



IMPACT REPORT

The Green Surgery Challenge was run very successfully for the first time in 2021. The Challenge is a special adaptation of the Centre for Sustainable Healthcare (CSH)'s flagship programme, the Green Ward Competition which is an award-winning clinical leadership and engagement programme to improve the environmental sustainability of healthcare. Five UK surgery teams were selected to receive mentoring over a ten-week period in order to hone a specific question per team, design a sustainability project, implement the project, and measure the outcomes.

The teams presented their projects at the Green Surgery Conference, highlighting the environmental, social, and financial impacts made. A recording of the conference can be viewed here: [Green Surgery Challenge | Centre for Sustainable Healthcare](#)

This document contains a summary of each team's contribution to enhancing sustainable value in healthcare across the triple bottom line.

$$\text{Sustainable Value} = \frac{\text{Outcomes for patients and populations}}{\text{Environmental + social + financial impacts (the 'triple bottom line')}}$$

The Green Surgery Challenge Teams



DERRIFORD HOSPITAL,
UNIVERSITY HOSPITALS
PLYMOUTH NHS TRUST

[Introducing Team 1 of the Green Surgery Challenge | Centre for Sustainable Healthcare](#)

Reducing single-use surgical instruments during laparoscopic appendicectomy: Using sustainable quality improvement as a catalyst to encourage wider behavioural change in a surgical department



LEEDS TEACHING
HOSPITAL NHS TRUST

[Introducing team 2 of the Green Surgery Challenge | Centre for Sustainable Healthcare](#)

***1. Replacing CO2 insufflation with the RAIS device
2. Changing from disposable to reusable gowns and drapes
3. Replacing urinary catheterisation with pre-induction toileting
4. Replacing single-use instruments with reusable instruments in the instrument tray for appendicectomy***



UNIVERSITY HOSPITALS
SUSSEX NHS
FOUNDATION TRUST

[Introducing Team 3 of the Green Surgery Challenge | Centre for Sustainable Healthcare](#)

To eliminate the second group and save (G&S) blood test in the preoperative pathway for laparoscopic cholecystectomies (LC) at University Hospitals Sussex NHS Trust.



WREXHAM MAELOR AND
YSBYTY GWYNEDD
HOSPITALS, BETSI
CADWALADR UNIVERSITY
HEALTH BOARD

[Introducing team 4 of the Green Surgery Challenge | Centre for Sustainable Healthcare](#)

A new green patient pathway for carpal tunnel release by;

- *Using fewer re-sterilisable instruments in smaller trays*
- *utilising smaller drapes*
- *bypassing ward admissions.*



IMPERIAL COLLEGE
HEALTHCARE NHS
TRUST

[Introducing team 5 of the Green Surgery Challenge | Centre for Sustainable Healthcare](#)

***1. Increasing use of local anaesthesia (+/- sedation) instead of general anaesthesia for open inguinal hernia repair where patients were eligible:
2. Replacing disposable surgical gowns with reusable gowns***

Potential annual savings available when projects are fully implemented and embedded within the Team's service.

Team	Environmental Outcomes	Financial Outcomes	Social Outcomes	Organisational Outcomes
Derriford Hospital, University Hospitals Plymouth NHS Trust	0.512 tonnes CO2e / year	£34,400 / year	Good team engagement. Over 90% of staff survey responders said they would now consider sustainability within their practice.	Colleagues in subspecialties (e.g. upper GI surgery) are replicating project Has led to cultural changes, e.g. shutting down air conditioning systems in elective theatres overnight. A team member has been asked to join the new Sustainability Committee
Leeds Teaching Hospitals NHS Trust	110.3 Tonnes CO2e / year*	£88,695 / year*	Surgical colleagues and Trust representatives expressed motivation to implement green equipment rosters in their specialties.	RAIS device currently in use to run training workshops. Discussions with potential reusable drapes and gown suppliers taking place WHO pre-brief for lap. appendicectomies has been updated to include options to eliminate catheterisation and to use green trays. Pre-operative checklist and focused instrument trays have been implemented within the Institute of Emergency General Surgery because of this project.
	*based on 50% applicability of RAIS device and 80% applicability of reusable sets and pre-induction toileting.			
University Hospital Sussex NHS Trust	2.5 tonnes CO2e / year*	£3000 / year*	Addressed staff concerns of impact of over-investigation, reducing pressures in phlebotomy and laboratory services. Improved convenience for patients (reducing appointments & travel).	Engaged and inspired clinicians who are Green Ambassadors, engaged anaesthetic colleagues. Approach could be used to address blood bottle shortage in NHS. Widely applicable within and beyond surgery.
	*based on a conservative estimate of 250 cases a year			
Wrexham Maelor and Ysbyty Gwynedd Hospitals, Betsi Cadwaladr University Health Board	11.6 tonnes CO2e / year*	£12,641 / year*	Minimises patient contact with hospital personnel, negates need for a ward bed and main theatre list space (minimising risk of cancellations) Reduces length of stay. Reduced theatre list and surgical wait times Reduced the number of staff required per procedure.	The concepts on reusable instruments, streamlining packs & pathways, using procedure rooms are widely applicable to other surgical pathways.
	*based on 75% applicability			
Imperial College NHS Trust	8.5 tonnes CO2e / year	£16,740 / year	Patients under local anesthesia had a 53.2% shorter stay in hospital, as well as a lower incidence of complication compared to general anesthesia.	Project served as a catalyst for raising awareness of environmental impacts in healthcare. Suitable for many surgical procedures so potential for widespread application.
Total Savings	133.3 Tonnes CO2e / year	£155,476.00		



GREEN SURGERY
CHALLENGE

133.3 TONNES CO₂E/YEAR

Total emission savings per year from
Green Surgery Challenge projects

→
Carbon Impact



This is the same as
flying return from
London to Hong Kong
38 times

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GREEN SURGERY
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