A REUSABLES FIRST APPROACH IN HEALTHCARE

Why • The Case for Change
What • The Tools for Change
How • The Strategy for Change

This project was undertaken with the financial support of the Government of Canada.
Ce projet a été réalisé avec l'appui financier du gouvernement du Canada.

Canada

CASCADES

NAVIGATION

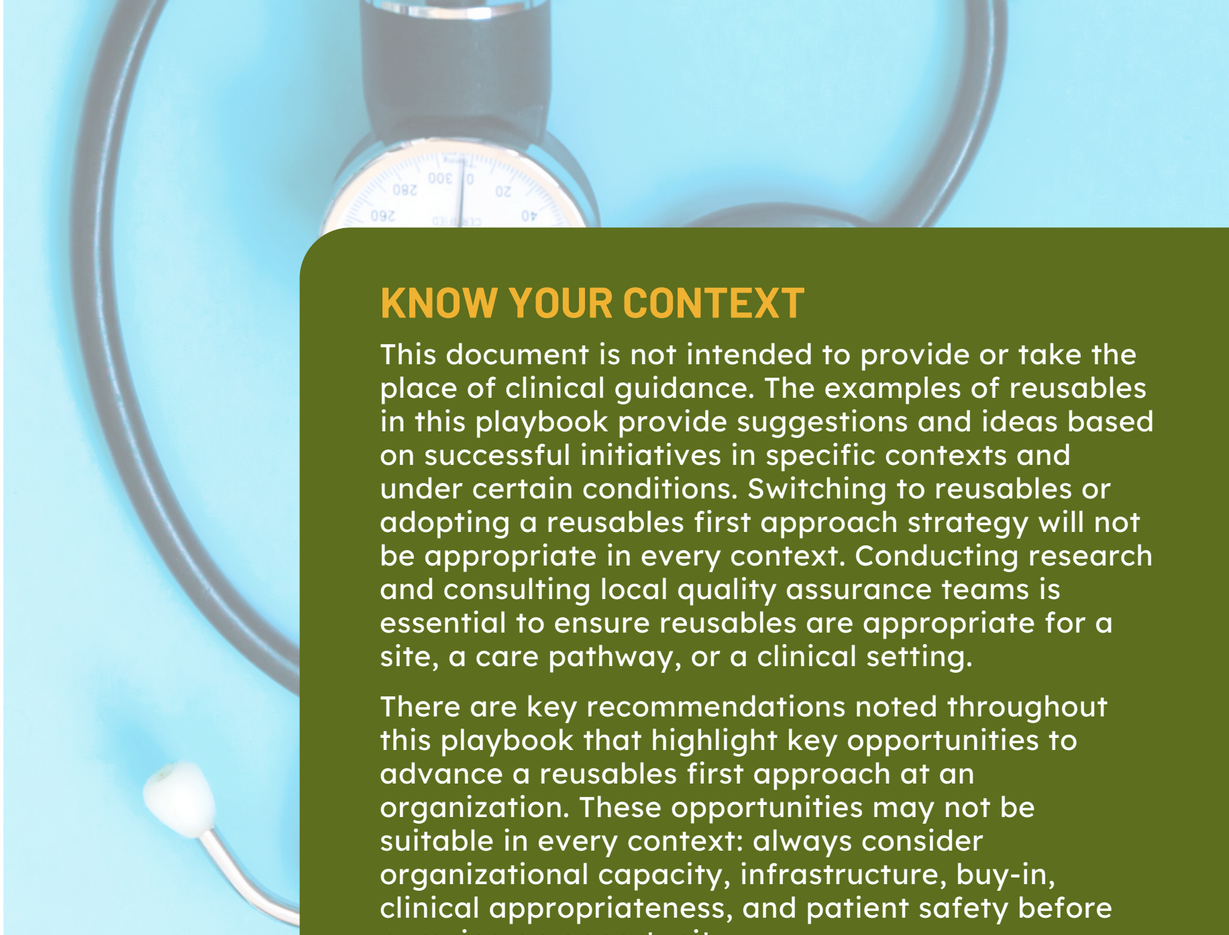
Click on a topic on the table found on the right to navigate the document

INTRODUCTION

“Reusables first” is a sustainable approach to procurement that prioritizes the purchase of reusable products and devices over single-use disposables whenever possible and clinically safe to do so.

This playbook provides background information, an overview of reusable opportunities in healthcare, as well as implementation resources and suggested strategies to adopt reusables at care sites.

This playbook was developed in partnership with Vancouver Coastal Health (VCH). VCH, one of five regional health authorities in British Columbia, has prioritized planetary health within its strategic priorities to guide the authority’s vision and goals. As part of its efforts to address its environmental impact, VCH identified switching to reusable medical devices and clinical supplies as a key opportunity. With support from CASCADES, VCH is establishing a reusables first approach as part of a broader sustainable procurement program. Although still in development, this initiative has had broader implications to healthcare procurement in BC due to the collaboration between VCH and the Provincial Health Services Authority (PHSA) which acts a central procurement body for all health organizations in BC.



KNOW YOUR CONTEXT

This document is not intended to provide or take the place of clinical guidance. The examples of reusables in this playbook provide suggestions and ideas based on successful initiatives in specific contexts and under certain conditions. Switching to reusables or adopting a reusables first approach strategy will not be appropriate in every context. Conducting research and consulting local quality assurance teams is essential to ensure reusables are appropriate for a site, a care pathway, or a clinical setting.

There are key recommendations noted throughout this playbook that highlight key opportunities to advance a reusables first approach at an organization. These opportunities may not be suitable in every context: always consider organizational capacity, infrastructure, buy-in, clinical appropriateness, and patient safety before pursuing an opportunity.

Suggested citation

MacNeil J, Miller FA, Dawson M, Chan C, Chin, E, Maguire B. A Reusables First Approach to Healthcare. Version 1.0. [Internet]. CASCADES (Creating a Sustainable Canadian Health System in a Climate Crisis). [Cited DATE]. Available from https://cascadescanada.ca/resources/reusables-first-playbook/

PLAYBOOK STRUCTURE

WHY

The Case for Change

Introduction to the Issue

WHAT

Action Areas for Change

Opportunities for Action
Resources to Plan and Implement Change

HOW

The Strategy for Change

Strategies for Sustaining Change

Summary of Key Recommendations for a Reusables First Approach in Healthcare

Adopt reusables or reuse strategies where possible	• Consider switching to reusable textiles in surgical and isolation settings, where possible • Consider switching to reusable textiles that are used across care settings, where possible
	• Consider switching to reusable clinical supplies and devices, when clinically appropriate to do so, within inpatient, outpatient, and community care settings, as well as the perioperative care setting • Recommend used or refurbished rehabilitation devices, if appropriate, before purchasing or leasing new • Start reuse programs for rehabilitation devices, where possible
	• Switch to reusable food service wares where possible that can be sorted/managed in-house or through rental/subscription-based partnerships • Consider switching to a room service model for in-patient meals to reduce waste, mobilize reusables, and improve patients' dining experience
	• Reuse furniture by repairing it to extend its life or refurbishing it to give it a second life through supplier partnerships or in-house services/reconditioning • Reuse furniture through redistribution/redeployment either externally or internally • Reuse furniture through rental/lease contracts
Strengthen reuse systems	• Strengthen capacity of in-house/on-site reprocessing or consider reusable product-service systems (external/off-site reprocessing) • Establish a used-device collection system with a remanufacturer or purchase remanufactured devices if possible and appropriate • Consider internal and external redistribution strategies for unwanted goods and equipment
Learn by doing	• Trial a reusable to assess feasibility and build a case for broader adoption at your site to transition to the reusable or other reusables permanently, to spread use of the reusable(s) to other units/sites, to trial another opportunity, or to strengthen internal reuse systems
Drive change through demand	• Adapt policies to prioritize reusables and align reuse efforts with strategic priorities • Develop cross-functional relationships to spread and scale reusable initiatives across units, sites, or networks • Leverage purchasing power to demand high-quality, sustainable products and service solutions to better serve user needs and to drive competition

Back to Navigation Page

WHY

The Case for Change

1. Healthcare Procurement
2. Reusables in Healthcare
3. Sustainable Procurement is Circular
4. Healthcare Sector Action Toward Sustainability & Reuse

Healthcare Procurement

Healthcare procurement is a significant lever for change. Approximately 90% of the Canadian health sector's emissions originate from supply chains.

The healthcare sector is responsible for an estimated 4.6% of all global greenhouse gas emissions (GHG) (1). The majority of the global health system GHG emissions—approximately 60-80%—originate from supply chains. These indirect emissions are categorized as Scopes 2 & 3 in commonly used international accounting and reporting standards (1-5). In Canadian healthcare systems, this is approximately 90% (3, 6). Scope 2 emissions are associated with the consumption of purchased electricity, steam, and heating and cooling by an organization, while Scope 3 emissions are associated with the extraction, manufacturing, transportation, use, and disposal of products, materials, and services used by an organization. Scope 3 emissions account for water use, raw material extraction and use, land use, toxic substance use, energy use, air pollution, waste, and others (6-8).

Healthcare procurement has significant potential to mitigate the healthcare system's impact on planetary health, including its contribution to climate change. By focusing on decarbonizing supply chains and adopting sustainable practices, such as prioritizing reusable products, the sector can drive meaningful progress toward environmental sustainability and climate mitigation.

RESOURCES:

- Greenhouse Gas Emissions Estimation in Canadian Healthcare Playbook, CASCADES
- GHG Scopes in the Context of the NHS, NHS England
- Organizational GHG Emissions Measurement: Opportunities and Guidance Chart, CASCADES
- Health Care Emissions Impact Calculator, Practice GreenHealth

Reusables in Healthcare

There is a growing interest in and movement towards procuring reusable products and devices as a high-impact strategy for advancing sustainability. Historically, the healthcare sector used reusable supplies and devices made from materials that could be cleaned/sterilized in-house then redistributed for multiple uses. The shift to single-use disposables occurred throughout the 1970s and 1980s, when plastic manufacturing techniques improved and marketing strategies promoted them as more protective, cost-effective, and convenient (9, 10). Over time, single-use disposable products and devices became the default purchasing strategy for healthcare organizations due to high availability, reduced up-front costs, and the perception of lower infection risk (7, 9, 10). The use of single-use disposables was further exacerbated during the Covid-19 pandemic.

Reusable products are designed for multiple uses and can be reprocessed, repaired, or refurbished. Eventually, they are recycled to recover the value of the base materials (7). In a healthcare context, reusables can be medical and surgical devices, instruments, equipment, canisters, gowns, drapes, and wrappers; and non-clinical items, such as food service wares.

A " **reusables first approach** " to healthcare procurement prioritizes the purchase of reusable or re-processable products over single-use, disposable items whenever possible, in order to minimize waste and to reduce environmental impact (11, 12). By adopting this approach, healthcare organizations can leverage their purchasing power to shape markets by demanding both high quality and sustainable products.

REUSABLES FIRST APPROACH TO PROCUREMENT, VANCOUVER COASTAL HEALTH

Vancouver Coastal Health (VCH) and the Provincial Health Services Authority (PHSA) have recognized that a sustainable, climate-resilient health care system is integral to individuals, communities, and the planet. To advance its shared vision, the Regional Energy and Environmental Sustainability team and the Sustainable Clinical Services team worked with Reeve Consulting to gain a better understanding of the procurement process between VCH and PHSA Procurement in order to leverage their procurement practices to achieve more sustainable outcomes. One key strategy identified was to switch from single-use products to reusable products where appropriate.

The team engaged key stakeholders across VCH & PHSA to better understand the most common methods of procurement (e.g., RFx, direct award, sole source, etc.) and to identify the product categories with the highest risk/opportunity. From there, they identified intervention points where procurement processes could be improved for sustainable outcomes and then piloted the improved processes on high impact procurement opportunities (HIPOs). Additionally, the team provided recommendations to drive systemic change within the organization, ensuring more sustainable outcomes aligned with Reeve's 10 Element Best Practice Framework.

CO-BENEFITS OF REUSABLES

A reusables first approach has multiple co-benefits:

GREENHOUSE GAS EMISSIONS

- Reusables help lower greenhouse gas emissions and other environmental effects by reducing the extraction and use of natural resources required to fulfill the product's function, compared to single-use items (7).
- Most life-cycle assessments (LCAs) comparing single-use products to the reusable counterparts demonstrate that reusables are (almost always) environmentally preferable (13, 38-41, 54-81). However, it is important to consult the most recent literature and data in order to make informed decisions about which options are in fact more sustainable.

WASTE & POLLUTION

- Reusables help reduce waste and pollution by being designed for repeated use, with the capacity to be repaired, refurbished, reprocessed, repurposed, and eventually recycled (7).
- Switching to reusables shifts procurement from a linear approach (raw resources are extracted for production, products are then distributed, used once, and discarded) to a circular one, where the value of the resource is recovered or retained (7).

COST

- Although reusables have higher up-front costs than disposable alternatives they often result in cost savings or are cost neutral long term.
- Reusables are used multiple times, and can often be repaired or refurbished to extend the product lifetime. This reduces the need for frequent replacement and can save costs when compared to purchasing an equivalent number of single-use items.

SUPPLY CHAIN RESILIENCE

- Single-use products and devices are vulnerable to supply chain disruptions, especially since manufacturing can be geographically and/or firm concentrated (made evident by the COVID-19 pandemic with product shortages) (14).
- Switching to reusables creates greater control over supply through in-house or local reprocessing and sterilization, ensuring the products are always available to healthcare institutions (14, 8).

RESOURCES:

- Retaining Product Value in a Circular Economy, Government of Canada
- Measuring and Reducing Plastics in the Healthcare Sector, Healthcare Without Harm
- Less Waste, More Health: A Health Professional's Guide to Reducing Waste, UK Royal College of Physicians
- Benefits of a Reusable PPE System in Health Care, Canadian Coalition for Green Healthcare

CONSIDERATIONS FOR REUSABLES

"The greatest value of a reusable product is realized when it is reused as many times as possible." -Dr. Andrea MacNeill *Medical Director of Planetary Health, Vancouver Coastal Health & Founder, UBC Planetary Healthcare Lab*

ENVIRONMENTAL IMPACTS OF MANUFACTURING & REPROCESSING

- Products and materials designed for reuse are usually more intensive to manufacture. For co-benefits to be achieved, reusables must be used as intended; that is, for the entire intended lifespan (duration & purpose of use) indicated by the manufacturer.

For example, if reusable bags or cutlery are used as a single-use item, then the environmental impact is greater than the production and use of single-use version of the item.

- Reprocessing reusables has an environmental impact because various inputs, including energy use, are required to ensure rigorous cleaning and sterilization. The environmental impact of reprocessing strongly depends on the local energy grid.

For example, a study done in Australia showed that select reusable devices had a greater climate impact where electricity was generated by the combustion of brown coal (15). However, when replicated in Europe, this study found reduced environmental impacts with a cleaner energy grid (16).

ORGANIZATIONAL CAPACITY & ATTITUDE

- Reusables require internal capacity (storage, infrastructure, logistics, administration, medical device reprocessing, change management, etc.) which may require investment and cross-functional buy in.
- Concerns around patient safety and quality of care are often raised in discussions about reusables. Rigorous standards for reprocessing reusable products are in place through federal regulation and provincial standards and guidance.
- Working with infection, prevention, and control (IPAC) or quality assurance teams to ensure appropriate use and to educate the workforce on the safety of reusables can be good place to start to shift organizational attitudes toward sustainability.

For example, a hospital in Montreal switched to multiple use breathing circuits after conducting a surveillance program and developing utilization criteria with its Infection, Prevention, and Control Service (17).

MARKET AVAILABILITY

- Although the market for reusables has grown in the past few decades, single-use products are more widely available.
- Availability of reusables depends on the product. Understanding availability constraints are crucial if replacing high-volume disposables with reusables, especially products that are essential for daily care delivery.
- Leveraging purchasing power is an effective way to demand innovation from vendors for high quality reusable products and sustainable practices (8).

Sustainable Procurement is Circular

Sustainable procurement is “a supporting framework for organizations to achieve their broader sustainability objectives” and “an opportunity to leverage immense spending power to advance environmental, social, and economic objectives” (p. 11) (18). Sustainable procurement efforts aim to embed sustainability considerations into procurement processes (i.e., goods and services selection and contracts).

Circular procurement aims to design away waste by keeping products and materials in use for as long as possible through reuse, repair, remanufacture, and eventually recovery (7, 12). Throughout a product’s lifecycle, there are various opportunities to introduce circular principles (7) by reviewing current products and processes to

- optimize supply and reduce use and demand
- maximize the life of products and materials that are currently in use
- redesign products for reuse (to be repaired, reprocessed, or remanufactured) and to better serve clinical needs
- replace disposable or high waste generating products/ practices with more sustainable options

CRITIQUES OF THE CIRCULAR ECONOMY MODEL

The circular economy model is widely known for its potential for reducing waste, conserving resources, and lowering environmental impacts and is often used as a way to generate buy in. It has, however, been criticized for its limitations and its potential to recreate negative conditions. Critics suggest the circular economy “stands as a discourse that focuses on the economy, excludes social dimensions, and simplifies its environmental consequences” (p. 428) (19).

Various practical challenges also exist, related to infrastructure, economic feasibility, consumer behaviour, regulatory uncertainty, and environmental limitations (19). Read more about critiques of the circular economy.

RESOURCES:

- Sustainable Health Procurement Guidance Note, United Nations Development Program
- Sustainable Procurement in Health Care Guide, Practice Greenhealth, Health Care Without Harm & Global Green & Healthy Hospitals
- Public Procurement for a Circular Economy: Good Practice & Guidance, European Commission
- Circular Economy in Healthcare: Communicating to Non-Experts in a Persuasive Way, Vancouver Coastal Health
- A Circular Economy Model for Hospital Generated PPE and Medical Single Use Plastic Waste: Demonstrating Opportunities for Reduction and Reuse, Canadian Coalition for Green Healthcare & Centre for Sustainable Health Systems

GUIDING R'S FOR CIRCULAR PROCUREMENT

The guiding R's for circular procurement prioritize environmental responsibility, resource efficiency, and waste reduction (6, 20).

REDUCE

Reduce unnecessary use of supplies and packaging.

Reducing use could involve efforts to avoid unnecessary or inappropriate use of supplies or to optimize supply to avoid unnecessary disposal or reprocessing of unused supplies. Performing an audit can help identify overage.

For example, reducing inappropriate glove use through awareness campaigns like in Quebec or British Columbia.

REUSE

Reuse medical devices & supplies when **clinically appropriate** and non-clinical goods where possible.

For example, reusing office furniture through a redistribution platform and showroom like at Royal Jubilee Hospital in Island Health Authority.

REPROCESS

Reprocess medical equipment & devices to make used or contaminated **reusables ready/appropriate for patient use**.

Reprocessing may include cleaning, functional testing, repackaging, relabelling, disinfection or sterilization. Reprocessing reusable & single-use devices involves strict protocols & requirements to avoid risk to patients and maintain high-quality care. Some disposable products can be **remanufactured** to be reused for another single use.

For example, reprocessing breathing circuits through a Medical Device Reprocessing Department like at North York General Hospital.

REFURBISH/REPAIR

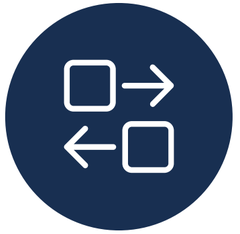
Refurbish and/or repair used or damaged single-use and/or reusable equipment and devices to **extend the life of the product for reuse.**

Refurbishing or repairing a product may involve replacing a specific component to make the product usable once more.

For example, repairing/ refurbishing used walking aids for reuse.

REPLACE

Where possible and when appropriate, **replace** disposables with **reusables.** When sourcing new, consider **products** that have been **repaired or refurbished** through redeployment or redistribution. If reusables are unavailable or inappropriate, incorporate sustainability criteria into purchasing practices.



For example, replacing a disposable product with the reusable when a contract is up for renewal.

REPROCESSING

Medical devices and clinical supplies that are intended for reuse must undergo thorough processing to meet strict protocols and requirements throughout the reprocessing cycle/pathway. These ensure they are safe and appropriate for additional use.

The term “reprocessing” is often applied both to products designed for reuse and products designed to be single-use as some single-use products can be reused if they are remanufactured. The way a product is reprocessed depends on its durability.

Devices and products that are designed for reuse, such as reusable surgical instruments or isolation gowns, can be reprocessed internally (on-site/in-house) or externally (off-site). Various factors can determine which approach is most feasible for a care site. Regardless of location, reprocessing comprises a multitude of steps which can vary slightly depending on the reusable.

In Canada, federal regulations and provincial standards and guidance exists to ensure rigour and adherence to requirements for patient and provider safety and to maintain high quality care (21-23).

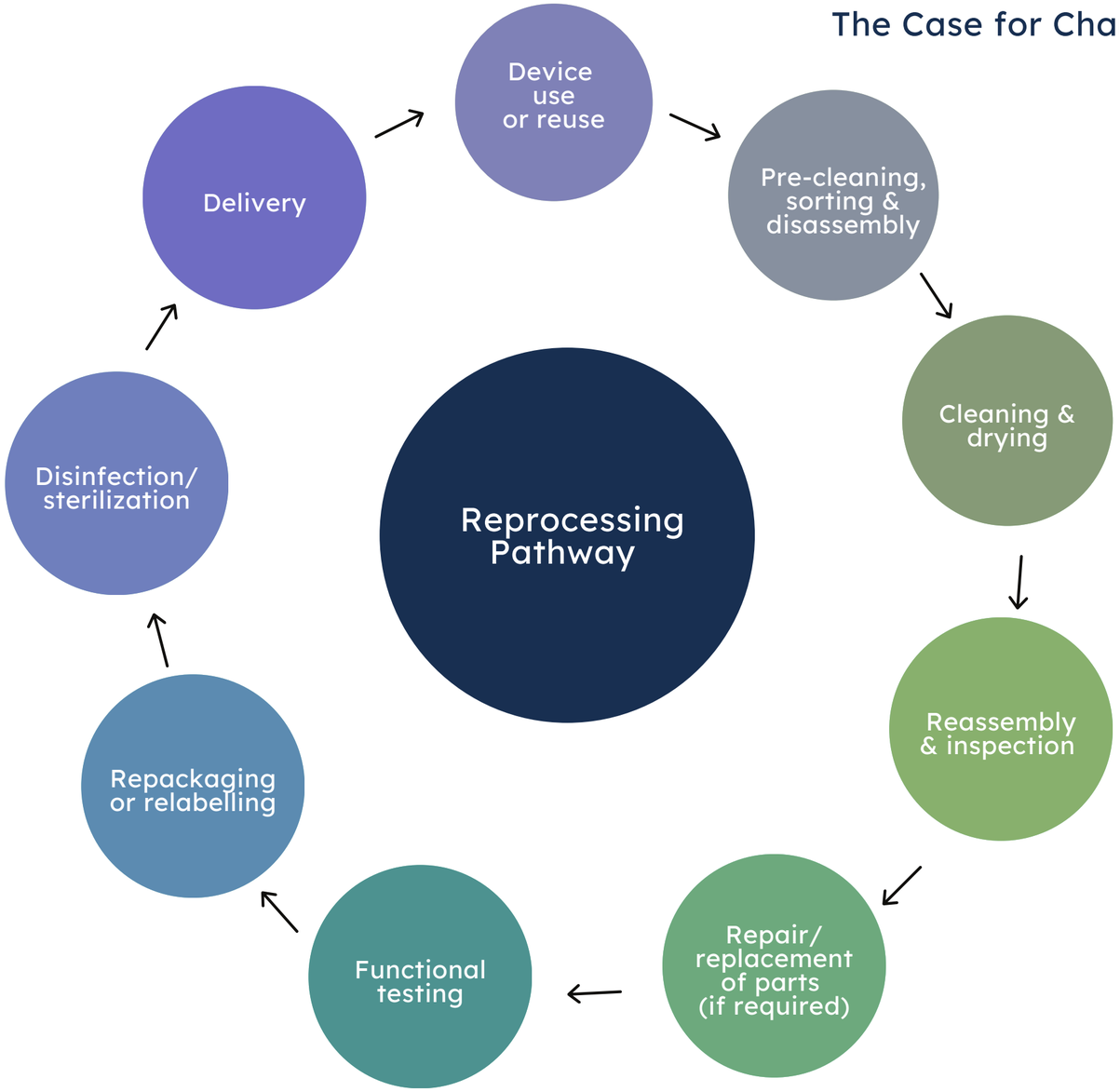


Figure 1: General steps in a reprocessing pathway (24, 25)

INTERNAL REPROCESSING

Reprocessing is done in house through

- medical device reprocessing department (MDRD) or central processing department (CPD) for products and devices
- facilities management for laundering linens and other textiles

Staff capacity, equipment, infrastructure, storage, and efficiency (processing time) are key factors to consider for reprocessing reusables internally.

BREATHING CIRCUITS, NORTH YORK GENERAL HOSPITAL

North York General Hospital's Medical Device Reprocessing Department reprocesses breathing circuits used during surgery.

VIDEO: The Reprocessing Pathway, NYGH

EXTERNAL REPROCESSING

Reprocessing is done off site by a vendor, supplier, a manufacturer or a third-party service provider and returned for reuse. This approach is typically done as a subscription-based model using either

- **an exchange system** : where set amount of reusable products are delivered, used, collected, and replaced on **a set schedule/timeframe**
- **a replenish or top up system** : where set amount of reusable products are delivered, used, collected, and **replenished as needed**

External reprocessing is often offered by vendors as a comprehensive "product-service system solution" where products are offered in combination with services (i.e., ongoing support, maintenance, monitoring, and consultation) (7).

REMANUFACTURING

Some single-use devices can be remanufactured for one additional use. The remanufacturing process restores the device to a "like new" state marketed as a new product by the company conducting the remanufacturing and then sold at a competitive price. In Canada, suppliers or manufacturers who remanufacture devices assume full liability for any defects or malfunctioning (26).

RESOURCES:

- Canadian Medical Device Reprocessing, Canadian Standards Association
- Reusable & Single-Use Medical Device Requirements for Medical Clinics, College of Family Physicians & Surgeons of Alberta
- Reprocessing Reusable Medical Equipment, Public Health Ontario
- Spaulding's Classification of Medical Equipment & Devices, Public Health Ontario
- Reprocessing Decision Chart, Public Health Ontario

"ENVIRONMENTALLY PREFERABLE" PRODUCTS: GUIDANCE FOR BIOPLASTICS

Although reusables are becoming more widely available on the market, so too are products that are being portrayed as "environmentally preferable" because they contain or are composed of bioplastics. However, recent evidence (27) suggests that bioplastic adoption in healthcare should be avoided until there is

- clarified and standardized terminology
- robust evidence of safety and real world performance of biodegradability
- a national regulatory framework and harmonized international standards
- greater transparency on sourcing materials and chemical additives (and their implications on biodegradability, environmental sustainability, and toxicological concern)

The exposure conditions needed for biodegradation are highly dependent on the material's composition. Since bioplastics are made from combination of bio-polymers or bio-based polymers and chemical additives, the exposure conditions required are not typically found in municipal or industrial waste management facilities (27, 28).

Currently, bioplastics threaten existing recycling and composting programs because they are considered contaminants (27).

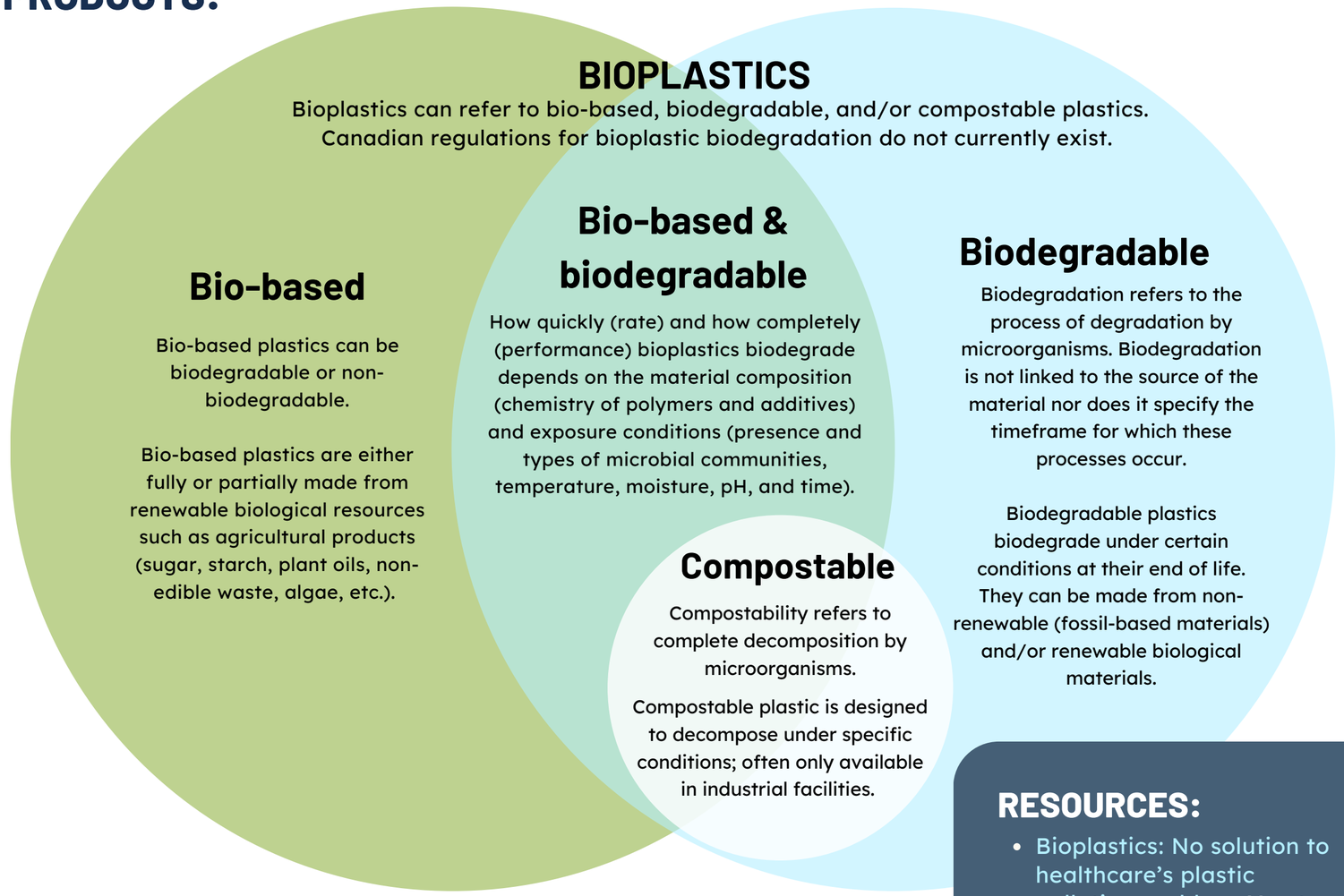


Figure 2: Bioplastics description (27)

RESOURCES:

- Bioplastics: No solution to healthcare's plastic pollution problem, Yu et al., 2024
- BIOPLASTICS: Guidance for Wales, WRAP

Healthcare Sector Action Toward Sustainability & Reuse

The healthcare sector is beginning to take action to address its contributions to the climate crisis and to help mitigate future impacts.

The following pages highlight key commitments and actions that different healthcare sector actors are taking toward sustainable supply chains, including those that are strategically prioritizing reuse principles and reusables within operations, procurement practices, and care delivery when clinically appropriate.

- International action for sustainable healthcare supply chains
- Health system climate action plans with commitments to reusables
- National momentum for reusables

INTERNATIONAL ACTION FOR SUSTAINABLE HEALTHCARE SUPPLY CHAINS

Since 2021, notable international commitments have been made to prioritize and support health systems to transition to more sustainable supply chains (low carbon, climate resilient).

COP 26: Alliance for Transformative Action on Climate & Health (ATACH)

- The international community committed to build both sustainable and low-carbon health systems and healthcare supply chains that deliver high-quality healthcare, mobilize resources for resiliency, and facilitate international collaboration (29).
- ATACH was established to provide knowledge, expertise, and guidance to help countries conduct baseline greenhouse gas emissions assessments (including supply chain emissions) and develop action plans to realize net-zero health systems by 2050 (29). In 2021, Canada committed to deliver climate resilient, sustainable, low carbon health systems and, in 2024, to reach net zero by 2050.

COP 27: International Procurement Collaboration

- The U.S. Department of Health and Human Services (HHS) and National Health Service (NHS) England announced a collaboration to align procurement requirements for suppliers in recognition of the significant contribution of the supply chain to the high emissions from the health care sector (30-32).

COP28: Climate & Health Declaration

- Over 120 countries, including Canada, committed to transform health systems, including supply chains, to be climate-resilient, low-carbon, sustainable, and equitable by reducing emissions & waste and setting decarbonization targets and procurement standards for national health systems (33).

COP 29: International Procurement Collaboration Expansion

- The HHS-NHS England procurement collaboration continues to streamline national procurement standards for health sector suppliers, specifically for carbon emissions disclosures and target setting. More countries have joined the discussions, including the Australian Department of Health and Aged Care, Health Service Executive Ireland, and the Norwegian Hospital Procurement Trust (34).

HEALTH SYSTEM CLIMATE ACTION PLANS WITH COMMITMENTS TO REUSABLES

Health systems across the world have begun identifying and prioritizing reusables as a key opportunity for sustainability. Health system climate action plans cite specific language toward reusables with four underlying motivations: to reduce plastics, to address waste, to create circularity in supply chains, and to educate the workforce about the environmental impacts of single-use disposables and the co-benefits of reusables.

NHS Wales: Decarbonisation Strategic Delivery Plan

- Prioritize reusable products as the default over single-use products where this is deemed clinically acceptable (Action 26)
- Address waste in the delivery of healthcare through “plastics in healthcare” initiatives (personal protective equipment [PPE], single-use plastics, and packaging waste) (Action 45)

NHS Scotland: Climate Emergency Sustainability Strategy

- Create circularity in supply chains to maximize repair, reuse, and waste reduction (embed waste hierarchy into contracts & establish a NHS Scotland circular economy programme)
- Identify single-use items and collaborate with suppliers to seek opportunities to switch to reusable and recyclable alternatives

NHS England: Delivering a Net Zero NHS

- Reduce reliance on disposable products through NHS Plastics Reduction Pledge including
  - Clinical plastics: 10% reduction in clinical single-use plastics by evaluating reusable or refurbished alternatives
  - Non-clinical plastics: Switching to reusables in canteens and food packaging
- Switch to domestically manufactured PPE

DESIGN FOR LIFE ROADMAP, NATIONAL HEALTH SERVICES, UNITED KINGDOM

In October 2024, the Department of Health & Social Care published the Design for Life Roadmap (2024) establishing the government’s ambition to transition away from all avoidable single-use medical technology products towards a functioning circular system by 2045. Through 4 overarching objectives, 6 key action areas with 30 corresponding actions, the roadmap lays a foundation to achieve circularity in medtech supply by designing, procuring, and processing medical products for reuse, remanufacturing, or recycling for all national health services in the United Kingdom. The roadmaps’s four overarching objectives are to 1) boost UK growth, 2) improve NHS resilience, 3) reduce waste & emissions, and 4) generate substantial cost savings.

Learn more

Government of France: Planification écologique du système de santé - Feuille de route

- Develop circular economy circuits and promote reuse by adopting the “5R” principle (“Refuse, Reduce, Reuse, Recycle and Return to Earth”) and integrate the notion of end of life from the time of purchase (recovery, recovery circuit by favouring reuse, reuse and then recycling)
- Investigate the feasibility of reprocessing single-use medical devices to identify the legal framework and practices to guarantee the safety of care
- Combat planned obsolescence by favouring reuse, systematizing recycling of devices, and reducing the ability to replace still-functional equipment

Government of Australia: National Health and Climate Strategy

- Aim to divert 80% of waste from landfill using a waste hierarchy: Reduce, Reuse, Reprocess, Refurbish, Recycle, Replace & Segregate
- Focus reuse efforts on medical devices (perioperative instruments) & PPE (surgical gowns & face masks)

HSE Ireland: Climate Action Strategy

- Optimize behavioural practices to reduce waste & encourage reuse of clinical/medical products
- Collaborate with public authorities & third parties to improve the reuse & recycling of healthcare products & materials
- Explore the clinical feasibility of safely replacing single-use items with reusables (PPE & drapes)
- Develop training for medical & clinical staff to reduce use of single-use items in medical practices

CANADIAN MOMENTUM FOR REUSABLES

Momentum for reusables and sustainable procurement more broadly can also be seen across Canadian healthcare groups/ organizations, such as medical associations and societies, academic health science groups, health authorities, and others.

Canadian Medical Association (CMA)

- The CMA calls for building sustainable health systems in Canada, with specific actions for environmentally sustainable purchasing:
  - Align purchasing with circular economy principles […] with a focus on reduction and reuse first
  - Reduce waste by transitioning from single-use disposable products to reusable products

Canadian Anesthesiologists Society

- New Guidelines to the Practice of Anesthesia (2023) added 10 items for environmental sustainability including: “the use of reusable, reprocessable equipment choices should be promoted over single-use disposables while ensuring adequate infection prevention practices”
- Ontario’s Anesthesiologists, a section of the Ontario Medical Association, have also released a position statement in support of circular economy principles for the procurement and use of medical devices & supplies in the operating room

Group Purchasing Organizations (GPOs)

- In Canada, many healthcare organizations procure equipment, supplies, and medicines through GPOs such as Mohawk MedBuy Corporation and HealthPRO. Although much work needs to be done, sustainability practices are being adopted into GPO operations and services, evident through
  - Launch of new ESG & Indigenous Reconciliation guidelines at Mohawk Medbuy Corporation
  - Publication of a new sustainability resource to help identify the types of products on contract, primarily where this is a combination of reusable and disposable products at HealthPro

Health Authorities

- Some Canadian health authorities have begun to strategically prioritize sustainability efforts:
  - Fraser Health's Planetary Health Strategy (2023-2028) commits to reducing its impact on the natural environment and biodiversity by implementing circular healthcare strategies that avoid single-use disposable medical devices & supplies
  - Interior Health's Climate Change & Sustainability Roadmap (2023-2028) commits to establishing a sustainable procurement policy by adopting circular economy principles, developing an environmentally preferred purchasing framework, and procuring reusable products over single-use disposables
  - Vancouver Coastal Health's Planetary Health Strategy (2024-2029) commits to moving towards low carbon, sustainable products and services, reducing emissions, pollution and waste; promoting circular economy principles, and embedding planetary health principles in business practices

Toronto Academic Health Sciences Network

- TAHSN, a network of 14 academic hospitals in the Greater Toronto Area, established the Sustainable Health System Community of Practice (CoP) to collaboratively address climate change in the health sector. A priority for the CoP is to identify high-impact opportunities within procurement, led by the Sustainable Procurement Working Group (SPWG). In 2023, the SPWG published a statement on Sustainable Procurement outlining three commitments across TAHSN:
  - Integrate sustainable procurement into organizational strategies & policies
  - Elevate sustainability considerations in procurement
  - Engage suppliers & procurement partners to improve evaluation of sustainability in purchasing decisions
- SPWG members and clinical champions have identified reusables as a key opportunity for improving sustainability, especially within perioperative care

EFFORTS TO REDUCE SINGLE- USE PLASTICS IN HEALTHCARE, CANADIAN COALITION FOR GREEN HEALTH CARE

The Canadian Coalition for Green Health Care is coordinating efforts to reduce single-use plastics across Canada. Its newly launched projects: the Single-Use Plastics Reduction Project and the Reducing Health Care-Related PPE and Medical Single Use Plastic Waste Through Circular Economy Principles Project aim to identify opportunities to eliminate single-use plastics in Canadian healthcare facilities by advising on reduction, reuse, recycling, and storage options tailored to facility needs. Learn more about these projects and resources below.

Learn more

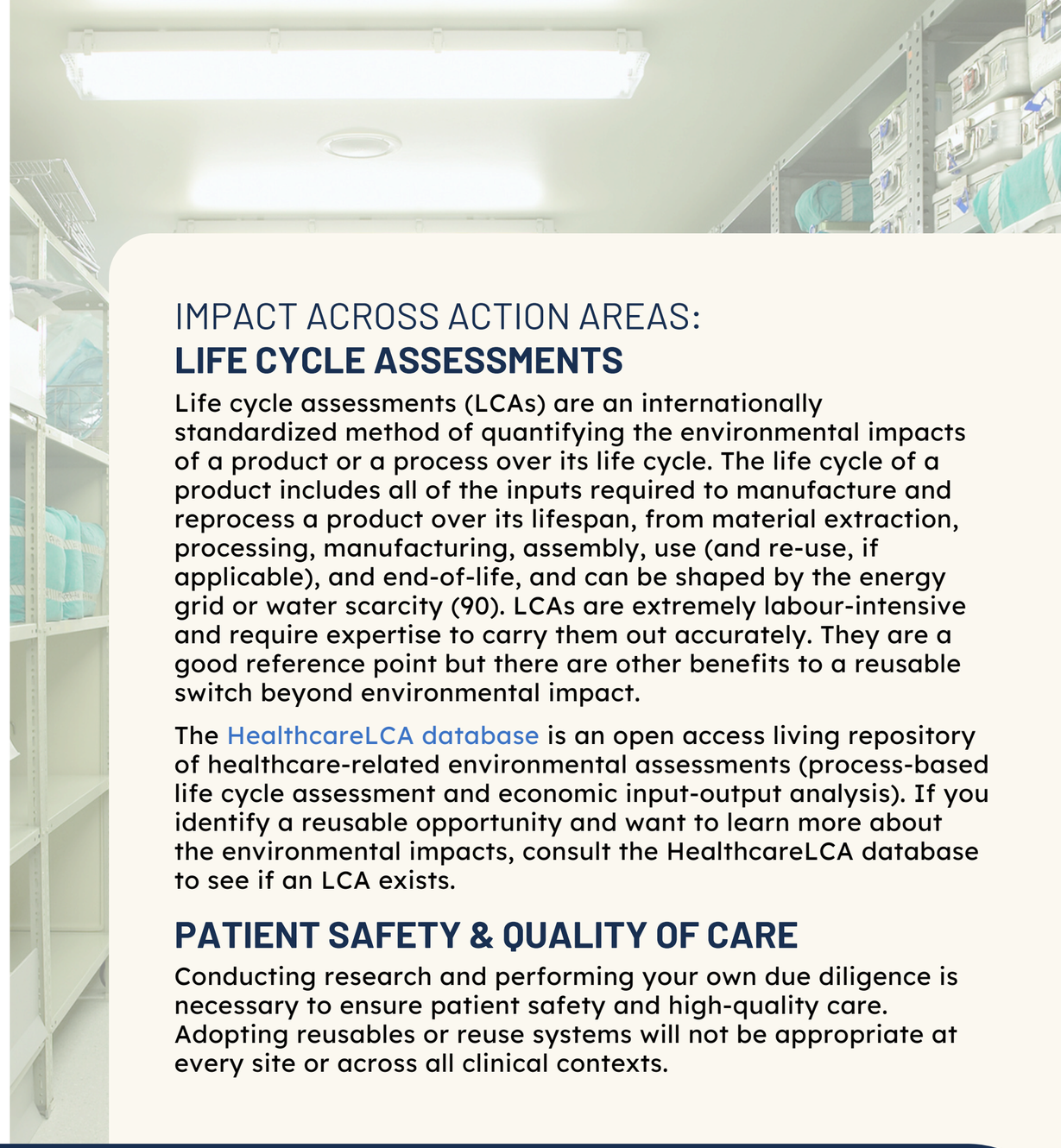
WHAT

Action Areas for Change

1. Textiles
2. Clinical Supplies & Devices
3. Food Service Wares
4. Furniture

Overview of Action Areas

MEDICAL TEXTILES	FOOD SERVICE WARES
Medical textiles is an umbrella term for textile fabrics used across various clinical settings & specialities. This action area explores reusable textiles categorized for “healthcare & hygiene” uses.	This action area explores reusable opportunities within food services specific to wares (i.e., plates, cutlery, trays, etc.).
CLINICAL SUPPLIES & DEVICES	**FURNITURE**
This action area explores reusable opportunities for clinical supplies and devices applicable to perioperative care, rehabilitative care, and general care needs across inpatient, outpatient, and community settings.	This action area explores opportunities to reuse furniture across healthcare settings.



IMPACT ACROSS ACTION AREAS:

LIFE CYCLE ASSESSMENTS

Life cycle assessments (LCAs) are an internationally standardized method of quantifying the environmental impacts of a product or a process over its life cycle. The life cycle of a product includes all of the inputs required to manufacture and reprocess a product over its lifespan, from material extraction, processing, manufacturing, assembly, use (and re-use, if applicable), and end-of-life, and can be shaped by the energy grid or water scarcity (90). LCAs are extremely labour-intensive and require expertise to carry them out accurately. They are a good reference point but there are other benefits to a reusable switch beyond environmental impact.

The HealthcareLCA database is an open access living repository of healthcare-related environmental assessments (process-based life cycle assessment and economic input-output analysis). If you identify a reusable opportunity and want to learn more about the environmental impacts, consult the HealthcareLCA database to see if an LCA exists.

PATIENT SAFETY & QUALITY OF CARE

Conducting research and performing your own due diligence is necessary to ensure patient safety and high-quality care. Adopting reusables or reuse systems will not be appropriate at every site or across all clinical contexts.

Healthcare & Hygiene Textiles

Healthcare and hygiene textiles, such as gowns, drapes, sterile wrap, etc., are a key area of opportunity to switch to reusables since they are typically high-volume items which can create widespread impact across care sites or organizations by achieving multiple co-benefits.

Reusable healthcare & hygiene textiles

- can be washed and sterilized for multiple uses, reducing environmental impacts and waste
- can be cost neutral or produce cost savings long term (36-38)
- can create greater control over supply (7, 8, 14)

KEY CONSIDERATIONS

- Laundering capacity: Is there capacity to launder reusable textiles in-house? Are there external professional healthcare laundry services available?
- Travel: If laundering cannot be done in house and requires transportation to an external facility, consider transport related emissions.
- Lead time: If pursuing a product-service solution with an external vendor, consider lead time as vendors may need to time prepare to ensure sufficient supply (i.e., linen type & sizing, volume, replenishing cycle, etc.)
- Operational changes: New or changes to procedures or protocols to store, replenish, collect, distribute/pick up reusable textiles may be required (i.e., coordinating the collection of soiled linens to laundering department/team or service or procuring designated hampers for soiled linens).

Photo Credit: Image used with permission from Barb McArthur

KEY RECOMMENDATIONS

- Consider switching to reusable textiles in surgical and isolation settings (gowns, drapes, caps, towels, sterile wrap, etc.), where possible
- Consider switching to reusable textiles that are used across care settings (underpads, bed linens & curtains, patient gowns, lab coats, etc.), where possible

REUSABLE TEXTILE OPPORTUNITIES ACROSS CARE SETTINGS

Opportunity Area	Description
Surgical and isolation settings	Use reusable textiles instead of single-use products throughout perioperative care delivery and when treating patients in isolation wards, including: • surgical & isolation gowns (39-42) • barrier drapes & wrappers (43-45) • caps (bouffant & skull) (46, 47) • bed covers & lift sheets (48) • towels & pads • stands & table covers • patient belonging bags
Inpatient and outpatient care settings	Use reusable textiles instead of single-use products throughout a patients' care in hospitals and bed-based facilities, including: • underpads (e.g., incontinence) (49) • bed linens & curtains (50) • positioning sheets • patient gowns & capes (adult & pediatric) • scrubs & lab coats

References added for opportunities with life cycle assessments.

SURGICAL & ISOLATION RESOURCES:

- Life Cycle Assessment of Surgical Drapes and Tapes, The American Reusable Textile Association
- A Life Cycle Assessment of Reusable and Disposable Surgical Caps, Donahue, L.M., et al. (2024), Journal of Surgical Research
- Project Charter Bring Your Own Reusable Bag, CASCADES
- Implementation Guide Bring Your Own Reusable Bag, CASCADES

OTHER CARE SETTINGS RESOURCES:

- Carbon Footprint of Hospital Laundry: A Life-cycle Assessment, John, J., et al. (2024), BMJ Open
- Reusable and Disposable Incontinence Underpads: Environmental Footprints as a Route for Decision Making to Decarbonize Health Care, Griffing, E. & Overcash, M. (2023), Journal of Nursing Care Quality
- Reducing Single-use Materials in Laurentian Emergency Departments, CASCADES

KEY OPPORTUNITY:
REUSABLE SURGICAL & ISOLATION GOWNS

Gowns are a common starting place to make the switch to the reusable option. Studies show that reusable surgical and isolation gowns

- can be laundered and sterilized between uses up to 75 washes (industrial laundering) with no change to performance or protection (39-42)
- can greatly reduce environmental impact compared to disposables (39-42)
- have been shown to outperform disposables in key safety test areas when combined with best practice guidelines (38)

Depending on their use, reusable gowns can have different levels of protection (levels of risk 1-4) that must meet standards of water penetration and hydrostatic pressure (38). The main difference between isolation or surgical gown is the protection rating: isolation gowns can range from no rating to Level 2 whereas surgical gowns can be Level 2 and up.

KEY CONSIDERATION

User experience: It's been reported that reusable gowns have less permeability than disposables. Thermal discomfort, especially for long surgeries, may deter staff from choosing a reusable gown. However, as the consumer, demanding better quality products for optimal user experience while maintaining safety and performance can drive innovation from suppliers and manufacturers.

REUSABLE GOWNS REPORT, NHS ENGLAND

In this report, the results from three hospital foundation trusts in NHS England that switched to reusable gowns (surgical & isolation) showcases key evidence, as well as the benefits, challenges, and key learnings from the three case study pilots.

IMPLEMENTATION RESOURCES:

- Project Charter Reusables Gowns, CASCADES
- Reusable Gowns Brief, CASCADES
- Surgical & Isolation Gowns Evaluation, The Ottawa Hospital
- Surgical Linen Standards, EcoTex
- The Case for Reusable Gowns, Textile Services Association

OTHER RESOURCES:

- Life Cycle Assessment of Surgical Gowns, The American Reusable Textile Association
- Life Cycle Assessment of Isolation Gowns, The American Reusable Textile Association
- Circular Economy Medical Textiles Roadmap for NHS Wales, NHS Wales Shared Services Partnership & Revolution Zero
- Implementation Module: Moving (Back) to Reusables in the OR, Practice Greenhealth

KEY EXPERIENCE SPOTLIGHT:

PROGRAM EXPANSION OF REUSABLE ISOLATION GOWNS, ISLAND HEALTH

Island Health launched a pilot to expand its reusable isolation gowns program to increase staff protection (reusable gowns exceed protection requirements and offer more coverage of the wearer's backside) and improve environmental sustainability, fiscal responsibility, and organizational resiliency aligning with its Climate Change & Planetary Health Strategy (2024).

The project team procured dedicated laundry equipment (washers, dryers, light tables, RFID technology, etc.), developed tracking processes and distribution protocols, and collaborated with their gown supplier to develop custom caddies to meet clinical needs. After a successful pilot, Island Health has formally launched the program at two hospital sites (where the pilots were run), and hopes early adopters will pave the way for other units and sites to join.

KEY FACTORS TO SUCCESS:

COLLABORATION

The project was led by representatives from several departments (laundry, environmental sustainability services, IPAC) who then collaborated with a core working group (occupational health & safety, clinicians) and other interest groups (facilities, design & construction, strategic procurement, communications, general support services).

INNOVATION

Custom caddies were develop in partnership with gown provider to improve usability and ensure quality standards: the new design maximizes storage space as they can be hung or laid flat on shelfs and streamlines restocking, while the caddie itself acts as a protective barrier ensuring uniformity and cleanliness.

EDUCATION & TRAINING

To help frontline users with the transition, the team developed several training and educational resources, including: a dedicated intranet page, onboarding guide, program info sheet & poster, a gown practice kit, train-the-trainer workshops for frontline leaders, and regular IPAC check ins with teams.

Learn more about Island Health's Reusable Isolation Gowns Project.

Photo Credit: Images used with permission from Amber Pikula & Jen Fraser

OTHER EXAMPLES OF REUSABLE TEXTILES

REUSABLE SURGICAL GOWNS, FRASER HEALTH

At Peace Arch Hospital in White Rock, BC, members of a surgical care team undertook a quality improvement project to reduce operating room waste by transitioning from single-use surgical gowns to reusables in its ORs. The team engaged their gown supplier and key internal stakeholders (medical device reprocessing department, housekeeping, PHSA supply chain and FH clinical supplies and equipment, and the OR team) and decided to conduct a trial.

During the trial, end users, surgeons and OR nurses, shared important feedback with the team and the supplier regarding gown features and comfort (sleeve & gown length, durability of snaps & ties, sizing inconsistencies, and temperature). After several discussions, the supplier agreed to address the feedback by collaborating with the manufacturer and increasing quality control measures. The OR team then made a formal decision to adopt reusables gowns and is now working to remove single-use gowns from both OR custom and harmonized packs.

REUSABLE SURGICAL CAPS, NHS SCOTLAND

At the Western General Hospital in Edinburgh (NHS Lothian), the Breast Theatres team has significantly reduced operating room (OR) costs and waste after introducing reusable surgical skull caps. The caps also feature embroidered names and roles, which has improved team communication during emergencies when new staff enter the OR. The success of the trial has led to a larger pilot to other surgical teams across Western General. The switch to reusable surgical caps is expected to save the hospital more than £6,000. Additionally, other sites in NHS Lothian are trialling generic caps (reusable but not personalized) (51).

Learn more

PATIENT BELONGING BAG INITIATIVES, CANADA

Across the country, thousands of disposable plastic bags are given out annually for patients to store their belongings during surgery. These bags are often thicker and larger than regular single-use plastic bags and are discarded in landfills. Several surgical departments across Canada have launched bring your own reusable bag campaigns or have procured reusable bins/containers.

Learn about reusable bag initiatives from Ontario and British Columbia care sites:

- Bring Your Own Reusable Bag, North York General Hospital
- Gyne Green Bag Project at Provincial Health Services Authority, BC GreenCare
- "Bring Your Own" Reusables to Surgery, London Health Science Centre
- Reusable Patient Bags, University Health Network

REUSABLE LINEN BAGS, ISLAND HEALTH

Island Health's in-house laundry services switched from disposable plastic bags to reusable mesh bags to transport clean linens. Two laundry sites ship over 900 reusable mesh bags to care sites (over 600 mesh bags from Victoria Regional Laundry and 300 from Cumberland Regional Laundry). The change has eliminated over 100,000 single-use plastic bags per year (52).

Learn more

BRING YOUR OWN REUSABLE BAG, NORTH YORK GENERAL HOSPITAL

Learn more from Dr. Dave Smith about North York General Hospital's bring your own reusable bag initiative.

VIDEO: BYORB with Dr. Dave Smith, NYGH

RESOURCES:

- Project Charter BYORB, CASCADES
- Implementation Guide for BYORB, North York General Hospital & CASCADES
- Implementation Guide for Other Reusables, North York General Hospital & CASCADES

Clinical Supplies & Devices

Clinical supplies and devices are a high-impact area to switch to reusables as they are used at all levels of care—primary, secondary, tertiary—across all care settings and clinical specialities, constituting a large proportion of healthcare spending. Reusable clinical supplies and devices require reprocessing to ensure adequate infection control (53).

KEY CONSIDERATIONS

Switching to and implementing reusable medical devices and clinical supplies, instead of single-use disposables, requires careful planning and consideration to ensure patient safety, compliance with regulations, cost-effectiveness, and environmental sustainability. Key considerations include

- Product selection
- Clinical staff buy-in & training
- Logistics, infrastructure & staff capacity
- Environmental impact
- Cost-benefit analysis
- Patient safety (e.g., IPAC engagement & staff training)
- Regulatory compliance & standards
- Performance metrics (e.g., track cost savings & waste reduction)

KEY RECOMMENDATIONS

- Consider switching to reusable clinical supplies and devices, when clinically appropriate to do so, in the perioperative care setting
- Consider switching to reusable clinical supplies and devices, when clinically appropriate to do so, within inpatient, outpatient, and community care settings
- Recommend used or refurbished rehabilitation devices, if appropriate, before purchasing or leasing new. Start reuse programs for rehabilitation devices, where possible

REUSABLE CLINICAL SUPPLIES & DEVICE OPPORTUNITIES ACROSS CARE SETTINGS

Opportunity Area	Description
Perioperative care settings	Reduce single-use clinical supplies & devices in perioperative care settings, such as • breathing circuits (54-56) • larnygeal mask airways (57, 58) • anesthesia circuit face masks • laryngeal handles & blades (59) • vaginal speculum (60, 61) • anaesthetic drug trays (62) • rigid sterilization containers (63) • scopes: bronchoscopes, duodenoscopes, intubation scopes (64-68) • surgical instrument sets (69), instrument trays & hollowwares • robotic surgery ports/laparoscopic surgery sets (70-72) • surgical scissors (73, 74) • patient belonging bins • patient water bottles • patient warming devices
Other care settings	Reduce single-use clinical supplies and devices in in-patient, out-patient, and community care settings, such as • sharps containers (75-77) • pulse oximeters (78) • blood pressure cuffs (79) • tourniquets • compression devices • slings & patient positioning devices • stethoscopes • bed pans & other collection containers (80) • pharmaceutical shipping & waste containers (81) • biohazardous waste bins
Rehabilitative care settings	Recommend used or refurbished rehabilitation devices, if appropriate, before purchasing or leasing new, such as • canes • walkers • crutches • knee walkers/scooters • wheelchairs • hospital beds • electric lifts • motorized wheelchairs • shower chairs & benches

References added for opportunities with life cycle assessments.

KEY OPPORTUNITY:
REUSABLE BREATHING CIRCUITS

Anesthetic breathing circuits are an essential component of anesthetic airway management, yet disposable breathing circuits are a source of plastic waste that contributes to the OR's sizable environmental footprint (82). While reusable breathing circuits offer a more sustainable alternative, these devices are often sterilized more frequently than necessary, wasting water and electricity.

There are three pathways to improve the sustainability of breathing circuits (83):

- extend the use of disposable breathing circuits from 24 hours up to seven days
- use reusable breathing circuits in place of disposables
- ensure the time between sterilizations for reusable breathing circuits is appropriate

At most organizations, breathing circuits are customarily removed for decontamination at the end of a day/24-hour period. However, when breathing circuit use is extended to seven days (with circuit condensate emptied and patient-filters discarded after each case), there is no observed increase in bacterial contamination (84, 85, 17).

KEY CONSIDERATIONS

Education: Educating and training teams about the benefits of extended use and addressing safety concerns is important to generate buy-in and ensure proper use (preventing premature disposal or sterilization).

Infrastructure: Coordinating with infection, prevention & control and medical device reprocessing departments, acquiring new reprocessing equipment, and establishing new cleaning protocols may be required.

Finances & Procurement: Investing in reusable breathing circuits will increase upfront costs, however per use costs are reduced overtime. Sites may have existing contracts with a single-use vendor.

REUSABLE BREATHING CIRCUITS, NORTH YORK GENERAL HOSPITAL, ON

Learn more about reusable breathing circuits at North York General Hospital in Toronto, Ontario with Dr. Melissa Ho.

VIDEO: Sustainable Perioperative Care: Extended Breathing Circuits with Dr. Melissa Ho

RESOURCES:

- Reusable Breathing Circuits Project Charter, CASCADES
- Sustainable Perioperative Care Playbook, CASCADES
- Letter from vendor testifying to safety of extended use, Ali Abbass
- Reusable Breathing Circuits: Background and Information Sheet, Ontario's Anesthesiologists Environmental Sustainability Working Group

OTHER EXAMPLES OF REUSABLE CLINICAL SUPPLIES & DEVICES

WALKING AID REUSE PROGRAMS, NHS ENGLAND

Walking aid reuse programs are emerging across NHS England hospital trusts as part of its greater strategy toward sustainability: the Greener NHS programme (86).

Outlined in NHS England's Delivering a net zero National Health Service report, reuse programs for walking aids (crutches, frames, and walking sticks) can contribute to carbon savings due to the high greenhouse gas intensity of aluminium manufacture (86). These reuse programs also help improve accessibility and reduced costs for both patients and care sites (86).

WALKING AID REUSE, NHS SUPPLY CHAIN & WEST YORKSHIRE INTEGRATED CARE SYSTEM

Learn more about the development of reuse walking aid program at West Yorkshire Integrated Care System.

Learn more

REUSABLE MEDICATION BINS, SURREY MEMORIAL HOSPITAL, BC

At Surrey Memorial Hospital in British Columbia, the pharmacy for the neonatal intensive care unit (NICU) has switched from single-use plastic bags to reusable metal and plastic bins for medication delivery. By purchasing 75 reusable containers, this initiative avoided the use of approximately 790 plastic bags per week, resulting in cost and carbon savings (approx. 41 000 plastic bags and 720 kg of carbon per year) as well as waste avoidance.

Learn more

EMERGENCY ROOM REUSABLES, CISSS DES LAURENTIDES, QC

At CISSS des Laurentides in Quebec, 6 emergency room departments switched from disposable to reusable absorbent underpads/blankets, thermometers, and speculums resulting in an 86%, 73%, and 95% reduction in waste respectively.

Learn more

RESOURCES:

- Towards a Circular Economy in NHS Wales – Mobility Equipment Repair and Reconditioning, NHS Wales
- Developing a Walking Aid Re-use Scheme at GOSH, Centre for Sustainable Healthcare
- 10 Reasons Why to Start or Expand a Walking Aid Return & Reuse Scheme, NHS England
- 57 Next Steps - Moving the GOSH Walking Aid Reuse Scheme Forward, BMJ Paediatrics Open
- Case Study: Circular Economy Initiative: Repairing and Reusing Walking Aids, NHS Scotland

Food Service Wares

Food service wares are a high-impact opportunity to switch to reusables as many organizations or sites may have existing in-house capacity to reprocess them. Additionally, several disposable wares are now banned under the Canadian Single-use Plastics Prohibition Regulations in an effort to reduce plastic waste and pollution.

KEY CONSIDERATIONS

Transitioning away from single-use plastics and individually portioned foods/beverages necessitates either switching to reusables or “environmentally preferable” foodservice wares.

- Operational changes: For reusables, reprocessing requires extra equipment (ware washing capabilities), adequate storage space, upfront costs, and staff time to collect, sort, clean, store, etc. Consider unit-level dishwashers for wares used for medication delivery.
- Staff input & buy-in: Engage food services staff, clinicians, pharmacy, IPAC, and other important stakeholders when adopting reusable food service wares for clinical uses.
- Differentiation: If reusable spoons or cups are being used for medication rounds and need to be kept separate from dining wares, consider different colours or materials to distinguish.
- Loss prevention & sorting strategy: Small reusable items, such as cutlery, can easily become lost or end up in waste bins. A strong loss prevention/sorting strategy (such as stations) may be required.
- Unverifiable claims: Food service wares that are made with bioplastics are not necessarily environmentally preferable due to lack of transparency and regulation related to the manufacturing of these types of products (27, 28). Additionally, disposal (biodegradation) of bioplastics depends greatly on the material composition and specific exposure conditions (microbial communities, temperature, pH, and time) (27). Currently, bioplastics threaten existing recycling and composting programs because they are considered contaminants (27).

KEY RECOMMENDATIONS

- Switch to reusable food service wares (i.e., plates, cutlery, trays, etc.) where possible that can be sorted/managed in-house or through rental/subscription-based partnerships.
- Consider switching to a room service model for in-patient meals to reduce waste, mobilize reusables, and improve patients’ dining experience.

REUSABLE FOOD SERVICE WARE OPPORTUNITIES ACROSS CARE SETTINGS

Opportunity Area	Description
In-patient food services	Use reusable food service wares instead of single-use for in-patient meals, including: • dining wares (e.g., plates, bowls, cups, mugs, cutlery) • warming containers • trays • water jug (to refill patient cups)
Facility cafeterias, lunchrooms & restaurants	Use reusables food service wares instead of single-use when providing meals to staff and visitors, including: • dining wares (e.g., plates, bowls, cups, mugs, cutlery) • takeaway containers • lids
Medication delivery	Replace single-use cups and/or spoons with reusables for delivery and administration of oral medications

REDUCE & REUSE WITH ROOM SERVICE

Another strategy to reduce both single-use disposables and food waste is to change in-patient meals to a room-service model: patients can order meals from a select menu (reduce food waste) and indicate desired condiments (reduce delivery of single-use condiment containers), refreshments, etc.

RESOURCES:

- Foodware Calculators:
  - Rethink Disposable
  - Product Stewardship Institute
- Sustainable Foodservice Purchasing Guide (2023), District of North Vancouver
- Single-Use Item Reduction Toolkit (2019; 2023), Metro Vancouver
- The Reuse Policy Playbook, Upstream (USA-focused)
- Reusable Food Serviceware Guide, ReThink Disposable (USA-focused)

KEY EXPERIENCE SPOTLIGHT:

REUSABLE SPOONS FOR MEDICATION DELIVERY, ELLEN SINCLAIR KENNETT LODGE, FRASER HEALTH

A unit at the Ellen Sinclair Kennett Lodge (ESKL), a long term care facility in the Fraser Health Authority, conducted a three week pilot project that introduced reusable teaspoons for medication delivery in an effort to reduce single use plastic waste. After engaging key stakeholders (nurses, food services, Planetary Health lead, site project lead, and clinical operations leads) and troubling shooting concerns around availability, storage, and reprocessing, the pilot was launched and resulted in

- 5,880 plastic spoons saved during the course of the three-week pilot (equivalent to 44.1kg of plastic waste)
- 388 of 400 spoons were retained after the three weeks
- Extrapolating pilot data, the unit could see weekly savings of 280 spoons/day; totalling an avoidance of over 102,000 plastic spoons per year

For next steps, the team plans to expand the project to all other units at ESKL as well as other long-term care sites within Fraser Health.

Learn more

EXAMPLES OF REUSABLE FOOD SERVICE WARES ACROSS NHS ENGLAND

NATIONAL FOOD & DRINK STANDARDS, NHS ENGLAND

In 2022, NHS England established national standards for healthcare food and drink which “describes the methods by which organizations must ensure the quality and sustainability of their food and drink provision for patients, staff and visitors, and how they should be applied and monitored, as well as recommending future improvement aspirations and actions.”

The “Improving sustainable procurement and reducing food waste” standard, supported by legislation, commits NHS organizations “to stop procuring single-use plastic items for catering services” and to source sustainable alternatives to plastic.

Learn more

REDUCING SINGLE-USE PLASTICS IN CATERING, NEWCASTLE HOSPITALS

The Newcastle-upon-Tyne Hospitals NHS Foundation Trust invested over £12,000 GBP to replace single-use plastic bowls, lids, and cutlery with reusable alternatives for in-patient catering. The initial investment was recuperated within two months, and the Trust continues to achieve approximately £80,000 GBP in annual savings.

Learn more

SWITCHING TO REUSABLES CUPS FOR MEDICATION ROUNDS, MILLVIEW HOSPITAL, SUSSEX PARTNERSHIP NHS FOUNDATION TRUST

On a 20-bed acute in-patient ward, a nurse introduced the switch from single-use disposables to reusable cups for her medication rounds. After each use, the reusable cups are sterilized to meet infection, prevention, and control standards. The Trust uses over 22,000 cups annually for medication rounds; if this initiative was scaled up across sites, the Trust could not only avoid waste but also generate savings (approx. £900 plus in waste management costs per ward).

Learn more

FURNITURE

Reusing furniture in healthcare settings can greatly contribute to waste reduction and can further circular procurement principles. There are three key ways that furniture can be reused: through refurbishment, redistribution/redeployment, or lease contracts.

KEY CONSIDERATIONS

- Storage: Temporary storage space may be required if there is overlap between redeployment or receiving new leased furniture.
- Internal capacity: Staff time may be required in order to
  - assess the quality of condition (i.e., good condition, need of repair, unrepairable yet recyclable, etc.)
  - investigate opportunities for redeployment (i.e., take photos, connect with internal or external stakeholders, etc.)

KEY RECOMMENDATIONS

- Reuse furniture by repairing it to extend its life or refurbishing it to give it a second life through supplier partnerships or in-house services/reconditioning.
- Reuse furniture through redistribution/redeployment
  - **Internal** : Investigate opportunities to redeploy existing furniture within the organization, prior to purchasing new.
  - **External** : Investigate opportunities to redeploy used furniture outside of the organization. There are organizations that can recover used furniture for repair or refurbishment and facilitate redeployment.
- Reuse furniture through rental/lease contracts (i.e., consider leasing furniture instead of buying it outright). Leasing can reduce upfront expenditure, spreading the cost of furnishing over an extended period of time.

OPPORTUNITY AREAS TO REUSE HEALTHCARE FURNITURE

Opportunity Area	Description
Ward furniture	Repair, refurbish, lease, or source used furniture for wards, including: • bedside chairs • over-bed tables • hospital beds • bedside lockers • chairs & tables for waiting rooms, dining areas, and staff rooms • recliner seating for rehabilitation areas
Office furniture	Repair, refurbish, lease, or source used office furniture, including: • desks • chairs • storage units • shelves • filing cabinets
Residential furniture	Repair, refurbish, lease, or source used furniture that is used for residential purposes in care settings, including: • lounge seating • tables • chairs • storage units • bedroom furniture (e.g., beds, bedside cabinets, etc.)

RESOURCES:

- Giving Furniture a Second life Circular Procurement Guidance (2023), WRAP & Welsh Government

- Public Health Wales Sustainable Procurement Case Study (2017), NHS Wales
- Office and Outdoor Furniture Framework Agreement, NHS Supply Chain

KEY OPPORTUNITY:
REUSING OFFICE FURNITURE

TAKING INSPIRATION FROM NHS SCOTLAND

NHS Scotland has developed recommendations for furniture reuse/redeployment, including guidance on assessing quality conditions, categorized as (87):

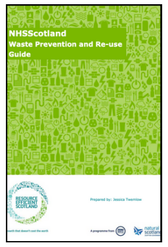
- reusable in current condition
- reusable after minor repair
- reusable after major repair
- not repairable but recyclable

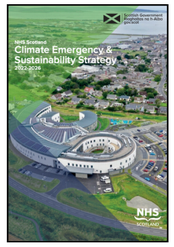
It also promotes internal and external redistribution through a centralized platform/system.

Outlined in its Waste Prevention & Reuse Guide, NHS Scotland is also working with its supply chain and other partners to develop infrastructure for “effective take-back systems supporting lease and access contracts over ownership and facilitating extended producer responsibility” for furniture and other goods (87).

Learn more about NHS Scotland’s efforts for circular procurement and sustainability:

- Waste Prevention & Re-use Guide
- Climate Emergency & Sustainability Strategy 2022-2026





KEY EXPERIENCE SPOTLIGHT:
FURNITURE REUSE EFFORTS, ISLAND HEALTH, BC

As part of its broader Climate Change and Planetary Health Strategy (2024), Island Health’s efforts to reduce its environmental impact include reducing unnecessary use of materials and goods, which has led to the development of internal redistribution for furniture and select goods:

Learn more

- “To promote a culture of circularity, Island Health’s Surplus Program at Royal Jubilee Hospital offers hundreds of lightly-used desks, chairs, office storage, televisions, and medical furniture – all free for staff. Island Health staff are encouraged to opt for used furniture and equipment through the surplus showroom when moving or updating their office spaces” (52).

EXAMPLES OF FURNITURE REUSE EFFORTS IN NATIONAL HEALTH SERVICES ACROSS THE UNITED KINGDOM

NHS ENGLAND

NHS England has established a framework for office, outdoor, and children's furniture that recommends suppliers that will refurbish existing products, facilitate reuse through redeployment to the market or to charitable institutions, repurpose existing products, or facilitate furniture leasing.

Read about examples across Trusts:

- Recycling, refurbishment and reuse of furniture achieves 43 tonnes of carbon savings, waste reduction and cost avoidance for hospital trust, Black Country Health Care NHS Foundation Trust
- More than £5,700 saved thanks to Dump the Junk, Calderdale and Huddersfield NHS Foundation Trust
- Recycled furniture brings patient day room back to life, Solent Estates & Facilities

Learn more

NHS SCOTLAND

NHS Scotland has established a reuse and redistribution platform for reusable furniture, fixtures, and fittings through a third-party service provider specializing in resource redistribution called WARPIT. This resource reuse and management platform allows NHS employees to share surplus or no-long-wanted items to other organizations and individuals.

For example, through the platform, NHS Greater Glasgow and Clyde has seen more than £3 million worth of cost savings and diverted nearly 18,000kg of waste from the landfill as of 2021.

Learn more

NHS WALES

NHS Wales has established a plastics in healthcare initiative that encourages all health boards and trusts to reduce waste of non-medical equipment that is no longer required, including furniture and other consumables, by reusing it elsewhere or donating it, where permitted and safe to do so.

These efforts are reflected in the Welsh Government's Beyond Recycling Strategy (2021), which aims to make the circular economy a reality for Wales, and its subsequent guide for reusing furniture: Giving Furniture a Second life Circular Procurement Guidance (2023).

Learn more

HOW

Strategies for Change

1. Strengthen Reuse Systems
2. Learn by Doing
3. Drive Change through Demand

Overview of Strategies

This section identifies key strategies to help embed a reusables first approach into an organization long term by highlighting recommended actions, considerations and collaborators, as well as examples and resources for each strategy area. As you explore each strategy, consider what is most appropriate and feasible for your context.

Strengthen Reuse Systems	Learn by Doing	Drive Change through Demand
• Mobilize Reprocessing • Mobilize Remanufacturing • Mobilize Redistribution	• Make a High Impact Procurement Opportunities (HIPO) List • Trial a Feasible Reusable Opportunity • Build a Case for Change	• Adapt Policies to Prioritize Reusables & Sustainability • Leverage Purchasing Power to Shape the Market

Strengthen Reuse Systems

Reuse systems in a healthcare context refer to the mechanisms and processes by which a good (product, device, item) can be reused.

There are three key approaches that organizations can consider to increase circularity in their product use and purchasing—through reprocessing, remanufacturing, and redistribution systems.

Mobilize Reprocessing

- Consider strengthening capacity of in-house/ on-site reprocessing
- Consider reusable product-service systems (external/off-site reprocessing)

Mobilize Remanufacturing

- Consider establishing a used-device collection system
- Consider purchasing remanufactured devices

Mobilize Redistribution

- Consider renting or leasing goods
- Consider developing a return & reuse system for walking aids and in-house refurbishment
- Consider developing or using redistribution platforms (internal or external)
- Consider external redeployment of certain goods through service provider

KEY RECOMMENDATIONS

- Strengthen capacity of in-house/on-site reprocessing or consider reusable product-service systems (external/off-site reprocessing)
- Establish a used-device collection system with a remanufacturer or purchase remanufactured devices if possible and appropriate
- Consider internal and external redistribution strategies for unwanted goods and equipment

MOBILIZE REPROCESSING

Many medical devices and clinical supplies can be reprocessed. Reprocessing can happen on-site through device reprocessing departments (devices) or facilities departments (linens) or off-site through suppliers/service providers. Staff capacity, equipment, infrastructure and efficiency (processing time) can impact which approach is most feasible. In this context, “reprocessing” applies to reusable products, devices, and textiles.

There are two ways to mobilize reprocessing, which organizations can choose between or pursue in tandem:

1. by strengthening in-house capacity and/or
2. by adopting reusable product-service systems

KEY EXPERIENCE SPOTLIGHT:

INCREASING REPROCESSING CAPACITY FOR ISOLATION GOWNS, ISLAND HEALTH

Learn more from Island Health’s investment in its internal reprocessing capacity for isolation gowns from Sustainability Coordinator Jen Fraser.

VIDEO: Increasing reprocessing capacity with Jen Fraser, Island Health

STERILE PROCESSING MANAGEMENT SYSTEM, FRASER HEALTH

Read about Fraser Health new electronic sterile reprocessing management system for its medical device reprocessing program that tracks instrument sets from shelf to sterilizer to improve availability and maximize workflows.

Learn more

RESOURCES:

- IPAC Checklist for Clinical Office Practice: Reprocessing of Medical Equipment/Devices, Public Health Ontario
- The Spaulding Classification, Nanosonics

STRENGTHEN CAPACITY OF IN-HOUSE/ ON-SITE REPROCESSING

Developing internal capacity to reprocess products and devices requires upfront investment, planning, and collaboration. However, cost savings and other benefits, such as strengthening a reliable supply and building resilience, can be achieved over time.

KEY COLLABORATORS

Key actors needed to develop this reuse system:

- Sustainability champion(s)
- Medical device reprocessing
- Infection, prevention & control
- Facilities
- Procurement
- Clinical leads
- Suppliers
- Leadership

KEY CONSIDERATIONS

- Buy-in from executive leadership: Secure support from executive leadership for approval, endorsement, or investment.
- Buy-in from clinical staff: Engage clinician staff to ensure their support for the change and address any concerns. Clinicians who are used to a certain model of disposable device may be reluctant to train themselves on a reusable alternative.

STEPS TO STRENGTHEN CAPACITY OF IN-HOUSE/ON-SITE REPROCESSING

Identify key reusable opportunities and consider current capacity for reprocessing

- Consider device-specific guidelines and regulatory compliance (new protocols must align with standards/regulations).

Assess staff capacity & invest in equipment, infrastructure & staff/personnel

- Source efficient and certified equipment (such as automated washers-disinfectors, sterilizers, inspection stations, and drying systems) to minimize energy use and maximize efficiency.
- Ensure adequate physical infrastructure (e.g., space for storage, reprocessing, sorting, etc.).
- Review staff capacity; hire additional staff if needed.

Streamline workflows to improve efficiency

- Optimize device flow by reducing unnecessary steps or minimize delays between cleaning and use; create a centralized reprocessing centre/facility/site, or use scheduling software to improve planning and scheduling.

Implement a tracking system and inventory management strategies

- Tracking: Follow devices throughout use and reprocessing cycles (via barcoding or RFID [radio frequency identification] tags) to identify and minimize loss.
- Repair: Integrate quality assurance and repair processes.
- Storage: Ensure sufficient storage capacity and logistics.

Train staff and engage key users for quality control and continuous improvement

- Cross-train staff on reprocessing protocols, device handling, and infection control practices to handle different types of medical devices for flexibility and adaptability. Share the rationale for switching to reusables and investing in reprocessing system. Knowing both the “why” and the “how” may support buy-in.
- Engage staff and clinical users to understand their needs, gather feedback on reprocessed devices, address any issues related to device performance or availability, and improve procedures.

CONSIDER REUSABLE PRODUCT-SERVICE SYSTEMS

A product-service system or “servicization” is a performance-based model where products are offered in combination with services (i.e., bundles) where ongoing support, maintenance, monitoring, and consultation are included with the goods (7). Product-service systems can be beneficial as user and vendor/supplier aims can align (7):

- Healthcare organizations receive high-quality, reusable, easy-to-clean products and devices and use is supported by technical assistance and product servicing
- Original equipment manufacturers design products to be durable (minimize disposability) and protocols to optimize reprocessing
- Original equipment manufacturers can improve products by learning of malfunctions and inefficiencies and by receiving direct feedback, especially for clinical needs

For example, a case study found that a product-service system for hemodialysis therapy demonstrated a 50% reduction in both costs and environmental impacts when compared to a business-as-usual scenario (7, 88).

See suggested steps to adopt reusable product-service systems on the next page.

KEY COLLABORATORS

Key actors needed to develop this reuse system:

- Procurement
- IPAC
- Facilities/maintenance
- Clinical leads
- Vendors/suppliers
- Leadership

KEY CONSIDERATION

- Hidden contractual obligations:
  - Ensure clear terms and conditions to avoid entering contracts with unfavourable terms (i.e., high volume purchase minimums of consumable components could increase waste and hide costs).
  - Be mindful of travel related emissions for small scale pick ups.
  - Ensure volume for pick up or explore logistics services which collect different streams at the same time.

SHARPS CONTAINERS, BRITISH COLUMBIA

Two regional health authorities have switched to reusable sharp containers that are reprocessed off-site at a local facility (full containers are collected, emptied, cleaned, and sterilized, then returned in shipments to each care site).

Learn more

STEPS TO ADOPT PRODUCT-SERVICE SYSTEMS

Start

Identify key reusable opportunities through research and engagement with staff and vendors/suppliers that provide full product-service systems. Existing vendors may offer service add-ons; others will use subscription-based models.
Communicate your goals to vendors/suppliers to work collaboratively on developing a solution that suits your needs.

Engage vendor/supplier to establish or modify a purchase contract; choose an exchange or replenish system.

Receive training and support to handle and clean the reusable product or device safely

Educate and communicate widely to staff of planned changes

Deposit used reusables in designated collection containers with appropriate documentation for pre-arranged pick-up schedule
Engage with housekeeping teams on the location of receptacles for collecting the reusables and transfer to loading dock or MDRD if required.
Be mindful of ergonomics.

Ensure technical support and product service needs are met

Engage staff, clinicians, and other key actors to understand user experience, address any issues related to product performance or availability, and improve procedures

Report needs and requests to vendor representatives, include sustainability in terms and conditions with vendors/suppliers to keep them accountable
Conduct a cost benefit analysis as sometimes the reusables are more expensive financially and will require executive leadership or CFO sign off to endorse the carbon savings at a higher financial cost.

Report on cost and carbon savings to leadership

KEY EXPERIENCE SPOTLIGHT:

REUSE CALCULATOR, GOVERNMENT OF WALES

The government of Wales has developed a "Benefits of Re-use Tool" that estimates the environmental, social, and economic impacts of a reused item (full life cycle) compared to disposal by calculating differences in landfill use, energy from waste (EfW), and recycling. Although not specific to healthcare, this tool is a useful for "governments, local authorities, and re-use organisations making the case for re-use" (p. 6) (89).

The tool compares the impacts of reusing an item to the environmental, social, and financial impacts of other disposal methods, such as (89):

- the environmental impact of landfilling/incinerating used items
- the cost of waste disposal and landfill tax
- the environmental and cost impacts of waste collection
- the jobs required for collection, sorting, and management of waste

MOBILIZE REMANUFACTURING

Remanufacturing single-use devices allows for one or more additional reuse(s) for a subset of single use medical devices. The remanufacturing process restores the device to a “like new” state marketed as a new product by the company conducting the remanufacturing. In Canada, suppliers or manufacturers who remanufacture devices assume full liability for any defects or malfunctioning.

There are two components in the mobilization of remanufactured products; some organizations only pursue one component of this process:

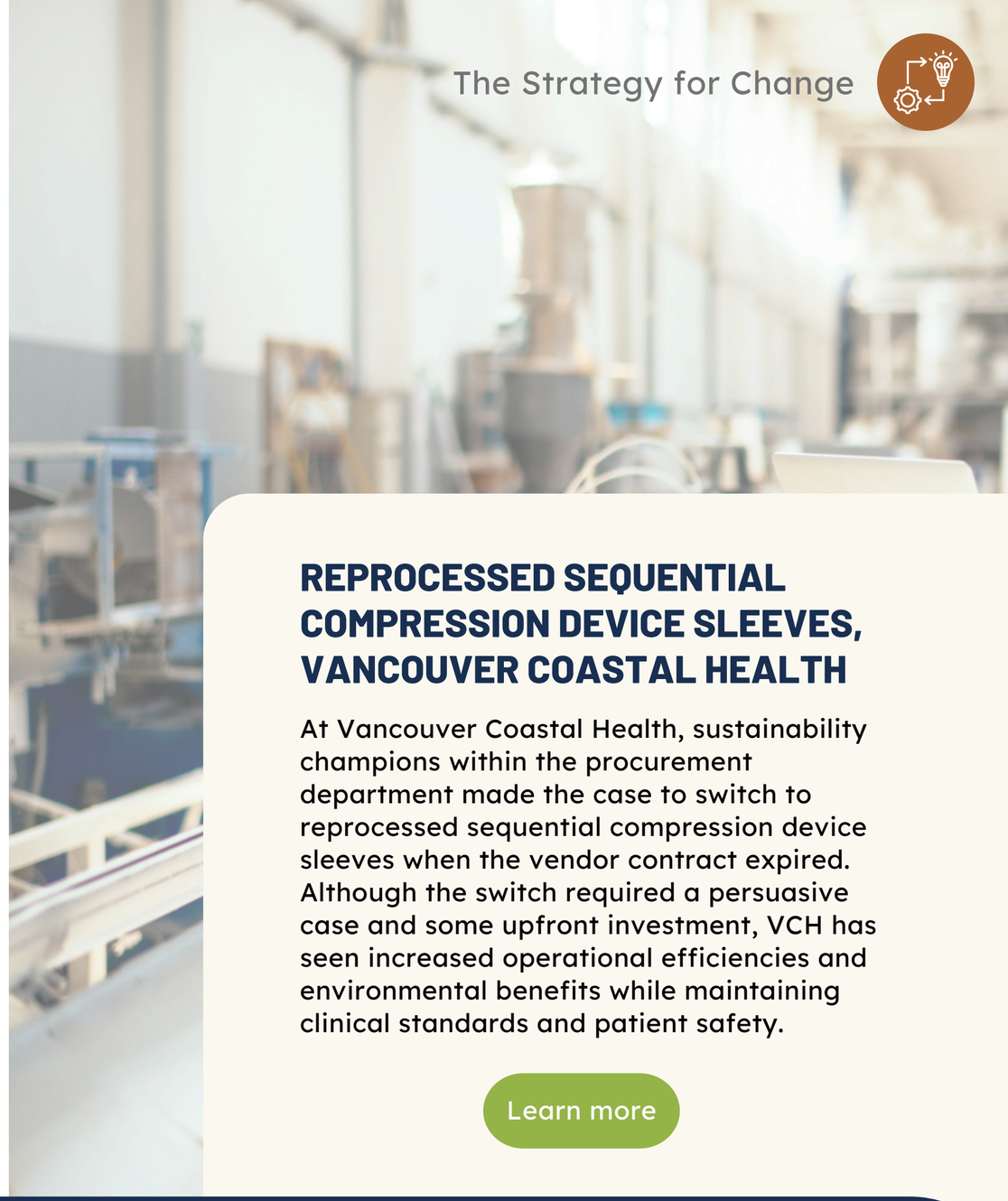
1. Establish a used device collection system
2. Purchase remanufactured devices

KEY RESOURCE SPOTLIGHT:

REMANUFACTURE MEDICAL DEVICES “HOW TO” GUIDE, NHS ENGLAND

NHS England published a Medical Device Remanufacturing “How To” Guide to help Trusts’ strengthen circularity by setting up reuse systems focused on single-use medical devices that are durable enough to be remanufactured to quality assured standards, extending their useful life while offering carbon and cost savings.

Learn more



REPROCESSED SEQUENTIAL COMPRESSION DEVICE SLEEVES, VANCOUVER COASTAL HEALTH

At Vancouver Coastal Health, sustainability champions within the procurement department made the case to switch to reprocessed sequential compression device sleeves when the vendor contract expired. Although the switch required a persuasive case and some upfront investment, VCH has seen increased operational efficiencies and environmental benefits while maintaining clinical standards and patient safety.

Learn more

ESTABLISH A USED DEVICE COLLECTION SYSTEM

Many single-use medical devices are durably made; some can be remanufactured to quality assurance standards. Establishing a used-device collection system with a remanufacturer can generate income and enhance circularity.

STEPS TO ESTABLISH A COLLECTION SYSTEM (90)

- Identify which products can be remanufactured and engage the remanufacturing supplier to establish a collection agreement
- Receive training from supplier (clinicians/technicians) to clean and handle used devices safely for collection
- Deposit used devices in designated collection containers with appropriate documentation; supplier organizes pick up/ shipment
- Collect feedback from staff, clinicians, and other key actors for process improvement or recommendations
- Receive collection payments and report on cost and carbon savings

KEY CONSIDERATION

Hidden contractual obligations: Ensure clear terms and conditions to avoid entering contracts with unfavourable terms (i.e., high volume purchase minimums of consumable components, often proprietary, that could increase waste and hide costs).

PURCHASE REMANUFACTURED DEVICES

Remanufactured devices are restored to a “like new” state but are sold at a competitive price. Due to their reprocessing, these devices generate less emissions and environmental impacts due to the avoidance of raw material extraction. Purchasing remanufactured devices when clinically appropriate to do so can create savings while enhancing circularity.

STEPS TO PURCHASE REMANUFACTURED DEVICES (90)

- Engage staff, clinicians, and other key actors to understand their needs, identify candidate devices, and address any issues related to device performance or availability
- Engage remanufacturing supplier to establish a purchase contract; if user group is hesitant, conduct a trial before before committing to buying remanufactured devices on an ongoing basis
- Order remanufactured devices (at reduced cost resulting in savings) and receive training
- Return used devices to the same supplier/remanufacturer to ensure traceability of devices
- Educate and communicate widely to staff of planned changes
- Continue engaging staff and clinical users to understand their needs, gather feedback on remanufactured devices, address any issues related to device performance or availability, and improve procedures
- Report on cost and carbon savings

MOBILIZE REDISTRIBUTION

Products or devices can be reused through redistribution (internally or externally) and may undergo refurbishment or repair before redeployment.

There are four key ways to mobilize redistribution:

RENT OR LEASE GOODS INSTEAD OF BUYING OUTRIGHT

When in need of a new product or good, such as furniture, IT equipment, etc., consider pursuing a lease or rental contract instead of buying outright.

- Consult existing suppliers or investigate whether known manufacturers or vendors provide rental or leasing contracts for products and goods.

DEVELOP AN INTERNAL REDISTRIBUTION PLATFORM OR CONSIDER AN EXTERNAL PLATFORM

When there are goods, such as furniture or equipment, that are no longer wanted but are still in working condition, it's possible other sites or units within your health system may have use for them. Reuse unwanted goods by leveraging a redistribution platform.

- Create an internal reuse/redistribution platform to redeploy existing goods (i.e., furniture or equipment) that are in good shape and safe to use
- Consider using an existing external platform to redeploy existing goods that are in good shape and safe to use

KEY EXPERIENCE SPOTLIGHT: DEVELOPMENT OF REUSE PLATFORM, NHS SCOTLAND

NHS Scotland has established a reuse and redistribution platform for reusable furniture, fixtures, and fittings through a third-party service provider specializing in resource redistribution called WARPIT (87, 91) This resource reuse and management platform allows NHS employees to share surplus or no-long-wanted items to other organizations and individuals. For example, through the platform, NHS Greater Glasgow and Clyde has seen more than £3 million worth of cost savings and diverted nearly 18,000 kg of waste from the landfill as of 2021 (92).

Learn more

RESOURCES:

- Waste Prevention and Re-use Guide, NHS Scotland
- Repair and Re-Use Research on Digital Platforms Report, WRAP & Government of Wales
- Sustainable Procurement Hierarchy Guidance, WRAP & Government of Wales

CONSIDER EXTERNAL REDEPLOYMENT OF CERTAIN GOODS THROUGH SERVICE PROVIDERS INSTEAD OF SENDING TO LANDFILL

Unwanted supplies and equipment that are still in working condition can be redistributed externally to other health systems. Redeployment can be facilitated by a third-party service provider.

STEPS TO EXPLORE EXTERNAL REDEPLOYMENT

- Find a service provider to redeploy existing supplies, equipment, or furniture that is in good shape and safe to use
- Find a service provider, supplier, or manufacturer to repair, refurbish, or restore existing equipment or furniture for continued use or to be redeployed elsewhere
  - If considering donation to low or middle income country, ensure adherence to WHO guidance to avoid burdening health systems with low value goods. Be an ethical donor and ensure there is transparency where goods end up and that they are of use to those countries and not polluting other parts of the world.

DEVELOP A RETURN & REUSE SYSTEM FOR WALKING AIDS AND CONSIDER IN-HOUSE REFURBISHMENT

Walking aids are durably made products that can easily be refurbished and reused beyond the needs of a single patient. They also have low risks for infection and defects and can be quickly inspected and disinfected for further use. A walking aid reuse program can be established in-house and run by staff or can be managed by a third-party service provider/organization. These programs can reduce emissions, save costs, and improve patient access.

STEPS TO ESTABLISH A COLLECTION SYSTEM

- Investigate existing return and reuse policies with leading manufacturers or vendors
- Create a collection system based on internal capacity; collaborate with vendors, where possible
- Educate and encourage patients on how and where to return items
- Consider establishing in-house refurbishing of walking aids

KEY CONSIDERATIONS

- Storage space
- Staff capacity for inspection, cleaning, and repair

LET'S NOT WASTE: WALKING AIDS RECYCLING / REUSE RESOURCE, COMISIWN BEVAN COMMISSION, NHS WALES

This "how to" resource showcases lessons learned and important tips on how to develop a walking aid reuse program at sites across NHS Wales.

Learn more

CIRCULAR ECONOMY INITIATIVE - REPAIRING AND REUSING WALKING AIDS, NHS SCOTLAND

This case study explores the development of reuse walking aid program at sites across NHS Scotland.

Learn more

Learn by Doing

Switching to reusable products, strengthening a reuse system, or implementing a reusables first approach to a purchasing strategy will require various inputs, actors, and resources from across an organization or site. To understand the breadth of financial, operational, and change management implications, learn by trialling a reusable opportunity to assess feasibility and build a case for broader adoption.

KEY EXPERIENCE SPOTLIGHT:
TRIALLING REUSABLES USING A HIPO LIST, VCH

VCH's Reusables First project identified specific product and service categories for sustainable procurement including clinical devices, textiles, and food services. From there, the team developed criteria for its High Impact Opportunities (HIPO) list including products that were high volume, high spend, high risk, or required minimal effort to make the switch to reusables. For VCH, the HIPO list is living list – it is continually updated with new products, targets, and procurement categories as the project progresses and new reusables are trialled and adopted. See an example on the next page.

KEY RECOMMENDATIONS

- Trial a reusable to assess feasibility and build a case for broader adoption at your site
  - to transition to the reusable or other reusables permanently
  - to spread use of the reusable(s) to other units/sites
  - to trial a new opportunity
  - to strengthen internal reuse systems

MAKE A HIGH IMPACT PROCUREMENT OPPORTUNITIES (HIPO) LIST

"A High Impact Procurement Opportunity (HIPO) list identifies procurement categories of special interest for sustainable purchasing, usually in industries offering a range of more sustainable alternatives and where third-party certification has been developed. HIPO lists may be accompanied by information on product categories that identifies risks, impacts, opportunities and relevant certification options." -**Reeve Consulting**

Develop a HIPO list to determine which reusable opportunities are feasible in your context. Start by recording the opportunities you identify, draft your inclusion criteria, consult key actors, then compare and prioritize the most feasible opportunities.

Review a Sample HIPO List* to get started

*This example is from Vancouver Coastal Health's Reusables First Approach Project.

STEPS TO BUILD HIPO LIST

Investigate opportunities & develop inclusion criteria

- Investigate reusable opportunities
  - Which reusables are used at your site? Consider reviewing spend data if possible. Look for products that are of high spend, high volume, high risk, high opportunity, high visibility, or upcoming procurement.
  - What internal reprocessing capacity does your site have? What products or product categories are you interested in pursuing? What options can your existing vendors & suppliers provide? What is available on the market?
- From your learnings, develop inclusion criteria. This will be highly dependent on your context; consider what is most feasible for your site. For example, you may choose to only include opportunities that:
  - are well developed in the market place with reliable availability
  - have strong internal interest
  - are high spend or high use/volume items
  - are in use or exist in procurement systems and can be scaled up to reduce purchasing of disposable version
  - can be reprocessed in house
  - demonstrates multiple co-benefits

Consult key internal actors

- Consult with key internal actors to validate your findings and create a shortlist; consider exploring opportunities for reprocessing equipment and/or infrastructure. For example, you might engage
  - Key internal actors at your site, such as leaders or individuals who are involved in reprocessing, facilities management/maintenance, leadership, procurement, sustainability, infection, prevention and control, transformation, housekeeping, and others
  - External sites or organizations with experience implementing reusables or expanding reuse systems (even if they were not successful) for lessons learned

Select a HIPO to trial

- If needed, revise inclusion criteria after consulting key actors. From the finalized shortlist, select a reusable opportunity to trial. Be sure to consider the opportunities with strong internal interest.

KEY CONSIDERATION

Consult widely: Consulting a wide range of actors can help discover new opportunities, build buy-in, and uncover unanticipated implications or barriers of switching to a reusable (i.e., resistance due to patient safety concerns or reprocessing considerations that only frontline or end-users are privy to).

HIGH IMPACT GREEN PROCUREMENT OPPORTUNITIES LIST, GOVERNMENT OF NEW BRUNSWICK

Service New Brunswick is responsible for procuring goods and services for the Government of New Brunswick's departments and agencies, schools and school districts, and its two regional health authorities. Within its recently published Green Procurement Policy, its High Impact Green Procurement Opportunity List outlines 10 key goods/services categories with corresponding risks and opportunities, including laundry services, office furniture, and clothing & linens.

Learn more

RESOURCES:

- HIPO Lists: Don't Get Stuck in the Planning Phase, Reeve Consulting

TRIAL A FEASIBLE REUSABLE OPPORTUNITY

Trial a reusable opportunity at your site. Anticipate that there will be challenges that require flexibility, adaptability, troubleshooting, and collaboration throughout the process. Consider planning ahead as much as possible. See suggested steps to trial a feasible reusable opportunity on the next page.

KEY CONSIDERATIONS

- Loss prevention strategy: Consider a multi-pronged approach to avoid the accidental disposal of reusables:
  - communicate the switch to staff in advance through multiple mediums;
  - conduct product training sessions;
  - clearly distinguish containers for reprocessing from containers for disposal;
  - consider adding labels and visuals;
  - solicit feedback from users
- Existing Supplies: Create a plan for the existing disposable supplies during the trial. Consider moving them to a different location to prevent continued use or donating them (for example, to a low or middle income country ensuring adherence to WHO guidance to avoid burdening health systems with low value goods).
- Timing: When during the year does it make sense to launch a trial? Consider when there is a new procurement opportunity or contract renewals. Consider when it is feasible for those involved (i.e., avoid holidays or vacations, busy times of the year, etc.).
- Vendor/Supplier Engagement: Consult with supplier reps early on in the process and consider engaging them in roll out meetings to help answer questions and clarify any product-related queries.
- Workflow Changes: Consider changes to workflows including staff time, staff training, and logistics planning.

KEY EXPERIENCE SPOTLIGHT:

REUSABLE ANESTHESIA CIRCUIT FACE MASKS, NORTH YORK GENERAL HOSPITAL

The North York General Hospital OR Planetary Health Team led an initiative to remove disposable anesthesia face masks from their surgical custom packs, replacing them with reusable anesthesia circuit face masks. This initiative has diverted approximately 600kg of plastic per year and has generated cost savings. Key factors to the team's success were 1) leveraging the existing reprocessing route (requiring no infrastructural investment) and 2) having a clear loss prevention strategy in place from the beginning to ensure the reusables were returned for processing. During the transition, surplus disposable face masks that were still arriving in their packs were collected and donated to various international medical missions where they may lack the resources to reprocess anesthesia equipment safely. This initiative was built off existing momentum as the team has a long-standing practice of utilizing other reusable anesthesia equipment including anesthesia breathing circuits and laryngeal mask airways (LMAs).

STEPS TO CONDUCT A TRIAL

Start

Select a reusable opportunity to trial from the HIPO list

Engage remanufacturing supplier to establish or revise a purchase contract

Order reusable devices and any reprocessing equipment needed (sterilization bins, hampers.)

Receive training and support from vendor/supplier reps to handle and clean the reusable product or device safely

Educate, train, and communicate widely to staff of planned changes; ensure the “what” (reusable), the “why” (rationale), and the “how” (process) is understood to bring people on board and to problem solve resistance from the start; develop a loss prevention strategy to ensure the reusables are returned for processing

Launch the trial: ensure proper equipment, staff time, and training needs have been sourced, allocated, and met, respectively; ensure technical support and product servicing needs are met

Engage staff, clinicians, and other key actors to understand user experience, address any issues related to product performance or availability, and improve procedures

Report needs and requests to vendor representatives, report on cost and carbon savings to leadership

TIPS FOR TRIALLING REUSABLES

Collaborate to create buy-in, trust, and address challenges

- Build a cross-functional trial team to generate buy-in and address challenges collaboratively (i.e., recruit members from infection, prevention & control, procurement, facilities, supplier reps, sustainability staff, clinical staff, etc.

Consider using a quality improvement approach

- Consider using a quality improvement approach for the trial that embeds environmental sustainability. Consult CASCADES' Embedding Environmental Sustainability in Quality Playbook & Project Charter for more information

Collect metrics (numbers & narratives) to monitor progress & assess impact

- Consider what measures will help you monitor progress, build a case for long-term change, and gain support from executive leadership
- Ensure you have baseline metrics to benchmark changes

Create a mechanism for feedback during the trial

- Collect feedback from key users; consider which method(s) and how frequently is best (e.g., surveys, individual or group check-ins, etc.)
- Consider collecting new ideas or opportunity suggestions from staff via a form submission, designated email inbox, focus group, etc.

Communicate effectively with targetted messaging

- Consider adapting your messaging in a positive way that resonates most with the target audience. For example, a trial could be framed as an opportunity to
  - achieve multiple co-benefits (sustainability & cost)
  - strengthen relationships with certain vendors or suppliers
  - identify problem areas & create solutions
  - identify where further support is needed for full scale adoption

TYPES OF MEASURES

Impact measures

- Percentage or net volume of single-use material reduced/diverted from landfill from switching to a reusable or re-processable product
- Dollar value of savings from switching from a single use to reusable or re-processable
- Greenhouse gas emissions savings from a single use to the reusable or re-processable
- Water usage/savings

Process & balance measures

- User experience
- Physical infrastructure needs
- Organizational change processes
- Unexpected/ unintended outcomes

RESOURCES:

- CASCADES Project Charter, CASCADES
- Embedding Environmental Sustainability in Quality Playbook, CASCADES
- Reusable Gowns Evaluation, The Ottawa Hospital
- Circular Economy Best Practices Checklist: For PPE Use in Healthcare Facilities, Canadian Coalition for Green Healthcare

BUILD A CASE FOR CHANGE

Use the findings of the trial to build a case to transition to the reusable or other reusables permanently, to spread use of the reusable(s) to other units/hospitals, to trial a new opportunity, or to strengthen internal reuse systems.

STEPS TO BUILD A CASE

- Collate information gathered before, during, and after the trial to make the case to scale and spread the reusable adoption or to trial another reusable opportunity
- Consider developing a cost analysis, including:
  - If purchasing reusable products, identify timeframe to financial break-even, considering upfront costs, expected volume, number of uses
  - Labour costs, logistics, maintenance, repair – incurred or averted
  - Waste disposal or management costs – incurred or averted
  - Savings – costs averted (if from custom packs, may take 3-6 month time horizon to get items removed from custom packs)
- Share findings with trial team, leadership, comparable sites (units/hospitals), and wider community

TIPS TO BUILD A CASE

Strategically align the case with organizational priorities/mandates or national guidance	• If possible, frame the case within an existing organizational priority, such as planetary health, environmental sustainability, supply chain resilience, and/or fiscal responsibility • If possible, frame the case with recommended standards from medical societies or associations or groups like Choosing Wisely
Leverage quantitative and qualitative data collected during the trial to showcase impact	• Highlight the number of reusable items used, percentage of reusables vs disposables, dollar spend of reusables, categories of reusables, user experience, implementation process, anecdotal feedback, etc. • Use a project charter or project planning resources to refine the case/project scope, goals, aims, and objectives
Highlight cost savings (return on investment) and showcase other co-benefits	• Reduction and/or avoidance of GHG emissions, waste, environmental inputs, etc. • Positive user experience or preference • Acknowledge existing buy-in from stakeholder groups • Leverage existing supplier/vendor relationships
Consider contractual obligations	• If contracts have minimum spend requirements or cost benefits from bundled/group purchases—aim to work with existing conditions or suggest modifications for when contracts renew

Drive Change through Demand

Working with vendors, suppliers, and manufacturers and collaborating with cross-functional actors is essential for creating more environmentally sustainable and effective:

- Products and devices that are high quality, low carbon, reusable, and ensure patient and provider safety and comfort
- Reuse and waste management systems
- Healthcare supply chains

Two key strategies to achieve these aims are to

Adapt policies to prioritize reusables & sustainability

Leverage purchasing power where possible to help shape the market

KEY RECOMMENDATIONS

- Adapt policies to prioritize reusables and align reuse efforts with strategic priorities.
- Develop cross-functional relationships to spread and scale reusable initiatives across units, sites, or networks.
- Leverage purchasing power to demand high-quality, sustainable products and service solutions to better serve user needs and to drive competition.

ADAPT POLICIES TO PRIORITIZE REUSABLES & SUSTAINABILITY

PROCUREMENT POLICY

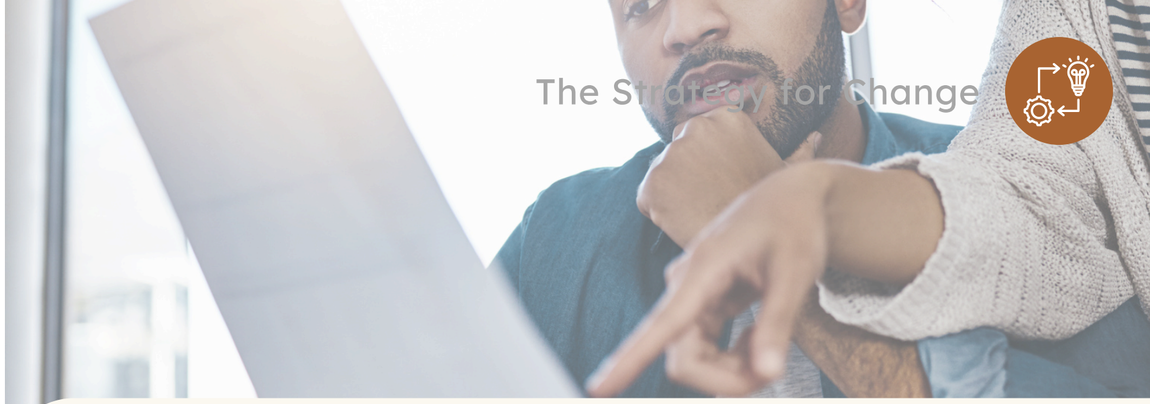
- Adopt a “reusables first” approach to procurement where the purchasing of reusables/reusability of products is prioritized.
  - This acts as a signal to the market of a growing interest in reusables, creating competition and leading to higher quality reusable products, greater selection and availability, and competitive pricing.
- Consider including other sustainability considerations (environmental, ethical, social, local, etc.) in evaluation criteria of RFPs and future purchase contracts (new & renewals).
  - For example, consider how the procurement team may compare competing bids. Often yes/no qualitative questions with a request for proof can be easier for both suppliers and evaluators to manage.
    - Has your organization taken steps to reduce energy use or emissions? Please explain how.
    - Has your organization taken steps to minimize packaging waste? Please provide examples.

KEY EXPERIENCE SPOTLIGHT:

GREEN PROCUREMENT POLICY, UNIVERSITY HEALTH NETWORK

The University Health Network, located in Toronto and a member of the Toronto Academic Health Science Network, has developed a green procurement policy that prioritizes the purchasing of reusables and embeds environmental sustainability into its RFx criteria that considers the reusability of products (93).

Learn more



PRODUCT USE POLICY

There are some clinical devices and supplies that have been shown to be safe for multiple uses, but are only used once due to site-specific product use policies. For example, evidence shows that disposable breathing circuits are safe to use for up to seven days (with circuit condensate emptied and patient-filters discarded after each case), yet most sites remove circuits for decontamination at the end of a day/24 hour period (83).

- When clinically appropriate and safe to do so, consider amending product use policies to allow for extended use of disposables.

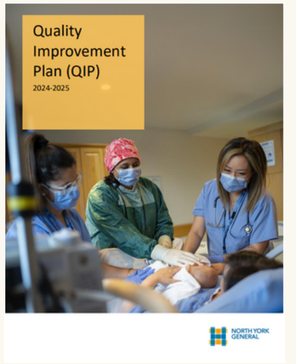
QUALITY IMPROVEMENT PLANS

A quality improvement plan is a "formal, documented set of quality commitments aligned with system and provincial priorities that a healthcare organization makes to its patients/clients/residents, staff, and community to improve quality through focused targets and actions" (94). Sustainability is intrinsically linked with both quality care and patient safety and can be embedded within quality improvement and patient safety efforts.

- Embed sustainability as a dimension in quality improvement plans and efforts; include reusables as a strategy for emissions reduction, waste reduction, and supply chain resiliency.

QUALITY IMPROVEMENT PLAN, NORTH YORK GENERAL HOSPITAL, ONTARIO

In North York General Hospital's Quality Improvement Plan (2024-2025), sustainability is included as a key performance dimension of quality, outlining efforts to reduce greenhouse gas emissions and waste "by reducing electricity, natural gas and water usage, and embracing reusable linens, cups and anesthesia equipment" (p. 12) (95).



Learn more

RESOURCES:

- Embedding Environmental Sustainability in Quality Playbook, CASCADES
- Letter from vendor testifying to safety of extended use, Ali Abbass
- Reusable Breathing Circuits: An Environmentally Sustainable Alternative, Dhane et al. 2024.
- La réutilisation des circuits d'anesthésie sans retraitement entre les usagers : évaluation et soutien à la gestion des risques, National Institute of Public Health of Quebec

LEVERAGE PURCHASING POWER TO SHAPE THE MARKET

DEMAND HIGH-QUALITY, SUSTAINABLE PRODUCTS & SERVICE SOLUTIONS

As consumers, healthcare organizations must work with manufacturers, vendors, suppliers, group purchasing organizations, and others by demanding high quality and sustainable products that better serve user needs, that are made durably and designed for reuse, and that are sourced and manufactured ethically and responsibly. Such demand will drive innovation and competition in the market leading to better products and more sustainable supply chains.

- Demand improved durability and quality of existing products to better meet user needs while being designed for reuse and repair
- Create opportunities for innovation for new reusable/sustainable products and product-service systems
- Demand products that are manufactured ethically to support social impacts/benefits (i.e., ensure living wages, safe working conditions, and job security across global supply chains)
- Purchase strategically to leverage buying power for vendors/suppliers to meet demands related to sustainability across sites, group purchasing contracts, or through organizational networks

COLLABORATE TO SUSTAIN CHANGE

Collaboration across actors, institutions, and groups is a valuable way to strengthen relationships, build networks, strategically align efforts, and enhance collective purchasing power.

- Work with group purchasing organizations, coordinating procurement bodies, or across units or sites to streamline purchasing and coordination
- Generate cross-functional buy in by aligning reuse efforts with strategic priorities
- Develop cross-functional relationships to spread and scale reusable initiatives across units, sites, or networks

HEALTHCARE ORGANIZATIONS = ANCHOR INSTITUTIONS

Consider healthcare organizations as “anchor institutions” (or networks of anchor institutions) that have the capacity to support community wealth and well-being because of its role as (8):

- Employers and workforce developers
- Purchasers of goods and services
- Managers of land and capital assets
- Environmental stewards
- Partners across place to engage communities and address their needs

By embracing the role of an anchor institution, healthcare organizations can maximize the social and economic value it brings to local communities (8).

KEY EXPERIENCE SPOTLIGHT:

CIRCULAR ECONOMY HEALTHCARE ALLIANCE, NHS ENGLAND

Seven healthcare trusts across England have come together to form the Circular Economy Healthcare Alliance (Central London Community Healthcare NHS Trust, University College London Hospitals, University Hospitals Sussex, Cambridge University Hospitals, West London NHS Trust, Imperial College Healthcare, and Chelsea and Westminster Hospital NHS Foundation Trust) that aims to advance environmental sustainability by coordinating purchases and processes to "reduce single-use medical equipment and consumables and reusing wherever it is clinically feasible and appropriate to do so" (96, 97)

The group will focus on the following actions (96):

- not using items when they are not needed
- using reusable items rather than single use wherever possible and safe to do so
- ensuring end-of-life items are returned for remanufacture or recycling where possible
- developing shared evaluation criteria to select products and suppliers through the procurement process

Learn more

RESOURCES:

- Taking One Step Further: Five Equity Principles for Hospitals to Increase their Value as Anchor Institutions, Allen et al.
- Anchor Institutions: Best Practices to Address Social Needs and Social Determinants of Health, Koh et al.

References

1. Lenzen M, Malik A, Li M, Fry J, Weisz H, Pichler PP, et al. The environmental footprint of health care: a global assessment. The Lancet Planetary Health [Internet]. 2020 Jul 1;4(7):e271–9. Available from: https://www.sciencedirect.com/science/article/pii/S2542519620301212
2. Visual summary [Internet]. 2023 Lancet Countdown. Available from: https://www.lancetcountdown.org/about-us/interact-with-the-key-findings/
3. Eckelman MJ, Sherman JD, MacNeill AJ. Life cycle environmental emissions and health damages from the Canadian healthcare system: An economic-environmental-epidemiological analysis. PLOS Medicine [Internet]. 2018 Jul 31; 15(7):e1002623. Available from: https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002623
4. Tennison I, Roschnik S, Ashby B, Boyd R, Hamilton I, Oreszczyn T, et al. Health care's response to climate change: a carbon footprint assessment of the NHS in England. The Lancet Planetary Health [Internet]. 2021 Feb 1;5(2):e84–92. Available from: https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(20)30271-0/fulltext
5. Eckelman MJ, Huang K, Lagasse R, Senay E, Dubrow R, Sherman JD. Health Care Pollution And Public Health Damage In The United States: An Update. Health Affairs [Internet]. 2020 Dec;39(12):2071–9. Available from: https://www.healthaffairs.org/doi/10.1377/hlthaff.2020.01247
6. Nowlan J, Machane S, Miller FA. Greenhouse Gas Emissions Estimation in Canadian Healthcare version 1.1 (2024) [Internet]. CASCADES (Creating a Sustainable Canadian Health System in a Climate Crisis). Available from https://cascadescanada.ca/resources/greenhouse-gasemissions-estimation-in-canadian-healthcare-playbook/
7. MacNeill AJ, Hopf H, Khanuja A, Alizamir S, Bilec M, Eckelman MJ, et al. Transforming The Medical Device Industry: Road Map To A Circular Economy. Health Affairs [Internet]. 2020 Dec;39(12):2088–97. Available from: https://www.healthaffairs.org/doi/10.1377/hlthaff.2020.01118
8. Miller FA, Devitt K, Goldthorpe P, Karafile P, Poyntz K, Wintemute K. Organizational Readiness for Sustainability version 2.0 (2023) [Internet]. CASCADES (Creating a Sustainable Canadian Health System in a Climate Crisis). [Cited DATE]. Available from https://cascadescanada.ca/resources/organizational-readiness-playbook/
9. Sun G. Disposable and reusable medical textiles. Textiles for Hygiene and Infection Control [Internet]. 2011;125–35. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7151877/
10. Simms N, Devitt K, Irani C, Khan N, Meng F. Sustainable Perioperative Care version 2.0 (2024) [Internet]. CASCADES (Creating a Sustainable Canadian Health System in a Climate Crisis). Available from https://cascadescanada.ca/resources/sustainableperioperative-care-playbook/
11. Vancouver Coastal Health. Sustainable Procurement Strategy & Action Plan: A Roadmap to Leverage Procurement to Reduce Single-Use Products. 2023.
12. Dawson M. Circular Health Care:An opportunities guide for health care organizations in B.C. 2021. Available from https://bcgreencare.ca/wp-content/uploads/2022/01/Circular-Health-Care-Opportunities-Guide_v2.pdf
13. Keil M, Viere T, Helms K, Rogowski W. The impact of switching from single-use to reusable healthcare products: a transparency checklist and systematic review of life-cycle assessments. Eur J Public Health [Internet]. 2022 Nov 26;33(1):56–63. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9898010/
14. 1.Miller FA, Young SB, Dobrow M, Shojania KG. Vulnerability of the medical product supply chain: the wake-up call of COVID-19. BMJ Qual Saf. 2021;30(4):331-335. doi:10.1136/bmjqs-2020-012133
15. McGain F, McAlister S, McGavin A, Story D. A life cycle assessment of reusable and single-use central venous catheter insertion kits. Anesth Analg. 2012 May;114(5):1073-80. doi: 10.1213/ANE.0b013e31824e9b69. Epub 2012 Apr 4. PMID: 22492185.
16. Hemberg L, Wessberg N, Leire C, Bentzer P. Environmental impact of single-use and reusable items in central venous catheter insertion kits: a life cycle assessment. Intensive Care Med. 2023 Jun;49(6):662-664. doi: 10.1007/s00134-023-07078-9. Epub 2023 May 11. PMID: 37166506; PMCID: PMC10287769
17. Dhane M, Gobert Q, Dernis L. Reusable breathing circuits: an environmentally sustainable alternative. Canadian journal of anesthesia. 2024;71(10):1433–5. Available from: https://link.springer.com/article/10.1007/s12630-024-02843-w
18. United Nations Environment Programme (UNEP). 2022 Global Review on Sustainable Public Procurement. Available from: https://www.oneplanetnetwork.org/sites/default/files/from-crm/300_I_UNEP_Global_Report_2022.pdf
19. Corvellec H, Stowell AF, Johansson N. Critiques of the circular economy. Journal of Industrial Ecology [Internet]. 2022;26(2):421–32. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/jiec.13187
20. WRAP & Government of Wales. 2021. Sustainable Procurement Hierarchy Guidance. https://wrapcymru.org.uk/sites/default/files/2021-07/WRAP-sustainable-procurement-hierarchy-guide-20210702.pdf
21. 1.Canadian Standards Association. Canadian medical devices reprocessing. https://www.csagroup.org/store/product/CAN-CSA-Z314-18/

22. Branch, L. S. (2024, June 17). Consolidated federal laws of Canada, Medical Devices Regulations. https://laws-lois.justice.gc.ca/eng/regulations/sor-98-282/fulltext.html
23. Health Canada. Medical devices [Navigation page]. 2004, July 26. Available from: https://www.canada.ca/en/health-canada/services/drugs-health-products/medical-devices.html
24. College of Physicians & Surgeons of Alberta. Reusable & Single-use Medical Device Requirements for Medical Clinics. 2021. Available from: https://cpsa.ca/wp-content/uploads/2022/10/Medical-Device-Requirements-for-Medical-Clinics.pdf
25. Public Health Ontario. Best Practices for Cleaning, Disinfection and Sterilization of Medical Equipment/Devices In All Health Care Settings. 2013. Available from: https://www.publichealthontario.ca/-/media/Documents/B/2013/bp-cleaning-disinfection-sterilization-hcs.pdf?rev=a3f4185160f64680b64defe9b917a7cf&sc_lang=en&hash=228E66E1BA0CE98BDA77EF00DDFCCF96
26. Health Canada. Update: Notice to Stakeholders - Health Canada's Regulatory Approach to Commercial Reprocessing of Medical Devices Originally Labelled for Single Use. Available from: https://www.canada.ca/en/health-canada/services/drugs-health-products/medical-devices/activities/announcements/update-notice-stakeholders-regulatory-approach-commercial-reprocessing-medical-devices-originally-labelled-single-use.html
27. Yu JT, Diamond ML, Maguire B, Miller FA. Bioplastics: No solution to healthcare's plastic pollution problem. Healthc Manage Forum [Internet]. 2024 Sep;37(5):401–5. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11348639/
28. WRAP & Government of Wales. Bioplastics Guidance for Wales. 2023. Available from: https://wrapcymru.org.uk/sites/default/files/2023-12/WRAP%20--%20Bioplastics%20Guidance%20-%20Final%20English%20--%202023.11%20%281%29.pdf
29. World Health Organization. COP26 Health Programme. Available from: https://www.who.int/initiatives/alliance-for-transformative-action-on-climate-and-health/cop26-health-programme
30. US Department of Health & Health Services. HHS Shares Health Sector Emissions Reduction and Climate Resilience Announcements at COP27. 2022. Available from: https://public3.pagefreezer.com/browse/HHS.gov/01-01-2023T06:35/https://www.hhs.gov/about/news/2022/11/10/hhs-shares-health-sector-emissions-reduction-climate-resilience-announcements-at-cop27.html
31. US Department of Health & Health Services. HHS Shares Health Sector Emissions Reduction and Climate Resilience Announcements at COP28. 2023. Available from: https://public3.pagefreezer.com/browse/HHS.gov/02-01-2024T03:56/https://www.hhs.gov/about/news/2023/12/03/hhs-shares-health-sector-emissions-reduction-climate-resilience-announcements-at-cop28.html
32. US Department of Health & Health Services. Climate Change and Health Equity Strategy Supplement. 2023.
33. World Health Organization. COP28 Declaration on Climate and Health. 2023. Available from: https://www.who.int/publications/m/item/cop28-uae-declaration-on-climate-and-health
34. US Department of Health & Health Services. HHS Shares Health Sector Climate Resilience and Emissions Reduction Announcements at COP29. 2024. Available from: https://public3.pagefreezer.com/browse/HHS.gov/02-01-2025T05:49/https://www.hhs.gov/about/news/2024/11/18/hhs-shares-health-sector-climate-resilience-and-emissions-reduction.html
35. McAlister S, Morton RL, Barratt A. Incorporating carbon into health care: adding carbon emissions to health technology assessments. The Lancet Planetary Health [Internet]. 2022 Dec 1;6(12):e993–9. Available from: https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(22)00258-3/fulltext
36. The Ottawa Hospital. Surgical & Isolation Gown Evaluation. 2023. Available from: https://view.publitas.com/5231e51e-4654-42c2-accd-b722e21f3093/perioperative_surgical-isolation-gowns-evaluation/page/1
37. NHS England. Understanding the Benefits of a Switch from Single-Use to Reusable Surgical and Isolation Gowns. 2024. Available from: https://www.healthinnovationnwc.nhs.uk/media/News/2024/REUSABLE%20SURGICAL%20GOWNS%20REPORT%20Jan%2024.pdf
38. McQuerry M, Easter E, Cao A. Disposable versus reusable medical gowns: A performance comparison. American Journal of Infection Control [Internet]. 2021 May 1;49(5):563–70. Available from: https://www.sciencedirect.com/science/article/pii/S0196655320309299
39. Vozzola E, Overcash M, Griffing E. An Environmental Analysis of Reusable and Disposable Surgical Gowns. AORN J. 2020 Mar;111(3):315–25.
40. Vozzola E, Overcash M, Griffing E. Environmental considerations in the selection of isolation gowns: A life cycle assessment of reusable and disposable alternatives. American Journal of Infection Control [Internet]. 2018 Aug 1 [cited 2025 Mar 31];46(8):881–6. Available from: https://www.ajicjournal.org/article/S0196-6553(18)30075-0/fulltext
41. Baker N, Bromley-Dulfano R, Chan J, Gupta A, Herman L, Jain N, et al. COVID-19 Solutions Are Climate Solutions: Lessons From Reusable Gowns. Front Public Health [Internet]. 2020 Nov 25;8. Available from: https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2020.590275/full
42. The American Reusable Textile Association. Life Cycle Assessment of Surgical Gowns, Infographic. 2020. Available from: https://op-textilien.at/publikationen-studien.html?file=files/op_textilien/pdf/publikationen-studien/LCA_ofsurrgicalgowns-infographic_2018.pdf&cid=127210

43. Vozzola, E., Overcash, M., & Griffing, E. Life Cycle Assessment of Surgical Drapes and Tapes: Reusable and Disposable. 2018. Available from: https://chaingegroup.eu/wp-content/uploads/2024/05/Surgical-Drape-LCA-Revision-9-24-18-Final.pdf
44. The American Reusable Textile Association. Life Cycle Assessment of Surgical Drapes and Tapes, Infographic. 2020. Available from: https://ecotex.ca/wp-content/uploads/2023/01/Surgical-Drapes-Life-Cycle.pdf
45. Cetin Y, Sonmez A. Cost analysis of disposable/reusable surgical drapes used in Turgut Ozal Medicine Center. Annals of Medical Research [Internet]. 2021 Oct 20;28(10):1858–62. Available from: https://www.annalsmedres.org/index.php/aomr/article/view/3940
46. Donahue LM, Petit HJ, Thiel CL, Sullivan GA, Gulack BC, Shah AN. A Life Cycle Assessment of Reusable and Disposable Surgical Caps. J Surg Res. 2024 Jul;299:112–9. Available from: https://pubmed.ncbi.nlm.nih.gov/38749314/
47. Kothari SN, Borgert AJ, Kowalski TJ. Bang Your Head–Bouffant vs Skull Caps and Impact on Surgical Site Infections: Does it Really Matter? Journal of the American College of Surgeons [Internet]. 2017 Oct 1;225(4, Supplement 2):e20. Available from: https://www.sciencedirect.com/science/article/pii/S1072751517311845
48. Chang JH, Woo KP, Silva de Souza Lima Cano N, Bilec MM, Camhi M, Melnyk AI, et al. Does reusable mean green? Comparison of the environmental impact of reusable operating room bed covers and lift sheets versus single-use. The Surgeon [Internet]. 2024 Aug ; 22(4):236–41. Available from: https://www.sciencedirect.com/science/article/pii/S1479666X24000581
49. Griffing E, Overcash M. Reusable and Disposable Incontinence Underpads: Environmental Footprints as a Route for Decision Making to Decarbonize Health Care. J Nurs Care Qual. 2023 Sep 1;38(3):278–85.
50. John J, Collins M, O'Flynn K, et al. Carbon footprint of hospital laundry: a life-cycle assessment. BMJ Open 2024;14:e080838. doi:10.1136/bmjopen-2023-080838.
51. Western General Team Introduces Reusable Surgical Hats to Reduce Waste – News & Media. 2023. Available from: https://news.nhslothian.scot/2023/12/20/western-general-team-introduces-reusable-surgical-hats-to-reduce-waste/
52. Island Health. Environmental Sustainability. N.d. Available from: https://www.islandhealth.ca/about-us/accountability/strategic-direction/environmental-sustainability
53. Rizan C, Mortimer F, Stancliffe R, Bhutta MF. Plastics in healthcare: time for a re-evaluation. J R Soc Med [Internet]. 2020 Feb [cited 2025 Mar 31];113(2):49–53. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7068768/
54. McGain F, Algie CM, O'Toole J, Lim TF, Mohebbi M, Story DA, et al. The microbiological and sustainability effects of washing anaesthesia breathing circuits less frequently. Anaesthesia [Internet]. 2014 Apr; 69(4):337–42. Available from: https://associationofanaesthetists-publications-onlinelibrary-wiley-com.myaccess.library.utoronto.ca/doi/full/10.1111/anae.12563
55. Hartmann D, Jung M, Neubert TR, Susin C, Nonnenmacher C, Mutters R. Microbiological risk of anaesthetic breathing circuits after extended use. Acta Anaesthesiol Scand. 2008 Mar;52(3):432–6. Available from: https://onlinelibrary.wiley.com/doi/10.1111/j.1399-6576.2007.01529
56. Dubler S, Zimmermann S, Fischer M, Schnitzler P, Bruckner T, Weigand MA, et al. Bacterial and viral contamination of breathing circuits after extended use - an aspect of patient safety? Acta Anaesthesiol Scand. 2016 Oct;60(9):1251–60. Available from: https://onlinelibrary.wiley.com/doi/10.1111/aas.12768
57. Eckelman M, Mosher M, Gonzalez A, Sherman J. Comparative life cycle assessment of disposable and reusable laryngeal mask airways. Anesth Analg. 2012 May;114(5):1067–72. Available from: https://journals.lww.com/anesthesia-analgesia/abstract/2012/05000/comparative_life_cycle_assessment_of_disposable.22.aspx
58. LIANG G. Life Cycle Assessment of Disposable and Reusable Laryngeal Mask Airway in Skånevård Sund. 2019. Available from: https://lup.lub.lu.se/luur/download?func=downloadFile&recordOId=8986326&fileOId=8989501
59. Sherman JD, Raibley LA, Eckelman MJ. Life Cycle Assessment and Costing Methods for Device Procurement: Comparing Reusable and Single-Use Disposable Laryngoscopes. Anesth Analg. 2018 Aug;127(2):434–43.
60. Donahue LM, Hilton S, Bell SG, Williams BC, Keoleian GA. A comparative carbon footprint analysis of disposable and reusable vaginal specula. Am J Obstet Gynecol. 2020 Aug;223(2):225.e1-225.e7.
61. Rodriguez Morris MI, Hicks A. Life cycle assessment of stainless-steel reusable speculums versus disposable acrylic speculums in a university clinic setting: a case study. Environ Res Commun [Internet]. 2022 Feb;4(2):025002. Available from: https://dx.doi.org/10.1088/2515-7620/ac4a3d
62. McGain F, McAlister S, McGavin A, Story D. The Financial and Environmental Costs of Reusable and Single-Use Plastic Anaesthetic Drug Trays. Anaesthesia and Intensive Care. 2010;38(3):538-544. doi:10.1177/0310057X1003800320.
63. Friedericy HJ, van Egmond CW, Vogtländer JG, van der Eijk AC, Jansen FW. Reducing the Environmental Impact of Sterilization Packaging for Surgical Instruments in the Operating Room: A Comparative Life Cycle Assessment of Disposable versus Reusable Systems. Sustainability [Internet]. 2022 Jan;14(1):430. Available from: https://www.mdpi.com/2071-1050/14/1/430
64. Bringier R, Arrigoni A, Muret J, Dro A, Gayat E, Vallée F, et al. An integrated environmental, economic, and clinician satisfaction comparison between single-use and reusable flexible bronchoscopes for tracheal intubation. Br J Anaesth. 2023 Jul;131(1):e4–7.
65. Sørensen BL, Grüttner H. Comparative Study on Environmental Impacts of Reusable and Single-Use Bronchoscopes. Am J Environ Prot [Internet]. 2018 Nov;7(4):55–62. Available from: https://www.sciencepg.com/article/10.11648/j.ajep.20180704.11

66. Le NNT, Hernandez LV, Vakil N, Guda N, Patnode C, Jolliet O. Environmental and health outcomes of single-use versus reusable duodenoscopes. Gastrointest Endosc. 2022 Dec;96(6):1002–8.
67. Kidane J, Thiel CL, Wang K, Rosen CA, Gandhi S. A Comparison of Environmental Impacts Between Reusable and Disposable Flexible Laryngoscopes. Laryngoscope. 2024 Dec 26.
68. Duijndam J. Sustainable device selection for flexible intubation scopes: Comparative environmental impact assessment of disposable and reusable flexible intubation scopes and concept design for sustainable flexible intubation scopes https://repository.tudelft.nl/record/uuid:b638ee2c-059c-4a9e-bc9d-e26d4c44cdc1
69. Rizan C, Lillywhite R, Reed M, Bhutta MF. Minimising carbon and financial costs of steam sterilisation and packaging of reusable surgical instruments. British Journal of Surgery. 2021 Nov 28. https://academic.oup.com/bjs/article/109/2/200/6445122
70. Rizan C. Environmental impact of hybrid (reusable/single-use) ports versus single-use equivalents in robotic surgery. Journal of robotic surgery. 2024;18(1):155–155. https://link.springer.com/article/10.1007/s11701-024-01899-6
71. Labib PL, Ford B, Winfield M, Douie WJ, Kanwar A, Sanders G. Revising a laparoscopic appendicectomy set to reduce reliance on disposable surgical instruments: supporting the transition to sustainable surgical practice. Ann R Coll Surg Engl. 2024 Feb;106(2):167–72.
72. Rizan C, Bhutta MF. Environmental impact and life cycle financial cost of hybrid (reusable/single-use) instruments versus single-use equivalents in laparoscopic cholecystectomy. Surg Endosc. 2022 Jun;36(6):4067–78.
73. Rizan C, Brophy T, Lillywhite R, Reed M, Bhutta MF. Life cycle assessment and life cycle cost of repairing surgical scissors. Int J Life Cycle Assess. 2022 Jun; 27, 780–795. https://link.springer.com/article/10.1007/s11367-022-02064-7
74. Ibbotson S, Dettmer T, Kara S, Herrmann C. Eco-efficiency of disposable and reusable surgical instruments—a scissors case. The International Journal of Life Cycle Assessment [Internet]. 2013 Jun 1;18:1137–48. Available from: https://ui.adsabs.harvard.edu/abs/2013IJLCA..18.1137I
75. Grimmond TR, Bright A, Cadman J, Dixon J, Ludditt S, Robinson C, et al. Before/after intervention study to determine impact on life-cycle carbon footprint of converting from single-use to reusable sharps containers in 40 UK NHS trusts. BMJ Open. 2021 Sep 27;11(9):e046200.
76. McPherson B, Sharip M, Grimmond T. The impact on life cycle carbon footprint of converting from disposable to reusable sharps containers in a large US hospital geographically distant from manufacturing and processing facilities. PeerJ. 2019 Feb 22;7:e6204.
77. Grimmond T, Reiner S. Impact on carbon footprint: a life cycle assessment of disposable versus reusable sharps containers in a large US hospital. Waste Manag Res [Internet]. 2012 Jun 1;30(6):639–42. Available from: https://doi.org/10.1177/0734242X12450602
78. Duffy J, Slutzman JE, Thiel CL, Landes M. Sustainable Purchasing Practices: A Comparison of Single-use and Reusable Pulse Oximeters in the Emergency Department. West J Emerg Med. 2023 Nov;24(6):1034–42.
89. Sanchez SA, Eckelman MJ, Sherman JD. Environmental and economic comparison of reusable and disposable blood pressure cuffs in multiple clinical settings. Resources, Conservation and Recycling [Internet]. 2020 Apr 1;155:104643. Available from: https://www.sciencedirect.com/science/article/pii/S092134491930549X
80. Sørensen BL, Wenzel H. Life cycle assessment of alternative bedpans – a case of comparing disposable and reusable devices. Journal of Cleaner Production [Internet]. 2014 Nov 15;83:70–9. Available from: https://www.sciencedirect.com/science/article/pii/S0959652614007276
81. Goellner KN, Sparrow E. An environmental impact comparison of single-use and reusable thermally controlled shipping containers. Int J Life Cycle Assess [Internet]. 2014 Mar 1;19(3):611–9. Available from: https://doi.org/10.1007/s11367-013-0668-z
82. Rizan C, Steinbach I, Nicholson R, Lillywhite R, Reed M, Bhutta MF. The Carbon Footprint of Surgical Operations: A Systematic Review. Ann Surg. 2020 Dec;272(6):986–95.
83. CASCADES. Project Charter: Extended Breathing Circuits. 2023. Available from: https://view.publitas.com/5231e51e-4654-42c2-accd-b722e21f3093/perioperative_charter_extended-breathing-circuits_en/page/1
84. McGain F, Algie CM, O'Toole J, Lim TF, Mohebbi M, Story DA, et al. The microbiological and sustainability effects of washing anaesthesia breathing circuits less frequently. Anaesthesia. 2014 Apr;69(4):337–42.
85. Dubler S, Zimmermann S, Fischer M, Schnitzler P, Bruckner T, Weigand MA, et al. Bacterial and viral contamination of breathing circuits after extended use – an aspect of patient safety? Acta Anaesthesiologica Scandinavica [Internet]. 2016;60(9):1251–60. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/aas.12768
86. NHS England. Walking aid reuse [Internet]. Available from: https://www.england.nhs.uk/ahp/greener-ahp-hub/specific-areas-for-consideration/walking-aid-reuse/
87. NHS Scotland. NHS Scotland Waste Prevention and Re-use Guide. 2017. Available from: https://cdn.zerowastescotland.org.uk/managed-downloads/mf-duusez99-1679414247d
88. Fargnoli M, Costantino F, Di Gravio G, Tronci M. Product service-systems implementation: A customized framework to enhance sustainability and customer satisfaction. Journal of Cleaner Production [Internet]. 2018 Jul 1 [cited 2025 Apr 1];188:387–401. Available from: https://www.sciencedirect.com/science/article/pii/S0959652618310023

89. WRAP, Cardiff, The Benefits of Re-use Three: User Guidance. 2024. Available from: https://www.wrap.ngo/sites/default/files/2024-07/WRAP-Benefits-of-Reuse-Three-User-Guide-v1.pdf
90. NHS England. Device Remanufacturing How to Guide. 2021. Available from: https://www.lpp.nhs.uk/media/477394/Device-Remanufacturing-How-to-Guide-ppt.pdf
91. Warp It Reuse Network (Director). (2018, June 21). NHS Scotland Reuse Project Story [Video recording]. https://www.youtube.com/watch?app=desktop&v=W78aPkemkP4
92. Doherty J. NHSGGC saves £3 million in new purchases through recycling and reuse scheme. 2021, November 9. Available from: https://www.nhsggc.scot/nhsggc-saves-3-million-in-new-purchases-through-recycling-and-reuse-scheme/
93. Maguire, B, Miller, FA. Toronto Academic Health Science Network (TAHSN) 2024 Climate & Sustainability Report. Collaborative Centre for Climate, Health & Sustainable Care. University of Toronto, Toronto, Canada. February 2025. https://climatehealth.utoronto.ca/practice-policy-change/tahsn-climate-sustainability-community-of-practice/tahsn-sustainability-balance-scorecard/
94. Ontario Health. Quality Improvement Plan (QIP) Guidance Document for Ontario's Health Care Organizations. 2014. https://www.hqontario.ca/Portals/0/documents/qi/qip-guidance-document-en.pdf
95. North York General. Quality Improvement Plan (QIP) 2024-2025. 2024 Sep 2024. Available from: https://www.nygh.on.ca/wp-content/uploads/2024/09/NYGH-QIP-12Sep2024_CCPA.pdf
96. Cambridge University Hospitals. New partnership aims to accelerate the path to more sustainable healthcare. (n.d.). Available from: https://www.cuh.nhs.uk/news/new-partnership-aims-to-accelerate-the-path-to-more-sustainable-healthcare/
97. University College London Hospitals NHS Foundation Trust. NHS trusts unite to reduce reliance on single use items. (n.d.). Available from: https://www.uclh.nhs.uk/news/nhs-trusts-unite-reduce-reliance-single-use-items

About this playbook

This playbook was co-developed with Vancouver Coastal Health and drew upon its experience of building a sustainable procurement program with a reusables first approach using Reeve Consulting's expertise.

LEAD AUTHORS

- Jaclyn MacNeil, Administrative Coordinator, CASCADES
- Fiona A. Miller, Professor & Director, Collaborative Centre for Climate, Health & Sustainable Care
- Marianne Dawson, Sustainability Advisor, Provincial Health Services Authority
- Colin Chan, Surgical Sustainability Lead, Vancouver Coastal Health
- Emily Chin, Sustainable Procurement Consultant, Reeve Consulting
- Brittany Maguire, Managing Director, Collaborative Centre for Climate, Health & Sustainable Care

WORKING GROUP CONTRIBUTORS

- Allen Bridge, MA, CEM, P.Mgr, Provincial Lead - Waste Management & Sustainability, Alberta Health Services
- Barb McArthur, Patient Care Manager, Sunnybrook Health Sciences Centre
- Dave Kortt, Manager, Service Performance & Monitoring, NFLES Provincial Operations Support, Alberta Health Services
- Elisabeth Perlikowski, MSc, P.Eng, Sustainability Program Manager, The Hospital for Sick Children
- Erin Gable, Regional Director, Practice Initiatives & Clinical Supplies, Vancouver Coastal Health
- Genny Ng, Manager of Quality & Patient Safety; Co-chair of Green Task Force, Sunnybrook Health Sciences Centre
- John Kozanczyn, Director, Supply Chain & Patient Support Management; Interm Director, Business Development Office, Centre for Addiction and Mental Health
- Kerry Coroy, Senior Lead, Clinical Services, CPSM, Alberta Health Services
- Linda Varangu, Senior Advisor, Climate Change, Canadian Coalition for Green Health Care
- Melissa Ho, HBSc, MD, FRCPC, Staff Anesthesiologist, North York General Hospital; Lecturer, Department of Anesthesia, Faculty of Medicine, University of Toronto
- Robert Warnock, Program Director, Strategic & Major Procurement Initiatives, AHS
- Sarah Scanlan, Regional Sustainability Consultant, Vancouver Coastal Health

WORKING GROUP CONTRIBUTORS

- Sonja Janousek, Regional Environmental Sustainability Manager, Vancouver Coastal Health
- Suzanne Lee, Provincial Manager, Supplier Relationship Management, Newfoundland & Labrador Health Services
- Tracey Menchenton, Clinical Coordinator, Supply Chain, Newfoundland & Labrador Health Services
- V. M. Parkins, MD, MSc, FRCPC, Endocrinology & Metabolism, Alberta Health Services
- Winnie Guan, Regional Practice Initiatives Lead, Vancouver Coastal Health
- Wissam Halimeh, Manager, Quality and Efficiency, MHA

CASCADES CONTRIBUTORS

- Katy Devitt, Project Manager
- Cate MacLeod, Communications & Events Lead
- Sarah Machane, Innovation Lead (Québec)

GRAPHIC DESIGN by Luz A. Paczka Giorgi

Version 1.0. Published Month #, 202_.

This document will be reviewed for future updates and we welcome your feedback. Please send any comments or recommendations to cascades@utoronto.ca or opt-in to our knowledge product surveys.

While it is not a requirement under the license, we would be grateful if you would let us know where and how you share or adapt our materials so we can see and learn from how they are used.

This playbook, or the associated resources, may reference services and/or product offerings from specific suppliers. The inclusion of such mentions or links should not be interpreted as an endorsement by CASCADES of any product or service.