SUSQI PROJECT REPORT

Staff education on appropriate medicines waste segregation and use of patient's own medicines during hospital stay and on discharge

Start/End date of Project: 21/9/23-31/12/23
Date of Report: 2/12/23

Team Members:
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Background:

The NHS aims to reach net zero for direct carbon emissions by 2040. Medicines account for 25% of carbon emissions within the NHS. Re-supplying medicines a patient is prescribed prior to admission at the point of hospital discharge is often adding workload to the dispensary and usually delays the discharge process unnecessarily. Oversupply of patient's routine medicines can contribute to pharmaceutical carbon emissions. Wherever possible, patients should be encouraged to bring medicines they have at home into hospital at, or as soon as possible after, the point of admission. NHS England has provided a guide to advise pharmacy teams and consider whether medicines supply at discharge is necessary.

Pharmaceutical waste is medicines that cannot be returned or reused. It includes medicines that are out-of-date, damaged, no longer required, or unsuitable for their intended use. This medicinal waste is either created by the hospital or brought in by patients (patient's own drugs) during admission. Northampton General Hospital (NGH) pharmacy can return some medicinal waste, to be reused if they are originally issued by the hospital and only if they are full pack. All patient's own drugs (PODs) and split packs issued by the hospital cannot be returned to be reused due to health and safety recommendations and the economic use of staff resources. There are some cases where pharmacy will return hospital-supplied medicines for example if they are expensive. Ward staff assume all medications can be reused if they place them in the green pharmacy return boxes.

There are many reasons why medicines are wasted. Reasons include medications have been stopped by doctors; injectables medicines are switched to oral tablets; patients no longer require them as they have died; expired medicines; or staff did not return drugs to patients on discharge. Lack of ward staff awareness in how to segregate medicinal waste (PODs and hospital-supplied medicines) into designated disposal containers lead to all waste being disposed into pharmacy return boxes. Pharmacy staff spend an increased amount of time sorting medicinal waste segregation in the dispensary on top of their dispensing duty. By educating nurses on appropriate medicinal waste segregation and encouraging patients to bring in their routine medicines to be used during their admission and return them on discharge; there should be less medicinal waste incinerated. This will have an environmental impact in reducing carbon emissions. It will also have a social impact on dispensary staff's well-being due to reduced workload in medicinal waste segregation. It will

have a social impact on patient's well-being as the waiting time of receiving their discharge medicines will be shortened. It will have a financial saving to the Trust by reducing the number of dispensing items on discharge.

This project will be conducted on a renal ward in NGH and is led by the renal pharmacist. It is an 18 bedded ward with a mixture of renal and medical patients. Renal patients usually have a cocktail of medicines, and their medicines regimen may change frequently during admission. The renal ward will be used to explore ways of reducing medicines waste before rolling out to other wards in the Trust. The project will look into two main service improvements: increase ward staff awareness on medicinal waste disposal on the ward and promote the use of patient's own drugs.

Specific Aims:

The first aim of this project (Task 1) is to reduce dispensary staff time processing medicines returns by providing nurses education on how to segregate PODs and hospital-supplied medicines into designated medicines return boxes on the ward.

The second aim (Task 2) is to encourage patients to bring their own routine medicines to hospital to reduce the need for hospital dispensing.

Several benefits were anticipated including reducing carbon emissions and cost-saving associated with dispensing patient's routine medicines, reducing medicines omission by use of PODs, reducing carbon emission associated with medicinal waste disposal, reducing waiting time for patients on discharge, and saving dispensary staff time.

Methods:

Studying the system
The renal ward in NGH is an 18-bed unit that cares for a mixture of renal and medical patients.

Task 1: The pharmacist reviewed the process of segregating medicinal waste by shadowing the dispensary staff half a day in September 2023. The Trust Waste Policy was studied to understand all the designated disposal containers. It was noted from current practice, ward staff place all medicinal waste in the pharmacy return box regardless of if they are PODs or hospital-supplied medicines. This is not the correct procedure according to the Trust waste policy. In summary, the PODs waste should be placed in the blue medicine's destruction bin. This will get taken away from the ward and get incinerated. Any full pack supplied by the hospital can be placed in the pharmacy return box which will be brought down by the porter to the pharmacy every 3 weeks. These can be returned to the pharmacy system and be reused if appropriate. Diagram 1 shows the process of segregating medicinal waste on the ward. High-cost medicines issued by the hospital will have a '££' label stuck on the medicine box by the pharmacy store for ease of identification. There is no visual signage for nurses to guide them choosing the correct medicines disposal containers on the ward despite the Trust Waste Policy being accessible on Intranet.

Diagram 1: Process of segregating medicinal returns
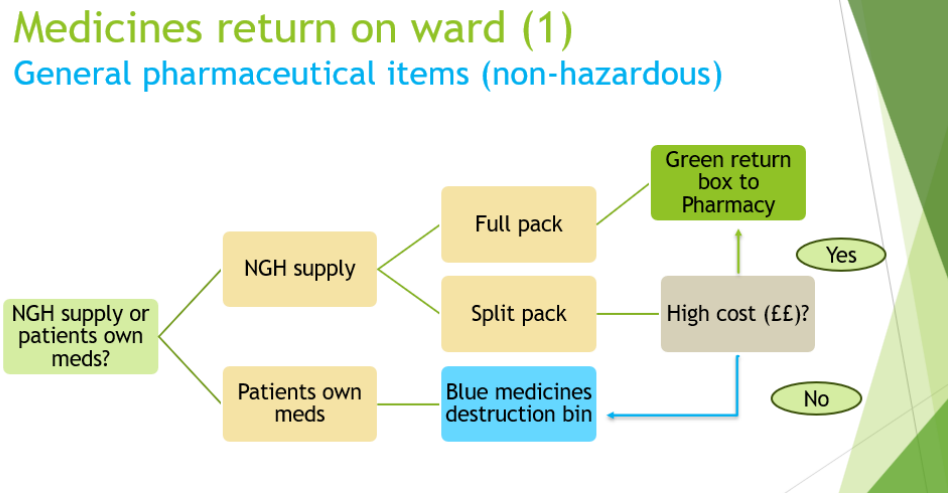
Task 2: It was noted from the current practice, patient's own drugs (PODs) are potentially underutilised on the ward. PODs are stored in the patient's bedside locker, so they can be used during admission and to be returned on discharge. Nurses tend to use ward stock even though there are PODs in the lockers. Staff may not look at the bedside lockers, and do not realise patients have brought their PODs in. If nurses use PODs rather than ward stock during hospital stay, the Trust will save money, reduce medicines omission, reduce carbon emission from duplicate supply of medicines. On discharge, if patients can get more supply of their PODs from GP rather than a supply from the hospital, the Trust will again save money, reduce carbon emission from duplicate supply, and reduce waiting time for patients on discharge as only new medicines are required from the pharmacy. Asking patients to obtain their routine medicines through GP would not cause an additional financial challenge to the patients who would normally pay for their prescription anyway if they were not in hospital. Pharmacists decide if PODs are needed to be dispensed on discharge using the drug history information on the drug chart, looking into patient's drug lockers as well as talking to patients. Some pharmacy staff will endorse that PODs have been brought in on the drug charts without mentioning how much PODs are still at home. If there is no information on the drug chart to state the patients have enough regular medicines at home or pharmacists are unable to look into the patient's drug lockers or unable to speak to the patients at point of discharge, pharmacists will request all PODs to be dispensed by pharmacy to prevent patients missing their medications. To change the current practice, engagement from ward staff, pharmacy staff and patients will be needed.

Education to ward staff and pharmacy staff

The ward pharmacist gave a presentation to the ward staff and other pharmacists and pharmacy technicians who work on the renal ward. The presentation included:

- background of sustainability in healthcare
- how much time dispensary staff are currently spending to process medicinal waste from the pharmacy return box
- the process of segregating PODs and hospital-supplied medicinal waste into the designated medicines containers on the ward (see Diagram 2 on next page)
- educating nurses to ask patients to bring in PODs, use PODs during hospital stay instead of using ward stock; return PODs to patients on discharge.
- educating pharmacists and pharmacy technicians during the drug history process, to ask patients and their relatives to bring in PODs; for those patients who have brought their medicines to the

hospital, to ask patients how much supply they have at home; encourage patients to order PODs from the GP rather than supply from the hospital on discharge; endorse on drug charts that patients can obtain their routine meds from GP.

Diagram 2: Blue destruction bin and green pharmacy return box

Measurement:

Collect baseline data

Task 1: Baseline data was collected on 12/10/23 on the content in the green pharmacy return box and the length of time it takes for dispensary staff to segregate medicines returns in the pharmacy. The data will help us to find out how many PODs are incorrectly placed into the pharmacy return box. The pharmacy return box is collected from the ward every 3 weeks, so the baseline data will be 3 weeks' worth of medicines returns.

Task 2: September and Oct 2023 discharge letters of the renal ward were downloaded from the electronic system. From the individual discharge letters, the number of total PODs patients are discharged home on, and the number of medicines dispensed where the patients already had a supply of their own was captured. September data will be used as the baseline before any intervention.

During October information was gathered, questionnaires designed, and education slides prepared. November data was used to measure change in practice post intervention for both Task 1 and 2.

Patient outcomes:

No risk to patient outcomes is anticipated as patients would still receive all medications if there was any concern, they couldn't access following discharge. This is checked on a case-by-case basis via conversations with the patient and their ward team.

Environmental sustainability:

To estimate the carbon emissions associated with waste disposal (for Task 1) a process-based approach based on weight of waste was used and an emissions factor for incineration, 1074 kgCO2e/tonne taken from Rizan et al 2021.

The carbon footprint of medications was estimated using a 'top-down' approach based on cost (for Task 2). The pharmaceuticals emission factor was sourced from the Department for Environment, Food & Rural Affairs of 0.621 kgCO2e/£ spent (this excludes VAT).

CO2e reduction was translated into miles driven using emission factor 0.3386 kgCO2e/ mile driven in an average car with unknown fuel, from the UK Government Greenhouse gas reporting: conversion factors 2023.

Economic sustainability:

The drug cost saving is measured from total cost of PODs patients are discharged home minus cost of medicines dispensed by the hospital where the patients already had a supply of their own. Cost of medications is obtained from the pharmacy dispensing system. The less items dispensed, the more financial savings for the Trust.

The time saved by dispensing pharmacy staff has not been included as direct savings. It is not anticipated that these hours will be "let go", and instead will enable staff to undertake higher value work as outlined in social impacts.

Social sustainability:

Conduct questionnaires to capture views from nurses, dispensary staff and patients

Separate questionnaires were designed to capture below data:

- Perceptions of nurses on medicinal waste, knowledge of the process of segregating medicinal waste to designated disposal containers; use of PODs from patients' bedside lockers
- Perceptions of dispensary staff on medicinal waste, their social impact on processing pharmacy return boxes
- Perceptions of patients on medicinal waste, awareness and level of concern as to the environmental impact of medication; their views of use of PODs during admission and on discharge

Results:

Patient outcomes:

There is no compromise of patient outcomes by implementing this project. Although data has not been collected due to time limitations in the project, some potential impacts include

- A reduction in medicines omissions, especially critical medicines by encouraging patients to bring in their PODs to be used in the hospital.
- Discharge medications may be dispensed quicker due to reduction of dispensing items. This will hopefully have a positive patient outcome as patients can go home quicker.

Population outcomes:

Although data has not been collected, reducing the dispensing of patients' routine medicines can potentially improve access of medicines to the wider population.

Environmental sustainability:

Task 1: Appropriate medicines waste segregation by ward staff

Pharmacy return box was brought down from the ward to the pharmacy on 7/11/23 and 28/11/23. There is an average reduction of 2.3kg in weight of medicines disposal compared November to October 2023 baseline data (see Chart 1). It works out as an average of 2.47 kgCO2e reduction associated with medicines disposal in 1 month. This is approximately **30 kgCO2e** reduction in one year (see Chart 2).

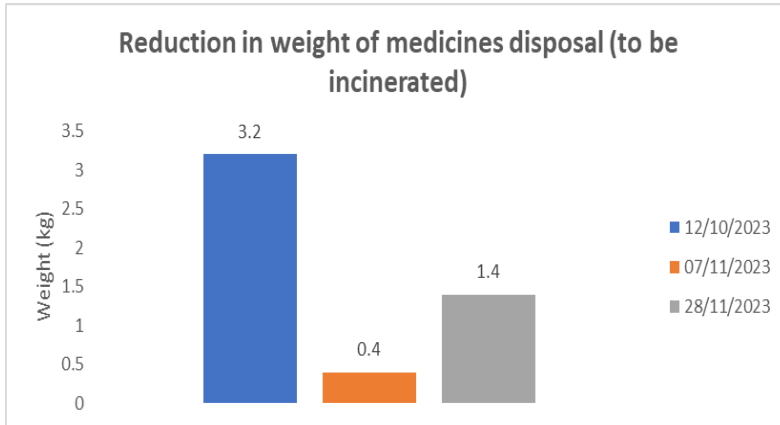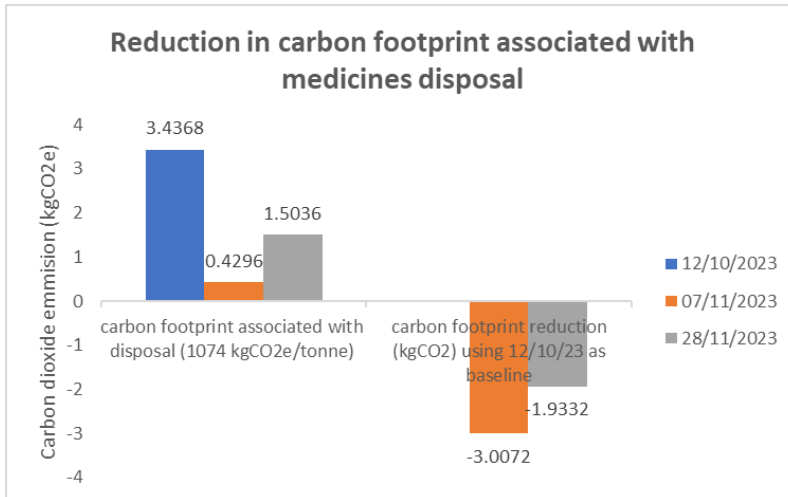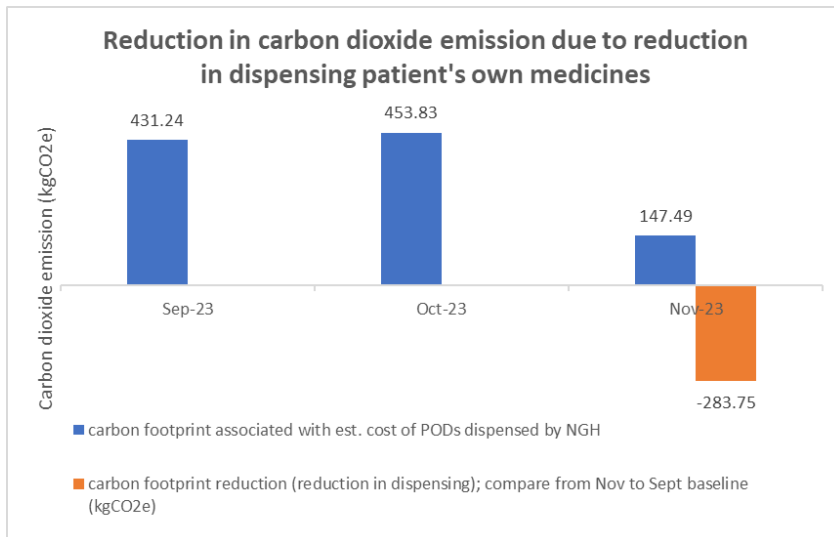*Chart 1: Renal ward pharmacy green return box in weight*

Reduction in weight of medicines disposal (to be incinerated)

- 12/10/2023: 3.2
- 07/11/2023: 0.4
- 28/11/2023: 1.4

Y-axis: Weight (kg)

Chart 2: Carbon footprint associated with medicines disposal

Reduction in carbon footprint associated with medicines disposal

Y-axis: Carbon dioxide emmision (kgCO2e)

carbon footprint associated with disposal (1074 kgCO2e/tonne):
- 12/10/2023: 3.4368
- 07/11/2023: 0.4296
- 28/11/2023: 1.5036

carbon footprint reduction (kgCO2) using 12/10/23 as baseline:
- 07/11/2023: -3.0072
- 28/11/2023: -1.9332

Task 2: Reduce number of patients own medicines dispensed on discharge

There is a reduction in carbon dioxide emission of **283.75kgCO2e** due to reduction in dispensing patient's own medicines in November compared to September 2023 baseline data (see Chart 3). This saving is equivalent to driving 838 miles in a car. If this data is extrapolated for one whole year; it can potentially reduce carbon dioxide emission of **3,405 kgCO2e**, which is equivalent to saving 10,056 miles in a car journey.

Chart 3: Carbon dioxide emission due to dispensing patient's own medicines

Reduction in carbon dioxide emission due to reduction in dispensing patient's own medicines

	Sep-23	Oct-23	Nov-23
carbon footprint	431.24	453.83	147.49

-283.75

■ carbon footprint associated with est. cost of PODs dispensed by NGH

■ carbon footprint reduction (reduction in dispensing); compare from Nov to Sept baseline (kgCO2e)

Total environmental savings including Task 1 and Task 2

286.22kgCO2e per month. Projected across a year this is a saving of 3,435 kgCO2e, equivalent to driving 10,143 miles in an average car.

Economic sustainability:

There is a proportionally 5% increase in drug cost saving in November compared to September 2023 baseline data (see Chart 4). The Trust has saved approximately £1,640 in November 2023 using the drug costs from the dispensing system. The cost saving is due to the reduction in number of PODs dispensed by the hospital pharmacy on discharge. The reduction is likely because during drug history taking stage, pharmacy staff have confirmed patients have enough supply of regular medicines at home or patients can obtain further supply from their community pharmacies. The information was endorsed on the drug chart at medicines reconciliation stage, and it prompted pharmacists not to supply regular medicines on discharge.

Chart 4: Percentage of cost saving by reduction in no. of patient's own medicines dispensed

Reduction in no. of patient's own medicines dispensed lead to cost saving

■ % PODs dispensed/total PODs   ── % cost of PODs saving/cost of total PODs
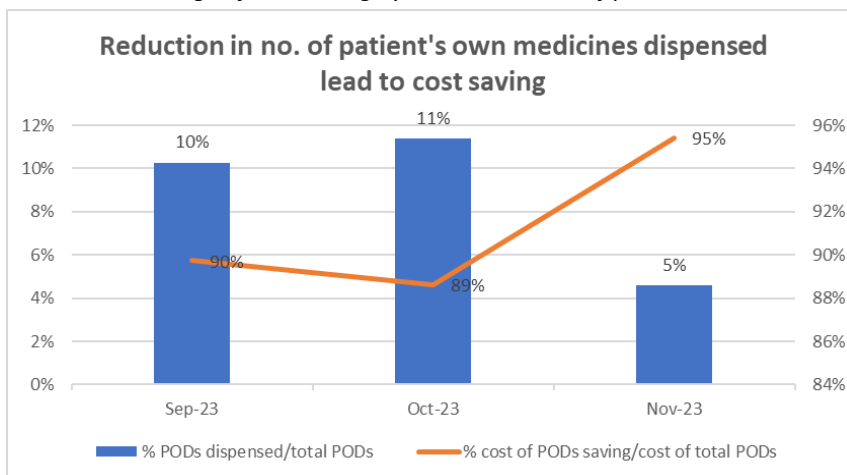
Total financial savings for Task 2

£1,640 per month. Projected across a year this is a saving of £19,680.

Social sustainability:

Survey response from ward staff on medication waste

13 staff responded to the survey pre-intervention. The survey QR code was distributed via ward WhatsApp group chat. The response rate was not captured. 62% of respondents agreed medication waste is a huge problem (see Diagram 3).

Diagram 3: Ward staff survey

1. Do you think medication waste is a problem on your ward?

More Details

🔵 Yes - a huge problem	8
🟠 Yes- however there are bigger a...	1
🟢 Its a small problem	2
🔴 No	2

6 respondents reported the main medication waste was due to the patient's own medication from home, 3 from blister packs, 1 due to expired drugs and 2 reported the problem was due to a mix of factors. Less than 50% of respondents used PODs first rather than ward stock. Some nurses were concerned patients may run out of their PODs on discharge. When informed that patients can obtain further supply from GP, nurses were reassured to use PODs first. Almost 90% of respondents ask patients or their relatives to bring in their PODs to hospital. 6 respondents think using patients' own medicines and returning PODs on discharge will reduce medicines waste. 83% of respondents concerned about the environmental impact of healthcare. One third of respondents don't know PODs returned to pharmacy cannot be reused and therefore get incinerated. Half of the staff would like to do something about medicines waste.

Survey response from dispensing pharmacy staff on medicines waste

9 pharmacy staff responded to the survey pre-intervention. The survey QR code was distributed via email. The response rate was not captured. 89% of respondents agreed medication waste returned to the pharmacy is a huge problem (see Diagram 4).

Diagram 4: Pharmacy staff survey

1. Do you think medication waste returned to you (the dispensing team) from wards is a problem?

More Details

🔵 Yes - a huge problem	8
🟠 Yes- however there are bigger a...	1
🟢 Its a small problem	0
🔴 No	0

Some of the respondents have provided feedback that PODs, split packs and inappropriate items have been placed in the pharmacy return boxes that cannot be reused. The pharmacy staff thinks wards should take

responsibility to segregate medicines according to waste policy. 4 respondents have commented that split packs cannot be reused which causes a lot of waste.

> "Split packs having to be disposed of even if nothing has been used. Original packs where 1 or 2 tablets/capsules have been used. Boxes of vials where only 1 has been used." (Respondent 7)

There is a strong sense of waste of time and frustration from the dispensing team in dealing with the medicines waste.

> "Time consuming to process waste, also a sense of waste of time dispensing/checking" (Respondent 6)

> "It's a laborious task which builds up very quickly. It can be quite disappointing especially if it's medication that was prepared for an Edn (discharge prescription) on a late night." (Respondent 7)

> "Time to sort and put back into stock. Time to collect from ward, Time to record all stock, Time to redo medication if disposed in error or lost in transit, feeling of time and effort wasted " (Respondent 8)

> "It affects the team for sure. It's a long process that we've had to ask the volunteers to help with or we wouldn't get it done. As soon as we clear it, it's full again shortly after. Ward staff bring down returns and dump them on the shelf, or in an already overflowing blue bin, which is then the dispensaries job to sort through. We cannot keep up with the demand, especially as we are losing staff constantly. " (Respondent 9)

100% of respondents feel there is duplication of dispensing as patients can bring in their medications from home. 3 respondents have highlighted education is needed to ward staff in promoting appropriate medicines returns segregation. 3 respondents have commented that pharmacy staff on the ward should clarify with patients what medicines are needed for dispensing on discharge instead of requesting all medicines to be dispensed. 83% of respondents concerned about the environmental impact of healthcare.

Survey response from dispensing pharmacy staff on medicines waste

Unfortunately due to the time limit, only two patients were surveyed. Both were concerned about the environmental impact of healthcare. Both stated they will only require new medicines on discharge to reduce medicines waste. They were fine with obtaining further PODs from the GP.

Reduction in dispensary staff time in processing medicines return

By appropriate segregation of medicinal waste on the ward, dispensary staff saved 75 minutes in processing medicines return in a month (see Chart 5). This is extrapolated to 900 minutes (2 days) of time saving in 1 year for 1 return box/1 ward.

Chart 5: Time processing medicines return in pharmacy (12/10/23 as baseline pre-intervention)
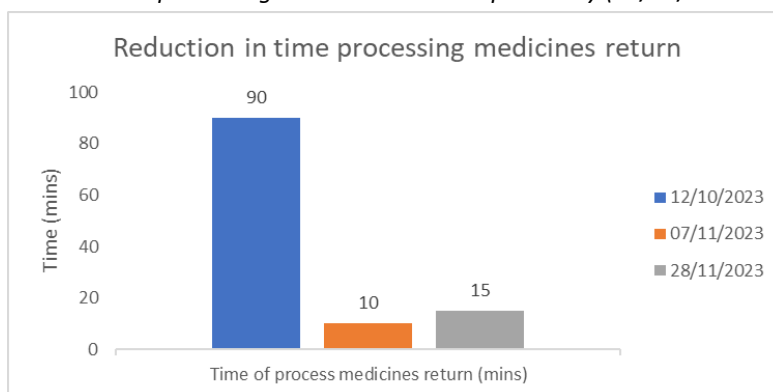
Discussion:

Conservative estimate of saving trust wide in a year

Task 1: Appropriate medicines waste segregation by ward staff:

32 pharmacy green boxes from the wards are returned per month for the whole hospital. Applying a conservative estimate of one thirds of the savings to each box, the Trust could save 320 kgCO2e per year if similar changes were applied across the Trust. This can potentially save 160 hours (21 working days) of dispensary staff in processing medicines return in 1 year. The time saved can be used to do higher value tasks. Based on an average Agenda for change salary for a band 3/4 assistant technical officer (£24,973), this equates to approximately £2,049 of staff time that can be redirected to higher value activity.

Task 2: Reduce number of patients own medicines dispensed on discharge:

There are 21 adult wards in NGH. Applying a conservative estimate of one thirds of our savings to each ward, the Trust could save £137,760 and 23,835 kgCO2e per year if similar changes were applied.

After the training had been implemented, there were less PODs or split packs returned to the pharmacy from the ward. Ward staff were receptive with the education provided and changed their behaviour. The survey and PowerPoint presentation have increased ward staff awareness of how they can be responsible to take part in climate change. The ward pharmacist has played an active role in showing the nurses of the medicines segregation process to enforce education. The ward staff have acknowledged that by changing their practice, they can make a difference on the social impact on dispensary staff, patient care, and environmental impact. Although the data has not been captured, using PODs, and returning to patients on discharge have probably contributed to less PODs getting wasted. There are posters (see Diagram 2) displayed in the drug treatment room to remind ward staff the process of segregating medicinal waste. The intervention has saved time for pharmacy dispensing time so they can do higher value work.

Ward staff and pharmacy staff have encouraged patients to bring in their PODs. There are less PODs needed to be dispensed on discharge. Pharmacy staff have been proactively asking patients whether they have more of their routine medicines at home and ensure clear documentation on the drug charts. Pharmacy staff have encouraged patients to request their routine medicines from their GP. Once patients understand the benefits of obtaining medicines from their GPs e.g. quicker discharge, reduce duplication of dispensing lead to reduce medicines waste; they are mostly receptive. Pharmacists and pharmacy technicians have played an active role to reduce the number of dispensing items in order to reduce medicines waste at the upstream. This has a social impact to pharmacy dispensing teams as they have limited control of what can or cannot be dispensed. Although patients' feedback was not captured, there is no risk to patients as new and routine medicines will be supplied if necessary.

It would be useful to gather patients' views on why they do or don't bring PODs in, and to explore what patients' concerns might be. It might be insightful to explore what PODs are being returned to the pharmacy and why, to see if interventions can be made further upstream to reduce the amount of PODs waste in the first place.

Limitations

Renal patients have highly complex drug regimens. They may have higher hospital readmission rates than other acute patients. These patients may have gained knowledge from previous hospital experience and tend to bring in their own regular medicines. This might impact the transferability of the findings in relation to

patients' behaviour to other more acute medical settings. Future projects should explore ways of encouraging patients to bring in PODs more systematically and routinely during pre-admissions and elective appointments.

Barrier 1: The cost of medications cannot be directly compared month by month as individual patients have varied amounts of routine medications. Cost of individual medications vary; some are more expensive than others. For example one patient may have 3 regular medications which are high cost, and another patient may have 10 regular medications which are low cost. To address this issue, the proportion of PODs dispensed divided by total PODs on discharge letters was measured. Then the percentage of cost of PODs saved (i.e. cost of PODs not dispensed by hospital as patients have enough at home) divided by cost of total PODs on discharge letter was measured. The less PODs the hospital dispensed, the more cost saving for the Trust, and quicker discharge process.

Barrier 2: The carbon emission of medications cannot be directly compared month by month. This is because currently the pharmaceuticals emission factor is fixed (0.621 kgCO2e/£ spent) even though the cost of individual medication varies. The volume of dispensing does not proportionally reflect on the carbon emission produced. For example 1 box of Drug A costs £10, and 1 box of Drug B costs £100. This will be equivalent to carbon emission of 6.21kgCO2e for Drug A and 62.1kgCO2e for Drug B. If five boxes of Drug A were dispensed, the carbon emission seems less than Drug B. To address this issue, an average cost of 1 PODs using Sept 2023 baseline data was calculated as £18.27. The average cost of 1 PODs (£18.27) is then used to calculate the cost of total PODs listed on discharge letter and the cost of PODs dispensed by hospital for each month (Sept to Nov 2023). The cost of PODs dispensed by the hospital is then multiplied by the pharmaceuticals emission factor to work out the carbon emission per month. The calculated carbon emission will reflect on the volume of dispensing rather than the actual cost of the drug.

Barrier 3: Patients who came into hospital with blister packs were excluded. A blister pack is a medication aid, which helps patients take the correct tablets at the right time of day. Each dose is sealed in a plastic bubble (blister) on the pack. Each pack usually contains one week of patient's routine medicines. If one medication's dose or frequency has changed, the whole blister pack will need to be discarded as you can't individually change the plastic bubble. Two new blister packs (2 weeks) will be dispensed by the pharmacy on discharge if there is a change in medicines. In this case, it is unavoidable that the pharmacy has to dispense the patient's routine medicines as patients will not have enough time to obtain a new blister pack from their GP on discharge. There are debates in providing blister packs to patients because they are hugely wasteful, represent additional packaging and can cause more problems particularly in patients where medications are changing frequently. More research is needed to explore the indications, and effectiveness of blister packs.

Conclusions:

The project has successfully shown social, financial, and environmental impact by appropriate segregation of medicinal waste on the ward and promoting use of patient's own drugs. There is no compromise in patient outcomes by conducting the project. The key elements that contributed to the success of the project include good engagement with the ward pharmacist, nurses, and other pharmacy colleagues. From the staff survey, the majority has raised concerns of medicines waste affecting environmental impact and they want to do something about it. The project has shown by breaking down communication barriers and misconception, multidisciplinary team can work efficiently, cost effectively and environmentally friendly.

There are challenges in times such as calculating emission factors for medications as not all medications currently have individual emission factors. The Centre for Sustainable Healthcare (CSH) project leads are very helpful in supporting this project in terms of data collection and data interpretation. Assumptions have to be

made such as assuming each drug has the same cost in order to compare data month by month. Although data cannot be directly compared month by month, the proportion of reduction in dispensing PODs has demonstrated an impact on environmental and financial savings. There are other hospitals who have shown the success of the use of PODs in terms of financial savings. This is probably the first Greens project which has attempted to quantify the environmental impact.

Pharmacy staff will continue working with the ward staff to promote the use of PODs. Regular monthly audit will monitor the lasting effect of the project. A staff survey after 3 months of the project will be useful to evaluate staff attitude and behaviour after the education. It will be useful to conduct patient surveys to explore their feedback on the use of PODs.

The next step will be to share the project within the clinical pharmacy team during a clinical pharmacy meeting. The plan is to expand the project across the Trust. The presentation slides of staff education can be shared to other ward pharmacists to train more ward staff. The poster of the process of medicinal waste segregation can be displayed at other ward drug treatment rooms. Medicines reconciliation training is needed for pharmacists and pharmacy technicians to ensure the use of PODs in the most effective way.

In terms of wider engagement, hospitals should work with the integrated care system (ICS) by promoting patients to bring in their PODs to the hospitals. Pharmacists working in care homes can play a key part in ensuring processes in place when patients require hospital admission. There is a need to have better communication between hospital pharmacies, paramedics, NHS111 and community pharmacies to spread the message to patients. There are some hospitals which routinely send text messages or appointment letters to patients before their elective admission. Supplying patients' routine medicines from hospital at point of discharge should be seen as the exception rather than standard of practice. There needs to be a joint agreement obtained from ICS and patient representatives that unchanged medicines on repeat prescription do not need to be routinely supplied.

References and Resources

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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 ☐ <mark>Staff engagement</mark> ☐ 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) ☐ <mark>Support from senior organisational or system leaders</mark>	☐ clear guidance / evidence / policy to support the intervention. ☐ Incentivisation of the strategy – e.g., QOF in general practice ☐ systematic and coordinated approach ☐ <mark>clear, measurable targets</mark> ☐ 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	☐ <mark>Dedicated time</mark> ☐ 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 ☐ <mark>Links to staff benefits</mark> ☐ 'Permission' given through the organisational context, capacity and positive change culture.