GREEN TEAM COMPETITION
CENTRE FOR SUSTAINABLE HEALTHCARE

NHS
Gloucestershire Hospitals
NHS Foundation Trust

SUSQI PROJECT REPORT

REDUCING DISPOSABLE BAG USE WITHIN THE PHARMACY DEPARTMENT AT GLOUCESTERSHIRE HOSPITALS NHS FOUNDATION TRUST, PHARMACY TEAM

TEAM MEMBERS:

- Millie Harris – Clinical Pharmacist
- Jason Bell – Mental health Lead Pharmacist



Background:

At Gloucestershire Hospitals NHS Foundation Trust (GHNHSFT) pharmacy, we place all our medication supplies to wards, clinics, outpatients, and external sites in individual patient bags, which are then placed in another plastic bag for transport to the destination. We use a range of LDPE and craft paper bags for different supplies depending on who the supply is for and where it is sent. We use thousands of bags per year, creating a carbon footprint of 5,531.56 kgCO2e, which is equivalent to driving approximately 16,000 miles. We feel this bag use is unnecessary and can be eliminated entirely for inpatient wards, and supply reduced to outpatients by offering a bag instead of providing one by default. Transport bags are essential to deliver medications safely and securely to the ward however disposable bags can be replaced with reusable bags.

Specific Aims:

Phase one:

- To reduce the number of bags used for inpatient supplies by >80%.
- To reduce the number of paper bags used for outpatient supplies by >30%, for patients waiting for their prescriptions.

Phase two:

- To replace 70% of our disposable transport bags with reusable bags.

Methods:

<u>Studying the system</u>

The process of dispensing and sending medications to the wards and supplying to outpatients was process mapped (Appendix 1). Where the step included the introduction of a bag, this was identified as a potential change.

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Alternative options were considered such as removing the bag entirely, using an elastic band to keep medicines for the patient together and removing bags for single items only. Communication and research took place to investigate how other hospital pharmacies transport medications to the ward and if we could adopt this good practice. It was found that sending medication boxes loose was common practice at 5 out of 7 (71%) Trusts within the region. It was decided to remove the bags from the process entirely for phase one of the project.

One project lead undertook small scale data collection by offering outpatients a bag instead of automatically providing one for their prescription. It was estimated that two thirds of patients decided they did not need a bag, forming the basis of our aim to reduce paper bag supplies to outpatients by over 30%. This only applies to outpatients waiting for their prescriptions in the pharmacy as bags are necessary for the safe storage of prescriptions awaiting collection.

Engaging key stakeholders

Project leads engaged pharmacy staff at two departmental meetings, using the statistic that our carbon footprint associated with bag use is equivalent to driving 16,000 miles to create a sense of shock. Dispensary leads on both sites were also engaged on an individual level. Buy-in from the Director of Pharmacy was obtained, a key stakeholder in the project.

The Divisional Director of nursing was engaged by the Director of Pharmacy and one project lead spoke at a ward manager meeting to gain support on behalf of the nursing staff. Posters were sent up to the wards informing staff of the change, and communication sent out via the trust global email.

Phase 1:

As of November 1st, 2022, dispensary staff were encouraged to stop providing bags for inpatient supplies and to offer outpatients waiting for prescriptions a bag rather than providing one by default.

Phase 2 – planned changes:

We plan to remove disposable transport bags and replacing with re-usable bags. This is outside of the scope of this project however the team are looking to order these re-usable bags and implement this change in the near future.

Measurement:

Patient outcomes:

Our change did not affect supply of medication and we do not anticipate any negative impact on quality of care. We will measure any potential unintended impacts through feedback from ward and pharmacy staff and the Trust Datix reporting system.

Environmental sustainability:

An estimate of bag use for medication supply per year within the pharmacy department was calculated using the pharmacy ordering system, EMIS, the pharmacy prescription tracking system WebTracker, and through visual spot checks.

We used a bottom up (process based) carbon footprinting methodology to calculate savings in bag reduction. This involved contacting suppliers for the range of bags we use to establish the materials used to create the bags, their country of manufacture to consider transportation emissions, as well as weighing each item to calculate waste disposal. Similar data was also collected for re-usable transport bags for sending medications from pharmacy to the ward, which will be ordered and implemented in the near future.

A reduction in quantity of single use plastic bags will be estimated by spot checking the pigeon holes in the dispensary and in the long-term using the EMIS ordering system.

There will also be a reduction in the production of sticky bag labels however this was not included in the carbon footprint reduction calculations due to difficulty in measuring this.

Economic sustainability:

Cost of each type of bag and how many are ordered/used by the department was obtained through our procurement team

Savings will be measured via our EMIS ordering system which will show a reduction in procurement and cost of both inpatient and outpatient bags.

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Social sustainability:

Qualitative feedback from staff has been gained via departmental meetings.

Results:

Patient outcomes:

There have been no incidents of missed doses of medications affecting the patient care reported during out trial period. We will continue to monitor for any unintended negative consequences of our change long term.

Environmental sustainability:

Phase one

Based on an outpatient bag reduction by 30% across both sites, 134.5kgCO2e per year will be saved, equivalent to 387 miles driven in a car.

Based on an inpatient bag reduction by 80% across both sites, this results in a saving of 812.3 kgCO2e per year, or 2340 miles driven in a car per year.

Current estimated reduction **= 957 kgCO2e per year** (2,754 miles driven in a car).

There is an estimated saving of 50,000 plastic bags and 60,000 paper bags per year across both sites.

Phase two

The replacement of disposable to re-useable transport bags will result in a saving of approximately 18,500 disposable bags per year. There is an anticipated saving of **1,751.34 kgCO2e per year**, or 5,560 miles driven in a car per year. This takes into account the carbon footprint created by purchasing 80 re-usable transport bags at a cost of £44 each, across both sites, which can be used over 2000 times as per manufacturers guidance.

Total projected estimated reduction = **2,708 kgCO2e per year** (7,800 miles driven in a car).

Economic sustainability:

Phase one: Based on a reduction of 50,000 plastic bags and 60,000 paper bags per year across both sites we estimate a saving of £2,500 per year.

Phase two: Based on a replacement of 18,500 transport bags per year with 80 re-usable transport bags, we estimate a saving of £5,000 per year.

Our total projected estimated saving is therefore £7,500 per year.

Social sustainability:

There was some concern that the project could potentially increase the workload for nursing staff who will have to sort medications for patient's lockers, however there have been no reports from nursing staff that this has been the case, or that sorting loose medications into patient's lockers has hindered their work. Feedback obtained from nurses include "it doesn't matter if it's in a bag, as long as the medication gets here" and "there's no need to put everything in a bag as the medication has the patient's name on".

A change in the way of working for dispensary staff. Initially, feedback was very negative regarding increased workload and worry that items would go missing. However, there is now a more positive attitude towards the process as staff have got more familiar with it and the benefits of reducing bag use is better understood.

Discussion:

Phase one of the project was successful in reducing bag use within pharmacy. It is difficult to accurately report the exact percentage in bag reduction due to the vast workload that goes through the dispensaries on each site however the figures reported are an estimation of what the team have seen so far.

Within the next year, the EMIS ordering data can be compared to the prior year to assess the impact of the intervention. It is difficult to change a long-standing process within a system therefore it is accepted that not every member of dispensary staff will adopt this change in the early stages of the project.

There were a number of barriers faced which included resistance from dispensary staff who believed medication items would get lost and would introduce a higher workload for the team. However, Datix reports did not suggest an increase in the number of lost medication items so far. An incident was reported by a member of the pharmacy team that some medication items had been placed in the ward stock cupboards instead of the patient locker. It was accepted that this is likely due to unfamiliarity with the new process, so in response a reminder was sent out in the Trust global communication email. Dispensary staff were encouraged to be practical when considering bag use and it was agreed it is acceptable to use a bag where a large quantity of supplies is made for a single patient.

The project team encourage pharmacy staff to communicate new ideas to improve the process if it is felt necessary.

Conclusions:

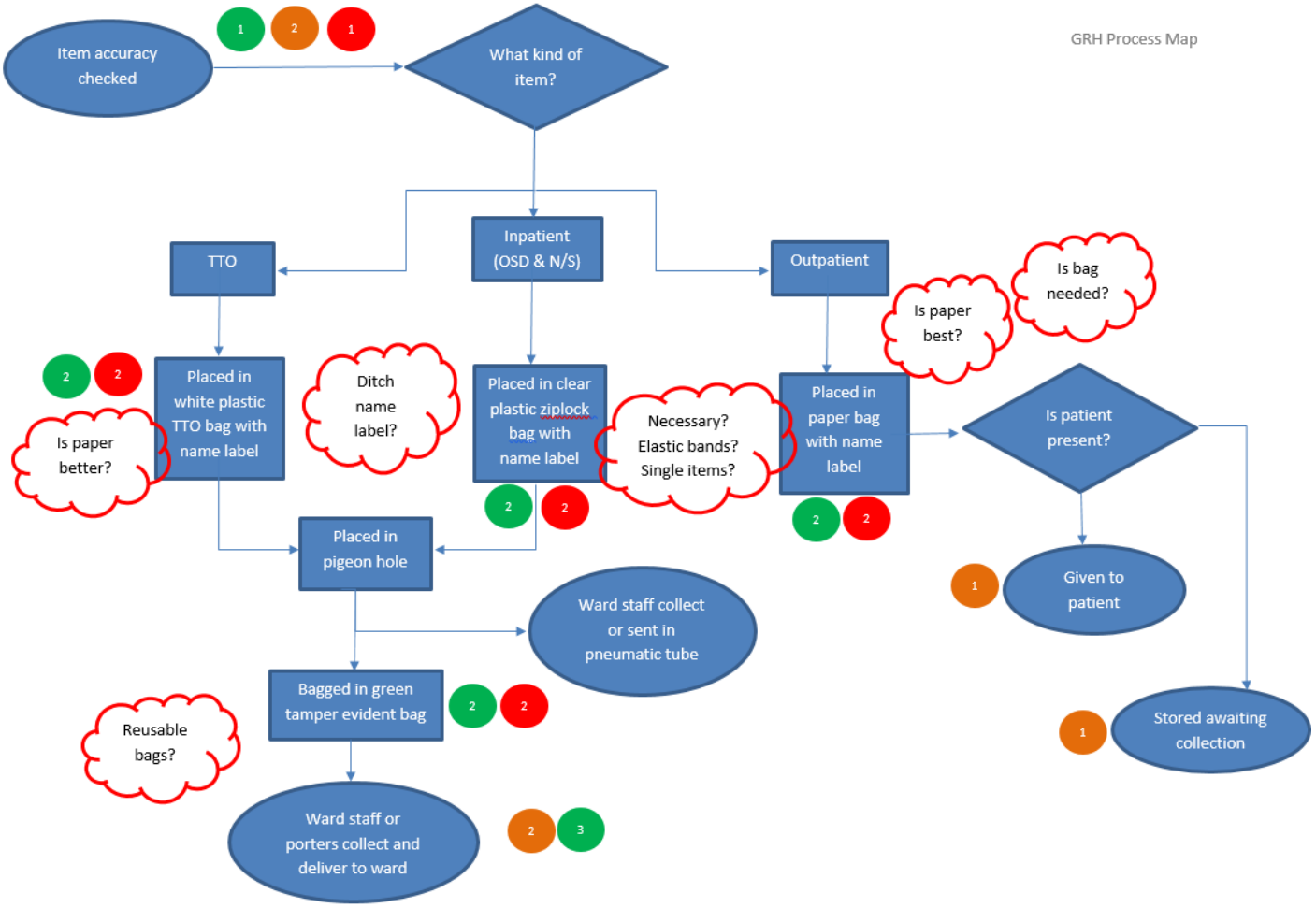
Overall, phase one of project so far has been successful. There has been a reduction in bag use and even greater reductions are yet to come during phase two with the implementation of re-usable transport bags. Whilst there have been potential issues raised by both pharmacy and ward staff regarding the new process, it is accepted that there is likely to be issues when a new process is introduced, and it takes time for staff to adapt to this. We are confident that these issues will resolve in the long term with familiarity with the process as many other trusts have already adopted this green practice and we will continue to review improvement ideas in the future.

References

Information of bag materials and place of manufacturer obtained from:

- Midco Print & Packaging Ltd – Customer service team
- Valley Northern - sales representative
- Versapak – sales representative

Appendix 1: Process map of plastic and paper bag usage in pharmacy department



Environmental resources		Social resources		Financial resources	
Medications	1	Patient/carer satisfaction	1	Medications	1
Energy use	2	Staff time	2	Cost of packaging	2
Waste disposal	3	Staff satisfaction	3	Nursing staff time	3

Phase 1: Calculations for estimated bag use

Bag use in CGH

Estimated bag use reduction was difficult for the CGH site as many different types of paper bag are used for all inpatient (IP), outpatient (OP) and TTO supplies. The number of outpatient and TTO bags used were calculated from data collated from WebTracker – a pharmacy prescription tracker system, which tracks the number of outpatient and TTOs we process within pharmacy. The proportion of white and brown bags, including the different sizes were estimated through visual spot-checks.

Based on data collated from WebTracker.

Outpatient bag use: 228 average/week, 11856/year (rounded to 12000/year approximately).

Bag use per year

Small white	27.5%	3300	
Medium	45%	White: 30% = 3600	Brown: 15% = 1800
Large	27.50%	White: 19% = 2300	Brown: 8.5% = 1000

Carbon Footprint

Bag	Number	kgCO2e
Small white	3300	25.76
Medium White	3600	57.32
Medium brown	1800	52.66
Large white	2300	67.84
Large brown	1000	40.51
Total		244.09

TTO bag use: 68 average/week, 3536 average/year (rounded to 3500/year).

Small white	32%	1120	
Medium	40%	White: 20%= 700	Brown: 20% = 700
Large	28%	White: 8% =280	Brown: 20% =700

Carbon Footprint

Bag	Number	kgCO2e
Small white	1120	8.742
Medium White	700	11.15
Medium brown	700	20.48
Large white	280	8.26
Large brown	700	28.35
Total		76.982

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Inpatient bag use

The total number of bags used in a year was taken from the EMIS ordering system. The number of bags used for outpatient and TTO supplies were subtracted from the total number, to get the quantity used for inpatient supplies.

S White bags		
	Number	kgCO2e/year
Outpatient	3300	25.76
TTO	1120	8.742
Inpatient	13580	106
Total	18000	140.5

M White bags		
	Number	kgCO2e/year
Outpatient	3600	57.32
TTO	700	11.15
Inpatient	5700	90.76
Total	10000	159.23

L White bags		
	Number	kgCO2e/year
Outpatient	2300	67.84
TTO	280	8.4
Inpatient	4620	138.6
Total	7200	216

M Brown bags		
	Number	kgCO2e/year
Outpatient	1800	52.66
TTO	700	20.48
Inpatient	0	0
Total	2500	73.14

L Brown bags		
	Number	kgCO2e/year
Outpatient	1000	40.51
TTO	700	28.35
Inpatient	300	12.15
Total	2000	81.01

Total carbon footprint for bags for CGH outpatients = 244.09 kgCO2e

Total carbon footprint for bags for CGH inpatients = 347.51 kgCO2e

If OP bags reduce by 30%, potential saving is 73.23 kgCO2e or 210 miles in car.

If IP bags reduce by 80%, potential saving of 278 kgCO2e or 772 miles in car.

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Bag use in GRH

Data collection was simpler than for CGH as plastic ziplock bags are used for inpatient supplies only and paper bags for outpatient supplies only.

Outpatient bag use

Carbon Footprint

Bag	Number	kgCO2e
Small white	6000	46.83
Medium White	8000	127.38
Large white	1000	30
Total		204.21

Inpatient bag use

Obtained from EMIS ordering system.

Carbon Footprint

Bag	Number	kgCO2e
Small ziplock	23000	129.34
Medium ziplock	26000	219.31
Large ziplock	16000	220.44
Extra large ziplock	4000	111.34
Total		680.43

If OP bags reduce by 30%, saving approx 61.27kgCO2e or 176 miles

If IP bags reduce by 80%, saving of 544 kgCO2e or 1566 miles

Total savings: If OP bags reduce by 30%, there is an estimated saving of 134.5kg CO2e per year, equivalent to 387 miles driven in a car. If IP bags reduce by 80%, there is an estimated saving of 822 kgCO2e per year, equivalent to 2367 miles driven in a car.

Cost saving calculation for bags

Cost of plastic ziplock bags for IP use				
	Price per pack (£)	Price per bag (£)	Quantity used per year	Cost per year
S ziplock	11.35 for 1000	0.0135	23000	261
M ziplock	22.27 for 1000	0.02227	26000	579
L ziplock	60.12 for 1000	0.06012	16000	962
XL ziplock	51.32 for 1000	0.05132	4000	205
Total				£2007

An 80% reduction would lead to a saving of £1605.

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	Cost of plastic paper bags					
	Price per pack (£)	Price per bag (£)	Quantity used per for IP per year	Cost for IP per year	Quantity used for OP per year	Cost for OP per year
S white	20.60 for 1000	0.0206	13580	279.75	9300	191.58
M white	39.39 for 1000	0.03939	5700	224.5	11600	457
L white	79.28 for 1000	0.07928	4620	366.27	3300	261.6
M brown	31.83 for 125	0.25	0	0	1800	450
L brown	47.11 for 250	0.188	300	56.40	1000	188
Total				£926.92		£1548

£926.96 total cost for paper IP bags. Saving of 80% = £744.

£1548 total cost for paper OP bags. Saving of 30% = £464.274.

Total cost saving = £2813

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Phase 2: Calculations for carbon footprint saving for transport bags

We currently use 26,400 disposable transport bags per year. This equates to a carbon footprint of 2,729.59 kgCO2e/year.

A reduction by 70% would lead to a saving of 1910.71 kgCO2e.

Taking into account the carbon footprint associated with purchasing the new bags and security tags (159.37 kgCO2e), the overall reduction is 1,751.34kg CO2e.

Calculations for economic savings for transport bags

Cost of disposable transport bags per year = £11,600. A 70% reduction = £8120 saving per year.

Cost of investment of re-usable bag = £44. Multiple by 80 = £3520. Manufacturer states can be used over 2000 times, assuming each bag is used once per day, they will last for 6 years, cost per year = £586.

Cost of investment of transport tags = £42 for 500, or £0.084 for each tag. Assuming one tag per bag per day, this is a cost of approximately £2500/year.

The overall cost reduction is approximately £5000.

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