

CARBETOCIN

Background:

Carbetocin bolus is recommended for use in elective Caesarean Birth (CB) due to lower side effect profile and increased duration of action compared to single bolus oxytocin⁴. Its longer duration results in no postoperative infusion, improving ease of breastfeeding and skin-to-skin contact. It also results in decreased equipment use and associated nursing resources, as well as decreased sustainability costs occurred in disposal.

Pilot Trial:

Carbetocin 100mcg IV was used for 50 consecutive elective lower segment caesarean sections.

First line uterotonic strategy	EBL	Additional uterotonic	Use of oxytocin infusion	Tranexamic Acid	Antiemetics given	Annual Cost	Annual Waste
Oxytocin 5IU bolus +/- infusion	200-1504ml (599ml)	43.2%	40.9%	20.5%	50%	£1095.97	Neutral
Carbetocin bolus	200-1800ml (621ml)	13.2%	0%	20%	48%	£10,248.34	- 23.5kg
Universal oxytocin infusion	N/A	N/A	N/A	N/A	N/A	£2673.92	+35.2kg

Results: EBL was similar, as was antiemetic use, although these are given routinely. **A significant reduction in extra uterotonic use** was demonstrated, replicating the evidence in medical literature. Significant medical waste savings were achieved. Carbetocin is now used routinely for all elective CB. The initial cost is outweighed by the benefit to staff, patients and the environment in moving away from syntocinon infusions.

DECOMMISSIONING NITROUS

Background:

Nitrous oxide contributes significantly to global warming². Cylinder manifolds exhibit significant leakage and although use as an anaesthetic agent has reduced, this has limited effect on greenhouse gas emmision³.

Tips to get agreement for decommission

- Evidence use (survey of anaesthetic colleagues)
- Demonstrate wastage and leakage and environmental impact
- Create MDT working group
- Offer alternative if required (cylinder) and train in use



Results

No nitrous cylinder manifold in hospital. Portable Entonox cylinders are available for use in labour analgesia and 3 portable nitrous cylinders are available for anaesthetic use.

Usage has decreased since decommissioning, saving £2000+ Feedback is collected each time a cylinder is used to map ongoing consumption

This model is reproducible and provides significant environmental and financial benefit.

- * 90% would recommend decommissioning to other trusts
- * 85% reported no problems
- * 15% respondents had been unable to locate portable cylinders – we have since initiated whiteboards to sign them in/out

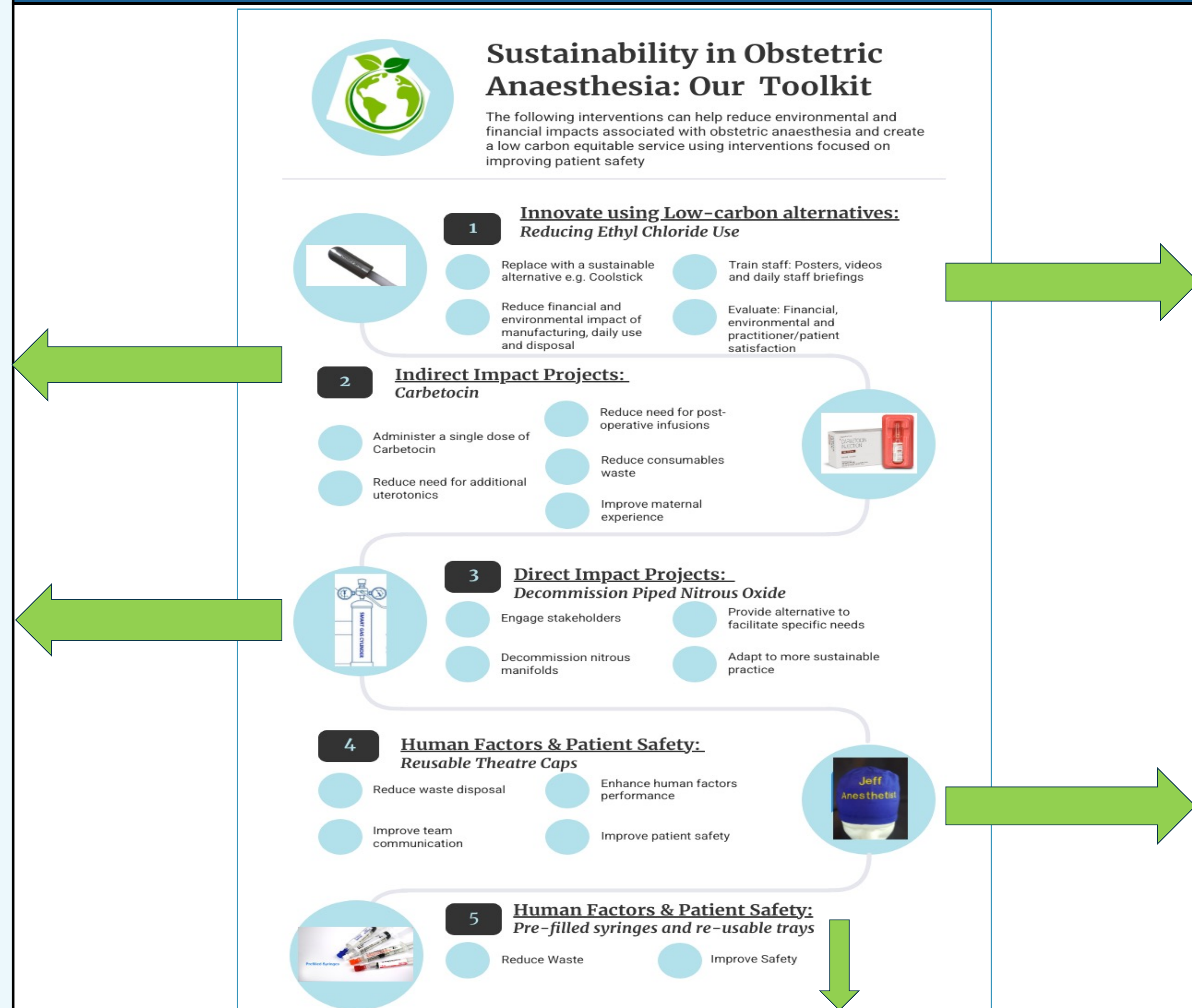
AUTHORS

¹Clinical Fellow in Anaesthesia, ²Core Trainee Anaesthesia, ³Consultant Anaesthetist, Royal United Hospitals Bath NHS Foundation Trust
Please direct queries to ronanhanratty@gmail.com or rachael.meredith@doctors.org.uk.

INTRODUCTION

Our trust set a sustainability goal of being carbon neutral by 2050¹. Obstetric theatres care for high acuity patients and use a high volume of single-use items, leading to high carbon footprint and financial costs. We aimed to achieve engagement with environmental and financial savings by focusing on interventions to improve patient safety as well as support sustainability.

OUR INTERVENTIONS



EMERGENCY DRUG PREFILLED SYRINGES

Emergency vasopressor drug box converted Ephedrine to Prefilled syringes in 2012. Increased safety by reducing risk of dilution and selection errors, significant decrease in waste from daily preparation⁶. Atropine and metaraminol added as became available. Further increasing safety, as well as decreased waste, resulting in environmental and financial saving.

REFERENCES

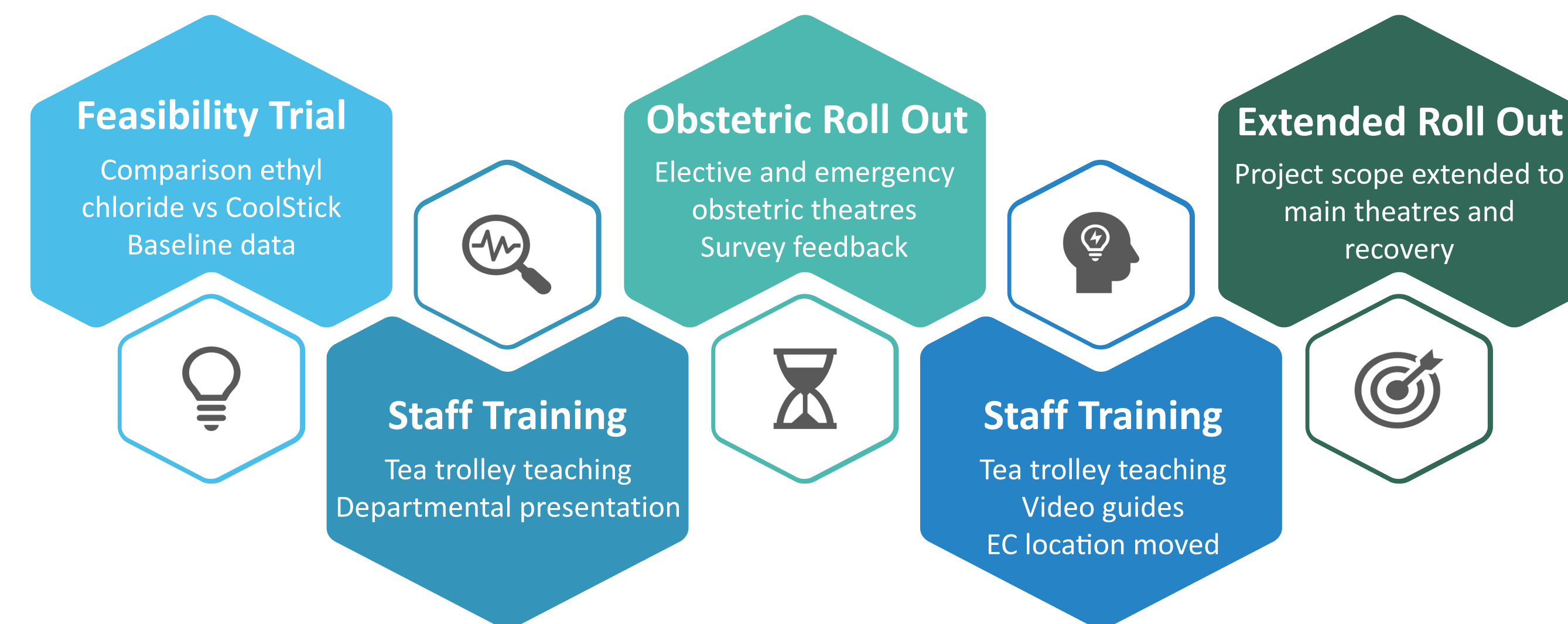
- ¹Royal United Hospital Bath NHS Foundation Trust, Sustainability Manifesto, 2022
²Sherman J, Ryan S. Sustainable anaesthesia. Anaesthesia and analgesia. 2012; 114: 921-3
³Seglenieks R et al. Discrepancy between procurement and clinical use of nitrous oxide: waste not, want not. British Journal of Anaesthesia, 2022; 129, e32-34
⁴Su L, Chong Y, Samuel M. Carbetocin for preventing postpartum haemorrhage. Cochrane Database of Systematic Reviews, 2012; 4
⁵Kelly F et al. Implementing human factors in anaesthesia: guidance for clinicians, departments and hospitals. Anaesthesia, 2023; 78; 458-478
⁶Yang Y et al. A Human Factors Engineering Study of the Medication Delivery Process during an Anaesthetic: Self-filled Syringes versus Prefilled Syringes. Anaesthesiology, 2016; 124; 795–803.

COOLSTICKS

Background:

Ethyl chloride is commonly used to test regional blocks but has significant impact on the environment. Our trust used on average 740 cans per year. Cost: £13,080 and 12,644 kgCO₂e CoolSticks are a stainless-steel reusable alternative, stored in the fridge and wiped clean between use. They offer a lower carbon footprint and significant cost savings compared to ethyl chloride.

Methods:



Results:

- ✓ 78% often/always use CoolStick
- ✓ 83% really like CoolSticks
- ✓ 89% support a Switch to CoolSticks
- ± 17% want ethyl chloride back up
- £ Saved £11,700 in a year

Change in practice:

- CoolStick available in all theatres and recovery
- Decreased quantity of ethyl chloride ordered for back up
- Less chemical exposure for patients
- Carbon footprint reduced

REUSABLE THEATRE CAPS

Background:

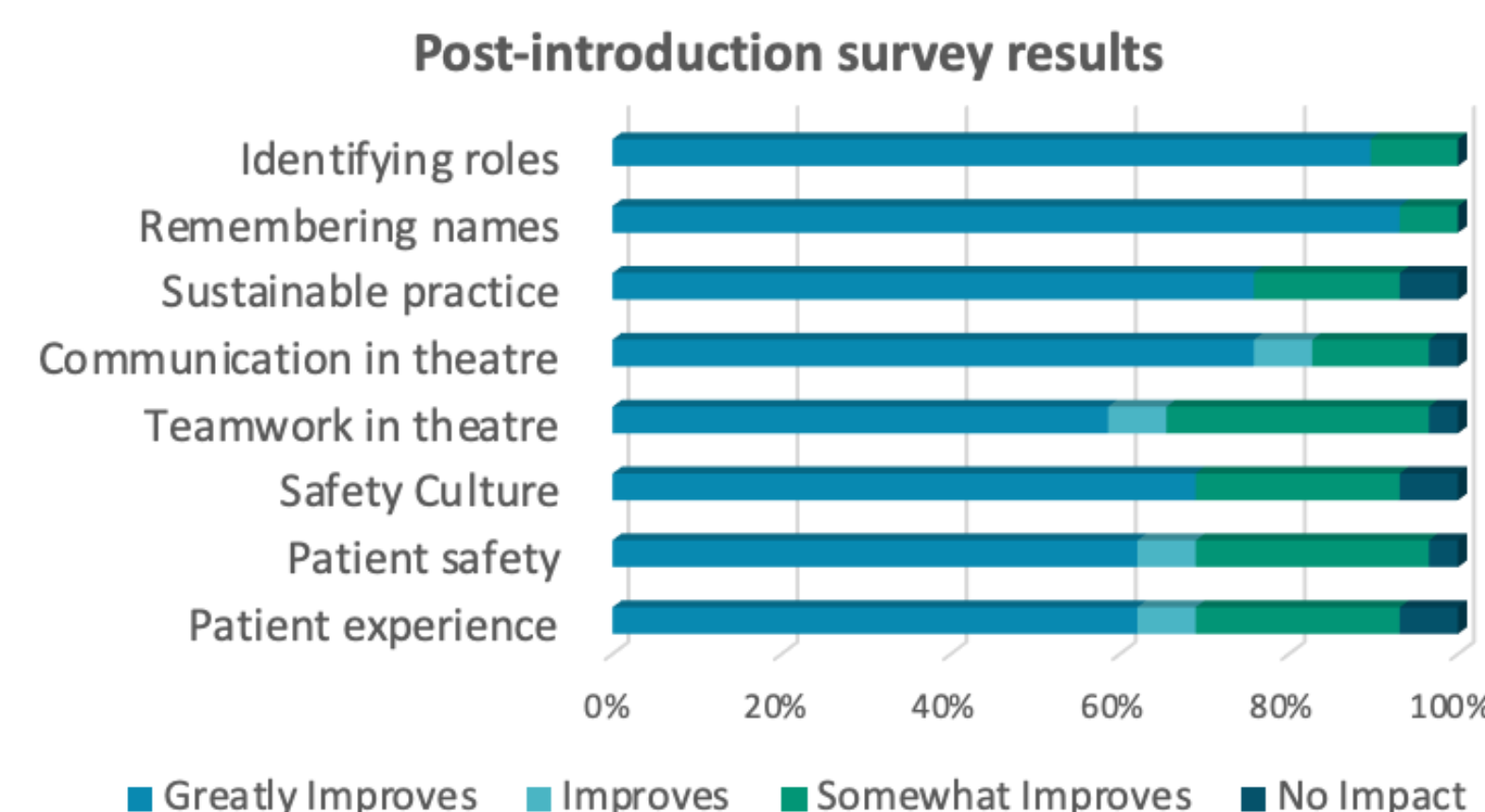
Named scrub caps can improve communication and teamwork, particularly in emergencies⁵. Disposable theatre hats are non-biodegradable and cost our trust over £10,000 per annum.

Methods:

- ✓ Baseline financial data collection
- ✓ Evidence presented to IPC to reassure around infection risks
- ✓ Successful innovation grant application
- ✓ Pre-introduction survey
- ✓ Obstetric theatre pilot
- ✓ Post-introduction survey

Change in Practice:

100% of survey respondents use them regularly and 80% felt they improved communication. Agreed extension to main theatres will enhance patient safety and enable environmental and financial impacts to be achieved



CONCLUSION

We have focused on safety, resulting in benefits for patients, staff and the environment.

- ✓ Reduced carbon footprint in obstetric theatres
- ✓ Decreased staff and patient exposure to chemicals
- ✓ Decreased uterotonic use, side effect profile and treatment burden for expectant mothers
- ✓ Improved safe communication in theatres, minimised drug error
- ✓ Estimated financial savings over 2 years: £22,352
- ✓ We aim to develop a reproducible Sustainability in Obstetric Anaesthesia Toolkit