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

CENTRE for SUSTAINABLE HEALTHCARE
inspire • empower • transform

NHS
The Shrewsbury and Telford Hospital
NHS Trust

NHS
University Hospitals Sussex
NHS Foundation Trust

NHS
The Newcastle upon Tyne Hospitals
NHS Foundation Trust

NHS
Guy's and St Thomas'
NHS Foundation Trust
















Literature review protocol

Heather Baid, Eleanor Damm, Jessica Mills, Gabby Dempster. Environmental sustainability of intensive care service provision: a systematic review. PROSPERO 2020 CRD42020205717 Available from: https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42020205717

Research question

What is the range of environmentally sustainable practices undertaken in intensive care settings?

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

The carbon footprint of treating patients with septic shock in the intensive care unit

Forbes McGain, Jason P Burnham, Ron Lau, Lu Aye, Marin H Kollef and Scott McAlister

Critical Care and Resuscitation • Volume 20 Number 4 • December 2018

- 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

Averages	US-ICU	Aus-ICU
Energy (kWh/day)	272	143
Single use items (kg/day)	3.4	3.4
Greenhouse gas emissions (CO_2-e/day)	178	88
Energy contribution to carbon footprint (%)	87	76
Equivalent total daily carbon footprint of 1 ICU patient with septic shock	3.5 Americans	1.5 Australians

Environmental Sustainability in Canadian Critical Care:

A Nationwide Survey Study on Medical Waste Management

*Alec Yu and *Iman Baharmand

Healthcare Quarterly Vol.23 No.4 2021

- National survey via Canadian Critical Care Network
- 81 ICUs responded out of 286 hospitals in Canada (28.3%)

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

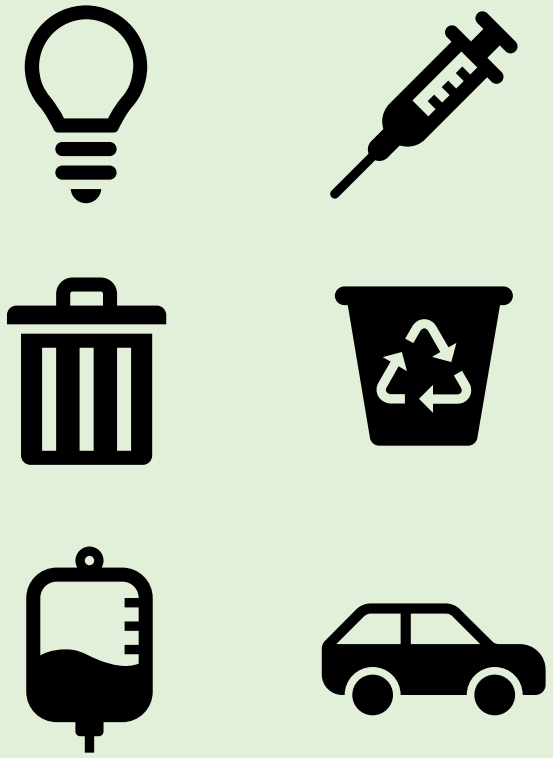
- $140-$170 / patient
- $140,000 / year
- 3,715 kg of waste

Intervention

80% reduction in waste of unused items

$110,000 annual savings

Literature review – preliminary themes



reducing travel energy procurement disposables medicines resusing waste recycling

- 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

GREEN-ICU

GREater ENvironmental sustainability in Intensive Care Units

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

Multi-phase mixed methods research project is currently in progress

Online survey

Interviews

Volunteer participants needed

https://blogs.brighton.ac.uk/sustainablecriticalcare/green-icu-research/

Twitter chat

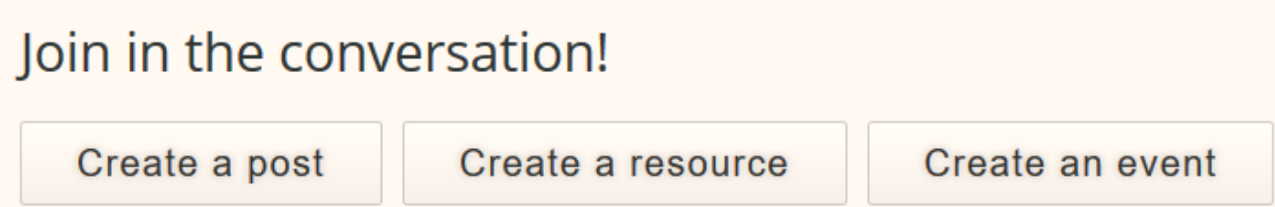
#baccngreen

- 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

BACCN
British Association of Critical Care Nurses

https://www.baccn.org/events/twitter-chats/

Critical Care Susnet



- 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

https://networks.sustainablehealthcare.org.uk/network/critical-care-susnet

GREEN-ICU research team

Dr Heather Baid, Dr Tom Ainsworth, Dr Chris Allen, Jason Beeching, Dr Kubra Boza, Dr Eleanor Damm, Anna Fuhrmann, Dr Katerina Iliopoulou, Dr Åsa Israelsson-Skogsberg, Trish McCready, Dr Ann Price, Becky Ritchie, Dr Dipak Sarker, Oliver Slaughter, Dr Fredrika Sundberg, Dr Ryan Woodard

Other contributors to systematic review

Jessica Mills, Gabby Dempster, Dr Frances Mortimer and Ingeborg Steinbach

Dr Heather Baid

Principal Lecturer

School of Health Sciences

University of Brighton

H.Baid@brighton.ac.uk @heatherbaid

Project funded by University of Brighton Rising Stars Award