

Postgraduate Diploma in General Pharmacy Practice

Quality Improvement Written Task Coversheet

Please complete this coversheet and include as the first page of your written task.

Proposal title	Improving recycling in the inpatient pharmacy dispensary at Hammersmith Hospital
Candidate number	ZZFW2
Date	19/02/2023

Important: Please ensure that for all the following pages of your written task:-

- the title of your proposal is in the header
- your candidate number (provided on reporting instructions), word count and the date are in the footer

DECLARATION OF OWNERSHIP

- I confirm that I have read and understood the guidelines on plagiarism, that I understand the meaning of plagiarism and that I may be penalised for submitting work that has been plagiarised.
- I confirm that this work will be submitted electronically via Moodle and that this will be checked using the plagiarism detection service, Turnitin@.
- I declare that all material presented in the accompanying work is entirely my own work except where explicitly and individually indicated and that all sources used in its preparation and all quotations are clearly cited.

Should this statement prove to be untrue, I recognise the right of the Board of Examiners to recommend what action should be taken in line with UCL's regulations.

By submitting this form you are agreeing to the above declaration.

	Name	Date
Project supervisor	Eva Bayerkoehler	19/02/2023
Educational Programme Director	Eva Bayerkoehler	19/02/2023
Trust (<i>relevant Trust group</i>)	Imperial College Healthcare NHS Trust	19/02/2023
Ethics Committee (where appropriate)	N/A	19/02/2023

All abstracts will be included in an annual PGDipGPP practitioners' Quality Improvement project year book. If you would like to opt out of this, please indicate here by marking this box:

Please do NOT include my project abstract in the annual year book

Your assignment may also be used as an example of good practice for other students to refer to in future. If selected, your assignment will be presented anonymously and will not include feedback comments or the specific grade awarded. Participation is optional and will not affect your grade.

Do you consent to your assignment being used in this way? Please tick the appropriate box below.

Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
---	-----------------------------

Postgraduate Diploma in General Pharmacy Practice

Quality Improvement

Title

Improving recycling in the inpatient pharmacy dispensary at Hammersmith Hospital

Abstract

The NHS is a major contributor to carbon emissions. It is responsible for producing thousands of tonnes of waste a year. Climate change has direct health risks which means there is opportunity to improve health whilst also save money which can be spent to improve health. All 1.4 million employers have a duty of care for the health and wellbeing of their patients by ensuring the NHS is not one of the biggest contributing factors to that ill health. Imperial College Healthcare NHS Trust (ICHNT) have developed a Green Plan recognising the importance of recycling. Despite this, accurate recycling remains an issue within the Trust. If there is more than 5% contamination in recycling bin bags, they are deposited in to general bins. This report looks at identifying and removing barriers to recycling in order to achieve the aim of improving waste segregation at Hammersmith Hospital and thus improving recycling for ICHNT.

Pharmacy dispensaries generate the highest amounts of waste within the pharmacy team owing to the continuous labelling, dispensing and checking of TTAs/inpatient items. High amounts of this waste is recyclable which provides a good opportunity to initiate the tackling of the everlasting recycling issue. This will be the first project looking at recycling within ICHNT.

To better understand the problem, a process map was created with the QI team (Pharmacy Green Team, Education and Training Lead Pharmacist, waste manager, Hammersmith dispensary staff and myself, Specialist Rotational Pharmacist) and a driver diagram was produced to generate potential change ideas. The project consisted of one PDSA cycle. The implemented change was education sessions within the dispensary, targeting identified barriers to recycling and building of intrinsic motivation. Daily feedback of the prior day's contamination rates was given. The primary outcome was the number of contaminated (over 5%) bins at the end of each day. A survey was also sent out to assess baseline knowledge/awareness of climate change/recycling and then at again, post-implementation of change.

The results showed 100% contaminated bin bags at baseline compared to 57% post-implementation of change. The survey showed an improved reported perception of recycling and climate change of staff in the dispensary.

Limitations of the project include lack of physical implementations; short data collection period and lack of integration with pharmacy staff that are involved in the dispensary but not permanently based there.

Strengths include the positive change in recycling behaviour and increased intrinsic motivation.

The impact of the project has allowed the Trust to explore potential methods of improving recycling and is also the first project to assess recycling within the Trust. It has positively impacted staff member's knowledge/awareness/behaviours about recycling.

Understanding the problem

¹Climate change is a worldwide concern and the greatest threat to health in the 21st century. The complex issue causes implications on various segments of society which are interrelated. ²It has imminent consequences for our patients, the public and the NHS. In 2019, England recorded 900 people killed by heatwaves. Disruptions in weather, including flooding, can lead to spread of disease such as vibriosis and tick-borne encephalitis. ²Human activity is now the primary driver to changes in our climate – these are the same drivers of bad health.

²The NHS is a huge contributor to the production of greenhouses gasses, responsible for approximately 4% of the UK's carbon emissions and also for producing thousands of tonnes of waste yearly. ²With 1.4 million staff, the NHS is the largest employer in the UK, making it our duty to tackle the crisis. Toxic air pollution costs the NHS and social care £157 million. ²NHS England embedded net zero into legislation in July 2022, via the Health and Care Act 2022, becoming the first health system to do so. The Greener NHS National Programme highlighted that poor environmental care contributes to major diseases including asthma, cardiac issues and cancer. ²It has been estimated that by 2040, with a Greener NHS, 5,770 lives would be saved yearly from a decrease in air pollution and 38,400 lives saved yearly from more physical activity.

³Imperial College Healthcare (ICHNT) released a Green Plan indicating one of their goals as better waste management. In 2021, ICHNT generated around 5,000 tonnes of waste. In 2019/2020 around 20% of ICHNT waste went for recycling by tonnage. Waste segregation is important as it reduces waste, impact on the environment and saves money that can be used for patient care.

A survey was sent out to the dispensary staff which showed a relationship between lack of understanding with poor recycling. A walk around with the waste manager identified different waste streams and possible barriers to recycling. Liaising with the dispensary domestic staff showed lack of education surrounding contaminated recycling bags, indicating a greater importance to improve recycling within the pharmacy team. ⁴A study by Haj-Salem et al suggested that guilt, subjective norms, perceived effort and recycling knowledge are the main motivators to recycling. Focus groups were held, daily during the baseline data collection period, involving discussions with dispensary staff to explore their perceptions, motivations and barriers to recycling. The findings of the focus groups were categorised to themes which influenced the contents of the education sessions implemented in the PDSA cycle. Themes included attitudes/behaviours and practical issues.

The aim of this quality improvement (QI) project is to improve waste segregation at Hammersmith Hospital and thus improving recycling for ICHNT. In practice, if recycling bags are more than 5% contaminated, they are disposed of into general waste. The purpose of the project was to aim for an average of 90% of recycling bags having less than 5% contamination, post-implementation, over 14 days. The design of the project was based on the IHI Model for Improvement approach where interventions were measured through one PDSA cycle.

Figure 1: Diagram representing the position of stakeholders

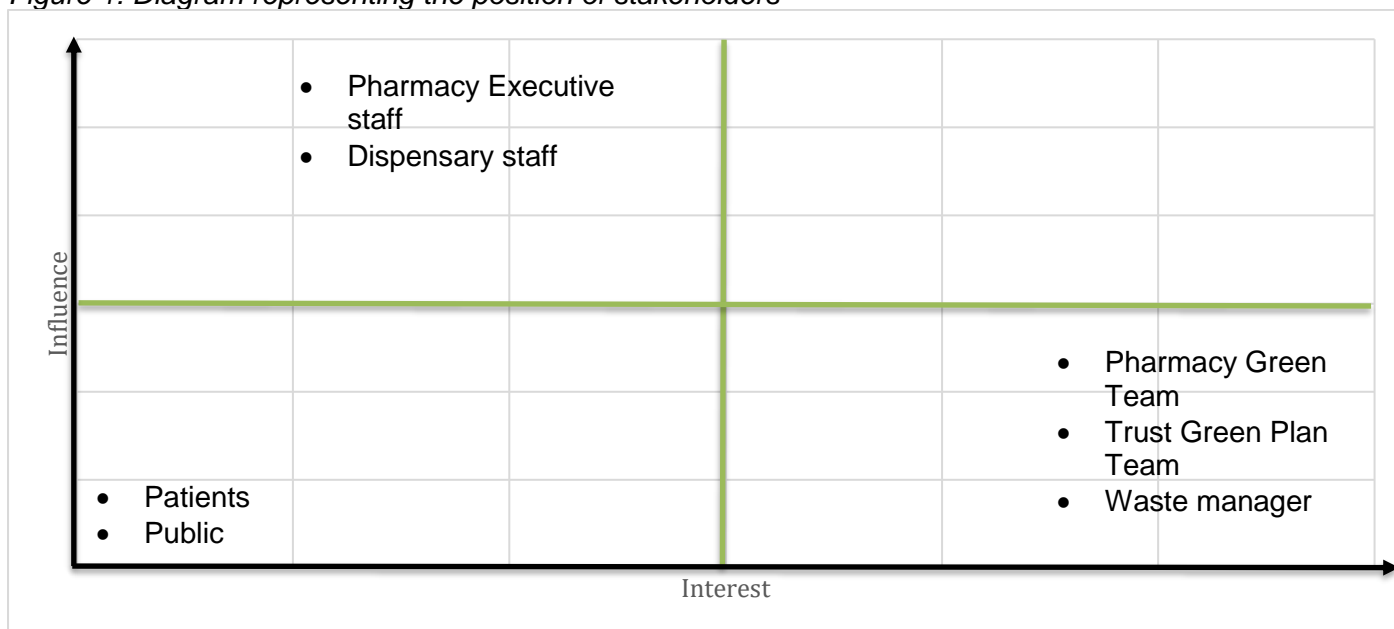


Figure 1 shows a graph of the position of key stakeholders. The QI team consisted of the Pharmacy Green Team, Lead Education and Training Lead Pharmacist, waste manager, Hammersmith dispensary staff and myself, Specialist Rotational Pharmacist.

The recording and analysis of contaminated bins was defined to be the primary outcome measure. The success of the QI would have an impact on the recycling success of the Pharmacy Team and would identify which behaviours influence recycling. Findings of the project will be presented to the Pharmacy team at ICHNT and to the Trust Green Plan team with further improvements to be suggested.

Process mapping (Figure 2) was used to identify at which point of the process a change could be implemented. At each step, between labelling inpatient/TTA items, recyclable waste can be produced and thus focusing on teaching for all dispensary staff would better the overall outcome. Focus groups highlighted that staff may not know common recyclable items and will need to know where they can find out. Figure 2 also suggested that the dispensary SOP does not include recycling. The driver diagram (Figure 3) enabled us to generate a range of ideas for the PDSA cycle, based on discussions with the QI team.

Figure 2: Process map showing where waste is produced and the process of recycling

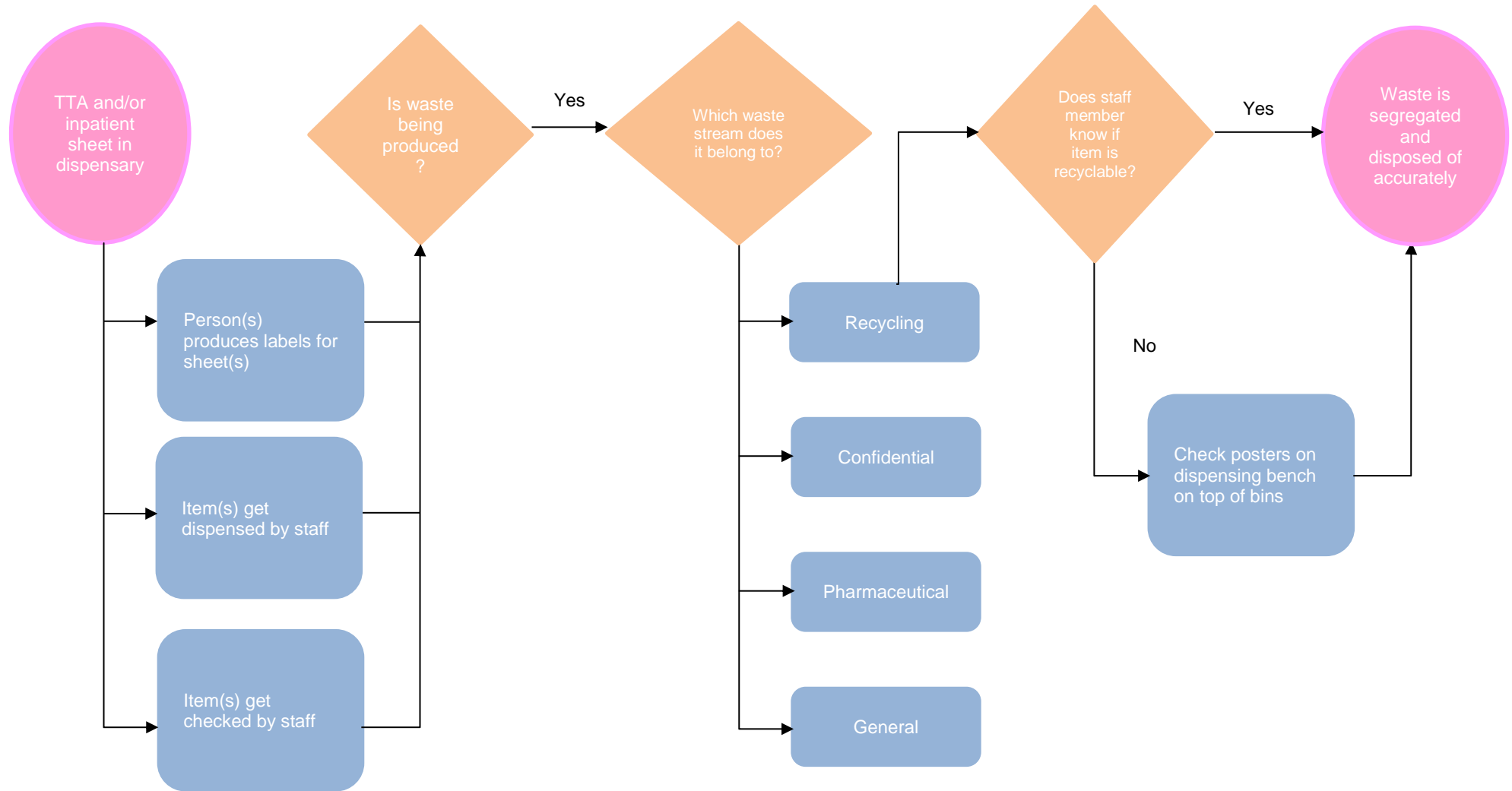
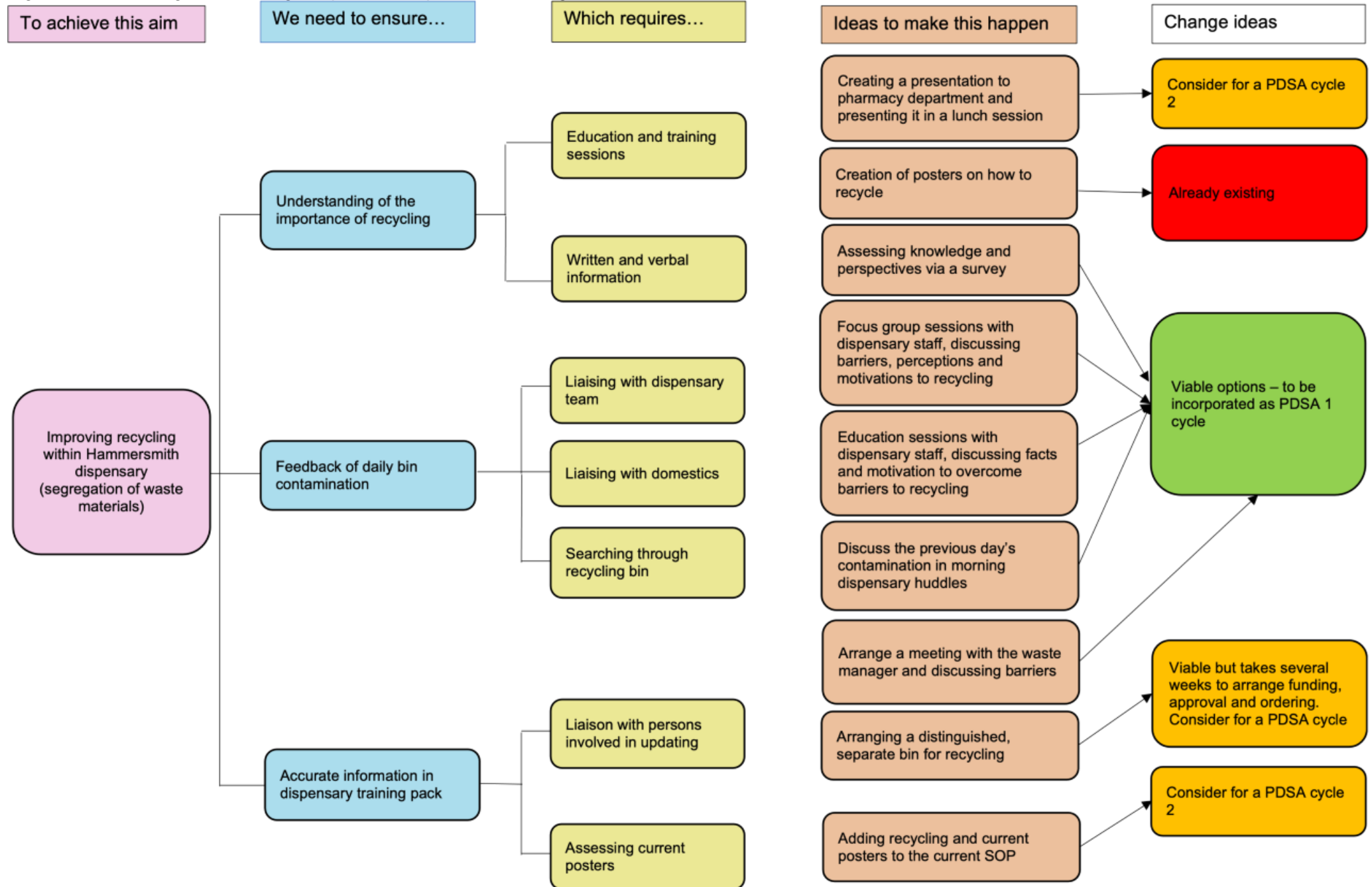


Figure 3: Driver diagram showing the process of potential ideas generated to achieve the aim



Choice of measures

Domestic staff evaluate the contamination in the recycling bin daily. The bags are transparent and easily assessed. If it is over 5% contaminated, it has to go to general waste. For this report, the recycling bin bags were checked for contamination at the end of each working day at Hammersmith Hospital inpatient dispensary. There are three recycling bins in dispensary. These were checked and averaged for the day. The location was chosen due to practicality (my current base) meaning I could apply the PDSA method daily. The dispensary is where the most waste is generated within pharmacy therefore it was deemed appropriate to focus on recycling there. A large number of staff move through dispensary, making it representative.

Since the project looks at determining knowledge, motivation and barriers, it was decided that a survey should be sent out to collate the views and knowledge the dispensary staff reported regarding climate change and recycling. This was sent out prior to implementing the PDSA cycle, and after for comparison.

Measure	Type of measure	Validity
Percentage of contamination (over 5%) of bins at the end of each day	Outcome	Measurable, quantitative data
Knowledge and perception of climate change/recycling of dispensary staff	Process	Subjective data; measure is based on views and trusting staff to give truthful answers

The chosen process measure provides subjective data. A survey relies on people providing accurate reports to questions. This may not always be the case and can produce data that is not a true representative of practice.

The primary, outcome measure looks at the daily percentage of contamination. This is the most measurable choice as it quantifies data, making the variation understandable and analysable through run charts. It shows a true reflection of whether the PDSA cycle had the intended impact.

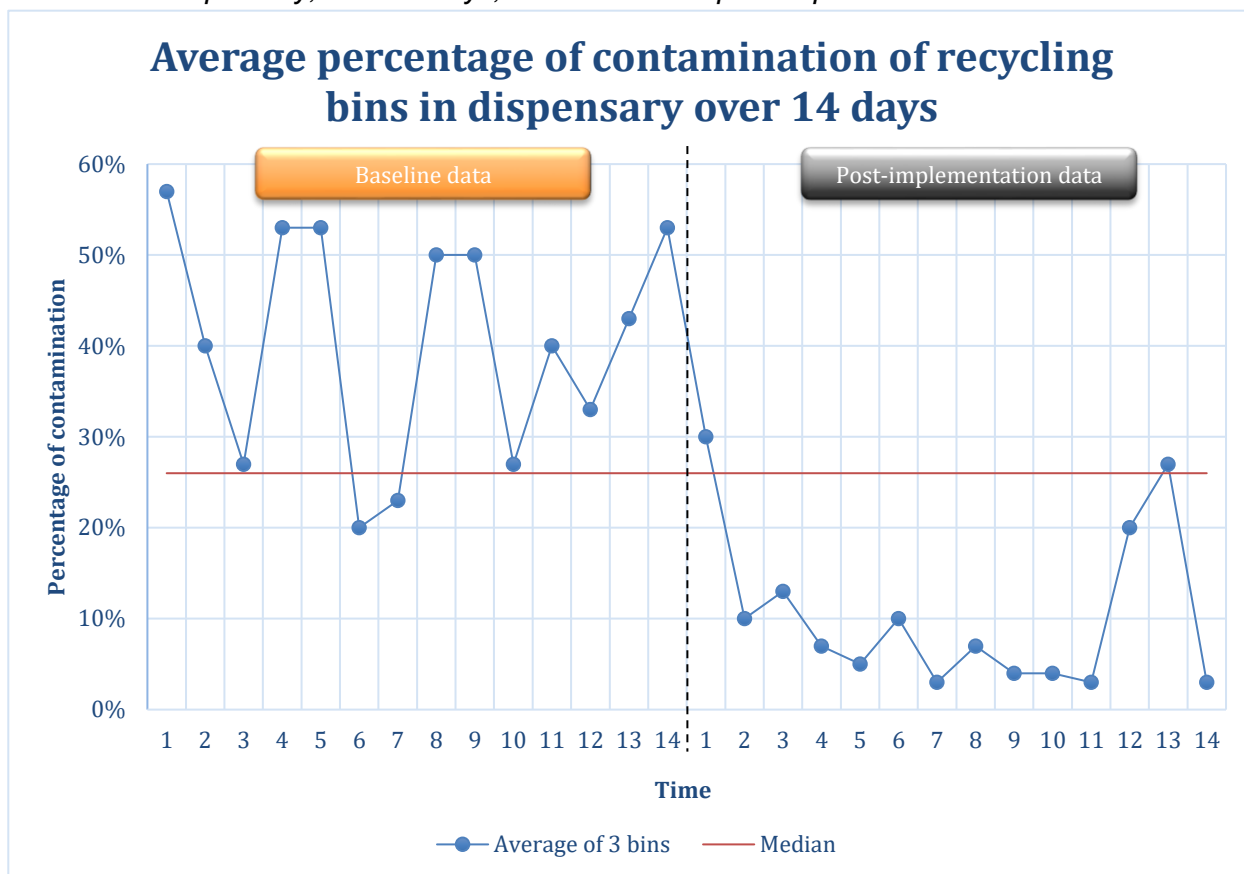
Design and application of PDSA method

Figure 3 demonstrates the considered improvement measures and any disadvantages to them. One of the viable options were to arrange a meeting with the waste manager and look at the different waste streams. Common barriers to recycling and important education points for the focus groups were discussed.

A survey looking at the knowledge and perspective the dispensary staff had about climate change/recycling was amongst the most viable options. Focus groups explored issues by identified common themes of barriers to recycling which lead to the first implementation of the PDSA cycle – educational sessions. This involved daily morning teaching, to the dispensary staff, tailored to the themes (attitudes/behaviours and practical issues) identified in the focus groups. A presentation was designed which showed facts/figures about the damage climate change has to our health and the estimated lives saved with the help of recycling within the NHS. Physical barriers were targeted through teaching about common recyclable and non-recyclable items within dispensary and signposting where to find further information (posters in the dispensary). By providing education, it was hoped that an increased intrinsic motivation would be seen. Feedback was also given daily about the prior day's contamination rate in the morning dispensary huddles. Baseline data was collected in January 2023 and again after the change implementation of PDSA cycle 1 in February 2023 over a 2-week period.

From the PDSA cycle I learned that there were further areas of improvement within recycling which can be implemented in future cycles. One of these being arranging for a distinguished recycling bin to help segregate the waste, however organising this would take a prolonged period of time. I also learned that pharmacy staff outside of dispensary have less exposure to consistent recycling reminders. Adding recycling to the dispensing SOP and presenting the findings to the pharmacy department at a lunchtime education and training session will be done as a follow up from the project.

Figure 4: Run chart showing the average percentage of contamination of the 3 recycling bins in Hammersmith dispensary, over 14 days, at baseline and post-implementation.



The baseline data showed high percentages of contamination from 20% to 57%. Over 14 days, there were 0 days of uncontaminated bin bags and hence were not recycled. Post-implementation of change, the contamination ranged from 3% to 30% with 6 days of bin bags classed as uncontaminated.

The results of the survey showed that at baseline, 30% of people did not read the posters in dispensary; 50% reported yes to knowing the common dispensary recyclable items and 60% reported that they did not know that contaminated bins are thrown in to general waste. Post-implementation, the results reported 16%, 100% and 16% respectively.

Critical evaluation of findings

The results showed a decrease in daily contaminated bin bags post-implementation of change. This suggests that whilst the bin bags were not 100% uncontaminated, the results positively indicate a general decline in the percentage of contamination post implementation, Figure 4. Whilst the purpose of 90% reduction of contamination was not achieved, recycling within the dispensary had improved, arguably owing to behavioural change.

The survey results suggest that perceptions of climate change/recycling were positively influenced post-implementation. This may have been due to the education sessions which discussed the meaning of recycling/climate change and their potential impacts. This data is qualitative, reflecting a collection of personal opinions, thus the answers may lack transparency. This can be considered a limitation and hence the survey was not the primary measured outcome.

Towards the end of the post-implementation data collection, a spike of contaminated bin bags was observed. This may have been due to different staff members in the dispensary who had not been there for the full project and may have less been invested.

The data was collected over a short time period. The project focused on transforming barriers into longer lasting behaviour change underpinned by intrinsic motivation. This would typically take longer than other physical changes. In future PDSA cycles, data should be collected over a longer time period, allowing for a bigger opportunity for changed behaviour. The survey suggested a lack of awareness which could suggest

that more emphasis put on recycling within the pharmacy team, possibly coming from senior staff leading by example, is needed.

For future teaching sessions, there should be a practical involvement showing the common dispensary items and which waste stream it belongs to. If people are taught, it removes the barrier of them having to research it. There have been no previous audits/projects regarding recycling at ICHNT and specifically within pharmacy and therefore there is no data for comparison with this QI project which can be considered a limitation.

The education sessions were had daily as dispensary did not have capacity to allow all staff to attend the same session, due to staff shortages/commitments. This could explain why the initial contamination rates were higher at the beginning of the post-implementation period compared to the end.

The education sessions went well as I was able to observe staff member's responses to facts they had learned about climate change. Providing feedback allowed staff to take accountability. In the hopes of encouraging positive feedback, I suggest 'recycling message of the week' emails identifying 'recycling heroes of the week'. Having a 'recycling ambassador' at each site could provide staff members with verbal recycling reassurance/advice. These suggestions could ensure the developed healthy recycling behaviours are continued outside of this PDSA cycle and passed on to new staff in the dispensary.

The impact of the project has allowed ICHNT to explore methods of improving recycling. It is the first project to assess recycling at ICHNT. It has positively impacted staff members' recycling knowledge/awareness/behaviours and is encouraged to pass on to colleagues. Future PDSA cycles can implemented the proposed suggestions and focus on increasing intrinsic motivation.

References

1. WHO. *Climate change and health*. World Health Organization. Available at: <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health> (Accessed: 17 February, 2023).
2. NHS. *Delivering a 'Net Zero' National Health Service, NHS choices*. NHS England. Available at: <https://www.england.nhs.uk/greenernhs/a-net-zero-nhs/> (Accessed: 17 February, 2023).
3. Imperial College Healthcare NHS Trust (ICHNT), *Green Plan briefing pack*. (Accessed: 17 February, 2023).
4. Haj-Salem, N and Al-Hawari, M.A. (2021), "*Predictors of recycling behaviour: the role of self-conscious emotions*" *Journal of Social Marketing*, Vol. 11 No. 3, pp. 204-223.

Acknowledgements

I would like to thank Eva Bayerkoehler for the help throughout the QI project and the consistent support through FS2.