SUSQI PROJECT REPORT

Project Title: Switching from single use to reusable food containers in the main restaurant at RUH - Bath

Start date of Project: 2/10/2024
Date of Report: 09/01/2025

Team Members:

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Background:

At the Royal United Hospitals (RUH) Foundation Trust, it has been calculated that we use >4,000 single-use cardboard food containers in the main staff facing catering outlet, the Lansdown Restaurant every week. This is creating large amounts of waste and associated carbon emissions which we would like to avoid in order to align to our Trust's ambitious Net Zero targets.
A similar initiative is also active in the University of Bath across all of its catering outlets and other NHS Trusts that use the same reusable packaging (FSG), such as Solent and Northampton.

The Lansdown Restaurant serves an average of 1,000 customers per day at the Royal United Hospital, with customers being both staff, patients and visitors. Food provided by the RUH is a mixture of grab-and go items that are kept in cold fridges and then placed onto hot servers. There are self-service tills to prevent overcrowding and large queues. In addition to this, there are a set number of staff behind the hotplate serving areas. The intent of this initiative is to find a solution that will reduce single-use containers at the Lansdown whilst maintaining speed of service and not requiring an increase to staff workload or overall staff headcount required. There is also a strong preference to avoid any price increase to customers.

The project team consists of Fabio Soliman, Retail Catering Manager, overseeing operations at all retail catering units across the hospital, with support from Georgia-Rose Gleeson, Sustainability Officer, who has since left the Trust, but was keen to see a reusable container initiative succeed, and subsequent support from Elizabeth Ray, interim Sustainability Manager.

Specific Aims:

To reduce single use packaging, and to avoid the current high unnecessary wastage production via a reusable container scheme for all RUH staff, patients and visitors .

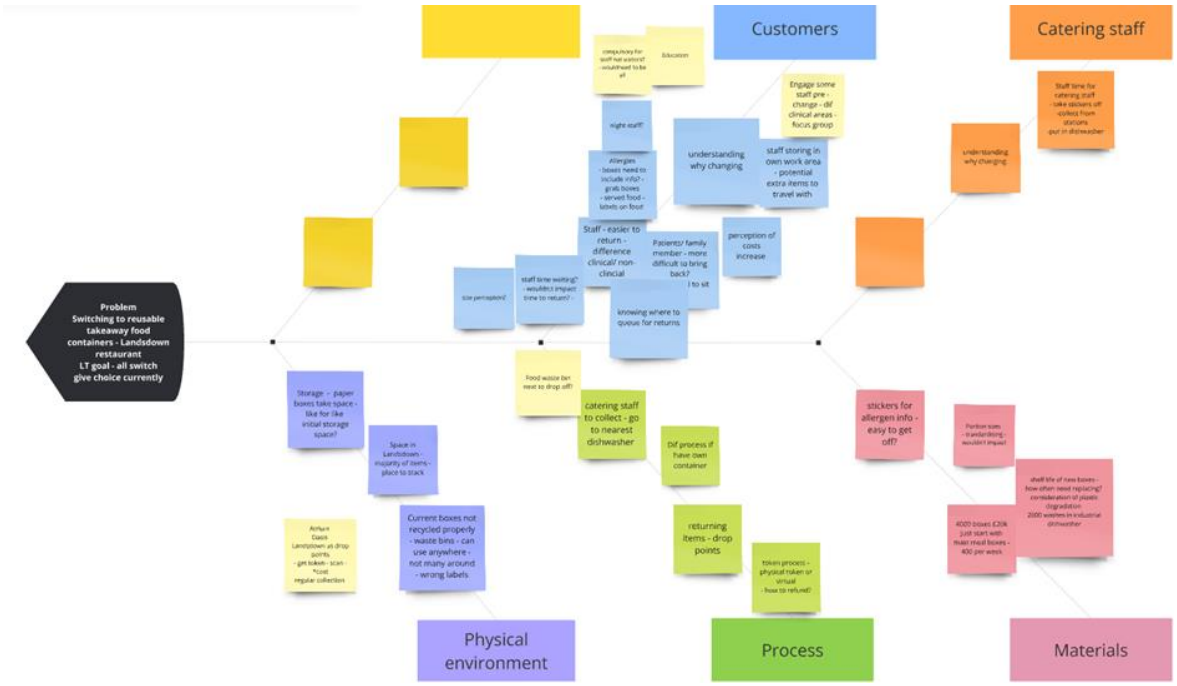
Methods:

Studying the system:

Initially we collected data on the number of daily customers and the quantities and spend on single-use containers. We receive an amount of over 1,000 customers a day and get through around 600 single use containers/day, split between boxes and paper cups.
Then, it was really important to engage the catering team to understand their thoughts and concerns - the main difference to their duties would be washing of reusable containers, but there would be a reduction in cleaning duties of waste. Staff were supportive with no concerns raised. It was important to engage Georgia-Rose Gleeson - Sustainability Officer and customer of Lansdown Restaurant and Nicola Talbott - Coach House team to support the project.

To understand all factors of introducing the change of reusable containers, a fishbone diagram was produced during a brainstorming session with Nicola Talbott, Fabio Soliman, Catherine Richards and Georgia-Rose Gleeson to understand the root cause of the problem. (Image 1.)

Image 1. (fishbone diagram)



A number of key considerations were highlighted through the fishbone exercise. Below is a list of changes that we need to consider, explore and test as we roll out the switch to reusable containers.

Drivers	***Changes to test***
Customers	● Trial reusable boxes with no deposit - get feedback ● Wider roll out with deposit/ token system - get feedback ● Communication / posters about new scheme
Environment	● Washing facilities ● Storage ● Drop off bins for customers to return
Process	● Drop off process for customers ● Pick up process by catering staff ● Washing by catering staff
Catering staff	● Provide clarity on new process, who's role and when
Materials	● Purchasing of new containers ● Stickers on new containers - how they come off and allergen information ● Testing durability of reusable containers

Changes tested/planned

Initial testing of reusable boxes:

- A number of staff started using a sample of the reusable boxes on a regular basis to test usability and robustness of the product. For example, the clasp - to see if it breaks, how well the product washes, and whether it stains - which may be off-putting to users.
- Feedback provided was that the boxes are sturdy enough and keep the heat as expected. Can also go through the dishwasher safely and can be kept under the heat lamp.

Based on this success we decided to further test the product.

Planned testing:

- 15 regular customers were selected by the retail catering manager to trial the reusable boxes over a 2 week period.
- Those in trial would not be required to pay the deposit for the reusable box, but they would see the benefit of the 20p discount on rice box meals which would be a usual benefit of using the containers in the future.
- Feedback questionnaire will be sent out at the end of trial.(see appendix 1.)

Aspects tested that didn't work, and what we learnt in the process:

- Manually giving a customer a physical token on receipt of a returned container, which could then be exchanged for another reusable container in the future was not pursued as one of the project aims is to enable food in reusable containers to be taken away and the container returned at the self service tills.

- Therefore the option of barcodes on reusable containers was explored. Unfortunately we found that generic barcodes don't work, i.e. scanning a barcode once the container had been returned would refund £5 back to the customer, but then the same barcode could be reused easily refunding £5 multiple times. Therefore a better (and previously market tested) option was raised by the supplier to which there is no deposit required, but the customer's bank card information is stored and is charged only if the container is not returned within 7 days.

In terms of resources required for initial testing, sample boxes were provided by a reusable container supplier. No other resources were required.

Final planned project:
The plan of the final project is to begin with 100 reusable boxes per day starting primarily with regular customers. These customers would test the uptake of a food container reuse scheme and see how this could be rolled out which would encourage behaviour change of other customers on a wider scale. Feedback will be encouraged using the same questionnaire as the initial small scale test (appendix 1.). If this pilot were to be successful, the plan would be to replace all single-use containers (food and drink) with reusable at all catering outlets in the hospital where practically feasible.

How would containers be paid for?
Based on the results of the planned project, the intent would be to scale up the use of reusables so that they replace single-use containers as far as practically possible across the RUH.
An investment would be made in an initial order of reusable containers, each of which can be reused up to 1,000 times. If any containers are not returned by a customer, they will be charged if the containers are not returned within 7 days.
A monthly cost is being explored with the supplier for an automated system that will provide kiosks for checking out reusable containers and return bins, supply of reusable containers, an integrated payment system, installation and support. Current pricing is higher than the current spend on single-use containers, however we are pursuing a price that favours reusable containers. Cost savings due to reduced waste production are also to be factored in.

Measurement:

Patient outcomes:

It does not impact patient care as it is not a patient project focused.

Population outcomes:
Through eliminating a proportion of single use containers, waste will be diverted from landfill, contributing to broader environmental benefits. Even greater benefits will be seen if all single-use containers can be replaced with reusables.

Environmental sustainability:

A process based life cycle assessment was used to estimate the GHG emissions associated with single use and reusable containers. The analysis included GHG emissions associated with raw material extraction, transport and disposal. Material weights and transport distance were converted into GHG emissions using emission factors taken from the 2024 UK Government Greenhouse Gas Conversion Factors database.

Additionally, for the reusable containers, GHG emissions associated with cleaning containers was included. Reusable containers will be washed between uses using an industrial dishwasher (Upster K-S200). Average electricity and water consumption during typical operation was taken from Upster technical guide and divided by average contact time per rack to provide an electricity and water consumption per rack. It is assumed that 6 containers fit into one rack and will be washed together. Electricity and water consumption per box was converted into GHG emissions using emission factors taken from the 2024 UK Government Greenhouse Gas Conversion Factors database.

Table 1 details the carbon footprint of each box, including washing of reusables.

	Single use container	**Reusable container**	
	Carbon footprint per container (kgCO2e)	**Carbon footprint per use (kgCO2e) (assuming 1,000 uses before disposal)**	**Carbon footprint per washing (kgCO2e)**
	0.0439	0.000339	0.0298
Total (kgCO2e):	0.0439	0.0301	

Economic sustainability:

Financial data was sourced from:

- Procurement records of single use containers
- Cost of reusable containers from suppliers
- Cost of container scanning technology from provider (Novirapack/ FSG)
- Cost of energy use dishwasher from manufacturer technical data and current electricity tariff

Social sustainability:

Sustainability is defined as “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations Brundtland Commission, 1987). The triple bottom line of sustainability encompasses social, environmental and financial sustainability. In order to achieve the RUH’s net zero goals, it is important that work focusing on the holistic nature of sustainability is carried out. This trial has provided us with an accurate insight into how behaviour change can be influenced through the incentivisation of environmentally beneficial

initiatives. Qualitative data is still being collected from the trial group. However, the reusable container scheme is a sustainable initiative that will continue to save financial costs and reduce the negative environmental footprint of single-use containers with beneficial results to customer experience. Encouraging a change of habits and emphasizing the potential individual costs as an outcome for customers to return or reuse the container will further encourage the success of this project.

Results:

Patient outcomes:

N/A, this was not a patient focused project.

Population outcomes:

Consideration given to wider population health outcomes (as above) but not measured as part of this project.

Environmental sustainability:

Table 2: If the RUH were to switch from single use meal boxes to reusable, it is estimated that we will save 1,485 kgCO2e per year. Additionally, we are diverting 3,641 kg of waste from landfill.

	GHG emissions (kgCO2e)
Single use containers per year	4,746.05
Reusable containers per year (use and washing)	3,260.97
Savings per year	**1,485.08**

Economic sustainability:

Table 3: Basic comparison of initial outlay costs considering the provision of single-use vs reusable containers for 100 rice-boxes per day:

Single-use		**Reusable**	
No. of containers/week =	600	Initial number of containers (assumed)=	500
No. of containers / month=	2,600	Replacements needed after 1,000 uses	32
Total number of containers/yr	31,200	Total number of containers/yr	532
£/unit	£0.157	£/unit	8.85

Annual cost	**£4,898.40**	Initial one-off cost	**£4,708.20**
Monthly cost	**£408.20**	Annual dishwashing cost	**£33.29**
		Break-even point	**11.6 months**

Cost savings are attributed to both reduced procurement and waste disposal of single-use food containers.

Over a year once initial outlay is covered, savings of using reusable containers = **£156.91**

However, other costs to account for include:
- Recycling waste disposal costs (would increase overall cost of single-use containers more than reusable scenario)
- Cost of reusable container scanning/ payment system

Social sustainability:

Some data is still being collected from the groups affected by the change.
Reduction of waste to landfill will have significant environmental benefits, along with fewer raw materials required in the long term that would have been required for manufacture and delivery of single-use containers, reducing carbon emissions, climate change impact and therefore healthcare issues linked to climate change.

Discussion:

According to our latest Lansdown survey (June' 24) around 44% of the customers who visit the restaurant for a meal tend to visit us at least 3 times a week, and use a single use container for their meal. Changing behavioural habits is the main barrier encountered so far. The challenge we have faced as a result of the trial has been the fact that unfortunately 6 out of the 15 containers were not returned for reuse within the first 7 days, and would have to be replaced. The value of the container would have been charged to the customer if it was not at trial stage, after the 7th day to ensure we are not at a financial loss.

Our next step to avoid the misplacement of reusable containers and associated potential carbon cost could be to facilitate easy returns by adding special collect "drop out bins" in strategic places such as near the entrance and exit of the restaurant. We are currently in discussions with a supplier, Noviratech, that can provide this service along with barcodes linked to specific customer payment information to recoup container costs if they are not returned.

Signage and online communications to staff will be used to raise awareness about the reusable container scheme with clear, simple instructions within the restaurant and near drop out bins on how the scheme works.

Once the challenges that this current project presents are corrected, it can also be extended to reusable cups and saver meal deal containers, with scope to cut single use to a minimum. This would have a huge impact on our road to net zero, as it would create significant cuts to scope 2 and 3 emissions.

Conclusions:

As we are still collecting data from the trial, some successes and learning are still being raised. The progress made with FSG has been very positive due to their previous experience with other Trusts. The aim is to move forward on reducing single use packaging by replacing single use cups and implementing reusable packaging to all other offered meals at Lansdown.
Raising awareness about sustainability in this area may help to encourage behaviour change of Lansdown Restaurant users and their openness to other environmentally focussed projects in the future.

References and Resources

- Brundtland, G.H. (1987) Our Common Future: Report of the World Commission on Environment and Development. Geneva, UN-Dokument A/42/427. http://www.un-documents.net/ocf-ov.htm

Appendices

Appendix 1 - Feedback questionnaire-

To be sent to users at end of trial.

1. Overall, how would you rate your experience purchasing food from a reusable container?

2. How do you rate the initiative as per below:

Quality of the container:	Poor/ Fair/ Good/ Very good/ Excellent
Ease of use:	Poor/ Fair/ Good/ Very good/ Excellent
Return scheme:	Poor/ Fair/ Good/ Very good/ Excellent
Price:	Poor/ Fair/ Good/ Very good/ Excellent
Loyalty discount:	Poor/ Fair/ Good/ Very good/ Excellent
Understanding how it works:	Poor/ Fair/ Good/ Very good/ Excellent

3. How many times did you visit the Lansdown Restaurant for the purpose of purchasing food from the Reusable Scheme?

4. How likely are you to support the initiative and reduce single use wastage?

   Very likely/ Somewhat likely/ Neither likely nor unlikely/ Somewhat unlikely/ Very unlikely

5. What did you like most about the Reusable Scheme?

6. What did you dislike about the Reusable Scheme?

Critical success factors

Please select one or two of the below factors that you believe were most essential to ensure the success of your project changes.

People	Process	Resources	Context
☐ Patient involvement and/or appropriate information for patients - to raise awareness and understanding of intervention ☐ Staff engagement ☐ MDT / Cross-department communication ☐ Skills and capability of staff ☐ Team/service agreement that there is a problem and changes are suitable to trial (Knowledge and understanding of the issue) ☐ Support from senior organisational or system leaders	☐ clear guidance / evidence / policy to support the intervention. ☐ Incentivisation of the strategy – e.g., QOF in general practice ☐ systematic and coordinated approach ☐ clear, measurable targets ☐ long-term strategy for sustaining and embedding change developed in planning phase ☐ integrating the intervention into the natural workflow, team functions, technology systems, and incentive structures of the team/service/organisation	☐ Dedicated time ☐ QI training / information resources and organisation process / support ☐ Infrastructure capable of providing teams with information, data and equipment needed ☐ Research / evidence of change successfully implemented elsewhere ☐ Financial investment	☐ aims aligned with wider service, organisational or system goals. ☐ Links to patient benefits / clinical outcomes ☐ Links to staff benefits ☐ 'Permission' given through the organisational context, capacity and positive change culture.

This template is adapted from SQUIRE 2.0 reporting guidelines.

Template References

- SQUIRE | SQUIRE 2.0 Guidelines (squire-statement.org)
- Home | Sustainable Quality Improvement (susqi.org)