POLICY BRIEF

# Transition to reusable medical products in NHS hospitals: Current practice and challenges

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CENTRE for SUSTAINABLE HEALTHCARE
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Green Healthcare Hub

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**The Centre for Sustainable Healthcare (CSH)** is a UK registered charity that has been at the forefront of driving net zero and carbon reduction initiatives within the healthcare sector since 2008. Its primary objective is to integrate the values of environmental sustainability into the health and social care system, aiming to make healthcare practices more sustainable and supporting the NHS target of achieving Net Zero by 2040. CSH developed the framework of Sustainable Quality Improvement as a mechanism to support a holistic approach to improving healthcare. We have worked across the UK and globally to embed this framework in a wide range of healthcare settings and clinical specialties, including supporting a transition to reusable products and working with organisations to evaluate the impact on clinical quality. CSH has significant experience in carbon footprint analysis, having worked with a large number of NHS Trusts and Integrated Care Systems (ICSs) to quantify their direct and indirect carbon emissions and make recommendations for achieving lasting reductions.

**Brighton and Sussex Medical School (BSMS)** is an equal partnership between the Universities of Sussex and Brighton. The BSMS Green Healthcare Hub is a leading group in research, education and policy relating to environmental, social and financial elements of sustainability in health and healthcare. Recent work includes publication of a Policy Brief on Environmental Impact of Medical Devices in the NHS, commissioned by the Greener NHS, which explores and evidences the challenges and opportunities for integrating environmental impact into decision-making around medical device adoption in the NHS.

CSH and BSMS are established partners, having worked together on a range of projects with a focus on improving and expanding sustainable approaches in healthcare.

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# Contents

# Executive Summary

The National Health Service (NHS) faces an urgent need to address the environmental and financial impacts associated with the use of single-use medical devices. Transitioning to reusable medical products offers a viable pathway to reduce waste, carbon emissions, and long-term costs, while maintaining or improving patient and staff outcomes. This report, commissioned by the Design for Life programme at the Department of Health and Social Care (DHSC), presents a detailed evaluation of current practices, challenges, and opportunities surrounding the adoption of reusable medical products in NHS settings. The research was conducted jointly by the Centre for Sustainable Healthcare (CSH) and Brighton & Sussex Medical School (BSMS), incorporating both quantitative modelling and qualitative stakeholder interviews.

The project aimed to quantify the financial and environmental impacts of transitioning from single-use to reusable medical products, and investigate the processes, barriers, and enablers related to this transition through organisational case studies and staff interviews.

Ten NHS organisations were selected to evaluate the implementation or modelling of reusable alternatives for selected high-priority medical products. The Sustainable Quality Improvement (SusQI) methodology was applied to assess environmental, social, and financial impacts. Carbon emissions were modelled using hybrid carbon footprinting techniques, while financial assessments included lifecycle cost analyses.

Thirteen stakeholders from clinical, procurement, and sustainability roles participated in interviews, guided by the Theoretical Domains Framework (TDF) and supplemented by elements of the NASSS-CAT framework to explore behavioural, organisational, and systemic influences on the transition process.

We found that most organisations followed a common structure when moving to reusable items involving procurement, clinical leads, infection prevention and control (IPC), and decontamination services. Approval processes often included the development of clinical protocols, risk assessments, and senior leadership sign-off. However, implementation approaches varied. Some sites purchased and implemented the reusable item without conducting a trial in a local clinical area, while others conducted smaller-scale trials with plans to roll out more broadly if the trial proved successful. Even successful trials sometimes failed to result in permanent transitions for example due to staff turnover, unclear governance pathways, or financial hesitancy. The lack of a clear, standardised implementation framework was consistently cited as a barrier, leading to delays and inefficiencies.

For environmental and financial outcomes, quantitative analyses revealed mixed results, with environmental and financial viability of reusable products strongly influenced by local factors, including product use frequency, infrastructure, and staff behaviour, for example:

- Reusable **slide sheets** at Somerset NHS Foundation Trust would save 4,204 kgCO2e and £10,000 annually.
- Reusable **patient warming devices** at Northampton General Hospital would save 3,536 kgCO2e and £10,276 per year in main theatres but incur costs when scaled across all theatres (due to lower usage in these theatres).
- Reusable **tray containers** in Wales produced a wide range of outcomes depending on washer energy efficiency: from a saving of 4,291 kgCO2e to an increase of 25,883 kgCO2e under worst-case conditions.

Reusable products generally (but not always) maintained or improved staff satisfaction, with reusable options preferred for their ease of use, perceived safety, and environmental benefits. However, concerns were noted regarding training adequacy and workflow disruptions, such as sterilisation departments experiencing increased workloads. Patient experience and safety remained unaffected for most products, and there were mixed views on patient perceptions of safety, and whether and when patients should be engaged on this agenda.

A key goal of the study was to explore current barriers to adoption and a number of these were identified. Transitions were largely driven by highly motivated individuals or small teams, often without formal project management support, and the absence of dedicated leadership roles or integration with Quality Improvement structures limited continuity and scalability. Staff responsible for implementation frequently reported unclear responsibilities, limited awareness or knowledge of reusable options and their potential benefits, gaps in training, and breakdowns in communication within a complex system. Constraints in decontamination capacity, storage, and infrastructure (including inventory management systems) posed barriers, with some transitions (e.g., to reusable tray wrap) requiring substantial capital investment. Fragmented procurement systems and poor visibility of reusable options in NHS Supply Chain catalogues impeded adoption, and decentralised decision-making led to inconsistent practices across departments and organisations. Although reusable devices often result in long-term cost and emissions savings, high upfront costs and variable usage patterns created uncertainty. Infection Prevention and Control (IPC) teams across sites were generally supportive of reusables when provided with appropriate risk assessments and manufacturer cleaning guidance. However, perceptions of risk and safety varied within IPC teams, clinical teams and between organisations, influencing acceptance..

We end with three recommendations, for policymakers and government.

First, strengthen system-level leadership, governance and infrastructure. This includes establishing national policies on adoption of identified priority reusable products, with a “comply or explain” mechanism for NHS organisations. This should include centralised guidance on IPC requirements, carbon savings estimation, and expected financial impacts. There should be an exploration of central funding mechanisms for infrastructure upgrades, and provision of seed funding to support local transitions.

Second, provide a structured framework for planning and implementation. This means development of a flexible, standardised implementation framework for introducing reusable alternatives that aligns with existing NHS quality improvement and change management structures. Such a framework should seek to define stakeholder roles, responsibilities, and sequenced transition steps, and will need to be supported by time and resources into dedicated staff roles, and integrated training programmes tailored to different reusable product types.

Third, address knowledge gaps and build the evidence base for successful implementation within NHS organisations. This can be through curation of comprehensive case studies (including documenting challenges encountered), shared through clinical and operational networks.

Section 1

# Adoption of reusable medical products: Case studies of organisations and products

We set out to quantify the costs and benefits to participating NHS Trusts and Health Boards from transitioning to a reusable alternative compared to a single-use version, for a selection of priority medical products. We also set out to map the process underlying transition, the challenges and barriers to transition and to map perceived changes to staff or patient safety and experience.

### Selection of priority products

For the purposes of this project, priority products were defined by the Design for Life team at the UK Department of Health and Social Care (DHSC), based on volumes purchased and/or cost per item in the NHS, as summarised in the table below.

**Table 1: High priority products identified by the Design for Life team at DHSC**

| | |
|---|---|
| Video laryngoscope | Laryngeal mask airway |
| Forced air warming | Video laryngoscope blade |
| Slide sheet | Anaesthetic face mask |
| Theatre warming jacket | Bronchoscope |
| Blood pressure cuff | Baby bottle |
| Curtain | Diathermy cable |
| Tray wrap (CSSD containers to replace) | Patient return electrode |
| Ureteroscope | |

### Selection of participating organisations and project leads

We assessed and selected organisations to participate in this study through an expression of interest form and subsequent phone call. Organisations were selected on the basis that they could be informative of barriers and opportunities for change, but we also sought to ensure we covered a range of priority products, a range of geographical areas, and organisations at different stages of their product transition process.

We selected organisations based on the following criteria:

- The organisation already has or is planning a transition to one or more of the priority products
- The organisation has capacity to generate outputs within the short timeframe of the project: February - March 2025.
- The organisation has engagement from relevant stakeholders including, but not limited to sustainability, procurement, infection prevention and control, decontamination and clinical leads
- The organisation agrees to data collection and sharing with CSH/BSMS for the purposes of measuring and reporting environmental and financial outcomes, and discussion and understanding of processes, barriers and enablers

We selected ten organisations to participate (with four working as a collaborative) exploring a range of high priority items, as shown in Table 2:

**Table 2: Selected sites and products evaluated.**

| Site | Priority product/s evaluated |
|---|---|
| *Reusable at point of care* | |
| Wrightington, Wigan and Leigh Teaching Hospitals NHS Foundation Trust | Diathermy pad |
| University Hospital Sussex NHS Foundation Trust | Blood pressure cuff |
| Northampton General Hospital NHS Trust | Patient warming device |
| *Reusable with decontamination via a sterilisation facility or laundry service, whether in-house or outsource* | |
| Somerset NHS Foundation Trust | Slide sheet |
| Cambridge University Hospitals NHS Foundation Trust | Bronchoscope |
| Hampshire Hospitals NHS Foundation Trust | Tray wrap |
| NHS Wales Shared Services Partnership, Aneurin Bevan University Health Board, Cwm Taf Morgannwg University Health Board and Cardiff and Vale University Health Board | Tray wrap |

We liaised with a project lead within each organisation rather than all stakeholders. Project leads were from varied staff groups (e.g. a clinician, a sustainability lead, etc) and were responsible for engaging and collaborating with a range of colleagues, including:

- Clinical staff with direct experience in the clinical requirements for the product.
- Infection prevention and control representatives.
- Procurement representatives.
- Sustainability representatives.
- Decontamination (sterilisation) services representatives.
- Governance and sustainability team representatives.

**Process and experience of switching to reusable medical products**
We included in our analysis data from cases where products had already transitioned to reusable versions and cases where changes were proposed. Due to the short timeframe of the project, we were unable to oversee the full implementation of transitions, and so change was modelled where necessary.

Project leads were supported using the Sustainable Quality Improvement (SusQI) method, an approach established by CSH to support bespoke assessment of the environmental, social and economic impact of a particular treatment pathway or clinical process. Support was provided via online meetings and included guidance, report writing and the provision of resources such as data collection templates for carbon footprinting (with additional assistance in analysis and reporting, to ensure a consistent methodology).

For each project, we supported project leads to write a report detailing six outcomes:

a) Process and approach taken to support transition.

b) Perceived barriers to the transition.

c) Perceived change to patient experience or safety (including infection prevention and control considerations).

d) Perceived change to staff experience or safety.

e) Carbon emission cost/saving of the proposed change.

f) Financial cost/saving of the proposed change.

The full reports from each case study organisation are available on the **CSH Resource Library**.

### Carbon modelling methods

A hybrid approach was used to estimate greenhouse gas (GHG) emissions of single-use items and their reusable alternatives, expressed as carbon dioxide equivalents ($CO_2e$). Where possible and data allowed, a cradle-to-grave process-based carbon footprint analysis[1] was conducted. Where this wasn't feasible, findings were supplemented with data from academic and grey literature or an EEIOA undertaken[2]. See individual project reports for detailed methodology of each project.

The process-based carbon footprint analysis included GHG emissions associated with extraction of raw materials, disposal and, in the case of reusable items, sterilisation or cleaning. Where data were available, emissions from transport and packaging were also included. Items were weighed and analysed by either the project team (CSH/BSMS) or healthcare teams, and CSH converted material and transport data into GHG emissions using carbon conversion factors from the **2024 UK Government Greenhouse Gas Conversion Factors database** or the **Inventory of Carbon and Energy (ICE) database V4.0**. For disposal-related emissions, relevant emission factors were sourced from **Rizan et al., 2021** (1).

For reusable items, the number of lifetime uses (product cycles) of each item before disposal was sourced either from the supplier or published literature. Where possible, data on reasons for early disposal (e.g. accidental damage during transit to sterilisation, faster wear and tear than supplier reports, etc) were captured and accounted for in carbon footprint estimations.

### Financial modelling methods

For single use devices, project leads consulted with their finance and procurement departments (or suppliers directly where required) to obtain data on single use device usage and spend. This included data on cost per unit and units procured in a set time frame (e.g. one year), or cost for bulk equipment contracts. Cost of disposal of single use items was estimated based on the weight of the item, the waste stream used (e.g. clinical waste, recycling) and the cost to the Trust of that waste disposal route.

For reusable devices, costs for purchase were sought from potential, identified or existing suppliers as well as finance and procurement departments where reusable items were already in use. Costs for decontamination or sterilisation were identified and incorporated where possible. Modelling also included the expected number of times a product can be reused before requiring repair or disposal, the cost of that repair, and the cost for disposal or replacement. Where there were opportunities at end of life for no-cost collection by suppliers or to sell products for spare parts or material recovery, those costs were incorporated.

1 A process-based carbon footprint analysis converts the physical items/materials/resources which are needed to manufacture a product, carry out an activity, provide a service or run an organisation into CO2e based on the material composition, amount or volume used.

2 An environmentally extended input output analysis (EEIOA) converts financial spend in an economic sector directly into a carbon dioxide equivalent (CO2e) value or carbon footprint. That means, when using EEIOA for a product, service or organisation, their cost or spend is directly converted into CO2e.

## Case Study Findings

Individual site reports are available at the **Centre for Sustainable Healthcare Resource Library**.

### Process and approach taken to support transition

Most organisations followed a similar governance and approval structure when transitioning to reusable items. Procurement and/or clinical leads usually played a key role in driving change and ensuring all relevant stakeholders were engaged. The process generally begins with development of clinical guidelines and standard operating procedures (SOPs) in collaboration with clinical leads, decontamination and sterilisation services, and/or infection prevention and control (IPC) teams. For items that are reusable through sterile or laundry services, it was the decontamination and sterilisation staff that ensured products met the required standards, and they also evaluated and/or monitored the change, although the IPC team could be involved from an oversight/sign off perspective. For items reusable at point of care, IPC teams took more of a lead, to ensure products met requirements for decontamination effectiveness. Once necessary safety and operational guidelines were established, typically senior leadership approval was sought, which could include presenting the proposal for Board and finance sign-off.

Whilst governance approaches were similar, implementation approaches varied. Some organisations opted for a clinical trial phase (e.g. for diathermy) to assess feasibility, safety, efficacy, and staff agreement before wider adoption. Others selected a phased rollout with incremental change year on year, while yet others planned to implement a change Trust wide (e.g., reusable blood pressure cuffs, diathermy) though due to training needs, this may also take place in a phased manner. Trials and/or phased rollouts were perceived as more likely to succeed because they provided an opportunity to identify and address potential challenges before full implementation. However, full implementation was not always guaranteed after a trial. For example, a successful trial of reusable diathermy was undertaken in which all feedback was positive, but several months later the transition had still not occurred, due to a combination of factors (key staff having limited capacity / going on extended leave, disjointed communication on next steps, and finance concerns).

Some organisations have both single use and reusable products available for purchase via the NHS Supply Chain, which has led to different practices in different departments or directorates (e.g. a surgical department taking a different approach to the rest of the hospital).

## Perceived barriers to the transition

We classify reported barriers into six categories.

### 1. Lack of formal structure and governance

Staff often lacked clarity on governance pathways for adopting reusables, with transitions heavily reliant on motivated individuals operating without formal support. Momentum could be lost due to staff capacity, staff turnover, or senior management buy-in, as seen when successful trials of equipment did not lead to implementation (e.g. diathermy). Inconsistent leadership and lack of clear protocols may also contribute to varied item selection and usage across organisations (e.g., blood pressure cuffs, bronchoscopes).

### 2. Training and communication deficits

Inadequate and inconsistent training affected staff engagement and safe product use. For instance, improper use of reusable warming devices led to inconsistent outcomes and hesitancy among some staff groups. It is challenging for training to reach all relevant staff and ongoing training is not always planned or delivered, particularly in the context of high staff turnover and limited capacity of internal training teams or external representatives.

### 3. Clinical acceptability and perceptions

Acceptance varied by specialty. For example, endoscopy teams favoured reusable bronchoscopes for superior performance (with single use accessories such as biopsy forceps, guidewires and cytology brushes, as recommended by the British Society of Gastroenterology (2)). Intensive care staff in the same hospital preferred single-use scopes for efficiency purposes, also citing a research paper finding a lower carbon footprint for single use in comparison to reusable endoscopes (3). Subsequent (unpublished) local analysis as part of this project showed reusables yielded carbon savings for intensive care at this site.

### 4. Infrastructure and capital investment requirements

Some products, such as tray wraps, required significant capital outlays (e.g. £240,000 for a new washer). Others faced compatibility issues with existing equipment or storage constraints. Conversely, some concerns such as effectiveness of reusable trays in place of tray wrap in one site were viewed to be misconceptions from another site based on local testing. Additionally, many NHS inventory systems are not designed to manage reusable items, which require tracking usage cycles, repairs, and replacements, further complicating implementation.

### 5. Data availability and carbon accounting challenges

Carbon assessments depended on staff capacity, local organisation and supplier data, and cross-department collaboration. Most staff lacked time, expertise, or access to reliable data. For example, one site relied on assumptions due to a lack of transparency from suppliers. One site undertook their own carbon footprint analysis, the others were heavily supported by a CSH Sustainability Analyst.

## 6. Cost uncertainty and procurement complexity

While many reusable products offer lifecycle cost savings, perceived high upfront costs and short-term budgeting cycles deter adoption. Cost-effectiveness diminishes when products are underused, as seen when scaling warming devices for use in all operating theatres.

### Perceived change to patient experience or safety

Most products showed no negative impact on patient safety. In some cases, like reusable bronchoscopes, some teams reported clinical effectiveness improved due to increased functionality (though other services were satisfied with single use). Some reusable products were viewed to reduce risks, for example reusable diathermy pads can distribute current across a broader area and be placed as required, reducing risks for patients with a pacemaker. Theoretical risks linked to insufficient training were noted, such as improper use of reusable warming pads increasing hypothermia risk, however, in this instance an audit of practice by the evaluating site found in fact patients to be adequately warmed, with no harm.

Although Infection Prevention and Control (IPC) is commonly cited as a barrier to transitioning to reuse, in practice, IPC teams across case studies were generally supportive when provided with adequate decontamination protocols and risk assessments. In all cases, it was reported that the risk of patient contamination or infection was perceived to be extremely low if standards and processes were agreed and followed prior to implementation. However, perceptions vary between organisations and within IPC teams themselves.

For most products, there were no anticipated changes to patient experience. For several items, patients are under anaesthesia in the operating theatres. For items where the patient is likely to be awake and observing care (e.g. blood pressure cuff), the reusable items look and perform like the single use version. Some clinical staff raised concerns about possible patient resistance to use of reusable items.

### Perceived change to staff experience or safety

Staff generally reported positive experiences with reusable products, noting improvements in ease of use, reliability, and environmental impact. Surveys of diathermy pads and warming devices showed strong support, with many staff preferring reusables for their safety and comfort benefits. However, some raised concerns about increased workloads in sterilisation departments, training needs, and equipment availability. Challenges in sterilisation capacity can be compounded by inefficiencies such as items being reprocessed despite not being used, highlighting opportunity to rationalise existing reuse. Maintenance issues were raised with a urology team reporting they don’t use reusable ureteroscopes (not a key product explored) as the scopes damage easily, reducing function and procedure quality.

## Carbon emission and financial cost/savings of the proposed changes

These calculations are detailed in table 3 below.

### Table 3: Summary of project sites, selected medical items, projected annual GHG emission and financial impacts

| Site | Priority product/s evaluated | Current practice | Process for calculation | Scope for GHG and financial calculations | GHG emission costs/savings per year ($kgCO_2e$) | Financial costs/ savings per year (£) |
|---|---|---|---|---|---|---|
| *Reusable at point of care* | | | | | | |
| Wrightington, Wigan and Leigh Teaching Hospitals (WWL) NHS Foundation Trust | Diathermy pad | Single use | Modelled | Royal Albert Edward Infirmary (Wigan) and Leigh Infirmary (11 theatres) and Wrightington Hospital (12 theatres) | Wigan and Leigh: -571<br>Wrightington: -935 | Wigan and Leigh: +3,770<br>Wrightington +3,563 |
| University Hospitals Sussex NHS Foundation Trust | Blood Pressure Cuff | Mixed single-patient use, reuse of single patient use, multi-patient use cuffs | Modelled | Trust wide | -6,108 | -38,808 (trial price)<br>-28,511 (other price) |
| Northampton General Hospital NHS Trust | Patient Warming Device | Mixed | Partial implementation observed; savings modelled at full (100%) uptake. | Main theatres (6)<br>All theatres (9) | Main theatres: -3,536 | Main theatres: -10,276<br>All theatres: +8,926 |
| *Reusable through sterile services / laundry* | | | | | | |
| Somerset NHS Foundation Trust | Slide Sheet | Single use, with exception of theatres | Partial implementation observed; savings modelled at full (100%) uptake. | One hospital site (Yeovil) | -4,204 | -10,000 |
| Cambridge University Hospitals NHS Foundation Trust | Bronchoscope | Mixed | Modelled savings for ICU use; product already in use in endoscopy at the same hospital. | Adult and neonatal intensive care | -168 | -22,434 |
| Hampshire Hospitals NHS Foundation Trust | Tray Wrap | Single use (2 single use sterilisation sheets per tray) | Modelled | Two hospitals | -31,564 | +10,000 |
| NHS Wales Shared Services Partnership, Aneurin Bevan University Health Board, Cwm Taf Morgannwg University Health Board and Cardiff and Vale University Health Board | Tray Wrap | Single use (1 single use sterilisation sheet per tray) | Modelled | Cardiff (one Health Board) | Scenario 1 Existing washer -4,291<br>Scenario 2a Large washer, low energy consumption -496<br>Scenario 2b Large washer, high energy consumption +25,883 | -70,343 per year for 10 years for containers only (accounting for upfront investment cost of containers, but not washer). |

Section 2

# Experience and perception of healthcare staff in adopting reusable medical products: Qualitative study

We undertook 13 qualitative interviews to explore the experiences and perceptions of healthcare professionals when using reusable medical products, with a focus on perceived barriers to adoption.

Our analysis was underpinned by the Theoretical Domains Framework (TDF) (2), an integrative and theory informed approach developed to better understand the implementation of new practices through behaviour change and the design of behaviour change interventions. The TDF comprises 14 theoretical domains across motivation, uptake and engagement, that capture organisational, structural, cultural and individual factors that may impact success or failure of interventions and behaviours, including knowledge, skills, beliefs, professional and social roles and environmental factors. In addition, we applied and adapted the NASSS-CAT framework (3) which is designed to support planning, undertaking and evaluating technology supported change projects in health and social care. We used this to supplement data capture with the appropriate NASSS domains, in particular domains about the adopter system, the wider context and the interaction between these.

**Interview method**

Interviews took place over Teams and were audio recorded using integral Microsoft Teams software to generate an auto-transcription. Participants were from sustainability, procurement and clinical roles taken from our ten participating organisations detailed in section 1, but incorporating a wider range of products than in section 1 (Table 4).

**Table 4: Participants, interview time, job role and reusable products implemented**

| Participant | Length of meeting | Job Title | Products Implemented |
|---|---|---|---|
| 1 | 49 minutes | Clinical Lead Net Zero | Caps/theatre hats, baby bottles, walking aids, curtains, surgical containers, suture sets, tourniquets |
| 2 | 45 minutes | Clinical Sustainability Fellow | Caps/theatre hats, baby bottles, warming mattresses, pulse oximeters, suture sets |
| 3 | 28 minutes | Sustainability Clinical & Innovation Lead | Tourniquets, electrophysiology catheters, UV decontamination cabinets |
| 4 | 28 minutes | Sustainability Manager | Surgical equipment, laparoscopic ports |
| 5 | 27 minutes | Sustainability Project Manager | Caps/theatre hats, gowns, drapes |
| 6 | 38 minutes | Sustainability Transformation Project Lead | Caps/theatre hats, gowns, drapes, sheets, warming jackets, harmonic scalpels |
| 7 | 51 minutes | Clinical Lead Anaesthetics (ODPs/Nurses) | Gowns, blood pressure cuffs |
| 8 | 43 minutes | Head of Sustainability | Caps/theatre hats, curtains, video laryngoscope, slide sheets |
| 9 | 36 minutes | Clinical procurement | Gowns, drapes, energy devices tray carts |
| 10 | 1 hour | Consultant Anaesthetist/ Clinical Lead for Sustainability | Caps/theatre hats, gowns |
| 11 | 41 minutes | Contracts and Procurement Manager | N/A |
| 12 | 1 hour | Sustainability Programme Manager | Tourniquets, caps/theatre hats, sharps containers, gowns |
| 13 | 58 minutes | Clinical Procurement Specialist/Operating Department Practitioner | Tourniquets, suture sets, electrosurgical devices, carrying tray, laparoscopic scissors |

An interview schedule was used to probe specific areas of interest. Data were analysed using a thematic Framework Analysis Approach, with results mapped to TDF domains (however not all domains are reportedly individually in results due to overlap in themes). Ethics approval was not required as per the Health Research Authority (HRA) decision tool.

## Findings from qualitative study

### Lack of clarity in the transition process

Success in transitions to reusable items and outcomes have varied significantly. This suggests that some initiatives may be more appropriately resourced, aligned, or received than others. Several organisations have successfully implemented reusable surgical hats, gowns and drapes and reusable tourniquets stating them as being more feasible to implement.

> *"We've picked up the low hanging fruit, so we've done the easy things in a lot of cases, staff don't notice the difference."*
>
> Participant 1, Clinical Lead Net Zero

This may be due the adoption of these products being appropriate for a range of clinical settings and given high priority due to their perceived feasibility.

Staff members did not always have a full understanding of the process involved in transitions, and clear workflows and step-by-step instructions, and a clear and standardised procedure may enable quicker and more efficient transitions.

> *"They tried it for a while to see how it works and what the process was. We realised then that because of how it's cleaned you had to wait 90 seconds for the cleaning stuff to dry before you could use it again. Now you know where you're taking blood. It's patient, patient, patient, patient. So, they needed to have one [Single use product] each. [We] would [have] just implemented it. We wouldn't have known that. So, we then revisited how many we needed."*
>
> Participant 1, Clinical Lead Net Zero

> *"If something's being used by, you know, ten other hospitals and they've had no issues at some point, you've got to just say, well, you know, these ten hospitals are doing it for the past five years and they've not had any issues. So yes, there's no official guidance, but we're going to think outside the box and give it a go and I think that's difficult for infection control teams to do... ideally [there] needs to be a lot more national guidance."*
>
> Participant 10, Consultant Anaesthetist/ Clinical Lead for Sustainability

There was hesitation to discontinue purchasing single-use products altogether. While at times this may be due to a phased introduction that necessitates at least temporary provision of both single use and reusable items, this also reflects the need for clearer decision-making frameworks and training and guidance to build confidence in the transition toward reusable alternatives.

> *"You know, we could just stop ordering disposables, but we're sort of unsure if we can make that decision and if that would have any implications or if there'd be any concerns around having no availability to disposables as well."*
>
> Participant 5, Sustainability Project Manager

> *"And so, we're going to have to have a situation where we have disposables and reusables in parallel while we build up the logistics to get more reusable surgical gowns in or to get to 100% reusable surgical gowns. Might not be possible. We might need to keep some disposable options."*
>
> Participant 3, Sustainability Project Manager

**Transition relies on strong leadership and personal motivation**

All projects relied on strong leadership to drive progress.

> *"People power. I think I'm going to go for that as the biggest one, maybe because you need and you need everyone working together, don't you? I'm not talking about just grassroots. I'm talking about, you know, managers prioritising it, board level, prioritising it and making it a priority for a trust so people feel empowered to do it and having that bit of time to be able to dedicate towards it."*
>
> Participant 10, Consultant Anaesthetist/ Clinical Lead for Sustainability

Absence of leadership leads to stagnation and inconsistency, which can be demotivating.

> *"I find it sad that that our leaders in the trust aren't dictating more."*
>
> Participant 12, Sustainability Programme Manager

> *"It's a very, very slow progress and it can be quite frustrating and disheartening as well I think."*
>
> Participant 8, Head of Sustainability

inconsistent leadership leaves change up to individuals or teams who are guided by strong personal and professional motivation and passion for making meaningful changes.

> *"Surgeons who are interested in making this transition happen, who are really the ones driving it forward because they are the ones on the front line who are going to be using these products so they understand the limitations that there might be and some of the barriers that they need to get over."*
>
> Participant 8, Head of Sustainability

> *"So, I'm an enabler. People come to me, whether they're physios, doctors, nurses, admin staff who say I want to do this in my area, I've got the go ahead from my team. What do I do? I'm an enabler."*
>
> Participant 1, Clinical Lead Net Zero

> *"But no, like I think I think generally it's about what I try and find anyways about finding the path of least resistance so... so what I tend to try and do is find people who are motivated and want to make that change to transition anyway."*
>
> Participant 4, Sustainability Manager

> *"People have reached out and asked for reusable products...But no, it's to be honest is it comes, it comes up in a variety of different ways. So yeah, sometimes there'll be clinicians asking, sometimes there'll be industry, sometimes it'll be me, sometimes it'll be procurement."*
>
> Participant 4, Sustainability Manager

**Those driving the change are usually driven by personal motivation**

> *"And I feel like it's the right thing to do. I think. I think I feel a responsibility definitely to try to. Create a better environment for ourselves, for you know, future generations."*
>
> Participant 8, Head of Sustainability

> *"We can't keep using resource and then burning it because we're going to run out."*
>
> Participant 13, Clinical Procurement Specialist/Operating Department Practitioner

> *"I do believe that we, especially within the NHS there, is just so much waste. There's so much waste on a daily basis for anything but the amount of waste and the amount of CO2 hospitals produced is just disgusting."*
>
> Participant 9, Clinical procurement

> *"People who are most disadvantaged in the world are having the least impact on the planet in terms of carbon, but are suffering the most. And just like that inequality just seems so unfair to me. So, they're kind of some of the drivers that kind of propel me in in this area"*
>
> Participant 12, Sustainability Programme Manager

**Beyond those leading change, wider organisational awareness and action is limited**

Organisational awareness is essential for change. Efforts to incorporate sustainability concepts broadly into organisational culture are apparent in some organisations, such as through Green Champions and hiring processes. However, sustainability teams as drivers of this awareness are often limited in capacity.

> *"I want to meet people and talk to them about this and get them interested in it because what I've been saying at these events is, you know. I am on my own. I'm not going to get us to net zero. We need to, like, embed sustainability into the culture of the organisation."*
>
> Participant 12, Sustainability Programme Manager

> *"I think if I'm not banging the sustainability drum, no one else is really."*
>
> Participant 12, Sustainability Programme Manager

**Engagement, capacity and prioritisation among the wider team varies greatly**

> *"I've been engaging with our staff where I can. I started doing these kind of 'green tips of the month' and to try and raise awareness and comms had to say we need to stop doing them because nobody's clicking on them."*
>
> Participant 12, Sustainability Programme Manager

> *"The view up to this point has been that, well, that sustainability is their problem, not ours. So, if we're buying catheters, you know, and they're bringing them from China in plastic packaging, it's up to them to do something about it, not us."*
>
> Participant 11, Contracts and Procurement Manager

> *"Awareness alone, unfortunately, is not enough, because there's a big gap between knowing and doing knowledge and action." Participant 3, Sustainability Project Manager*
> *"So, I think it's more of the culture of change and trying to change our mindset."*
>
> Participant 7, Clinical Lead Anaesthetics (ODPs/Nurses)

**Competing priorities or opinion may limit ability to action sustainability initiatives**
There are gaps in clarity, communication and trust within organisations, with staff often unaware of specific goals, or differing and competing priorities with regard to transition to reusables.

> *"The issue is that the people who are buying it, so procurement will often want to change because of cost, but then the surgeon will want to keep because of preference. And it's difficult then to change because [of] their clinical preference, judgement and responsibility to the patient."*
>
> Participant 7, Clinical Lead Anaesthetics (ODPs/Nurses)

> *"There's all sorts of competing priorities, and I would say everybody pretty much everyone in the trust is willing, you know, willingness to be successful, but logistically, making it happen in practical terms or whether it is even possible in practical terms is often a hindrance to something."*
>
> Participant 11, Contracts and Procurement Manager

Such competing priorities or opinions may hinder process.

> *"You only need one or two people to say no, I don't want to because of XYZ and then everything stops"*
>
> Participant 7, Clinical Lead Anaesthetics (ODPs/Nurses)

**Staff capacity may limit action on sustainability initiatives**
Many staff who are agreeable to transitions in principle face significant operational and clinical pressures, with limited capacity to dedicate time or energy to new initiatives. This is not only the case for clinical staff, but sustainability and procurement teams too.

> *"They don't necessarily have the capacity to. You'd, you know, make changes when it's easier to just carry on doing what you've always done."*
>
> Participant 10, Consultant Anaesthetist/ Clinical Lead for Sustainability

> *"Procurement teams, I think across the NHS, are really hollowed out in respects of staffing, and I think that that's... a national issue with procurement teams. So certainly trying to engage, get feedback and get support from procurement teams is really, really, really challenging."*
>
> Participant 2, Clinical sustainability Fellow

Initial implementation of sustainable practices may disrupt daily operations and increase workload, which can create resistance among staff.

> *"It definitely requires more people time. More people resource and therefore the additional costs that are associated with that. It's very easy for somebody to just take something off and throw it in the bin. And so I think, understanding the impact that that will have on people's day-to-day roles."*
>
> Participant 8, Head of Sustainability

> *"The theatre staff are really reluctant to even engage in it because they're used to using a single use. They use it once and throw it in the bin. So, we're in essence taking them on a journey of more work, not less work and more paperwork to fill out to say the things been reprocessed. So that is a real obstacle."*
>
> Participant 1, Clinical Lead Net Zero

**Lack of evidence, training, or support can hinder adoption**
Uncertainty of evidence can make it difficult to push for adoption

> *"It's very dependent on knowing what's available and on we go to things like supply chain and things, products from top, it's very hard to find a reusable, a lot of misinformation about their efficacy and safety as well."*
>
> Participant 6, Sustainability Transformation Project Lead

> *"There's definitely something that could be done with educational purposes. I just, I feel there's not enough evidence out there yet for some of these products."*
>
> Participant 9, Clinical procurement

> *"There's not enough evidence out there yet to persuade people going back to being told what they were told 10/15/20 years ago...there's not the quantifiable amount of evidence that I can prove"*
>
> Participant 9, Clinical procurement

> *"Medical people are very evidence based in their practise, which is right."*
>
> Participant 1, Clinical Lead Net Zero

No training and support programs exist specifically tailored to the needs of reusable items. This may limit staff understanding of how to effectively integrate these items into workflows.

> *"So it wasn't an issue with training the staff, it was the resources around making sure that all of the staff, when there's a rapid turnover of staff, are going to follow that protocol."*
>
> Participant 3, Sustainability Clinical & Innovation Lead

> *"We don't offer specific training in our trust with regards to sustainability. There are a number of groups that are available that are active that talk about sustainability, where somebody could come and learn by listening."*
>
> Participant 8, Head of Sustainability

> *"All the surgeons coming through now have all been trained on single use. So they find it harder to go back to a reusable one. Whereas the old school surgeons could most probably go back to using an old-fashioned trocar because they have been trained on it, very similar to drapes."*
>
> Participant 9, Clinical procurement

> *"[We used] some funding to bring in an external consultant who has helped to drive that project forward as a project manager kind of person, and also used our quality improvement team and one of the project managers from the quality improvement team to help to drive that project forward as well."*
>
> Participant 8, Head of Sustainability

There are existing networks and forums to support sustainable practice in healthcare, however, these are focused on discussion rather than providing structured training. Case studies were viewed as an essential resource for understanding successful implementations but are not widely disseminated and leveraged as educational tools to demonstrate the process, benefits or challenges. Staff often need to know exactly where to look to find relevant materials.

> *"I've got certainly some of the ideas for some of these from like from the futures page and case studies from the Centre for Sustainable Healthcare. And Greener NHS case studies, they've been really, really helpful at thinking of, you know, new reusables that we could use."*
>
> Participant 2, Clinical sustainability Fellow

**Current products and technology may not support reuse**
There were concerns that some staff may see reusables as a step backwards.

> *"It's very difficult to go back to the way things were and you know I've been here 30 odd years and we're doing a lot of things that were going back to a lot of old ways... that's the barrier because it's perceived as a step backwards rather than perhaps the old ways were better."*
>
> Participant 1, Clinical Lead Net Zero

Some participants suggested that in certain areas current technology is not advanced enough to fully support the transition to reusables.

> *"The technologies aren't there. If we could have a reusable trade call that had a built-in balloon or a built in....There isn't that [Tray cart] in the reusable ones, so they would have to open up or put in another incision in the patient with the reusable ones because the technology is just not there yet."*
>
> Participant 9, Clinical procurement

This may be because of varied engagement from suppliers.

> *"It's really, really important that we're engaging with suppliers who are aligned with our net zero goals, because if we're doing everything that we can at a Trust level to reduce our emissions and then we're engaging with a partner or a contractor who doesn't care or it's not a priority for them, then that's problematic for us."*
>
> Participant 12, Sustainability Programme Manager

**Fragmented or inadequate systems and infrastructure can limit adoption**
For example, procurement processes involve many moving parts, making it difficult to streamline operations and implement changes. Large trusts may split resources, creating inefficiencies and fragmentation in procurement processes, limiting scalability and collaboration.

> *"Now we have regional procurement in the North for multiple Trusts... Also, that regional procurement function adds complexity. Because they're making purchasing decisions across multiple Trusts, not just ours."*
>
> Participant 3, Sustainability Clinical & Innovation Lead

Current NHS procurement systems make it difficult to identify or select reusable products effectively, creating bottlenecks for staff looking to source suitable items.

> *"It's not easy to identify what is reusable within the catalogue today. So, if you type in reusable into a search in the catalogue, you get some products, but you won't, you won't get them all because that's you know if reusable was a word not used in the descriptor, you won't find them."*
>
> Participant 13, Clinical Procurement Specialist/Operating Department Practitioner

Limited availability of necessary resources and facilities can also be a hurdle. For example, low capacity at decontamination facilities, or no on-site sterilisation and laundering facility, can impair uptake..

> *"We've got quite limited, got a lot of limitations on space and capacity across our sites. So that is that is an issue. Yeah, sterilisation facilities have maybe not as big or as what they should be. And obviously the capital requirements associated with delivering greater capacity"*
>
> Participant 4, Sustainability Manager

> *"I'm just thinking about reusable theatre hats. One of the things that kind of came up people-wise was that we're asking staff to wash them at home, and that sort of took a little bit of convincing, I would say, because we just don't have the facilities on-site to wash everybody's hats and get them back to them in time."*
>
> Participant 2, Clinical sustainability fellow

**There are poor systems to support separating and tracking reusable products**

> *"Separating reusables for collection is really, hard. A lot of the time these things will get thrown away. If you go into, say, an operating theatre, they are already lots of bins. Trying to separate out different reusable items to return to different suppliers is very, very difficult."*
>
> Participant 6, Sustainability Transformation Project Lead

However, other participants stated that less space will be required for reusables.

> *"There is and there is the perception that a reusable takes up more space than a single use one. I think the reality of that is incorrect because you probably need fewer reusable to replace your single use. But the perception is that we don't."*
>
> Participant 6, Sustainability Transformation Project Lead

**Perceptions of patient or staff safety or experience should be considered**

Ensuring safe patient care remains a key concern, and any perceived risk of infection associated with reusable products make stakeholders hesitant to adopt them. There was a belief that IPC teams could be more involved.

> *"It's all about doing what's right for the patient."*
>
> Participant 9, Clinical procurement

> *"But other people's perspective, I suppose it's more set in stone because, as I said, from older generations where we've been told that reusable stuff has more risk of infection than most, most probably be more set in their ways of that's going to affect me more than somebody that was of a younger generation who would most probably think, well, I'm doing my bit from the environment."*
>
> Participant 9, Clinical procurement

> *"Infection prevention could do a whole lot more to identify and agree products up front that are suitable for reuse."*
>
> Participant 13, Clinical Procurement Specialist/Operating Department Practitioner

For staff experience, reusable products are perceived as often being of better quality compared to single-use alternatives.

> *"A lot of these products are actually superior products that are reasonable gowns, they are superior products, that's increased one in almost all metrics"*
>
> Participant 6, Sustainability Transformation Project Lead

For some reusable products, there may be improvements to patient perception or experience.

> *"And I haven't ever had any feedback on, for example, like the reusable theatre hats, even though I know evidence from the kind of patient safety network is that patients prefer or were happier with kind of seeing staff's names and things like that."*
>
> Participant 2, Clinical sustainability fellow

There were mixed opinions regarding how patients may perceive or should be engaged in transitions to reusable items. Some staff perceive disclosing environmental or procedural changes to patients as risky, fearing legal consequences or heightened scrutiny of existing issues. Mixed opinions from staff on patient perceptions may be a barrier to adoption of reusables.

> *"There might be a view from patients that if they think something's being reused versus disposables, they would flag that infection prevention control concern."*
>
> Participant 3, Sustainability Clinical & Innovation Lead

Others believe patients, especially those with environmental awareness, would appreciate and potentially advocate for sustainable healthcare efforts.

> *"I definitely think they [patients] could be good stakeholders, and my dad is very sustainability minded, and he's been saying to me for a long time we need to get clinicians talking to patients about this stuff, you know, involving them. I would like to do some kind of patient public involvement group at some points."*
>
> Participant 12, Sustainability Programme Manager

> *"I think mainly majority [patients] would be dismissive in a sense of I've got more important things I'm worried about right now and I yeah, but I do think. People [public] who weren't coming in, if you just ask them, I think a lot of people would be interested and would like the environmental side of it. But I guess when you're actually coming in [as a patient]. It's a bit different. Your mind's elsewhere."*
>
> Participant 7, Clinical Lead Anaesthetics (ODPs/Nurses)

**The carbon and financial cost/saving of the proposed change must be made clear**
Reusable products often have a higher upfront cost, but a lower lifetime cost. The higher upfront cost can hinder adoption.

> *"You should be comparing 100 reused to 1 single use one that is a whole life costing price that isn't taken into account in the kind of procurement process"*
>
> Participant 6, Sustainability Transformation Project Lead

> *"We're locked into this this unhelpful 12-month finance cycle. We always just declare the first 12 months the second year, two year, three-year four. It's irrelevant because it's we're comparing what we're doing in this per financial period with what happened in the last financial period. That's the only comparison we're interested in."*
>
> Participant 11, Contracts and Procurement Manager

Only two participants stated a plan for measuring carbon footprint. Accurate measurement of carbon emissions remains a significant issue, with current efforts failing to deliver reliable data.

> *"We use a carbon foot printing software called smart carbon, and we use that to calculate our improvements... We do not need to publish our carbon footprint. Something I disagree with. I think we do."*
>
> Participant 6, Sustainability Transformation Project Lead

> *"The difficulty with measuring clinical things is who's going to do it like it takes a lot of time and effort to monitor things like that... That's not part of anyone's job description to do things like that. It's really difficult to sort of ongoing monitor things like that like I could, I mean I could do like a sort of snapshot, you know, of how many people are wearing reusable hats today and then, you know, in six months' time, has that changed?"*
>
> Participant 10, Consultant Anaesthetist/ Clinical Lead for Sustainability

Monitoring is not always possible in the required specificity and detail, relying heavily on general observations and project-based approaches. Product usage remains unclear, with insufficient data on where and how items are utilized within healthcare systems.

> *"You might be able to, you know, keep tabs on what reusables are in place, so I think. Not a full process, but hopefully that might be something we might be able to work on."*
>
> Participant 5, Sustainability Project Manager

Section 3

# Key combined insights

**1. Leadership and governance structures are absent**
The transition to reusable medical products within the NHS has largely been driven by motivated individuals or small teams, rather than strategic organisational leadership. This reliance on local champions often results in inconsistent implementation, slow progress, and vulnerability to disruption when those individuals leave or shift roles. Despite a generally similar project governance structure used across the NHS sites studied—typically involving procurement, clinical leads, infection prevention and control (IPC), and decontamination services—there is no clear or standardised implementation framework, which leads to inefficiencies, confusion, and missed opportunities for scaling change. In one case, an external consultant acting as a project manager and the involvement of a local Quality Improvement (QI) team helped drive progress, suggesting that formal project structures and leadership roles are enablers of success.

**2. Operational and infrastructure challenges can restrict adoption**
Significant operational barriers were identified, especially around sterilisation and laundering of reusable products. Common challenges included inadequate decontamination capacity, insufficient, incompatible machinery, and dependence on off-site services. Introducing reusable items often required investment in infrastructure and redesigning existing processes.

**3. Procurement systems are fragmented**
Procurement practices vary across and within NHS organisations. Many decisions are made at department or directorate levels rather than centrally, contributing to inconsistent product choices, duplication of effort, and limited standardisation. Procurement teams, often under-resourced, are not always able to support or oversee transitions. Fragmented procurement structures—such as regional shared services—add further complexity, making top-down coordination and alignment difficult. Short-term cost-saving incentives in procurement may also deter investment in reusables, even when long-term savings and sustainability benefits are well established.

**4. Staff awareness and training on this issue is limited**
Availability of, and capacity to attend, training — both during transition and on an ongoing basis—was a recurring barrier. Some staff were unfamiliar with reusable workflows, which created safety risks and reduced confidence. High staff turnover further exacerbated training challenges, as onboarding processes rarely included sustainability-focused content. Reusable products were sometimes viewed as more complex or burdensome, especially if changes added to workload or disrupted established routines. Sterilisation departments reported increased workload from managing reusable items, including reprocessing unused items due to sterilisation expiry.

### 5. Infection Prevention and Control (IPC) concerns can stop adoption

While IPC concerns were frequently cited as barriers in early stages, most sites in this study found that with adequate guidance, protocols, and communication, IPC teams were supportive. In some cases, resistance came more from individual staff perceptions or limited exposure to evidence than from policy constraints. IPC teams themselves reported variation in risk tolerance and practices within their own discipline. Where IPC concerns persisted, participants said that access to case studies and examples from other Trusts helped reduce uncertainty and support decision-making.

### 6. Staff and patient experience is variable

Most staff preferred reusable products when training, usability, and reliability were ensured. Reusables were often considered higher quality – more robust, quieter, and more comfortable for patients. In trials, staff showed a preference for reusables such as diathermy pads and warming devices. However, where infrastructure or logistics were insufficient, transitions risked increasing workloads or causing delays.

Patient experience was generally unchanged or neutral, especially for products used under anaesthesia. Staff opinions varied on whether to involve patients in transition decisions: some felt patients might perceive reusables as less hygienic, while others believed patients and the public –particularly those with environmental awareness – would support sustainability initiatives.

### 7. There is no central depository of evidence

Interview participants repeatedly emphasised the need for better access to reliable data and evidence to support transitions. Case studies – especially those detailing practical implementation challenges – were seen as powerful tools. However, many staff were unaware of where to find relevant resources. National guidance and peer-reviewed studies were limited, and clinical staff were hesitant to adopt changes without a strong evidence base. This lack of centralised, trusted information slowed momentum and made it harder to secure IPC or leadership approval.

### 8. Financial concerns can be barriers to adoption

Despite evidence of long-term savings from reusable products in many cases, the upfront costs were a major concern. NHS financial cycles prioritise short-term budgeting, making it difficult to justify investments that may take years to pay off. Cost-effectiveness also depended on usage rates: for example, reusable products with fixed time-based lifespans (e.g. two years) became less cost-efficient when underused (e.g. patient warming). Accurate financial modelling was further complicated by commercial sensitivities that limit transparency around procurement costs, supplier terms, and return-on-investment projections.

### 9. Carbon accounting is uncertain

While carbon reduction was a primary driver for many initiatives, robust carbon accounting was rarely conducted at site level due to limited expertise, time, or access to data. Some organisations used external software or relied on assumptions, but manufacturer transparency and lifecycle data remained a significant gap. Reusable products often have lower carbon footprints than their disposable counterparts(4), but actual impact depends on use rates, cleaning processes, and equipment efficiency.

### 10. Case studies and networks can support transition

Case studies and peer learning were cited as essential enablers of successful transitions. Staff gained confidence from seeing real-world examples, especially when supported by evidence of safety, IPC compliance, and cost-effectiveness. Participants valued case studies that addressed not just outcomes, but practical implementation issues such as training, infrastructure, and resistance. Informal professional networks also facilitated sharing of insights, documents, and templates. However, these networks were often limited to sustainability forums. Embedding reusable product discussions in broader clinical and operational networks is key to normalising change across the NHS.

Section 4

# Recommendations

Case studies to date show clear carbon benefit to the NHS from transitioning to reusable medical products in all reported cases. The full scale of this opportunity, beyond the products and sites evaluated in this project, has not yet been modelled but is likely to be substantial.

The products evaluated in this project have shown mixed financial results, depending on scale, usage and sterile services / laundering requirements, showing the importance of local factors.

Whereas there have been some concerns about patient safety or experience with transition to some reusable products, no actual harm has been reported, and with alterations to product or process, in many instances these concerns seem surmountable.

We make three recommendations, targeted at policymakers and government.

Recommendation 1

**Strengthen System-Level Leadership, Governance and Infrastructure**

The transition to reusable products within the NHS has been largely driven by motivated individuals and small teams rather than as part of a coordinated effort with strategic organisational leadership. We are mindful that the organisations and individuals that participated in this project have self-identified as those leading change, and so it is likely that in many NHS organisations such change has not been considered, has not been attempted, or has been attempted and failed.

Given the scale and speed of change needed to meet NHS net zero ambitions, there is a need for centralised national guidance and policy on the transition to reusable products, including on governance structures, safety (in particular, infection risk) and estimated carbon and financial savings. Although infection control policy and practice were not identified as a barrier for many of the case studies reported here, our experience from many other hospitals that have not adopted reusable products is that local infection control is a barrier to change, and often a barrier that appears insurmountable. Providing national guidance on carbon and financial cost/savings estimation will eliminate duplication of effort and inexpert assessment; however, guidance should take into account potential variability in implementation based on local factors (such as infrastructure).

National guidance can start with already identified high priority items, and transition to additional items. Shared prioritisation frameworks may facilitate alignment across organisations with high priority transitions including those that are high volume, high cost, or that bring direct benefits to patients and/or staff. There needs to be an exploration of existing infrastructure for decontamination and modelling of future requirements, and whether that is best delivered at local, regional or national level. There also needs be an exploration of the financial investment and possible funding mechanisms required to

support implementation programmes, including to seed fund transition, and an exploration of the level of centralised funding required for the supply and decontamination of reusable medical products.

To ensure uptake, this approach must be supported by a mechanism of accountability. National guidance can identify items to transition for reuse, and create a 'comply or explain' mechanism, whereby NHS organisations must either adopt the reusable version of a medical product or report their justification for not doing so. There may be circumstances that make a particular item infeasible to reuse in a particular context, for example due to poor availability of decontamination facilities, or low volumes of product use. Such strategy should include provision of timelines that are realistic for organisations, particularly in light of the complexities to implementation demonstrated in this report.

Recommendation 2

**Provide a Structured Framework for Planning and Implementation**

We found there is a strong need for a clear framework or systematic process for transitioning to reusable products (in the context of a complex system including many stakeholders in the decision making) to support staff and address challenges with inefficient, slow and restricted adoption..

A standardised implementation framework will support consistent and effective transitions at the scale and pace required. This framework should be centrally developed, while allowing sufficient flexibility for local adaptation to reflect variations in governance, clinical settings, product types, and organisational contexts. It should set out clear roles and responsibilities, key decision points, and sequenced steps for transition, with guidance on stakeholder engagement and risk management. Dedicated time to support these projects should be embedded into staff roles across stakeholder teams, and staff involved should have an understanding of the framework, with training provided where necessary.

Central to this approach is the need for strong interdisciplinary collaboration. Effective transitions require coordinated input and decision-making across clinical, procurement, finance, IPC, sustainability, and decontamination teams. Establishing well-defined communication channels and governance mechanisms between these stakeholders will avoid duplication, mitigate risks, and ensure that the full range of organisational expertise is brought to bear. To support this, the framework should align with existing NHS change management structures where possible, such as product review groups, cost-efficiency programmes, and quality improvement (QI) programmes.

A key component of the framework will ensure staff who will be using reusable products are provided with comprehensive technical training as required to ensure their effective, safe and efficient use with patients. Training should be integrated into existing organisational mechanisms where possible, to build on established learning and engagement pathways.

Recommendation 3

**Address Knowledge Gaps and Build the Evidence Base**

To support a safe and effective transition, it is essential to facilitate knowledge sharing and dissemination across the NHS. A commonly reported barrier to change is the perceived lack of robust evidence on the feasibility and impact of product transitions in NHS organisations. While many organisations have undertaken QI projects related to reusable transitions, these initiatives are not always shared widely or viewed with the same confidence as published peer-reviewed case studies or academic research. There is a need to raise the profile of this work and strengthen the credibility of local learning through better documentation and dissemination.

Promoting cross-organisational learning is vital and should be supported through local, regional and national networks. Importantly, exchange of knowledge should not be confined to sustainability-specific forums, and engagement in general clinical and operational conferences and networks should be encouraged to ensure that sustainability goals are aligned with core NHS priorities such as safety, quality, and value. Sites should be encouraged to share not only successful outcomes but also the challenges and barriers encountered when transitioning to reusable items. All reporting should consider the full sustainable value—capturing clinical, financial, social, and environmental impacts rather than focusing solely on carbon savings in isolation.

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