



REDUCING PLASTIC BAG USAGE IN BRONGLAIS HOSPITAL PHARMACY DEPARTMENT

TEAM MEMBERS:

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Background:

One of the targets in the 'NHS Wales Decarbonisation Strategic Delivery Plan 2021-2030' is to develop a 'plastics in healthcare' initiative to address waste in the delivery of health care – this will aim to tackle PPE, single use plastics, and packaging waste.¹

Within our pharmacy department, the standard operating procedure (SOP) for delivering medication from the pharmacy to patients on the wards in Bronglais hospital involves packaging every patient's medication into plastic bags. Bronglais pharmacy department orders approximately 7,000 plastic bags per year for this purpose, costing the department around £377 each year. Only a small proportion of these plastic bags are returned to the department for re-use.

This project to reduce plastic bag use was started as the first stepping-stone within the department to achieve the NHS carbon footprint goal of being net-zero by 2045².

Specific Aims:

Review the method for transporting medications to patients on the wards from the pharmacy department to reduce the number of plastic bags used.

Methods:

Studying the system

A process map was created of how plastic bags were used.



We discovered this practice of plastic bag use for individual patient medications started in response to an incident in which a patient was given incorrect medication, resulting in an adverse outcome





for the patient. Informal discussions were held with nurses on the wards and pharmacy staff, revealing varied attitudes toward plastic bag use and disposal. Some attributed the habit of throwing the bags away in the general waste to lack of time or lack of recycling facilities, while others had not considered reusing an option.

We spoke to colleagues from other sites within the health board to understand their policies and procedures around the transportation of medication and found similar systems were being used in the other sites.

Change implemented

As medications are already individually labelled with patient details, we agreed the plastic bags were unnecessary, instead opting to place all medications taken to the ward in a reusable zip bag with a 'return to pharmacy' label. The pharmacy has had these reusable bags available for several years that have been used infrequently for other purposes.



Once on the ward, each medication would be distributed to patient specific lockers as usual, and then the bags left in pharmacy boxes for ward stock deliveries to be returned to the pharmacy.

Stakeholders including senior pharmacists and nursing teams were approached about reasons for the change and to explain implementation of the change. Senior nurses briefed the sisters from all wards during morning bed meetings to disseminate information on the change to their ward teams. Multiple staff meetings were conducted to keep teams informed and to present findings with them.

Measurement:

Patient outcomes:

Using the data from the All Wales Medicines Safety Audit collected on a monthly basis by ward pharmacists, we were able to determine whether the change in procedure affected the availability of medicines on the ward for patients. This audit collects data on medications prescribed and administered on the wards, including incidents of missed medication due to it being 'unavailable'. We also monitored the Trust Datix system for any reports on missed medication.

Environmental sustainability:

Data collection was carried out by pharmacy staff in the dispensary to ascertain the numbers of plastic bags leaving the department each week before and after the change. Pharmacists kept a tally chart on the checking bench each day to record the number sent out of the dispensary.

We calculated the carbon emission for each size of plastic bag used in the pharmacy department.

Due to time constraints, we couldn't carbon footprint a reusable bag within the 10-week time frame, and instead we have taken the carbon footprint of a similar reusable bag from another Green Team project (1.3452 kgCO₂e).





Economic sustainability:

The cost of each bag was obtained via our procurement system. We extrapolated a cost per individual bag to extrapolate financial savings following implementation of the project.

As we repurposed reusable bags that have existed in the department for several years, we have not included a financial cost given the cost per use would be negligible. If additional bags were needed in the future, the cost would need to be considered.

Social sustainability: Data was gathered through informal discussions with nursing staff on the wards and during the pharmacy team meetings around impact of plastic bags.

Results:

Patient outcomes:

Based on our audits and monitoring of Datix incidents, there has been no change to frequency incident reports following our change, implying eliminating the use of plastic bags has not impacted on patients receiving their correct medications. As each box of medication is labelled with patient details, we are confident eliminating the plastic bag should not increase incidents in the future.

Environmental sustainability:

Average carbon reductions per week are demonstrated in the table below:

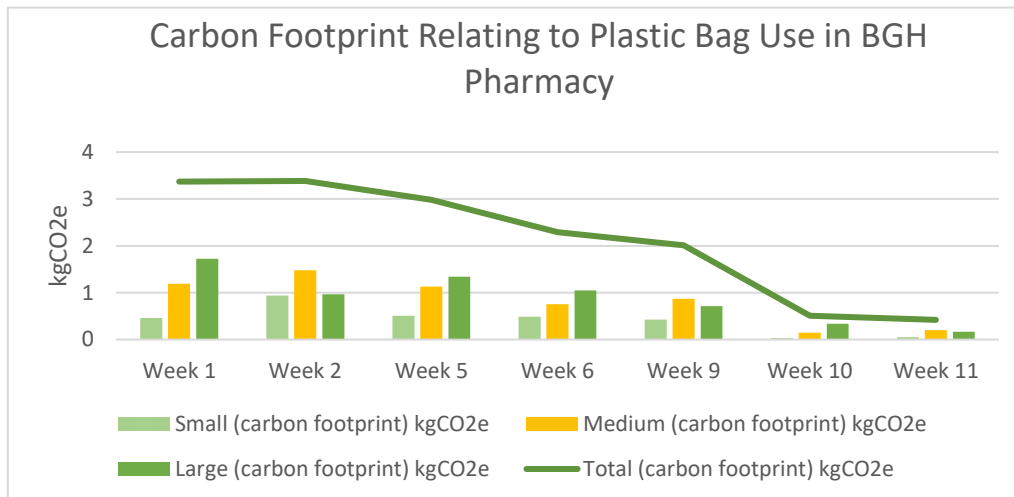
Bag	CO2e per bag	Average number of bags used	Average weekly CO2e before change	Average weekly CO2e after change	Reduction per week
Small	0.010 kgCO2e	56.6	0.57 kgCO2e	0.04 kgCO2e	-0.53 kgCO2e
Medium	0.029 kgCO2e	37.4	1.08 kgCO2e	0.18 kgCO2e	-0.90 kgCO2e
Large	0.042 kgCO2e	27.6	1.16 kgCO2e	0.26 kgCO2e	-0.90 kgCO2e

The graph below shows a reduction in plastic bag use, particularly in weeks 9-11 of the project. Assuming an absolute reduction is achievable soon, our CO2e reduction per week is 2.33kgCO2e which extrapolated over a year is 121.16 kgCO2e.

It was assumed that 15 reusable bags will be used and that they will last 5 years, providing a carbon footprint of 4.0356 kgCO2e per year.

Considering the CO2e of the reusable bags, our overall savings are **117 kgCO2e per year**. This is equivalent to driving 337 miles driven in an average car.





Economic sustainability:

Before our intervention an average of £5.70/week was spent on plastic bags (£0.02 / small bag and £0.07 / medium or large bag). This reduced to £0.92/week following the change, a saving of £4.78/week. Extrapolated across a year this is a potential saving of **£248.56**. This is equivalent to 9 months of a starting dose of blood pressure medication (ramipril) for one patient.

Social sustainability:

Discussions within the pharmacy department about the plastic bag reuse and disposal made people more aware of their actions in the department. The team have discussed the best options for changing practice and how we could group items together in a more sustainable way. More staff have become interested in the use of paper bags instead of plastic.

Nurses have not expressed any concerns following the change of practice and the senior nurses have welcomed the change in a step to make the wards and hospital more sustainable.

Discussion:

Discussions with the pharmacy team around the use of the bags is likely to have impacted on the number used throughout the project as a gradual decline is seen as the staff become more conscious of the use and impact. Some plastic bags are still used to dispense medication in bottles for the same patient and the label is attached to the bag, this may need to be reviewed as part of the dispensing policy.

A limitation was the data was only collected from the dispensary, there are still plastic bags being used in the storeroom.

One of the main challenges of this project was enabling change and managing the risk which was identified from a previous incident, leading to use of plastic bags in the first instance. There were other steps put in place to reduce risk of a similar incident including a two nurse check on discharge medication and them being delivered/collected separately to ward stock. Another challenge has been finding the time to complete the project in a busy patient facing department.

Conclusions:



This project has kickstarted our department to look at the impact they can have, and we are proud we have reduced our plastic bag usage within the dispensary. Some insightful discussions have been had and a collaborative approach was attained to find a new way of working. Some ideas for future projects involve paper bags for take home medication, inhaler recycling and reducing paper use.

References:

1. NHS Wales Decarbonisation Strategic Delivery Plan 2021-2030. Published March 2021. [NHS Wales Decarbonisation Strategic Delivery Plan \(gov.wales\)](https://www.gov.wales)
 2. [UK health services make landmark pledge to achieve net zero - GOV.UK \(www.gov.uk\)](https://www.gov.uk)
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