INNOVATION AGENCY
Academic Health Science Network
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NHS England

An Innovation Agency report for the NHSE Sustainable Procurement Team

SURGICAL INSTRUMENT SET RATIONALISATION: UNDERSTANDING THE BENEFITS AND REPLICATING THE PROCESS

CONTENTS

1 EXECUTIVE SUMMARY

The 'Delivering a Net Zero National Health Service' report has set out a challenging target to reach a Net Zero NHS Supply Chain by 2045 and is supported by the Royal College of Surgeons (RCS) recommendations in the Intercollegiate Green Theatre Checklist to reduce the environmental impact of operating theatres.[1]

The NHS England Sustainable Procurement team are working towards this goal through several practical programs and by supporting the wider system to understand and embrace the change required to deliver it.

In support of the net zero ambition, trusts and integrated care systems (ICS) should have in place Green Plans which set out their aims, objectives, and delivery plans for their carbon reduction strategy. Board-level 'net zero leads' will be held responsible for overseeing its delivery and the plans signed off by the trust board.

One of the programs identified by NHS England that will deliver towards that ambition is surgical tray rationalisation. Surgical trays are often added to over time without due reflection and this work aims to both prompt a rethink of which contents are necessary and to provide evidence of the benefits of rationalisation. Research assessing set utilisation across 4 surgical specialties found > 75% instruments remained unused per Procedure.[2]

"The principal determinant of the life-cycle carbon footprint of reusable surgical instruments is the decontamination process (...) responsible for up to 85 per cent.' - Rizan, Lilywhite, Reed & Bhutta (2022) [3]

The pilot surgical tray rationalisation builds on the successful earlier review of appendicectomy procedures carried out by Leeds. The pilot was carried out across Yorkshire: St James' Hospital, Leeds Teaching Hospitals Trust (LTHT) and the Mid Yorkshire Hospitals Trust (MYHT) (Pinderfields and Dewsbury sites) in collaboration with the NHS England Sustainable Procurement Team and The Innovation Agency (IA).

The IA are the Academic Health Science Network for the North-West Coast. They work to improve health and generate economic growth and collaborated on this project to capture both the sustainability benefits and the potential cost savings, as well as ensure the process was both acceptable to clinicians and replicable in other trusts.

For this project the target surgical procedure of cholecystectomy was agreed by the pilot sites and a prospective audit was undertaken from January – March 2023 and included Acute surgeries, Emergency General Surgery (EGS), Day Case surgery, and Hepato-Pancreatico-Biliary surgeries (HPB).

The mandated surgical tray checklists were used to record the actual instruments used during the procedure and note the redundant and supplementary instruments. A minimum sample size of 50 was recommended with the final numbers of 70 cases in Leeds and 60 in Mid Yorkshire submitted for analysis. A utilisation rate was calculated against each instrument. The data was presented to an advisory surgical group who were asked to agree the instruments for routine instrument use and propose instruments for removal deemed redundant or from the same functional or common group.

[1] file:///C:/Users/probe/Downloads/GreenTheatreChecklist.pdf

[2] Stockert EW, Langerman A. Assessing the magnitude and costs of intraoperative inefficiencies attributable to surgical instrument trays. J Am Coll Surg. 2014 Oct;219(4):646-55. doi: 10.1016/j.jamcollsurg.2014.06.019. Epub 2014 Jul 11. PMID: 25154669.

[3] Chantelle Rizan, Rob Lillywhite, Malcolm Reed, Mahmood F Bhutta, Minimising carbon and financial costs of steam sterilisation and packaging of reusable surgical instruments, British Journal of Surgery, Volume 109, Issue 2, February 2022, Pages 200–210, https://doi.org/10.1093/bjs/znab406.

To facilitate the discussion a "hack" was set up with all the key stakeholders from surgical and leadership teams to review the utilisation data using a systematic reproduceable methodology. The threshold for routine inclusion in the final tray was agreed by the hack. Instruments with a zero utilisation were simply excluded if no objections were raised, or added to the remaining instrument list for detailed discussion if no agreement was reached.

A consensus by discussion was used to identify the remaining instruments to be routinely included or excluded or assigned a supplementary status if no consensus could be reached on their exclusion. A commentary was recorded to ensure all feedback was respected and captured.

The hack proposals were reviewed by the local sterilisation service to determine the optimal DIN basket/tray configuration against their respective off-site or on-site sterilisation facilities.

A green pilot tray recommendation was produced for the surgical teams, and an approved surgical tray and supplementary list was entered into surgical practice for cholecystectomy surgeries. Feedback was collected from the pilot trays to determine if any further changes were required.

The benefits of tray rationalisation are cost savings, carbon reduction, time saved during preparing for surgery and the satisfaction of the clinical teams delivering a sustainable future. The financial savings were calculated using local sterilisation procurement frameworks which provides a methodology to calculate the cost savings based on incremental cost increases per instrument band.

"Rule of thumb 1: moving an instrument set down a tray banding by one yields approximately 15% reduction in costs and more optimally grouping instruments into fewer sets may yield even higher savings"

"Rule of thumb 2: reducing a surgical set by a standard sized tray yields approximately 1.5kg of CO2e per set decontamination"

NHS England used the estimated life-cycle emissions per machine cycle of a washer/disinfector (3.74 kg CO2e) and steam steriliser (12.13 kg CO2e) from Rizan et al., (2022) to determine CO2e savings per rationalised set use. The primary determinants of savings were derived from the reduction of slots required per set, per machine cycle.

LTHT reduced their typical surgical setup of over 100 items across four trays (3x in single-use wrap; 1x in rigid reusable container) into a single multi-layer rigid reusable container, containing only 65 items within two stacked DIN baskets. This resulted in a halving of emissions associated with the washer/disinfector cycle and a four-fold reduction of emissions for steam sterilisation [4]. Through reduction of number of instruments and more optimally grouping instruments within a single container, costs were reduced between 30%-50%. Across 800 cases performed at LTHT they are projected to save between £15-22k in sterilisation costs and between 2-3 tCO2e per annum.

[4] DIN baskets occupy a slot each within the washer disinfector, but when stacked in a multi-layer casket only occupy one slot within the autoclave.

Additional financial benefits also are likely to be incurred because of standardising sets across all four specialties. Due to current bespoke setups, it is typical to expedite some instrument sets to ensure adequate rotation, which incurs a fast-track premium. Standardised sets shared across all specialties can ensure the resilience of supply and demand for these high-volume cases.

Qualitative data was also collected from both sites. Survey results from Leeds revealed tray rationalisation led to quicker, easier and faster surgery preparation with all 25 respondents agreeing that it was a beneficial process. A semi-structured interview with Mid Yorkshire captured similarly high satisfaction with the tray rationalisation and ratified the recommended process and supporting materials.

Based on this evaluation, the NHS England sustainable procurement team and the Innovation Agency recommend these key activities:

- **Identify a routine target procedure.**
- **Audit the instrument use per procedure to determine an overall utilisation rate.**
- **Host a broad engagement event with all the stakeholders.**
- **Facilitate a hack across the surgical teams to determine the optimal number of instruments.**

Other teams wishing to replicate this process of rationalisation in their own trusts can refer to the **NHS England Sustainable Procurement guide 'How-To Guide: Surgical Instrument Set Rationalisation'** for further guidance.

2 RECOMMENDATIONS

There are several key considerations to ensure surgical teams are in a clear position to optimise the number of instruments. Before undertaking a green tray rationalisation project, it is important to understand the frequency of surgical instrumentation usage, the capacity of the sterilisation service trays and DIN baskets, the carbon footprint and the price banding to optimise standard usage while minimising the impact of any necessary supplementary single-wrapped instrument additions.

Senior leadership, staff engagement, communication and training, which is discussed further in the methodology will be integral to any successful implementation of both tray rationalisation and sustainability plans.

More generally it is imperative to gain the support of both the clinicians and the sustainability leads before undertaking steps to boost the sustainability of your processes. Once the benefits of rationalisation are understood there will be less resistance to behaviour change.

Discussion with the sterilisation provider is essential to understand the optimal process and the benefits that may be achievable through any rationalisation activity. Minimisation of the surgical instrumentation should not lead to an increase in single-wrapped supplementary items and should recognise infrequent use.

Some equipment will be used very infrequently in emergency situations, however early engagement with surgical teams will ensure they are available as supplementary items before safely removing them and ensuring there is no clinical risk to patients.

Trusts are recommended to undertake an audit from their operational SUS data to identify their most frequent surgeries to undertake future targeted tray rationalisation studies. Where major or minor sets are opened as standard, opportunities to curate streamlined speciality specific trays should be considered.

Further research is recommended:

- **To establish the benefits of switching to reusable containers or reusable wraps away from non-reusable wraps. Low-cost single-use wraps may be attractive in the short term however reusable containers and reusable wraps offer long term savings when the initial investment has been offset and the single-use wraps continue to attract recycling charges.**
- **To outsource the maintenance and repair of equipment and containers to the sterilisation team may reduce defective instrumentation at the point of surgery and delays.**
- **To understand the economic benefits of on-site vs commercial off-site sterilisation services to include carriage and economies of scale.**
- **To check for further potential consolidation of trays through sterilisation protocols where items may be currently processed with gas plasma in separate trays (check with manufacturer whether suitable for steam sterilisation).**

3 BACKGROUND

The Intercollegiate Green Theatre Checklist for interoperative equipment recognised the opportunity to streamline reusable surgical instrument sets by simply reducing and optimising the number of instruments sent for sterilisation, delivering real time carbon and financial savings.[5]

IMAGE 1: DIN BASKET

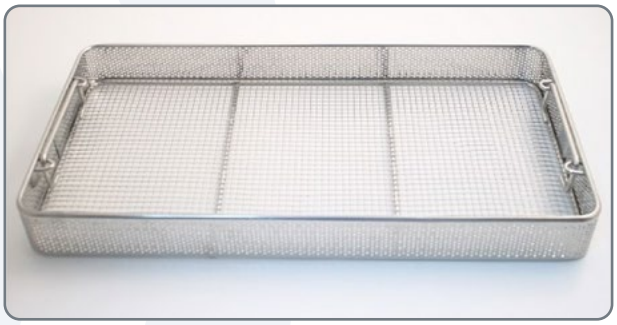

IMAGE 2: DIN BASKET AND REUSABLE RIGID STERILE CONTAINER

IMAGE 3: STERILISED WRAPPED TRAY (SINGLE USE OR REUSABLE WRAPS)

- **Where wrap is preferred, consider avoiding additional unnecessary layers beyond a single inner and outer layer or consider reusable wrap.**

- **Multi-layered containers allow for more efficient grouping of instruments, yielding cost and carbon savings.**

[5] https://rcpsg.ac.uk/college/speaking-up-for-the-profession/climate-change-and-sustainability/green-theatre-initiative

At the heart of sterilisation is the item to be sterilised and its necessity which is frequently overlooked over and above a technical assessment of its sterilisation needs.

Streamlining reusable surgical instrument trays yields both carbon and financial benefits by consolidating instruments into a smaller volume of trays (either number or size). This aligns with the approach recommended by the Intercollegiate Green Theatre Checklist for interoperative equipment.

The Sustainable Procurement Team has provided financial and practical support to Leeds and Mid Yorkshire to expand their surgical instrument green tray rationalisation approach to cholecystectomy procedures. The aim of the pilot is to develop clinical confidence across the wider system by identifying carbon and financial savings together with human factors such as user acceptance and surgical productivity.

The Leeds team has previously undertaken a project using the Sustainable Quality Improvement (SusQI) framework for laparoscopic appendicectomies which highlighted the opportunities to reduce the environmental impact.

The team identified surgical activity for appendicectomies and tracked all the instruments in the current procedure packs. The team were able to reduce these from 119 to 49, both reducing the number of trays of surgical instruments requiring sterilisation and the number of single-use items opened but not used. These 'Green Trays' are now being used routinely across the trust.

Laparoscopic cholecystectomies were selected by the NHS England Sustainable Procurement Team in partnership with the pilot sites as one of the most common surgical procedures performed in England for the routine surgical management of benign gallbladder disease with over 64,500 cases performed in 2021/22. This included total cholecystectomy and excision of surrounding tissue (OPCS Code J18.1), total cholecystectomy and exploration of common bile duct (J18.2), total cholecystectomy NEC (J18.3), partial cholecystectomy and exploration of common bile duct (J18.4), and partial cholecystectomy NEC J18.5

NICE currently recommend laparoscopic cholecystectomy for people diagnosed with symptomatic gallbladder stones either as a day-case for people having it as an elective planned procedure, unless their circumstances or clinical condition make an inpatient stay necessary or within one week if acute cholecystitis is diagnosed.

The life cycle analysis of a sterile services decontamination setup from Rizan et al (2022)[3] was used to predict the carbon footprint and financial cost of packaging and processing reusable surgical instruments. NHS England propose trusts build on this to demonstrate the impact of rationalising the number of surgical instruments, enabling surgeons to drive action towards net-zero carbon surgery.

There are a range of in-house and commercial sterilisation models across the NHS using a range of sterilisation techniques. All services should comply with

- **Article 12 (MDD) and Regulation 14 (UK MDR 2002 No 618, Part II) shall apply to systems and procedure packs. Article 12 (MDD) and Regulation 14 (MDR 2002, Part II) system and procedure packs: this article of the MDD and MDR 2002 (No 618) allow an assembler that puts devices bearing the CE and/or UKCA mark together within their intended purpose, and within limits of use specified by their manufacturers.**
- **ISO 13485 accredited with BSI 3 ISO 14971 (risk analysis) 4 HTM01-01part A-D.**

Steam sterilisation is the most common form of sterilisation services qualifying, supporting reusable devices or sterilization of products sold non-sterile.

Steam cycles using pre-vacuum, purge-pulse, air-cool and gravity accommodate most packaging designs for Class II and III devices, pharmaceuticals and ophthalmic products. In addition, various programmable cycles provide a wide range of steam cycle process development. The installation of multiple sterilizers with the same cycle design allows for back-up and cross-validation capabilities to assure continuous production capacity.

Other sterilisation systems are available; however, they fall outside the scope of this report. These include irradiation and ethylene oxide sterilization.

Rizan recognises three key variables around sterilisation:

- **The capacity of the onsite /offsite washer/disinfectors and steam sterilisation units.**
- **The loading efficiency of the washer/disinfectors in term of DIN backets and steam sterilisation units in terms of trays.**
- **The number and frequency of supplementary single wrap items requested outside the routine surgical trays.**

Rizan estimated the carbon footprint for an optimised instrument DIN basket with 30 instruments was 1,531g CO2 e per functional unit) or 66–77 g CO 2 e per instrument. Rizan demonstrated the carbon footprint of decontaminating and packaging instruments was lowest when instruments were part of sets (66–77 g CO2e per instrument), with a two-to three-fold increase when instruments were wrapped individually (189 g CO2e per instrument).

Commercial savings are immediate with the incremental saving arising from a reduction in the number of instruments to be sterilised, with trays with larger trays of 71 instruments or more costing up to 9 times more than smaller trays of 10 items.

The most carbon-friendly sets are when items are reduced to the point that the number of trays sent for sterilisation can also be reduced, and where items are only assigned to supplementary status when use is infrequent.

With reductions achieved from 119 to 49 in the earlier appendicectomies audit there is significant scope across other routine procedures to achieve similar outcomes.

4 METHODOLOGY

A sponsor was secured from the senior leadership sustainability team and the support from the surgical directorate to rationalise the surgical trays was agreed. Then a stakeholder event was scheduled across the trust stakeholders to ensure agreement was in place to adopt the recommendations from the process.

A prospective audit was undertaken of cholecystectomy surgeries performed across the two pilot trusts from the January – March 2023.

The mandated surgical tray checklists were used to record the actual instruments used during the procedure and note the redundant and supplementary instruments. A utilisation rate was generated from the audit data to inform further discussion.

The checklists data was supplemented with additional qualitative questions to determine if rationalisation was; beneficial, quicker and easier, the potential time saved for each procedure, and any additional insight into the reasons why it was beneficial.

The number of cases to be audited were agreed in advance with 70 surgeries captured across the surgical specialities in Leeds and 58 cases across Pinderfields and Dewsbury sites during this evaluation.
A larger sample size may be more appropriate when there is greater variation in tray contents between core specialties. The utilisation data was presented to an advisory surgical group who reviewed the data using a systematic reproducible methodology described below. A strong facilitator should be agreed across all parties to ensure the momentum of the hack is maintained.

The data was tabulated for ease of analysis recognising the surgical setting using the format described in **table 1.**

TABLE 1 NET UTILISATION ANALYSIS PER INSTRUMENT ACROSS ALL SURGERIES AND SPECIALITIES.

Instrument	Net % Use (when present)	% Use (absolute)	% Cases present on tray	Acutes % Use (absolute)	EGS % Use (absolute)	Day Case % Use (absolute)	HPB % Use (absolute)
Instrument 1	0%	0%	100%	0%	0%	0%	0%
Instrument 2	98%	98%	100%	100%	94%	100%	100%
Instrument 3	0%	0%	81%	0%	0%	0%	0%
Instrument 4	100%	100%	100%	100%	100%	100%	100%

Key: Red: low usage; Yellow: medium usage; Green: frequent usage

The threshold for automatic inclusion in the final tray was agreed by the advisory group and those instruments were assigned to the proposed tray list. On the other end of the scale, the exclusion threshold was agreed by the advisory group and instruments below the utilisation threshold were simply excluded if no objections were raised, or if no consensus could be agreed added back to the remaining instrument list for detailed discussion.

A consensus by discussion was used to identify the remaining instruments to be routinely included or excluded or assigned a supplementary status if no agreement could be reached to ensure the instrument remained accessible for the surgical teams. The group noted the impact of the sterilisation banding structure and where decisions made the difference between requiring fewer / smaller trays, in order to maximise both financial and carbon savings. A commentary was recorded to ensure all feedback was captured and available for future analyses.

A final proposed paper draft of the tray was circulated across the surgical teams for any further comment or amendments and forwarded to the host sterilisation service to validate the recommendations on the number of instruments and proposed tray design and assessed the proposals against the ANSI/AAMI ST79 guide to steam sterilization and sterility assurance in health care facilities standards.

A green pilot tray was ratified and entered in surgical practice. On-going feedback was collected from the pilot trays to identify if any further changes required.

A retrospective analysis of the impact of the green tray was undertaken to estimate the carbon footprint and financial impact for the proposed changes.

Rizan's carbon footprints for washer/disinfector (3.74 kgCO2e) and sterilization (12.13. kgCO2e) cycles were derived using emissions factors for detergent (washer only), electricity, natural gas, and water supply and treatment. These were divided by the DIN capacity of the machines to provide an estimate of the carbon footprint per DIN basket (net ~1.5kg CO2e per decontamination cycle).

The financial savings were calculated using local sterilisation procurement frameworks which provides a methodology to calculate the cost savings based on incremental cost increases per instrument band (typically, in bands of 10).

4.1 TRAY RATIONALISATION PROCESS MAP

CORE ACTIVITIES	HINTS & TIPS
Secure Internal advocacy and support Secure organisational support for tray rationalisation as a core Net Zero activity from senior sustainability leadership and clinical teams	Consider a strong lead who will champion the process and act as a facilitator for the advisory board and schedule a stakeholder event to ensure all the trust stakeholders are on-board
Engage the on-site or commercial sterilisation services Map the provision of sterilisation services and engage early with the sterilisation provider In- House /Outsourced	Establish decontamination and sterilisation carbon footprint and fee structure of the local service (typically bands of 10 instruments) to estimate the carbon footprint and potential cost savings from
Data collection Utilise mandated instrument tray checklists to collect data on instrument use	Generate a utilisation analysis for the surgical data to present the data the advisory group
Rationalise the instruments Review the checklists and generate a utility analysis for further discussion by the advisory group	The threshold for automatic inclusion in the final tray should be agreed by the advisory group and instruments routinely assigned to the proposed tray. On the other end of the scale, the exclusion threshold should be agreed by the advwisory group and instruments below the utilisation threshold simply excluded if no objections are raised, or if no consensus could be agreed added back to the remaining instrument list for detailed discussion. A consensus vote should be used to identify the remaining instruments to be routinely included or excluded or assigned a supplementary status if no agreement can be reached to ensure the instrument remained accessible for the surgical teams.
Secure agreement Present the advisory board recommendation to all the surgical teams for final approval	
Clinical sign off Enter the approved surgical tray into surgical practice	The sterilisation service will validate the optimal tray/din loading and ensure the process complies with ANSI/AAMI ST79 standards for steam sterilisation and sterility assurance in health care facilities
Carbon reduction (TCO2e) Estimate the impact of the tray rationalisation using carbon reduction using figures available in Rizan et al	Estimates of carbon savings can be derived from figures in Rizan et al. (2022), using the reported carbon footprint per machine cycle divided by the number of slots occupied by the surgical set. If you would like to undertake a more detailed carbon footprint of your own decontamination service, follow the methodology outlined in Rizan et al. (2022) supplementary materials.
Financial impact Estimate the impact of the tray rationalisation on the commercial framework	The cost of the sterilisation service can be secured through the commercial sterilisation framework with the host provider.

4.2 CARBON REDUCTION AND FINANCIAL CALCULATIONS

Trusts should map the mean duration for their decontamination (washer/disinfector and sterilizer) cycles to estimate the carbon footprint which should include: Electricity kWh, Water ltr, Natural gas m3 (3.20 kWh), Detergent (e).

Estimates are available from NHSE to determine the impact if local data is unavailable.

Rizan audited the percentage of tray/DIN backet slots occupied across the washer and steam sterilisation unit and the split for individually wrapped items

They used mean machine loading and mean number of instruments per set and the carbon footprint of decontaminating surgical instruments was calculated per instrument as part of a set and per instrument for individually wrapped items.

Rizan then demonstrated the carbon footprint of decontaminating and packaging instruments was lowest when instruments were part of sets (66–77 g CO_2e per instrument), with a two-to three-fold increase when instruments were wrapped individually (189 g CO_2e per instrument). The analysis utilised an average DIN basket size of 30 instrument. However, loading is determined by the capacity of the sterilisation service.

The analysis by Rizan highlights the trade-off if an instrument is removed from a DIN basket and subsequently used as a supplementary single wrap item attracting a separate cost and carbon footprint therefore consider the utilisation rate of the instrument before removing.

The financial impact was determined by the number of instruments in the DIN basket and the incremental price bands supplied by sterilisation services which generally fall into bands of 10. This provides a simplistic framework for trusts to estimate potential savings based on their sterilisation contract with the trust lead sterilisation provider.

5 QUALITATIVE SURVEY RESULTS

TRAY RATIONALISATION SURVEY RESPONSES

In total 26 responses were received from the team at Leeds.

ANSWERS FROM LEEDS SCRUB PRACTITIONERS

Question 1 – Does Tray rationalisation make surgery preparation easier?
The question received 26/26 responses, and saying ***"yes, tray rationalisation does make surgery preparation easier".***

Question 2 - Does Tray rationalisation make surgery preparation quicker?
The question received 26/26 responses, 25/26 responded ***"yes, surgical tray preparation time was quicker with tray rationalisation"***, with one respondent saying it didn't.

Question 3 - Can you estimate time saved setting up for each procedure through rationalisation
Only 3 responses gave an estimate of time saved, two stating it would **save 15 minutes**, one stating it would **save 10 minutes.**

Question 4 - Do you agree tray rationalisation is beneficial?
The question received 25/26 responses, with all 25 agreeing that ***"tray rationalisation is beneficial".***

Question 5 - Can you tell us why tray rationalisation is preferable?
This was a free text question with 16 of the questionnaires giving a response

- ***"Fewer trays to open"***
- ***"Improves efficiency"***
- ***"Reduces waste"***
- ***"Quicker to set-up"***
- ***"Easier to count"***
- ***"Greener"***

ANSWERS FROM LEEDS SURGEONS

Of the 26 questionnaires collected, 25 contained a response from the surgeon.

Question 1 - Do you agree tray rationalisation is beneficial?
Of the 25 responses, all 25 agreed with the statement that ***"tray rationalisation is beneficial".***

Question 2 - Can you tell us why tray rationalisation is preferable?
This was a free text question with 10 of the questionnaires giving a response

- ***"Consistency amongst trays and theatres"***
- ***"Time saving"***
- ***"More efficient/easier/quicker to set up"***
- ***"Reduces waste"***
- ***"Easier to count at the end"***

TESTIMONIAL FROM MID YORKSHIRE NHS TRUST

A semi-structured interview was carried out with a senior representative from Mid Yorkshire NHS Trust to capture the feedback from the two teams.

As the Dewsbury based team were already using smaller trays the team there could endorse their usage and support the Pinderfields team through the process of switching. They echoed the findings in Leeds that it was necessary to get buy in from senior leadership before commencing and that robust checklist data collection by the clinical specialist was a key enabler. Both these steps are essential before engaging in detailed discussions and making recommendations on the final reduced tray contents. Sharing photos of the tray during discussions also helps to remove any confusion about the naming of the instruments.

It was noted that having a smaller tray means less instruments to count by the theatre team. During surgery, the WHO guideline recommends a surgical pause to count the instruments. The more instruments there are to count, the longer this takes.

The Mid Yorkshire teams fed back that there is the obvious benefit of the reduced time spent by the scrub team to sift through a tray to get an instrument, as well as the quantifiable carbon and cost savings. The whole team also had an appreciation that making this switch is for the greater good for the NHS.

6 TRIAL SITES

6.1 LEEDS TEACHING HOSPITALS NHS TRUST LEEDS

Mr Adam Peckham-Cooper, Consultant General Surgeon at Leeds Teaching Hospitals, Iustin Maftei, the Quality Improvement Practitioner for Theatres and Anaesthesia, and Katie Boag, Academic Clinical Fellow in General Surgery led the project.

Sterilisation services have been contracted from BBraun through their Sterilog site in Pudsey. The site is one of the largest state-of-the-art decontamination supercentres in the UK.

Leeds previously piloted the rationalisation for surgical appendicectomies and tracked all the instruments used. The team were able to successfully reduce the instruments used from 119 to 49, reinforcing the scope for further tray rationalisation. These 'Green Trays' are now being used routinely across the trust.

Leeds is working with the NHS England Sustainable Procurement Team to document and standardise the approach for cholecystectomies surgeries aligned with the recommendations by the Intercollegiate Green Theatre Checklist for interoperative equipment which recognised streamlining reusable surgical equipment routinely sent for decontamination.

With thanks to Ben Grange Deputy General Manager for Theatres & Anaesthesia at Leeds Teaching Hospitals NHS Trust, Libby Sutherland Head of Sustainability at Leeds Teaching Hospitals NHS Trust, Lisa Fisher Deputy Head of Nursing at Leeds Teaching Hospitals NHS Trust, Joe Smith Operating Room Technician at Leeds Teaching Hospitals NHS Trust, Richard Vause Team Manager at Leeds Teaching Hospitals NHS Trust, Arlene Roque, Acutes & Obstetrics Deputy Team Leader and Paul Newman, Senior Decontamination Manager.

6.2 MID YORKSHIRE NHS TRUST

Pinderfields and Dewsbury sites within Mid Yorkshire NHS Trust are the second pilot sites for tray rationalisation for cholecystectomies. The Leeds approach was replicated by Mid Yorkshire to provide an additional test case of the approach developed with Leeds. The pilot is led by Mr Adeshina Fawole, consultant surgeon from Mid Yorkshire with full support from the wider team..

Pinderfields operates a different sterilisation model from Leeds, with a dedicated in-house service led by Angela Fairbank, the Sterile Services Manager for Mid-Yorkshire. Pinderfields has rationalised its sterilization services into one technically compliant new facility. The resulting increased capacity has allowed centralisation decontamination services.

Dewsbury utilise a general major surgical tray with dedicated surgical trays for a range of procedures including cholecystectomies, which contrasts the surgical approach in Pinderfields which favour a dedicated DIN basket.

Pinderfields aims to validate the Leeds approach and test the methodology to rationalise their trays from local audit of cholecystectomy surgeries.

Vicky Armitage, Clinical Specialist was in charge of the data collection and additional thanks for Tracy Wassell, Assistant Sterile Services Manager & Alison Osler, Decontamination Manager.

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