

Waste reduction in the Operating Theatre: example of nurse-led projects

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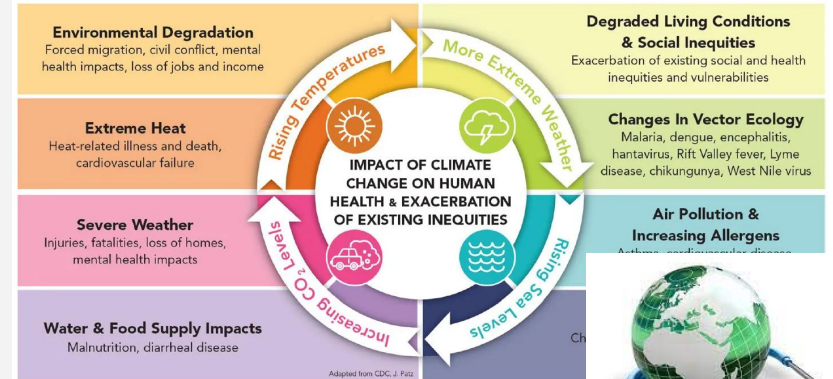
Why do I worry about climate?

I am a mom



I am a nurse

How does climate change affect human health?



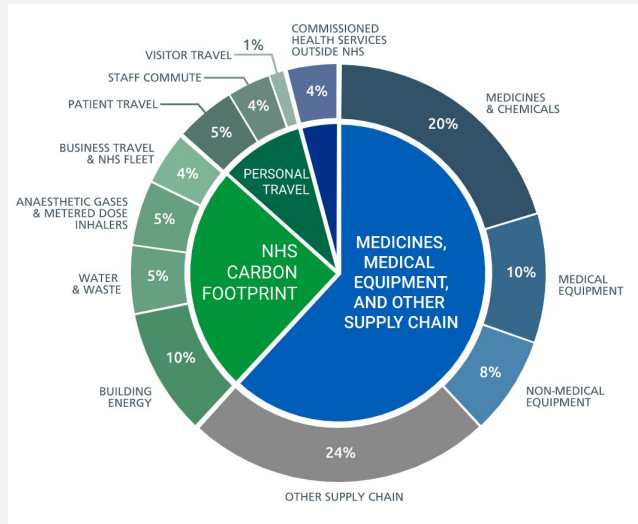
*I have NO financial
disclosure or conflicts of
interest with the presented
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presentation.*

DISCLOSURE
STATEMENT



The Healthcare sector environmental impact

equivalent to **4.4%** of global net emissions



The Harm **WE DO**:

- Direct GHGs emissions
- Hazardous and pharmaceutical waste
- Supply chain, procurement
- Energy, water usage
- Transport and commute

1. MacNeill A, Lillywhite R, Brown C. The impact of surgery on global climate: a carbon footprinting study of operating theatres in three health systems. The Lancet Planetary Health. 2017;1(9):e381-e8.

2 Schoen, J. & Chopra, V. (2018) The harm we do: The environmental Impact of Medicine, The Journal of Hospital Medicine, 13(5) 1-3.

The Operating Theatre challenge

3 Carbon hotspots

- Energy usage
- **Supply chain/Procurement**
- Anaesthetic gases



Carbon footprint of a surgery = **6-814 Kg Co2 / 2273 miles**



1. MacNeill A, Lillywhite R, Brown C. (2017) The impact of surgery on global climate: a carbon footprinting study of operating theatres in three health systems. *The Lancet* 1(9):e381-e8.
2. Rizan CSI, Nicholson R, Lillywhite R, Reed M, Bhutta MF. (2020) The carbon footprint of operating theatres: a systematic review. *Annals of Surgery*

How do we transform THEORY into PRACTICE?

“ Despite growing awareness and concern about the climate and ecological emergency [...], there remains a **gap** in knowledge and skills for sustainable healthcare among health professionals”



Case Study: Waste reduction in the OT

Anaesthetic teams use an enormous amount of premade disposable sets, which almost always contain unnecessary materials.

The manufacturing, transportation, and disposal of these sets results in needless GHGs emissions, waste generation, and financial costs for the hospital.



Case Study: Waste reduction in the OT - Ireland -

Reducing the environmental impact of the Cardiac Pack and Spinal Pack

1. Include **stakeholders** and redesign the sets;
2. Open dialogue with **suppliers**;
3. The Green Anaesthesia Week **education**.
4. Financial and Environmental **savings**;



Case Study: Waste reduction in the OT - Ireland -



Financial and Environmental savings

1. Number, cost and weight
2. Carbon conversion factors: Medical/surgical equipment: 0.3 kgCO₂e/£1**
High temperature incineration: 1074 kgCO₂e/t



Estimated **3,633 KgCo2 carbon emissions** saved, **429 Kg/year of waste** avoided



Staff satisfaction and education



Estimated **9,917 € savings/year** for procurement and incineration

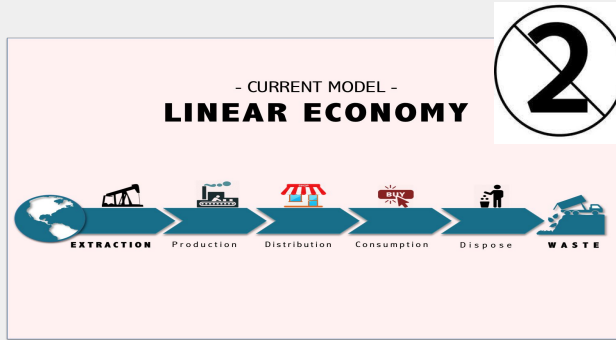


*<https://greenhealthcare.ie/topics/recycling/> (Retrieved, 08/11/21)

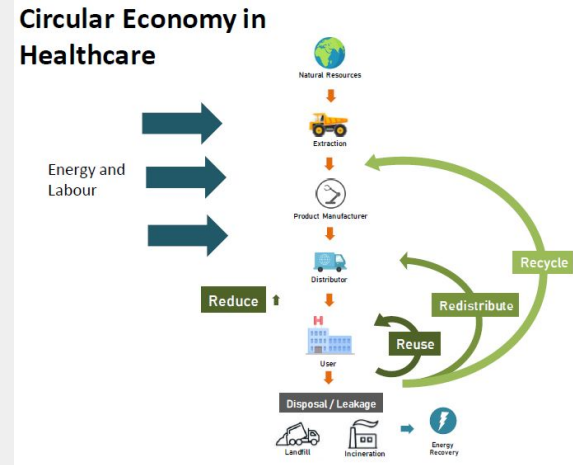
- Carbon factors Greener NHS Team 2020-21

- Rizan C, Bhutta M, Reed M, Lillywhite R. The carbon footprint of waste streams in a UK hospital. Journal of Cleaner Production 286 (2021) 125446

Circular economy in the healthcare sector



- Single use is safer ?
- Maximize profits /high-volume
- Lack of guidelines and regulations
- Increased costs, consumption disruptions



More sustainable, resilient, cost effective and environmentally sustainable supply chain

Circular economy in the healthcare sector

Regulation: **Art 17** of the Medical Devices Regulation (MDR)

Ireland - 26th of May 2021 **S.I. 261 2021**

<http://www.hpra.ie/homepage/medical-devices/regulatory-information/new-eu-device-regulations/reprocessing-of-single-use-devices>

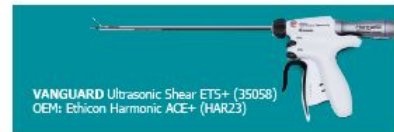
Case Study: Introducing reprocessed medical devices in laparoscopic surgery

Introduce a medical remanufacturing program

PART 1

- Identify the single-use **product**: Ultrasonic shears for lap gynae and colorectal surgery
- Involve **stakeholders**: assess availability and build consensus

Our remanufactured ultrasonic shears from the HARMONIC series by Johnson & Johnson are available in two different lengths.



VANGUARD's surgical portfolio is constantly expanding.

Case Study: Introducing reprocessed medical devices in laparoscopic surgery

PART 2

- Establish the **new circular pathway** and **educate** the staff

1. Purchase new device

TAKE

USE

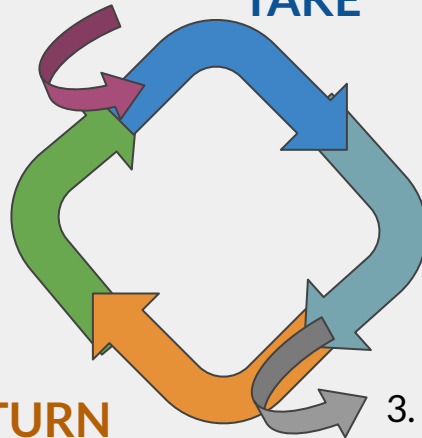
2. Device used on patient

3. Device disposed in the past

RETURN

4. Device reprocessed as CE marked product

REUSE



3. Device now collected by the supplier

PRECLEANING

Note: Please do not use disinfectants. Do not brush the device or put through automated cleaning.



1. Immediately after use rinse the product with clean water.



2. Dry it carefully with a lint-free cloth.



3. Avoid damaging the device, be especially careful of the blade.



4. After cleaning please allow the device to dry completely.

PACKAGING

Place the ultrasonic shears together with the Torque Wrench (without the Torque Wrench remanufacturing is not possible) into the transparent bag. **New products** must be placed into the bag with the **original label** (manufacturer's information). Place the bag into the TorqueWrench box.



Case Study: Introducing reprocessed medical devices in laparoscopic surgery

PART 3

- Assess the **results** and collect **feedbacks** → **24 HARH collected**

- Generate income through collection of used devices (192 €)
- **4,38 Kgs CO2 emissions and 3,12 Kgs of waste** saved
- No further workload for the staff or CDU
- Minimal storage space required
- Collection and transport organised by the supplier
- Ease of implementation
- Expanding market (e.g. Ligatures)





*“Everyone cannot do everything but
each of you can do one thing”
(Somaly Mam)*

Thank you!