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?

- Environmental Degradation
  - Forced migration, civil conflict, mental health impacts, loss of jobs and income

- Extreme Heat
  - Heat-related illness and death, cardiovascular failure

- Severe Weather
  - Injuries, fatalities, loss of homes, mental health impacts

- Water & Food Supply Impacts
  - Malnutrition, diarrhea disease

- Degraded Living Conditions & Social Inequities
  - Exacerbation of existing social and health inequities and vulnerabilities

- Changes in Vector Ecology
  - Malaria, dengue, encephalitis, bartonellosis, Rift Valley fever, Lyme disease, chikungunya, West Nile virus

- Air Pollution & Increasing Allergens
I have NO financial disclosure or conflicts of interest with the presented material in this presentation.
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


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

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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.
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**;

https://zerowasteeurope.eu/2019/05/a-zero-waste-hierarchy-for-europe/
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

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*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

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
Case Study: Introducing reprocessed medical devices in laparoscopic surgery

**PART 2**

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

1. **Purchase new device**
2. **Device used on patient**
3. **Device disposed in the past**
4. **Device reprocessed as CE marked product**
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)


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Conclusions

- Inform yourself and colleagues
- «What can I do?»
- Eco anxiety to eco action
- Start with small, sustainable steps
- Involve your hospital management
- Advocate
“Everyone cannot do everything but each of you can do one thing”
(Somalay Mam)

Thank you!