

Eco Ninjas

Improving Communication and Sustainability in Surgical Environments Through Reusable Scrub Hats with Detachable Name Badges



Topic area

Please identify (more than one option may be selected)

Adaptation ☐	Communications and engagement ☒	Estates and facilities (energy, waste, water) ☒	Food, catering and nutrition ☐
Funding and financial mechanisms ☐	Medicines ☐	Research, innovation and offsetting ☒	Strategic ambition ☐
Supply chain and procurement ☒	Sustainable models of care ☒	Travel and transport ☐	Workforce, networks and system leadership ☒
Green/blue space and biodiversity ☐	Digital transformation ☐	Sustainability education ☐	
Other (please specify): Enhancing patient safety and improving the patient journey			

**Topics aligned with the 12 Greener NHS workstreams (NHS England) are shaded.*

Key message/aim

To implement a sustainable, inclusive, and operationally efficient identification solution for surgical teams, addressing the limitations of embroidered hats, which are incompatible with central laundering, difficult to re-order, and often lost when staff leave. Embroidered hats also fail to identify temporary personnel such as visitors and students. The pilot focused on reusable scrub hats with detachable name badges to support long-term usability, streamline operations, central laundering, enhanced communication and equity in fast-paced clinical environments.

What was the problem?

In surgical environments, traditional ID badges and lanyards are often obscured by sterile gowns and lead aprons, leading to communication breakdowns, hierarchical barriers, and microaggressions- particularly in high-pressure situations. Research shows that up to 70% of adverse events are linked

to miscommunication (WHO Joint Commission, 2015). Somerset's pre-evaluation survey revealed that only 41% of staff could reliably identify colleagues by name and role.

Existing badges are frequently tucked away or too small to be read across the operating theatre, compromising clarity and safety. Additionally, hundreds of thousands of disposable scrub caps are incinerated annually at Somerset, prompting the need for a reusable alternative aligned with the NHS Net Zero Plan and the Green Theatre Checklist.

By clearly displaying names and roles on reusable hats, the initiative aimed to improve emergency response times, strengthen team rapport, and enhance inclusion, especially for visitors, trainees, and staff with diverse needs. It also reinforced the safer surgery checklist, reducing reliance on memory recall and human factors to maintain clear identification throughout the day.

Strategy

The pilot took place in a busy NHS Trauma & Orthopaedics operating theatre department, serving a diverse population with frequent staff turnover and shift changes. The initiative was led by Martin Davidson, Services & Solutions Manager at Johnson & Johnson who worked closely with the team to run a diagnostic, build the implementation plan and support the change as part of a wider sustainability initiative. Somerset utilised the national value voucher scheme, available through framework contracts, to fund the transition. Importantly, a Standard Operating Procedure (SOP) was developed to guide the process, making future adoption faster and more efficient for other hospitals. Danielle Checketts, co-founder of Eco Ninjas supported the pilot also. With published research on safer surgery and a commitment to environmental impact, the team worked closely with theatre staff, infection control, and laundry services. The project aligns with NHS Net Zero goals and the global Theatre Cap Challenge.

What was the solution?

Reusable Theatre Badge Hats with detachable name badges were implemented to improve communication, safety, and sustainability in operating theatres. Key stakeholders included scrub teams, anaesthetists, surgeons, theatre managers, procurement, infection control, and patient experience leads. Early staff engagement ensured buy-in and compliance.

Step-by-step:

1. The project was presented to the governance committee- great support was received and finances to purchase the products was approved.
2. Posters were put up in the department to advertise the initiative and staff were informed.
3. Blank writable badges were provided to ensure that students and visitors were easily identifiable.
4. The neighbouring hospital which was part of the trust and had laundering capabilities, was collaborated with to arrange collection, cleaning, and return of hats to theatres.
5. The hats were piloted in a busy NHS Trauma & Orthopaedics theatre department.
6. An SOP was developed and briefing materials designed and shared.

The pilot ran over six weeks in March & April 2025 with no disruption to theatre schedules. 424 reusable scrub hats and 112 detachable name badges in various sizes and styles, including elastic backs, bandanas and surgical hoods were purchased. The reusable hats were chosen for their durability, cost-efficiency, and waste reduction potential. For replication, approach your Trust's procurement, sustainability, and patient safety leads. External funding may be available via NHS Green Plans, charitable funds, or innovation bursaries.

What were the challenges?

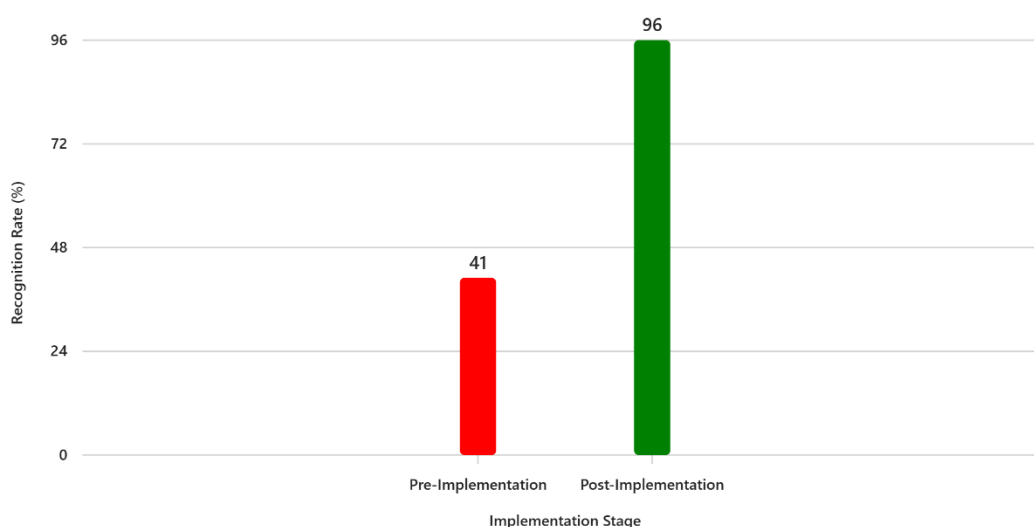
Several challenges emerged during the pilot of reusable scrub hats with detachable name badges. Storage was a key issue, both for hats and badges. A practical solution was found by having labelled receptacles for the hat sizes/styles on trolleys in the theatre corridor, ensuring visibility and accessibility for staff and visitors. Central laundering logistics, including collection and redistribution, required coordination with hospital laundry services but now run smoothly. Staff initially disliked the bright yellow badges, so they were changed to blue to match the hats, improving acceptance.

Staff kept hold of their own hat badges, storing them in lockers or personal spaces, which fostered ownership and consistency. Visitor badges were stored on trolleys in the corridor next to the hats. To engage staff, we held briefings, collected feedback, and adapted the design based on clinicians' input. Testimonials highlighted improved communication, teamwork, and emergency response.

Wider engagement included collaboration with infection control, procurement, and sustainability teams. The initiative aligns with NHS Net Zero goals and the Theatre Cap Challenge, offering a scalable model for safer, more inclusive surgical environments.

Results

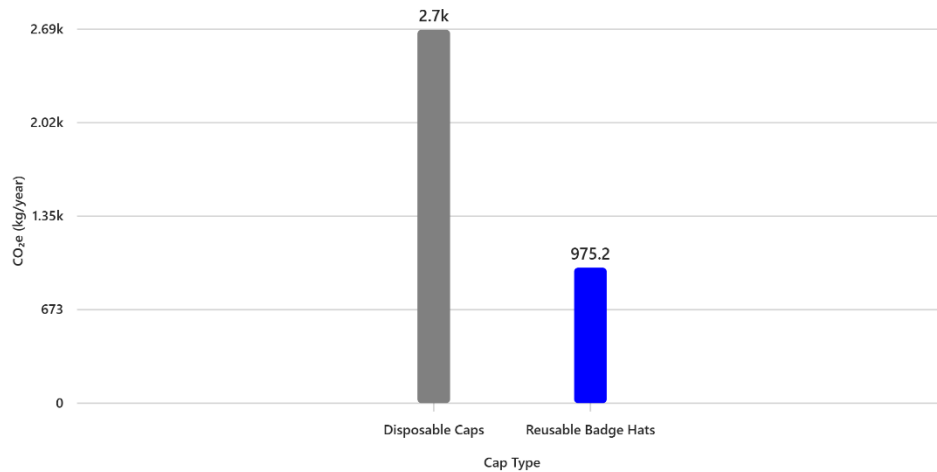
This initiative delivered measurable improvements in communication, patient experience, and sustainability. Staff name/role recognition rose from 41% to 96%, reducing delays and improving emergency response. Patients reported feeling more reassured and informed, especially those with additional needs such as autism.



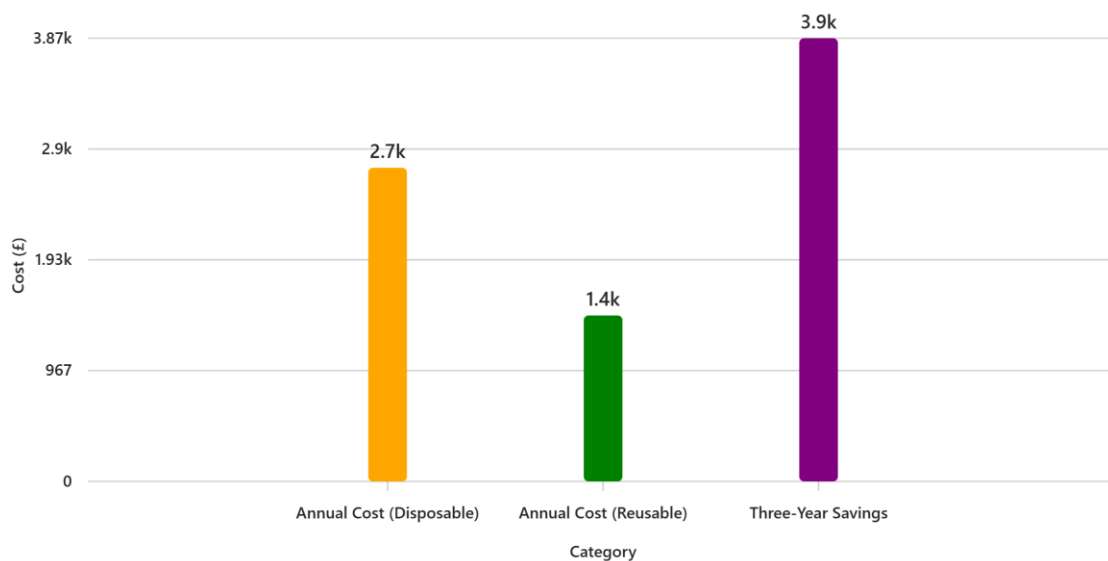
Environmental impact was assessed using CO₂e data: switching from disposable caps to reusable badge hats across the Trauma & Orthopaedic department which consists of just **three theatres** saved

1,712.9 kg CO₂e annually, predicting to prevent over 90,000 disposable caps from incineration once the rest of the trust converts to the badge hats.

Current literature suggests: reusable hats significantly reduces of waste and cost-saving (Donahue et al. 2024).



Based on these three theatres, financial analysis showed 48% cost savings, with projected annual savings of £1,289 and £3,868.40 over three years.



Unintended challenges included initial resistance to bright yellow badges, resolved by switching to blue badges.

Storage logistics were addressed with corridor trolleys, and laundering was coordinated with Yeovil Hospital (another hospital within the trust) to ensure infection control compliance.



Staff engagement included feedback sessions, design adaptation, and testimonials. Wider organisational support came from infection control, sustainability, and procurement teams. Public interest was high, with a promotional video reaching 556,000 views and 950+ comments.

This project demonstrates a scalable, cost-effective, and environmentally responsible solution for modern surgical practice.

Impact Overview: Conclusion & Next Steps

Theatre Badge Hats are reusable scrub caps with detachable name badges, designed to improve communication, safety, and sustainability in surgical environments. Traditional ID badges and lanyards are often obscured by sterile gowns and lead aprons, contributing to delays, miscommunication, and hierarchical barriers- factors linked to 70% of adverse events (WHO Joint Commission, 2015). By clearly displaying names and roles, these hats enhance patient-centred care, particularly during emergencies and handovers.

Patients with autism, dyslexia, dementia, or visual impairments benefit from clear visual identification, which fosters reassurance, trust, and informed consent. The hats also promote equity by accommodating diverse staff needs, including those wearing hijabs or braids, and ensuring visitors and trainees are easily identifiable.

Environmentally, switching from single use to reusable caps across three theatres prevents the incineration of approximately **19,550 disposable caps annually**, saving **1,712.9 kg CO₂e**. Financially, the initiative delivers a **48% cost saving over three years**, with projected savings of **£1,289 per year** and **£3,868 total**, including badge costs.

The overwhelmingly positive response to the initiative supports its permanent adoption at Musgrove Park Hospital and highlights strong potential for regional and national expansion.

Next Steps Include:

- Trust-wide implementation across Somerset NHS Foundation Trust.
- Ongoing evaluation of sustainability outcomes and cost-benefit impact.

Public interest was significant. A promotional video received over 580,000 views, with 26,000 user engagements and more than 940 comments, reflecting widespread enthusiasm and support for the initiative.

By improving communication, inclusivity, and sustainability, Theatre Badge Hats offer a scalable, cost-effective solution that enhances patient experience, supports vulnerable groups, and contributes to safer, greener surgical care.

Learning points

The Theatre Badge Hats initiative proved highly useful in improving communication, patient experience, and sustainability in surgical settings. Clear staff identification enhanced safety, inclusivity, and team cohesion, particularly benefiting vulnerable patients and high-pressure environments. The project also delivered measurable environmental and financial savings.

Key elements contributing to success included staff co-design, responsiveness to feedback, and alignment with existing NHS systems. For example, changing badge colour from bright yellow to blue improved staff acceptance, while adding colour-coded size tabs, aligned with NHS scrub colours and streamlined post-laundry sorting.

Limitations included initial resistance to change, logistical challenges with laundering and storage, and the need for ongoing staff engagement. These were overcome through practical solutions, clear communication, and iterative design improvements.

For others considering similar work, implementation enablers include:

Early Staff Involvement: Engaging frontline staff from the outset was critical to the success of Theatre Badge Hats. Early involvement-built ownership and compliance by clearly demonstrating the benefits to communication, sustainability, and patient safety

Improved Patient Experience: Staff were briefed on how clear visual identification enhances the patient journey, particularly for individuals with autism, dementia, dyslexia, or visual impairments-by improving clarity, comfort, and trust during vulnerable moments. Additional benefits included improved emergency response, reduced hierarchy, and more respectful, inclusive teamwork.

System Alignment: To ease adoption, hat colours and size coding were aligned with existing scrub systems. Laundering processes were also integrated with current workflows, allowing hats to be washed alongside scrubs.

Laundry Provider Support: All major laundry providers have wash-tested and approved Eco Ninja's reusable scrub hats for high-temperature central laundering. Providers confirmed that if a trust's scrubs are already part of their collection and drop-off schedule, hats can be included seamlessly, making implementation straightforward and operationally efficient.

Next Steps

To learn more or place an order:

- Contact the Eco Ninjas sales team: sales@econinjas.co.uk.
- Visit the website to download the SOP, view pricing, and explore products: www.econinjas.co.uk
- Order direct or via a compliant framework: Products are available through Mediq.
 - Direct link: <https://medbis.mediq.co.uk/manufacturer/eco-ninjas/surgical-supplies/theatre-apparel/headwear>

What the staff and patients had to say:

Staff Feedback

- “Encourages first-name use, flattening hierarchy”.
- “Boosts rapport, teamwork, and confidence”.
- “Crucial in emergencies- makes it easy to direct questions, even with unfamiliar or new staff”.
- “Helps when names are forgotten or missed during briefings”.
- “Supports staff continuity during frequent changeovers.”

Patient Feedback

- “As an autistic person, this is excellent!”
- “Reassuring to instantly recognise staff and roles”.
- “Enhances informed consent by clarifying team roles”.
- “More visible than lanyards, which are often hidden”.
- “Improves trust and communication during care”.

Resources and references

1. Reusable hats significantly reduce waste and cost
Donahue, L. M., Petit, H. J., Thiel, C. L., Sullivan, G. A., Gulack, B. C., & Shah, A. N. (2024). A *Life Cycle Assessment of Reusable and Disposable Surgical Caps*. *Journal of Surgical Research*, 299, 112–119. <https://doi.org/10.1016/j.jss.2024.04.007>.
2. Named scrub hats improve communication and inclusion
Douglas, N., Demedui, S., Conlan, K., Salmon, P., Chee, B., Sullivan, T., Heelan, D., Ozcan, J., Symons, G., & Marane, C. (2021). *Surgical caps displaying team members' names and roles improve effective communication in the operating room: a pilot study*. *Patient Safety in Surgery*, 15(27). <https://doi.org/10.1186/s13037-021-00301-w>.

3. 1 in 5 communication failures in theatre are due to failure to recognise team members
Lingard, L., Espin, S., Whyte, S., Regehr, G., Baker, G. R., Reznick, R., Bohnen, J., Orser, D.,
Doran, D., & Grober, E. (2004). *Communication failures in the operating room: an
observational classification of recurrent types and effects*. *BMJ Quality & Safety*, 13(5), 330–
334. <https://doi.org/10.1136/qshc.2003.008425>.
4. Dingley, C., Daugherty, K., Derieg, M., & Persing, R. (2008).
Improving Patient Safety Through Provider Communication Strategy Enhancements.
In: Hughes RG, editor. *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*.
Rockville (MD): Agency for Healthcare Research and Quality (US).
5. The Joint Commission (2017).
Sentinel Event Data – Root Causes by Event Type.
6. Royal College of Surgeons of Edinburgh. (2022). *Intercollegiate Green Theatre Checklist*.
Retrieved from <https://www.rcsed.ac.uk/policy-guidelines/sustainability/environmental-sustainability-and-surgery/intercollegiate-green-theatre-checklist>.
7. World Health Organization. (2009). *WHO Surgical Safety Checklist: Safe Surgery Saves Lives*.
Geneva: WHO Press. Retrieved from <https://www.who.int/teams/integrated-health-services/patient-safety/research/safe-surgery/tool-and-resources> [who.int].

Want to know more?

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- Role: [Managing Director & co-owner](#).
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- Location & NHS Region if within the UK: [Warwick, West Midlands, UK](#).
- Manufacturing partner: [Northumbria Healthcare Manufacturing and Innovation Hub](#).
- Has this project or story been made public in any form before? [Yes](#).
<https://www.bbc.co.uk/news/articles/cg7dnrr21dlo> as well as a radio interview with the
BBC.

If available, please provide details of additional contact to best enable others interested in your project to reach you in future.

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