



Optimising waste management in theatres: a stepping stone to a more sustainable NHS

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Introduction:

- Every year the NHS produces 156,000 tonnes of clinical waste which is either sent to high temperature incineration or alternative treatment (such as sterilisation). These disposal techniques are at significant higher financial cost to the NHS and produce more carbon than conventional waste disposal -with an estimated 100,000 tonnes of CO₂e per year¹
- Waste is often incorrectly separated with more going to high treatment incineration than necessary resulting in a larger carbon footprint for the Trust as well as a significance increase in cost²
- As NHS waste is predicted to grow³ and with the Carbon NetZero goal, it is imperative that separation techniques improve and recycling is prioritised

Aims:

- Improve education surrounding waste disposal amongst theatre staff
- Introduce all types of waste bags into the theatre environment (including recycling)
- Demonstrate how correct waste segregation and disposal has no impact on patient safety but shows significant financial savings and an improvement in carbon emissions

Methods:

Our hospital has over 200 colorectal resections each year. These produce a large volume of waste and hence significantly contribute to carbon emissions. We aimed to reduce this through education of different waste disposal and by introducing all types of waste bags into 2 theatres. We asked theatre staff to fill out a green checklist to act as a reminder and highlight areas which can be improved regarding sustainable theatre practise.

Our project was divided into 2 sections. Firstly we gained an understanding of the current situation through interviews and baseline data collection. We then implemented the change, recollected the data and held teaching sessions to try to maintain engagement. This final stage of data collection is still ongoing and is part of a larger study which will continue for 9 months.

Understanding the current situation:

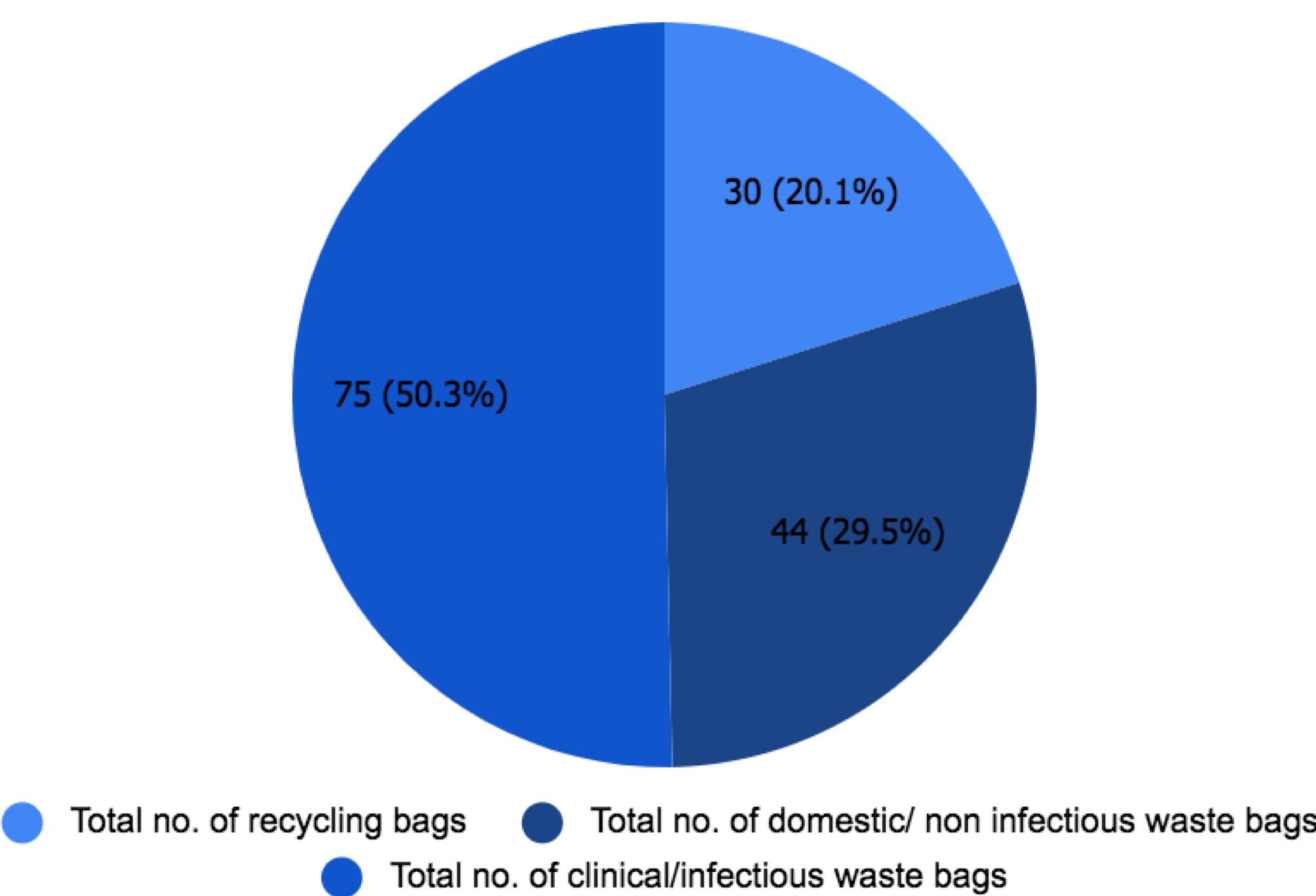
1. **Liaised with the estates team** to understand the different waste processes of the hospital
2. **Interviewed** theatre staff and those who support clinical work to learn about the current level of education and awareness regarding waste disposal and carbon footprints
 - Allowed us to identify the enablers and barriers to implementing current waste disposal in theatre
3. **Introduced 2 recycling bags into theatre (one in anaesthetic room + one in main theatre) >>> Collect baseline data**
 - We collected 3 months of data on the number and type of waste bags filled in each colorectal resection within 2 theatres following the introduction of recycling



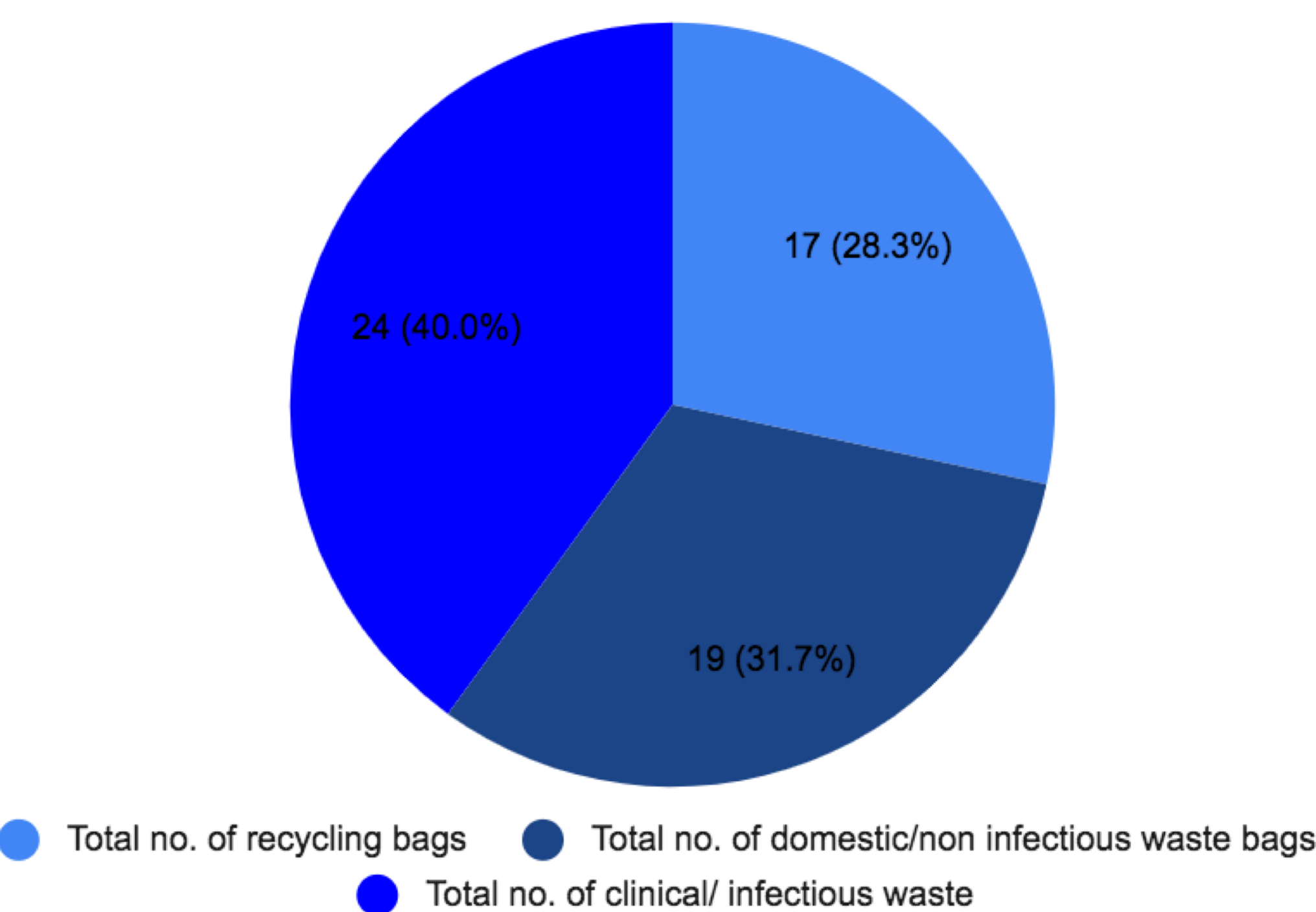
Implementing a change: Introduced a 'Green Theatre' Checklist

1. **We introduced a 'green theatre checklist'** which included the number of each waste bag used for each operation
2. We increased engagement by:
 - **Holding a teaching session** at the educational half day to remind about each waste classification and the overall cost saving correct waste disposal produces.
 - Sent out **monthly updates** regarding the current waste reductions and savings
3. **Repeat data collection:**
 - We collected a further 3 months of data following the intervention

Waste segregation before implementation of green checklist



Waste segregation after implementation of green checklist



Results:

After introducing recycling and the 'green theatre' checklist into 2 theatres, we re-measured the number and type of each waste bag from colorectal resections over 3 months. This data collection is still ongoing.

We are currently collecting data on:

- The number and type of waste bag from each colorectal resection
- Post-operative infection rate at 30 days and 90 days
- The overall reduction in carbon emissions
- The cost of waste disposal for the hospital

So far we have collected data on waste disposal for 35 resections prior to implementing the green checklist and 16 resections following. Our preliminary results show:

- An increase in recycling overall
 - Prior to the green checklist 80% of resections collected recycling (74% collected 1 bag and 6% collected 2)
 - After the green checklist 100% of resections collected 1 bag of recycling
- An overall decrease in the clinical/infectious waste collected from 50% to 40%
 - As this reduces the amount sent for incineration/ alternative treatment we predict a correlation with a reduction in carbon emissions and financial cost

We expect that by introducing recycling and a green checklist into theatre there will be no impact on patient safety but a clear financial benefit and overall reduction in carbon footprint for the hospital.

Conclusion:

Overall, the project has been received positively as a **maximal impact intervention** which is **simple** and **easy** to carry out whilst having the least effect on how theatre is run.

However we continue to face the ongoing challenge of a **laissez-faire attitude** towards prioritising correct waste segregation particularly at busier times.

Although our data collection is not finalised it would be extremely unlikely for these theatres to stop using recycling as it has now become **routine practice**. There is no reason why this project cannot be expanded and implemented across the other theatres.

Furthermore, it is a simple change which is **easily replicated within hospitals nationwide**- resulting in a large financial saving and allowing us to move closer to our NetZero goal.

References:

¹NHS England. NHS Clinical Waste Strategy [Internet]. 2023. [Accessed 12th September 2023]. Available from: <https://www.england.nhs.uk/long-read/nhs-clinical-waste-strategy/#acknowledgements>

²Royal College of Physicians. Less waster, more health: A health professional's guide to reducing waste. 2018. [Accessed 12th September 2023]. Available from: <https://www.rcplondon.ac.uk/projects/outputs/less-waste-more-health-health-professionals-guide-reducing-waste>

³NHS England. Delivering a 'Net Zero' National Health service [Internet]. 2022. [Accessed 12th September 2023]. Available from: <https://www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2022/07/B1728-delivering-a-net-zero-nhs-july-2022.pdf>