



THE UNIVERSITY OF
MELBOURNE

The University of Melbourne Health Service Environmental Sustainability Competition 2026/27

Overview



This document introduces the 2026/27 University of Melbourne Health Service Environmental Sustainability Competition. It serves as a guide to lead a successful sustainable healthcare quality improvement project in your organisation.

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2. The history of the competition
3. Measuring environmental, financial and social impact

Healthcare's Climate Impact

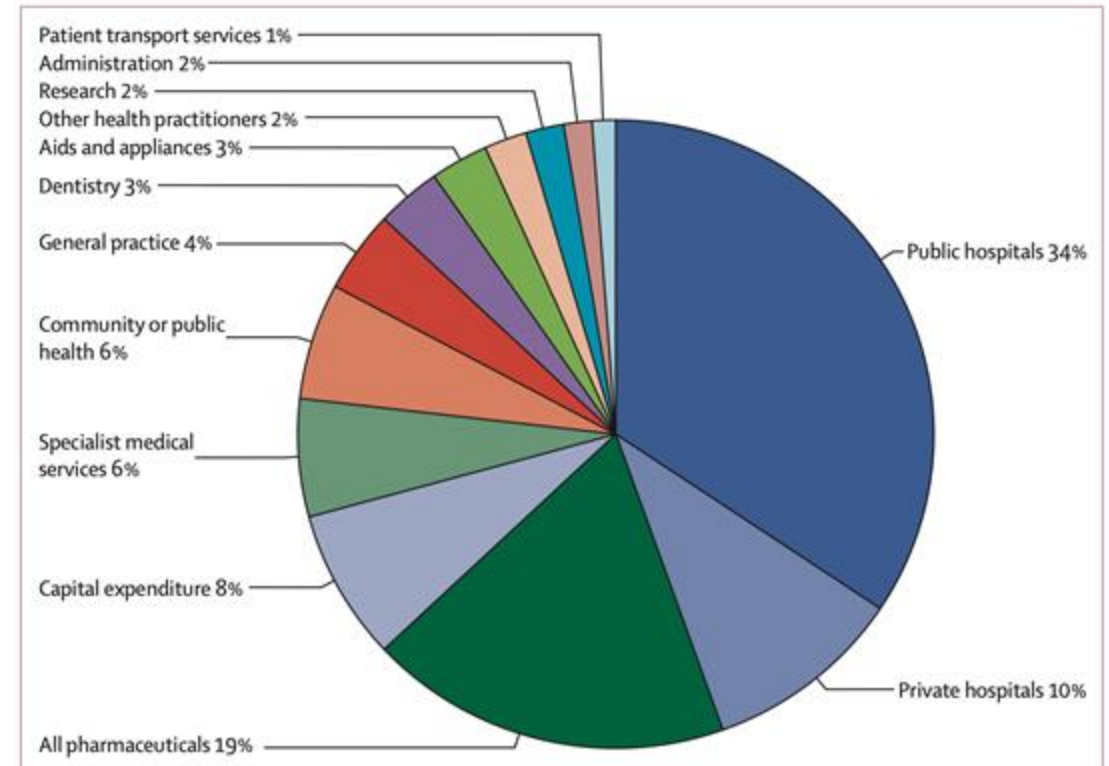


The carbon footprint of Australian healthcare is 7% of Australia's entire emissions¹

This is more than the carbon emissions produced by all South Australians²

All vehicles on the road in Australia produce 10% of our emissions³

Worldwide 4% of global emissions come from healthcare... compared to only 2% from all aviation⁴



[1] Malik A., Lenzen M., McAlister S., McGain F. The carbon footprint of Australian health care Lancet Planetary Health 2;1;27-35

[2] South Australia Dept of Environment and Water 'Climate Change' 12 Feb 2023 <https://www.environment.sa.gov.au/topics/climate-change/south-australias-greenhouse-gas-emissions>

[3] Federal Dept of Climate Change, Energy, Environment and Water 'Transport' 12 Feb 2023 <https://www.energy.gov.au/households/transport>

[4] International Energy Agency 'Aviation' 12 Feb 2023 <https://www.iea.org/reports/aviation>

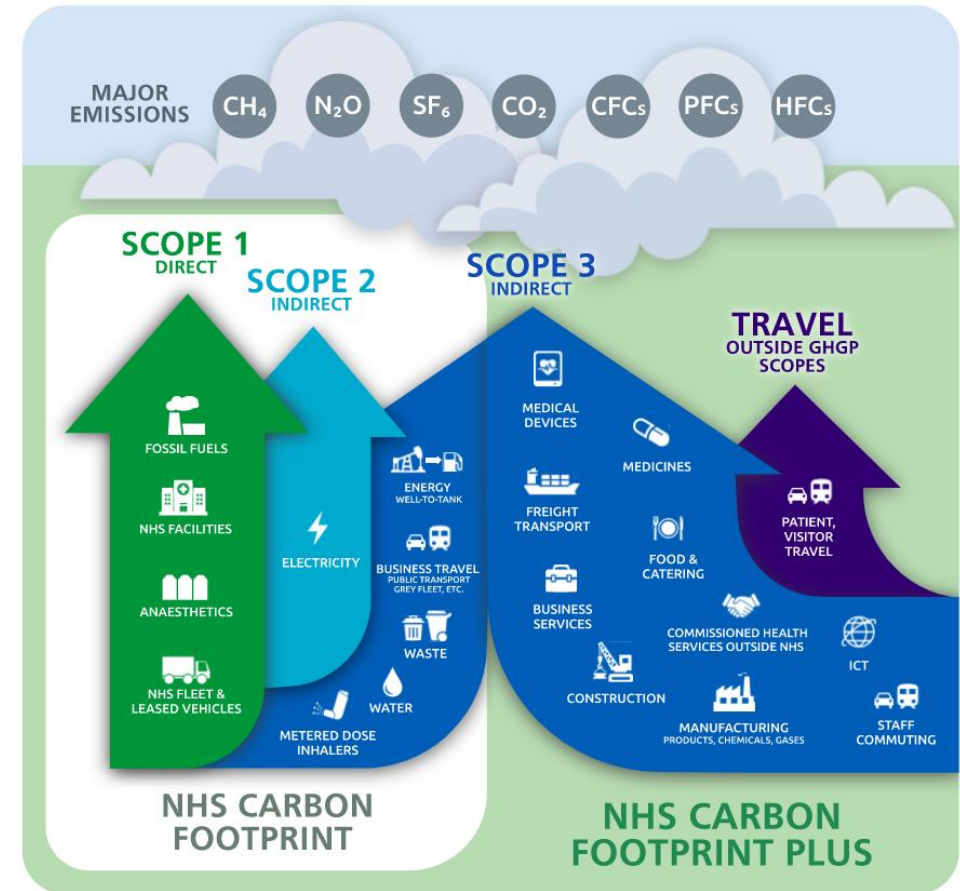
Healthcare's Greenhouse Gas Emissions



Emissions are generated from many sources and are described according to scope of emission.

Scope 3 emissions make up the majority of all healthcare emissions. This is because every product we use has a carbon footprint.

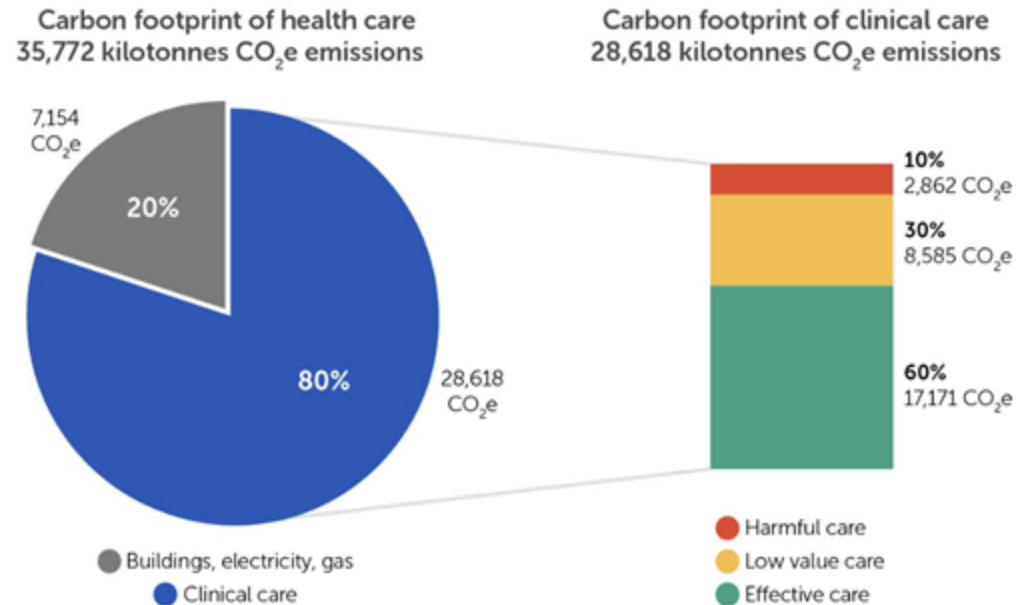
A carbon footprint is an estimate of greenhouse gas emissions associated with all steps of manufacture, use and disposal of that product. For example, a plastic kidney dish has a carbon footprint comprised of extraction of raw materials (fossil fuels used to produce plastics), emissions from energy used for manufacture, transport, and disposal.



Healthcare's Greenhouse Gas Emissions



The carbon footprint of Australian health care and the share of its carbon emissions attributable to harmful, low value and effective care



80% of healthcare emissions come from clinical care provision (scope 3)

- Largely related to the products, medicines, tests and procedures

Of this clinical care:

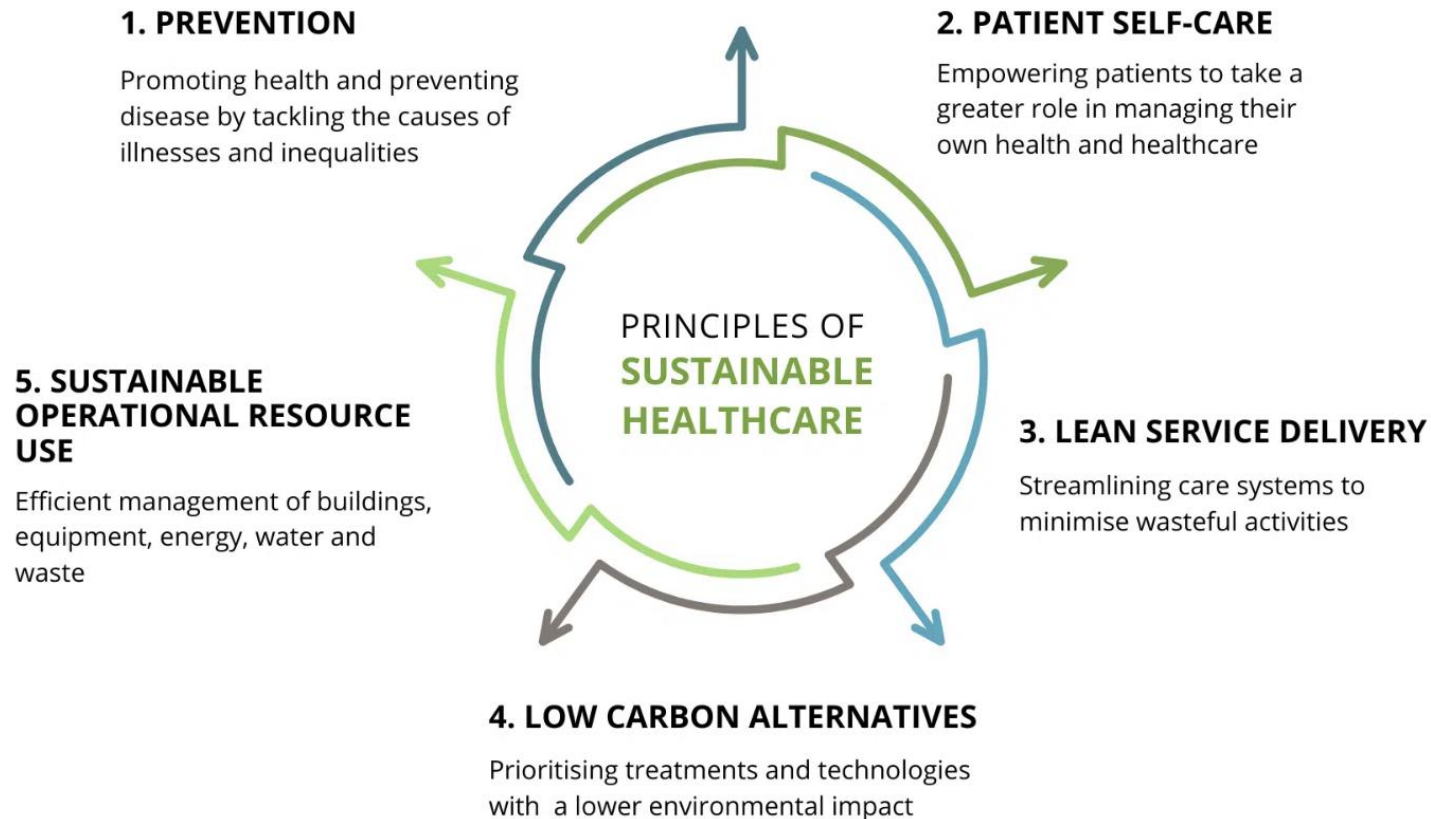
~60% of care is in line with evidence-based consensus guidelines

~30% is wasteful or of low value to the patient

~10% is harmful

By reducing the wasteful/harmful care we can deliver better care for our patients is better care for our planet

Principles of environmentally sustainable healthcare



Improving quality of care



Improving the quality of care provided also has environmental benefits that are not just directly related to resource use and waste.

Preventing ill health prevents the carbon footprint of the care required to manage that illness.

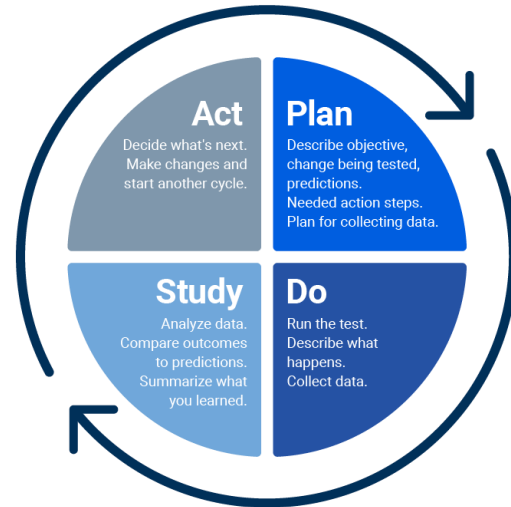
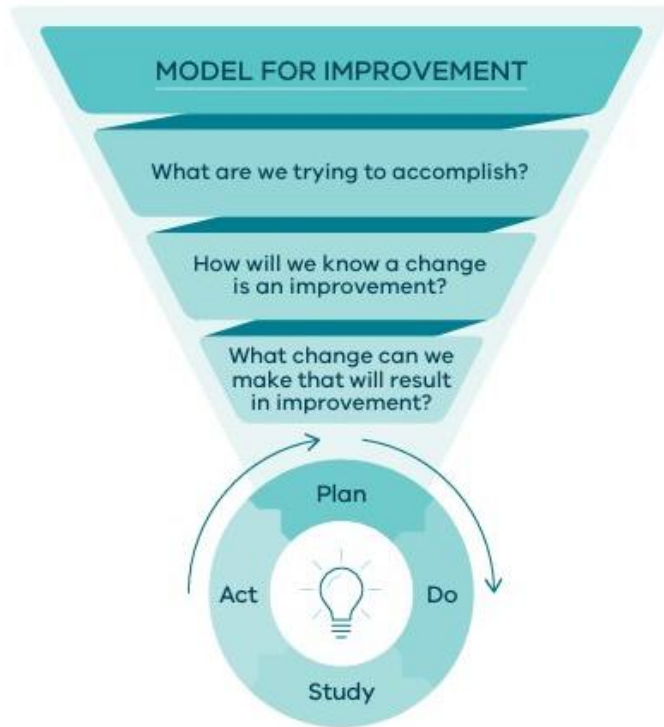
Any intervention that prevents illness, reduces complications, shortens length of stay or prevents readmissions has environmental benefits.



Sustainability in Quality Improvement (SusQI)



The SusQI framework builds on the Model for Improvement and PDSA framework but adds a lens of measuring environmental and social impact to QI projects to achieve 'triple bottom line' benefits



University of Melbourne SusQI Workshop



All competition participants will have the opportunity to attend a full day SusQI workshop



The Health Service Environmental Sustainability Competition

History of the competition



The Health Service Environmental Sustainability Competition was started at Royal Melbourne Hospital in 2022. In 2023 and 2024 it expanded to include Peter MacCallum Cancer Centre and the Royal Women's Hospital.

In 2025/26 and 2026/27 the competition has expanded to include:

- Royal Melbourne Hospital
- Peter MacCallum Cancer Centre
- Royal Women's Hospital
- Royal Children's Hospital
- Austin Health
- St Vincent's Hospital Melbourne
- Western Health
- Mercy Health



RMH Sustainability Competition 2022



13 Quality Improvement Projects led by clinical and non-clinical staff

Financial Savings

\$500,000

CO₂ savings

2.5 million kg CO₂e

Waste savings

250,000 items kept from landfill



Parkville Precinct Sustainability Competition 2023



17 Quality Improvement Projects led by clinical and non-clinical staff

Financial Savings

\$160,000

CO₂ savings

140,000 kg CO₂e

Waste savings

3 tonnes of waste out of landfill

The 2022 projects were maintained culminating in \$940,000 savings



Health Service Environmental Sustainability Competition 2024

14 Quality Improvement Projects led by clinical and non-clinical staff

Financial Savings

\$770,000

CO₂ savings

83,000 kg CO₂e

Waste savings

1.7 tonnes of waste AND 560,000 items
out of landfill

Selected audit of projects from 2022 and 2023 confirm cumulative savings of
over \$2.1 million



Health Service Environmental Sustainability Competition 2025



In 2025 the competition expanded to the eight health services.

Over 40 projects were registered by clinical and non-clinical staff.

45 participants and site leads attended the Sustainability in Quality Improvement (SusQI) Workshop.

The completed projects for the 2025 competition are currently being evaluated.



Potential project ideas



Avoid

- Use of unnecessary products, devices etc.
- Higher carbon footprint products where a lower carbon footprint alternative exists. Such as oral versus IV medications.
- Single use plastic items where avoiding them has a low risk of influencing patient care. For example, bluey absorbent pads.

Reduce

- Audit and reduce routine testing in accordance with evidence/consensus guidelines – all tests come with a carbon footprint. Examples include CXRs, coagulation tests if not indicated, pre-operative blood tests.
- Staff travel and promote public/active transport.
- Clinical waste stream volumes through improved waste segregation.

Reuse

- Measure staff personal use of plastic products and explore reusable alternatives for use in break areas.
- Explore reusable alternatives for single use devices (SUDs).

Recycle

- Improve recycling stream compliance.
- Introducing a new recycling stream into a new area.



Environmental hierarchy

Previous competition entries



Clinical Practice Change: Choosing Wisely

Reducing unnecessary blood tests in the ED



CO₂ 900kg CO₂e/year

 \$240,000/year

 Driving 6,164km

Paperless Revenue Services Project

Going paperless in the Revenue Services Office



CO₂ 342kg CO₂e/year

 \$630/year

 Driving 2,342 km

RMH Telehealth Program

Reduction in patient travel +N95 masks for clinic visits



CO₂ 2.4 million kg CO₂e/year

 \$150,000/year

 Driving 16,438,356 km

Choosing Wisely in CTS PAC

Reducing pathology + CXR orders in preadmission clinic



CO₂ 90kg CO₂e/year

 \$40,000/year

 Driving 616 km

Previous competition entries



Choosing Wisely in ED: IVC & CT KUBs

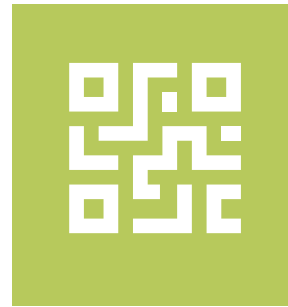
Reducing unnecessary IVC and CT KUBs in ED



- CO₂** 6,000kg CcO₂e/year
- \$60,000/year
- Driving 24,695km c

Going Digital with QR codes

Patient brochures on QR codes instead of paper



- CO₂** 2.02kg CO₂e/year
- \$4.80/year
- Driving 8.8km

Choosing Wisely in PAC: Coag Orders

Reducing unnecessary coagulation tests



- CO₂** 63.5kg CO₂e/year
- \$42,000/year
- Driving 260km

Eliminating Nitrous Oxide

Eliminated the use of NO in theaters



- CO₂** 116,000kg CO₂e/year
- \$1,800/year
- Driving 477,456km

Overview of the 2026/27 Competition

2026/27 Competition



The competition is open to participants from:

- Royal Melbourne Hospital
- Peter MacCallum Cancer Centre
- Royal Women's Hospital
- Royal Children's Hospital
- Austin Health
- St Vincent's Hospital Melbourne
- Western Health
- Mercy Health

Projects can focus on any area of the hospital including clinical care, energy use, waste management, supply chain, food service, facilities management, transportation, etc.

Teams or individuals can participate

Prizes will be awarded in the following categories:

- ❖ Winner for each health service
- ❖ Best overall Emissions Reduction Project
- ❖ Best overall Clinical Project
- ❖ Best overall Non-clinical Project



SusQI Workshop



As a participant in the competition you will be invited to attend the SusQI Workshop on **Wednesday 1st July 2026**

- Full day
- Face to face
- No cost to attend
- Presented by the University of Melbourne's Sustainability Team and external facilitators

The workshop combines foundational Quality Improvement concepts, practical tools and guided project planning to help you identify improvement opportunities, measure environmental impacts (including carbon), and design meaningful, implementable changes.

Please speak to your sustainability or clinical lead if you would like to attend



Key dates



Wednesday 15th April 2026	<p>Registration portal opens for you to register your project idea and express interest in attending the SusQI workshop.</p> <p>You will also be asked if you would like to take part in a research project evaluating the competition and SusQI workshop.</p> <p>Registration will also open to attend the Showcase and Launch event that will be held online on Wednesday 13th May.</p>
Wednesday 13th May 2026 12-12:45pm Online	Showcase and Launch event and official competition opening.
Wednesday 1st July 2026	Full-day face to face Sustainability in Quality Improvement (SusQI) workshop.
Wednesday 24th March 2027	Competition submissions due.

NHMRC funded research project



The competition and SusQI workshop compose 2 mandatory components of the University of Melbourne's [Hospital Sustainability Toolkit](#).

An NHMRC grant to implement the toolkit will evaluate the environmental, clinical, and social impacts of competition projects, as well as changes in your knowledge, skills, and confidence before and after SusQI training.

It will also assess how involvement in a sustainability project influences your wellbeing, including burnout, climate distress, and engagement at work.

If you would like to be involved in this exciting research please indicate your interest when you register your project and our research team will be in touch.

Evaluating environmental, financial and social outcomes

Environmental impacts can be measured in many ways



Common ways include:

- **Carbon footprint/GHG emissions – usually expressed in terms of carbon dioxide equivalent emissions or CO₂e.**
- **However, as it may not be possible to estimate the carbon savings for every project – other forms of environmental impact measures include:**
 - Waste reductions – usually expressed in mass / weight or number of items saved from landfill / diverted to other waste streams
 - Hospital admission avoidance / reduction in length of stay – this would inherently reduce emissions and waste, due to a reduction in resource use
 - Water reductions – expressed in litres of water reduced

What is the carbon footprint?

To estimate the carbon footprint of your activity/process, follow the below steps:

- **Obtain your activity data**
 - A measure of a level of activity – e.g. reduction in tests, interventions, number of supplies, kg of waste, kilometres travelled.
- **Find an appropriate emissions factor**
 - This number is a set quantity that represents the amount of GHG emissions that are typically released for that type of activity. An emissions factor is represented as: GHG emissions per unit of activity for a given emissions source.
 - For example, one CT Kidney Ureter Bladder has an Emissions Factor of 1.09kg CO₂e per test
- **Use the below equation to estimate total GHG emissions/carbon footprint:**
 - Carbon footprint (unit-CO₂e) = Activity data X emissions factor

Reliable data to help measure GHG emissions in Australia



Waste disposal	kgCO ₂ e/ tonnes
Recycling	21
Recycling reusable instruments	21
Recycling reusable surgical linens	21
Recycling batteries	65
Low temperature incineration with energy for waste - dry mixed recycling, domestic waste	172
Low temperature incineration with energy for waste – non-infectious offensive waste	249
Autoclave decontamination plus low temperature incineration with energy for waste – infectious waste	569
High temperature incineration – clinical waste, medicinal contaminated sharps, anatomical waste, medicinal waste	1074
Food waste (NGERS)	2100

PPE	kgCO ₂ e/item
Single glove	0.026
Cup fit FFP respirator	0.125
Duckbill FFP respirator	0.076
Type IIR surgical mask	0.02
Type II surgical mask	0.013
Face shield	0.231
Apron	0.065
Single-use gown	0.905

Reliable data to help measure GHG emissions for pathology testing and imaging in Australia

3 Carbon dioxide equivalent (CO₂e) emissions for five common hospital pathology tests, with distance driven in a standard car producing equivalent emissions

	Mean CO ₂ e (g) (95% CI)	Equivalent distance in car (km/1000 tests)
Full blood examination	116 (101–135)	770
Coagulation profile	82 (73–91)	540
Urea and electrolytes	99 (84–113)	650
C-reactive protein*	0.5 (0.4–0.6)	3
Arterial blood gases	49 (45–53)	320

CI = confidence interval. * Ordered in conjunction with urea and electrolyte assessment. ♦

Additional CO₂e used for one more scan

	MRI	CT	CXR	US
Average scan time	27 min	8 min	2 min	20 min
Consumables	0.8	1.02	0.58	0.084
Electricity	0.3	0.07	0.002	0.002
Total	1.1	1.09	0.58	0.09

McAlister S, Barratt AL, Bell KJ, McGain F. The carbon footprint of pathology testing. *Medical Journal of Australia* 2020; **212**: 377–82

McAlister S, McGain F, Breth-Petersen M, Story D, Charlesworth K, Ison G, Barratt A. The carbon footprint of hospital diagnostic imaging in Australia. *The Lancet Regional Health—Western Pacific*. 2022 Jul 1;24.

Measuring financial impact in your project



- MBS online – mbsonline.gov.au
- Procurement data – ask your sustainability team or procurement team for help
- Staff time estimates or Time-Motion studies
- Waste disposal costs for different waste streams – ask your sustainability team

How can we achieve social sustainability within QI?



Avoid social harm to patients / carers / staff within QI projects

Tackle the social determinants of health, improving equity and equality in healthcare access and outcomes

Design socially beneficial interventions

- Local patient and community benefits

Reduce broader social harms

- Modern slavery in supply chains





Measuring social impact in your project

Identify some positive or negative impacts from the existing system on the groups below.

Population Group	Potential Impacts	Data Source
Patients		
Employees		
Local Community		
Broader Community (e.g. supply chain)		
Target populations <ul style="list-style-type: none">• Unemployed/ underemployed• Carers• People with disabilities• Older people• Culturally and linguistically diverse people• Homeless / housing stress• Refugees, asylum seekers• Aboriginal and Torres Strait Islander people		

Key contacts



Have a question, big or small?

Contact the University of Melbourne Sustainable Healthcare team

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