ASP SUMMIT
CONTINUOUS MEDICAL EDUCATION WEBINARS

The role of Medical Device Reprocessing in

circular economy

2022 CME WEBINARS SERIES # 3

OPPORTUNITIES AND PITFALLS

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2 webinar intro

Medical device industry values safety, as it should. But throwing away entire products just to avoid cleaning them creates air pollution, water pollution, and other waste that damage people's health.

Healthy people require a healthy planet. Don't just treat the patient in he room, treat the other 8 billion patients in the world as well.

Reusing products can save much more impact & money than merely recycling.

SAVE IMPACT

The UK NHS found most of their CO_2 footprint is in their supply chain. Around 25% is just product manufacturing--larger than building energy, water & waste, patient travel, or staff commute.

7% of the UK's entire carbon footprint is the health care industry, so we can make a big impact.

Even full remanufacturing of Medical Devices (MD) can cut CO_2 in half, and mere sterilization is even better.

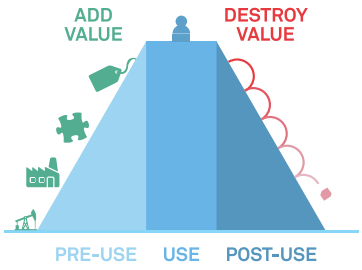
There are many other kinds of impacts, beyond carbon (acidification, particulate emissions, radiation, and more).

Impacts of transport are usually very small versus manufacturing new products.[1]

SAVE MONEY

The "Value hill" diagram shows how more environmental value and financial value are saved by reducing, reusing, and remanufacturing versus recycling. Recycling is the bottom of the barrel, saves the least (both environmentally & financially).

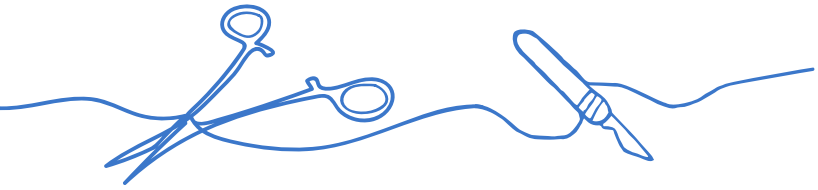
Cost savings can be large: a single hospital's neurosurgery dept. saved CAN$750,000/yr by reducing disposables 30%.



"A Circular Economy is more than just recycling. Before that, we need to reduce consumption, repair, reuse, refurbish, and remanufacture, to save both environmental impacts and money."

The dilemma of

single use VS multiple use



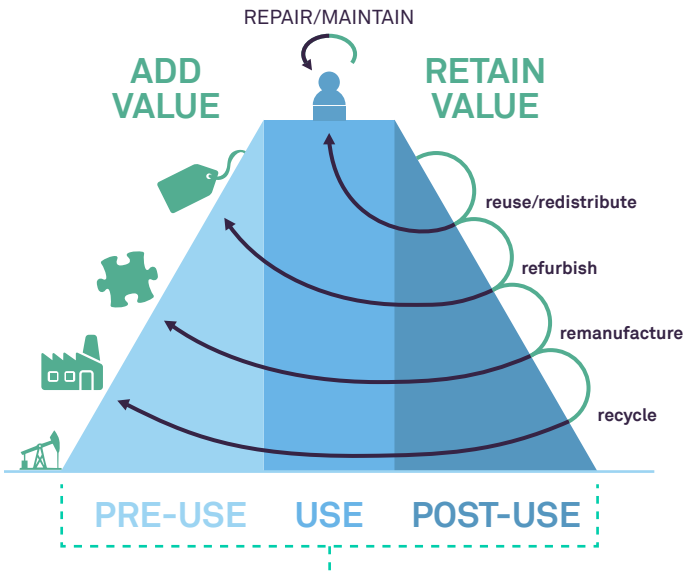
BARRIERS TO REUSE & CIRCULAR ECONOMY IN MEDICAL DEVICES

The main barriers to a CE in MD are reverse logistics (getting products back), safety (sterilization), and regulations on material handling (which sometimes prevent handling / reuse even when safe).
Product service systems can overcome the business barriers, to save you the hassle & sometimes save costs.

Different products have different impacts in disposal versus sterilization, and some products are easier / safer to reuse than others. Not all are better to reuse. We need to check product-by-product or at least category-by-category to make good purchasing decisions & good design policy.

For Circular Economy (CE) and if reusable MD are available, reprocessing/re-sterilization plays on decreasing medical waste with important savings associated.

"Value Hill"



Toronto Western Hospital neurosurgery dept. saved CAN$750,000/yr by reducing disposables 30%.[3]

Barriers to circularity are real, but we can do it.

How to improve the industry?

IMPROVE INDUSTRY
BY INTEGRATING SUSTAINABILITY INTO PRODUCT & SERVICE DEVELOPMENT

There are specific tools & methods for implementing the CE in design, engineering, & business. For example, Life Cycle Assessement (LCA), whole system mapping, biomimicry, product service system types, persuasive design. Free tutorials.[2]

Manufacturers must design circular products/services.

"Current economics drives manufacturers toward planned obsolescence, but they must switch business models and design methods to drive the Circular Economy."

How to improve the industry?

Improve industry by green purchasing

Purchasers have leverage, both in buying more sustainable products based on LCA or other quantified impact assessments, and subscribing to new business models like product service systems. If companies don't offer them, push them to provide the data and/or the business models."

All hospitals have purchasing departments, and many hospitals have technology assessment depts.; the assessors should learn LCA or circularity metrics.

"You don't necessarily need to do your own LCAs, but to require them of suppliers, and make purchasing decisions based on them. Both to find the best options and to avoid greenwashing."

ASSESSMENTS TO KNOW

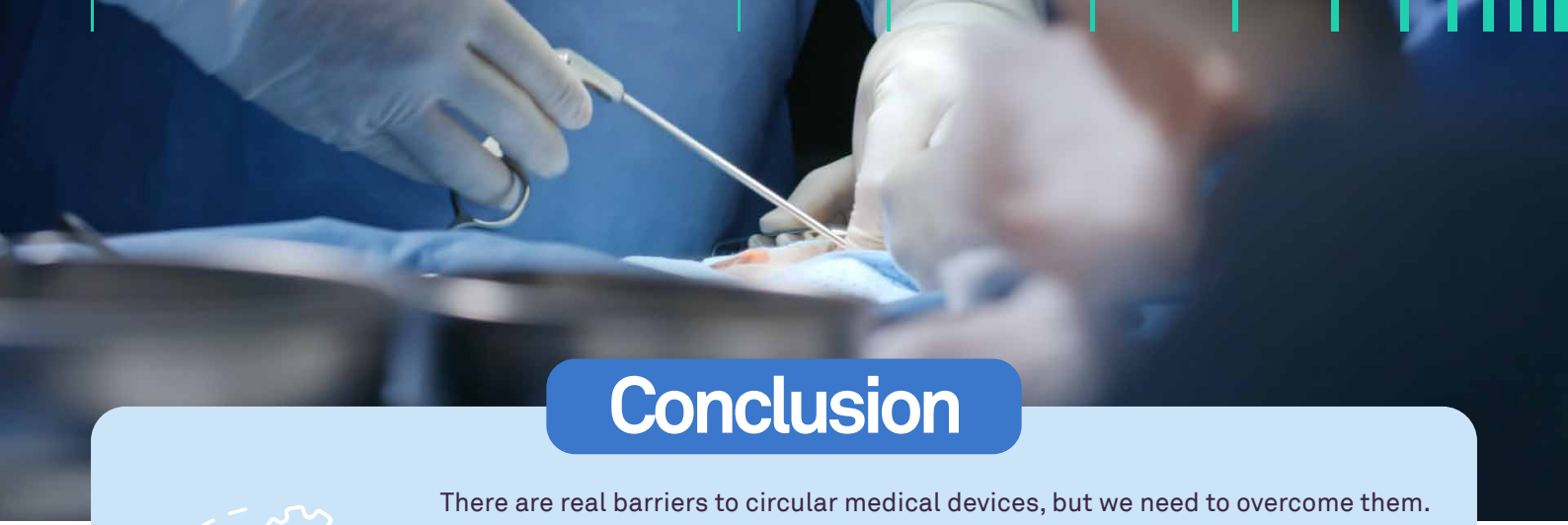
LCA quantifies environmental impacts-carbon footprint and much more.
Make fair comparisons by counting environmental impacts per unit of functionality / service, not per product.
Circularity metrics, e.g., Cradle to Cradle material reutilization index, count how much is recovered from one product life to the next.
Toxicity hazard scores measure 20 different hazards, but we need better data.
Repairability & durability scorecards measure how long your products can last; they're already legally required for some product types in France.

Buyers must be integrated into purchasing decisions.

PURCHASERS HAVE LEVERAGE

Purchasers create the demand for what medical device companies produce.
Circular product design fails without supporting business models.

"Purchasers can create demand not only for circular products, but circular business models (like product service systems)."



Conclusion

There are real barriers to circular medical devices, but we need to overcome them.

There are tools & methods to design better medical device systems, and to calculate their environmental effectiveness.

Even if you don't use these tools yourselves, you can be aware of them, and learn how to use them in your purchasing / contracting / business partnerships.

We need to do this, to treat the other 8 billion patients on the planet. Healthy people require a healthy world.

take home messages

01 A circular economy is more than just recycling. Before that, we need to reduce consumption, repair, reuse, refurbish, and remanufacture, to save both environmental impacts and money.

02 Barriers to circular economy medical devices are real, but they can be overcome. We need to overcome them, because healthy people require a healthy world.

03 Current economics drives manufacturers toward planned obsolescence, but they must switch business models and design methods to drive the circular economy.

04 Purchasers have leverage, both in buying more sustainable products based on LCA or other quantified impact assessments, and subscribing to new business models like product service systems. If companies don't offer them, push them to provide the data and/or the business models.

1 Examples shown from http://productdesign.green. 2 Free tutorials are available on https://VentureWell.org/tools_for_design/introduction. 3 Blackwell, T. (2015, July 30). Showing surgeons 'massive' cost of disposable supplies leads to big savings for hospitals. National Post. https://nationalpost.com/news/canada/showing-surgeons-massive-cost-of-disposable-supplies-leads-to-big-savings-for-hospitals

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