GREEN-ICU

GREater ENvironmental sustainability in Intensive Care Units

Multi-disciplinary research group conducting multi-phase, mixed methods study on greening up ICUs

University of Brighton

UNIVERSITY OF BORÅS

Canterbury Christ Church University

REGION VÄSTRA GÖTALAND

CARE WITHOUT CARBON

The Shrewsbury and Telford Hospital NHS Trust

University Hospitals Sussex NHS Foundation Trust

The Newcastle upon Tyne Hospitals NHS Foundation Trust

Guy’s and St Thomas’ NHS Foundation Trust
What is the range of environmentally sustainable practices undertaken in intensive care settings?

**Research question**

**Population** | Intensive care service provision
---|---
**Intervention** | Intensive care practices which are environmentally sustainable
**Comparison** | Current practices in intensive care
**Outcome** | Recommendations for improved environmental sustainability in intensive care
Literature review

Databases searched

- PROSPERO, Joanna Briggs Institute Systematic Review Registry
- MEDLINE, EMBASE, Web of Science, CINAHL Plus, GreenFILE
- Cochrane Library, NICE Evidence search and ProQuest Dissertations and Theses

Preliminary results

Limited primary studies about environmental sustainability in intensive care
Prospective, life-cycle assessment of care for intensive care patients with septic shock:

• Energy, machines, consumables and waste

• 10 patients in US and 10 patients in Australia

• Energy made up significant proportion of carbon footprint but relied on coal:
  • US electricity mix – 88% black coal, 5% natural gas, 7% renewable
  • Australia electricity mix – 86% brown coal, 4% natural gas, 10% renewable

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<thead>
<tr>
<th>Averages</th>
<th>US-ICU</th>
<th>Aus-ICU</th>
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<tbody>
<tr>
<td>Energy (kWh/day)</td>
<td>272</td>
<td>143</td>
</tr>
<tr>
<td>Single use items (kg/day)</td>
<td>3.4</td>
<td>3.4</td>
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<tr>
<td>Greenhouse gas emissions (CO₂-e/day)</td>
<td>178</td>
<td>88</td>
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<tr>
<td>Energy contribution to carbon footprint (%)</td>
<td>87</td>
<td>76</td>
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<tr>
<td>Equivalent total daily carbon footprint of 1 ICU patient with septic shock</td>
<td>3.5 Americans</td>
<td>1.5 Australians</td>
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Environmental Sustainability in Canadian Critical Care: A Nationwide Survey Study on Medical Waste Management
*Alec Yu and *Iman Baharmand

Sustainability initiatives in intensive care units

- Recycling non-medical equipment
- Reduction of stocking quotas of disposable equipment
- Reusing items after decontamination
- Moving supply carts / nursing carts outside rooms
- Systemic change to supply ordering, organisation, arrangement
- Donation of unused supplies

- Barriers to sustainability in intensive care units
  - Lack of buy-in from frontline staff
  - Restrictive infection prevention and waste management policies

Case – 16 bedded ICU
Unused supplies discarded
- $140-$170 / patient
- $140,000 / year
- 3,715 kg of waste

Intervention

80% reduction in waste of unused items

$110,000 annual savings
• More research needed about carbon hotspots in ICUs from different countries and how these can be addressed.

• Themes from literature review informing future workstreams of GREEN-ICU mixed-methods research.
Sustainability = maintaining quality while sufficing with ecological, economic and social resources available

Greener approaches are needed to reduce the environmental footprint of intensive care units. Full sustainability of critical care practice also requires appropriate use of financial and social resources, including adequate funding to holistically care for patients and families during critical illness and recovery, healthy staff wellbeing and ethical procurement of healthcare supplies. Dr Heather Baid (University of Brighton) created this website to share information about research, education and clinical practice related to responsible and sustainable critical care.

https://blogs.brighton.ac.uk/sustainablecriticalcare/
GREEN-ICU research

Online survey

Interviews

Multi-phase mixed methods research project is currently in progress

Volunteer participants needed

https://blogs.brighton.ac.uk/sustainablecriticalcare/green-icu-research/
Twitter chat
#baccngreen

- Twitter chat from @BACCNUK
- 14 June 2021
  - 19:00-20:00 UK time
  - How green is your ICU?
- Tweets will be included as data in GREEN-ICU research

https://www.baccn.org/events/twitter-chats/
• Free online network from Centre for Sustainable
• Aims to foster environmental sustainability within the care for critically ill patients, with financial and social sustainability co-benefits
• Brings together clinicians, researchers, educators and students interested in sustainable critical care

GREEN-ICU research team
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