Surgery and Anesthesia) meetings
- C-suite
- Community engagement regarding hospital sustainability efforts



### Let's go! -- Resources

There are many resources to get you started. **CASCADES**, a non-profit Canadian organization that includes the University of Toronto Collaborative Centre for Climate, Health & Sustainable Care, the Healthy Populations Institute at Dalhousie University, the Planetary Healthcare Lab at the University of British Columbia, and the Canadian Coalition for Green Health

Care has prepared suite of reference materials that will help you get started on the path to implementing reusable gowns at your hospital: <https://cascadescanada.ca/action-areas/perioperative-care/>. Resources include a presentation that you can modify to meet the needs of your hospital:

[https://docs.google.com/presentation/d/1h\\_yMoBeNYN70Y8xDZgzIJGv1Z6UPWldb/edit?slide=id.p1#slide=id.p1](https://docs.google.com/presentation/d/1h_yMoBeNYN70Y8xDZgzIJGv1Z6UPWldb/edit?slide=id.p1#slide=id.p1). Also please visit the SSO Surgical Oncologists for Sustainability: <https://surgonc.org/resources/surgical-oncologists-for-sustainability/> to view the SSO Surgical Oncologists for Sustainability Committee action plan.<sup>1</sup> If you want to learn more, check out the references below.<sup>2-8</sup>

### Summary

Sustainability initiatives are vital to protect the health of our patients, our families, and our planet. Implementation of any changes will be met with challenges along the way, do not be discouraged! Persist in your efforts, build a team and join us to create a more sustainable perioperative environment.

## References:

1. Gabriel EM, Chen KT, Amin M, et al. Surgical Oncologists for Sustainability: A Statement from the SSO Surgical Oncologists for Sustainability Committee. *Ann Surg Oncol* 2025 doi: 10.1245/s10434-025-18711-w
2. Bluiminck S, Eussen MMM, Kooistra EJ, et al. Reducing the carbon footprint and costs of laparoscopic cholecystectomy: a modelling study on interventions for sustainable surgery. *Surg Endosc* 2025 doi: 10.1007/s00464-025-12471-0
3. Harding C, Moons I, De Win G, et al. Kickstarting the Adoption Process of Reusable Surgical Gowns in Healthcare: Expectations, Evaluation and Factors That May Influence Healthcare Professional's Willingness to Wear Reusable Gowns. *Risk Manag Healthc P* 2025;18:3263-80. doi: 10.2147/Rmhp.S535218
4. McQuerry M, Easter E, Cao A. Disposable versus reusable medical gowns: A performance comparison. *Am J Infect Control* 2021;49(5):563-70. doi: 10.1016/j.ajic.2020.10.013
5. Rutala WA, Weber DJ. A review of single-use and reusable gowns and drapes in health care. *Infect Cont Hosp Ep* 2001;22(4):248-57. doi: Doi 10.1086/501895
6. van Nieuwenhuizen KE, Friedericy HJ, van der Linden S, et al. User experience of wearing comfort of reusable versus disposable surgical gowns and environmental perspectives: A cross-sectional survey. *Bjog-Int J Obstet Gy* 2024;131(5):709-15. doi: 10.1111/1471-0528.17685
7. Vozzola E, Overcash M, Griffing E. An Environmental Analysis of Reusable and Disposable Surgical Gowns. *Assoc Oper Room Nurs* 2020;111(3):315-25. doi: 10.1002/aorn.12885
8. Yap A, Wang KY, Chen E, et al. A mixed-methods study on end-user perceptions of transitioning to reusable surgical gowns. *Surg Open Sci* 2023;11:33-39. doi: 10.1016/j.sopen.2022.10.003