



Good for our Planet and Good for our Clinics: Reducing Waste in Medical Settings

CLINICAL QUESTION

What are some safe and sustainable ways to reduce waste in healthcare settings?

BOTTOM LINE

Key ways to safely and cost-effectively reduce waste in clinical settings include:

- Implementing reusable patient and PPE gowns
- Reducing unnecessary sterile and non-sterile glove use
- Switching to reusable stainless-steel speculums for pelvic exams
- Decreasing the use of exam table paper

EVIDENCE

Reusable Gowns

- A pilot project at the Ronald Reagan UCLA Medical Center in California introduced reusable isolation gowns in 2012, which diverted 297 tons of landfill waste in its first 3 years, while saving over \$1.1 million USD and maintaining safety standards. (Practice Greenhealth Case Study).
- A 2021 performance comparison showed that reusable PPE gowns provide superior protection and performance after 1, 25, 50, and 75 industrial washes compared to disposable gowns (McQuerry, Easter, & Cao, 2021).
- A 2020 review article found that replacement of disposable isolation gowns with reusable alternatives caused a 50% decrease in the cost per use of gowns, while also leading to a 28% reduction in energy consumption, a 30% reduction in greenhouse gas emissions, a 41% reduction in blue water consumption, and 93% reduction in solid waste generation. (Baker et al., 2020)

Reducing Use of Gloves

- A mixed-methods study performed in 2 UK hospitals found that in 278 observed procedures performed with the use of non-sterile clinical gloves, the gloves were used unnecessarily in 59% of procedures. (Wilson et al., 2017)
- Alberta Health Services guidelines state that non-sterile gloves are only required before contact with blood, bodily fluids, mucous membranes, or non-intact skin. (Alberta Health Services Infection Prevention and Control)
- A Canadian review article found that there is no significant increase in number of infections when using nonsterile gloves compared to sterile gloves for outpatient minor or uncomplicated skin excisions and laceration repair in immune-competent adults (Steve et al., 2017.)
- A 2018 campaign at the Great Ormond Street Hospital in the UK titled "Gloves Are Off" succeeded in reducing the hospital's annual non-sterile glove use by 4.3 million gloves, with no observed increase in hospital-acquired infection. Staff reported better skin condition and improved hand hygiene. (Gamba, Napierska, & Zotinca, 2021).

Reusable Speculums

- A lifecycle carbon footprint analysis of 3 different speculums models found that the 2 stainless steel models produced fewer life cycle carbon emissions than the acrylic alternative after being used for 2 (stainless steel grade 304) or 3 (stainless steel grade 316) examinations. The researchers concluded that the reusable speculums were a more sustainable choice without sacrificing clinical utility (Donahue et al., 2020).
- In the same study, it was found that in a single year, Michigan Medicine used 5875 disposable specula, which produced 5462 kg of solid waste throughout their life cycle. If switched to reusable metal specula (stainless steel grades 304 or grade 316) for 100 uses each, this would have reduced end-of-life solid waste generation by 64.43 kg. (Donahue et al., 2020).
- A case study in Wisconsin found that in a life cycle assessment of single-use acrylic and reusable stainless-steel speculums that the reusable alternative outperformed the single-use in global warming impact, acidification, respiratory effects, smog, and fossil fuel depletion. The acrylic speculum outperformed the stainless-steel in only one category, which was ozone depletion (Rodriguez Morris & Hicks, 2022).

Disposable Exam Table Paper

- Alberta Health Services Infection Prevention and Control guidelines do not indicate a need for exam table paper. At this time, there are no indications that exam table paper is beneficial to patient health when compared to standard environmental cleaning procedures. (Alberta Health Services, 2022).

CONTEXT

- In high-income nations such as Canada, healthcare systems depend on linear supply chains that mainly use single-use, disposable medical devices and PPE.
- Over recent decades, the health care sector has broadly adopted single-use disposables based on the perception that these materials are safer than reusable devices, yet there is no compelling evidence that these devices reduce healthcare acquired infections. (MacNeill et al, 2020)
- Plastics are harmful to the environment throughout their lifecycle; manufacturing of plastics accounts for 8% of the global oil production and plastic debris makes up 50%-80% of shoreline debris globally. (Thompson et al., 2009)
- Plastics make up an estimated 30% of all healthcare waste, including about 133,000 tonnes of plastic per year produced by the UK National Health Service. (Rizan et al., 2020).
- Non-sterile gloves are one of the major sources of waste in medical settings. The NHS in England reported using 1.4 billion gloves annually before COVID-19, with this number doubling during the pandemic (Gamba, Napierska, & Zotinca, 2021).

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