

Postgraduate Diploma in General Pharmacy Practice

Quality Improvement Written Task Coversheet

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| | |
|-----------------------|---|
| Proposal title | Reducing the number of unnecessary couriers booked to transport medications between hospital sites during weekends within Imperial College Healthcare NHS Trust |
| Candidate name | Coralie Leighton |
| Date | 13/08/2022 |

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| Project supervisor | Simran Singhota | 13/08/22 |
| Educational Programme Director | Eva Bayerkoehler | 13/08/22 |
| Trust (<i>relevant Trust group</i>) | Imperial College Healthcare NHS Trust | 13/08/22 |
| Ethics Committee (where appropriate) | - | - |

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Postgraduate Diploma in General Pharmacy Practice

Quality Improvement

Title

Reducing the number of unnecessary couriers booked to transport medications between hospital sites during weekends within Imperial College Healthcare NHS Trust

Abstract

Delays in the supply of medication can lead to patient harm and death, as well as delays in patient's discharge. Within Imperial College Healthcare NHS Trust (ICHNT), when a medication is out of stock on the dispensing system (CMM), there is no procedure to follow to obtain supply of medication. Concerns were raised that unnecessary couriers were often booked on weekends to transfer stock between sites, leading to avoidable delays, higher costs and increased carbon emissions. This ongoing project's objective is to ensure that 90% of couriers booked on weekends are necessary. This project was designed using the Institute for Healthcare Improvement (IHI) Model for Improvement and the PDSA cycle model.

Weekend teams were emailed with a table to collect data of couriers that were booked. The following week, the collected data was analysed and the appropriateness of the courier was assessed. Appropriateness was assessed by checking physical stock levels in pharmacy, availability as ward stock or in the emergency drugs cupboard, or that the medication had been previously supplied. Baseline data showed 51% (n=47) of medications couriered from another site could have been sourced by other means. To reduce this, a courier flowchart was designed to aid the decision of whether to book a courier.

The flowchart was displayed in the dispensaries and was emailed to all staff in the pharmacy department. The same data as the baseline was collected after implementation of the flowchart. Analysis highlighted an overall 36% (n=77) reduction in the number of medicines couriered, and a 50% (n=40) reduction in the number of unnecessary couriers booked after implementation of the flowchart. Although proportionally, 51% (n=24) of couriers were unnecessary during baseline data collection, whereas 53% (n=16) of couriers were unnecessary after implementation of the flowchart. It should be noted there was high variability in results between hospital sites.

Overall, this project has decreased the number of unnecessary couriers booked, however not enough to meet the project's objective. To enhance results, further PDSA cycles are planned alongside exploring an additional intervention whereby team leaders will need to approve the courier before booking.

Understanding the problem

A core part of pharmacy's role within hospital, is providing medication, both for inpatient use and discharge. It is important patients have quick, easy and safe access to medications to protect them during their hospital stay, but also to avoid delays when being discharged. Delays in providing critical medications to sick patients can lead to drastic consequences, including death, so it is important the process is as effective as possible.¹ Some medications, such as levodopa, need to be given within 30 minutes of their administration time to avoid harm, which is longer than the average time for a courier to travel between hospital sites.²

Within Imperial College Healthcare NHS Trust (ICHNT), when a medication is out of stock on the dispensing system (CMM), there is no procedure to follow to obtain supply of the medication on weekends. If an unnecessary courier is booked to transfer stock between sites, this has the potential to lead to avoidable delays, higher costs and increased carbon emissions.

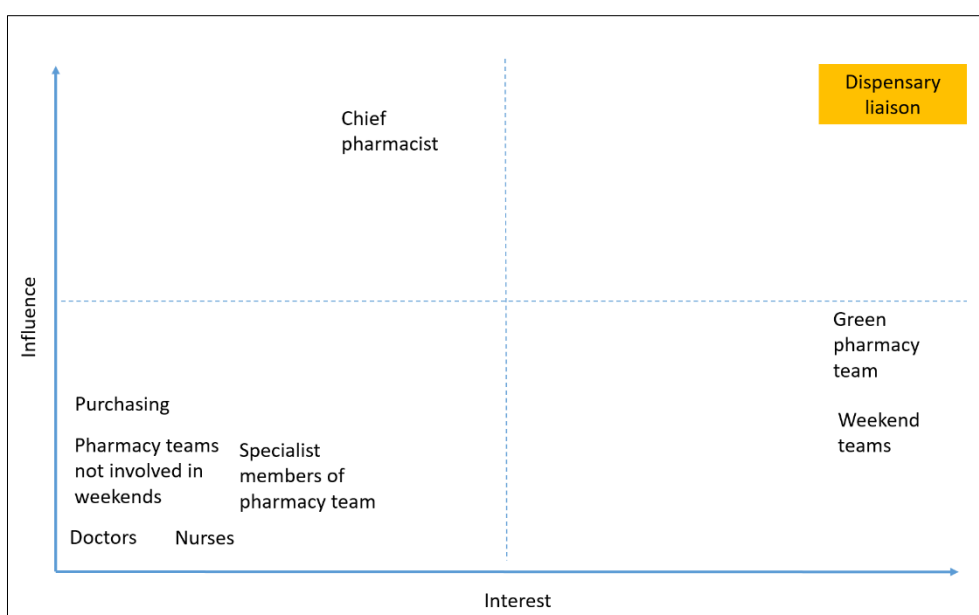
The Dispensary Liaison team, consisting of senior pharmacists and technicians from each hospital site within ICHNT, raised the initial concern regarding unnecessary couriers being frequently booked on weekends. It had been noticed that couriers were often booked without checking the physical stock levels within the dispensary, and stock was frequently sourced without the need for a courier when challenged by another

Project Title: Reducing the number of unnecessary couriers booked to transport medications between hospital sites during weekends within Imperial College Healthcare NHS Trust member of the team. This was commonly seen when staff working were not dispensary-based, so were unsure of steps to follow before booking a courier.

The aim of this project is to ensure 90% of couriers booked on weekends are necessary. The project is expected to take at least 12 weeks after changes have been instigated. The necessity of the courier will be examined based on a data collection tool to confirm if stock could have been sourced via other means. Any interventions made will need to be simple, accessible and clear to maximise impact and will be taken up by staff. This report is based on an ongoing project.

Baseline data was collected to confirm there was a high percentage of avoidable couriers booked on weekends. A stakeholder analysis map was created (figure 1) to outline teams who could have the most impact on the project. The Dispensary Liaison team was recognised as a key stakeholder team in this project, as it includes staff from all sites and given they are dispensary based, would have the authority to approve any changes being made to current processes.

Figure 1. Stakeholder analysis map



The quality improvement (QI) team included staff from the Dispensary Liaison team: myself as Senior Dispensary pharmacist at Hammersmith Hospital, the Senior Dispensary pharmacists at St Mary’s hospital and the Chief technicians at Charing Cross Hospital and Hammersmith Hospital.

The Institute for Healthcare Improvement (IHI) Model for Improvement framework was used to design the project, where a plan-do-study-act (PDSA) cycle model was utilised to test measures and implemented changes. This report is based on one PDSA cycle, however further cycles are planned for the future.

To understand the problem, a meeting was organised with the QI team to discuss the ideal process that should be followed before booking a courier, compared to the “incorrect” process currently followed. Process maps were created to visualise this (figures 2 and 3). These diagrams were based on baseline data collected that showed over a four week period 51% (n=47) of items were couriered between sites unnecessarily.

Figure 2. Ideal process to be followed before booking courier

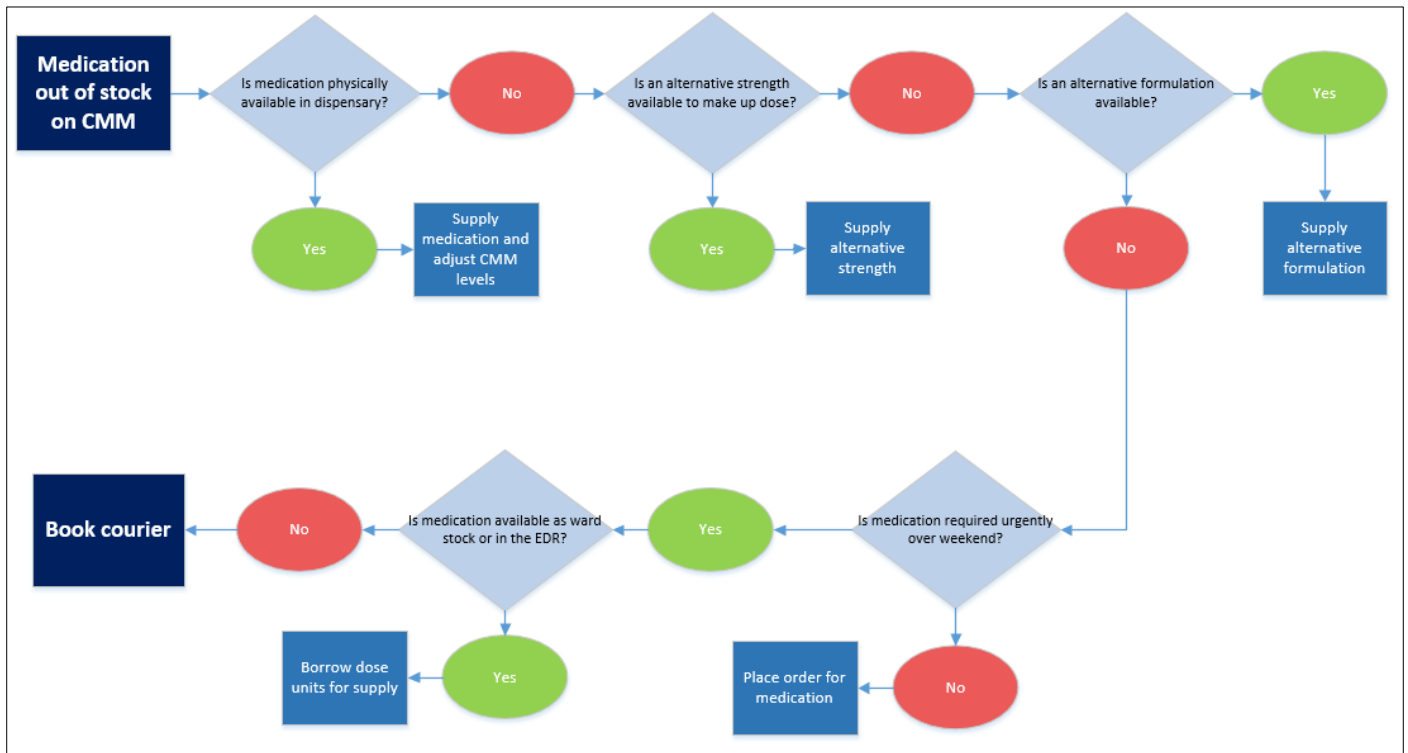
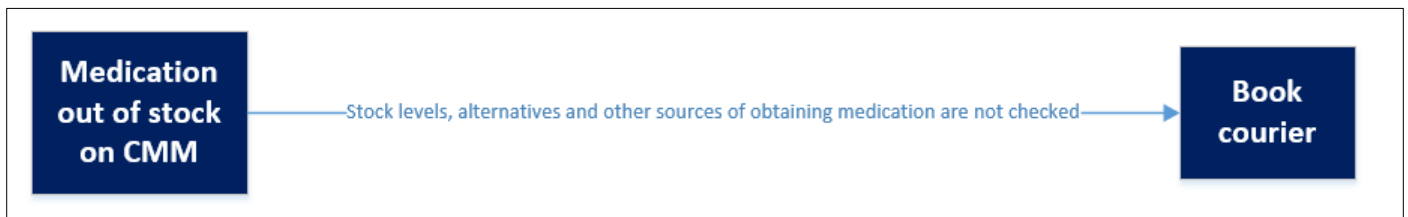
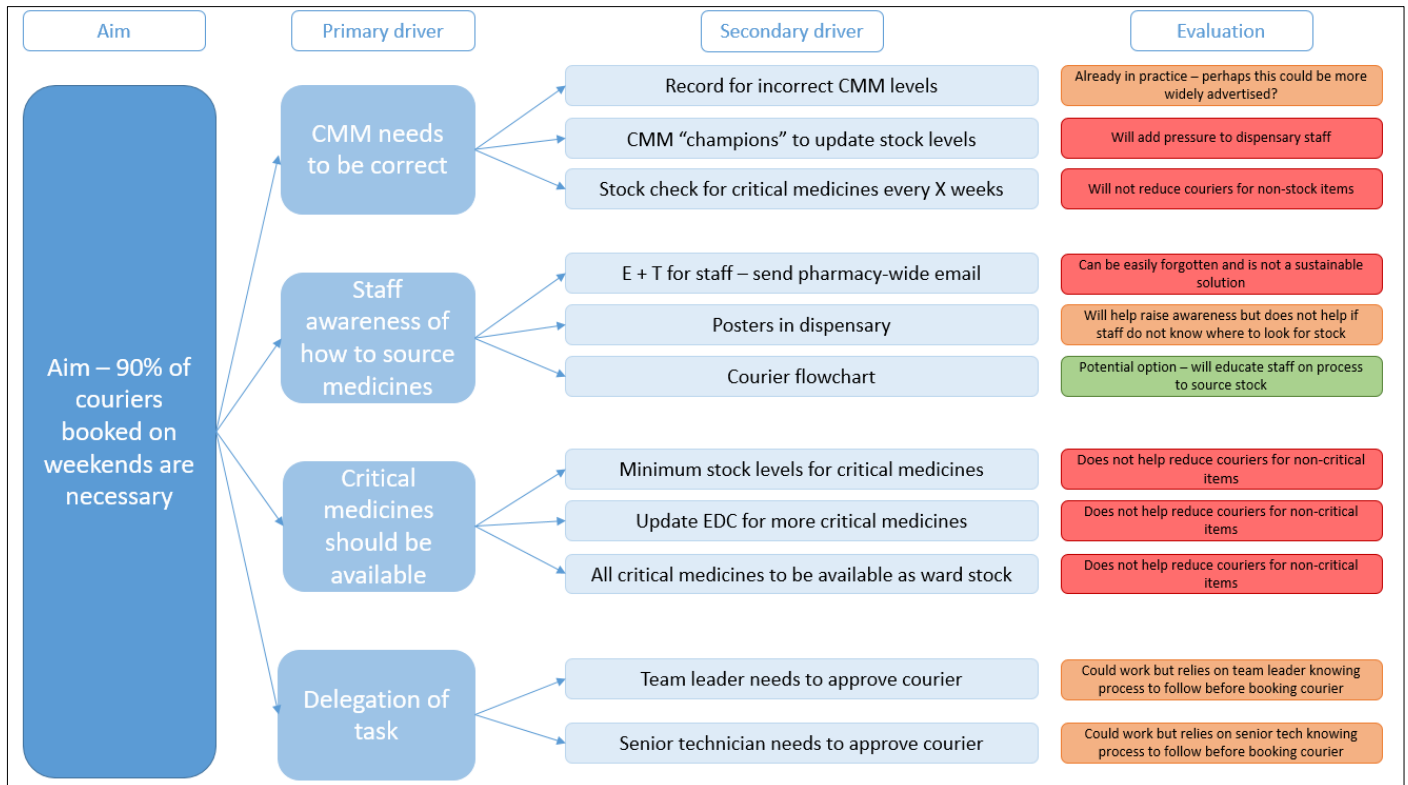


Figure 3. Incorrect and current process being followed before a courier is booked



After further analysis of potential approaches to rectify this problem, four primary drivers were identified: CMM needs to be correct, staff need to have awareness of how to source medicines, critical medicines should be available and the task of booking a courier should be delegated to an appropriate member of staff. See figure 4 for a driver diagram of interventions explored by the QI team.

Figure 4. Driver diagram



Choice of measures

To collect useful data and to determine if any intervention had an effect on the service, the following measures were used (table 1).

Table 1. Measures recorded for project

| Measure | Type of measure |
|---|-----------------|
| Was the medication previously supplied? | Process |
| Should the patient have the medication on the ward? | Process |
| Is the drug a critical medicine? | Process |
| Is the drug in the Emergency Drug Cupboard (EDC)? | Process |
| Is there stock available on other wards? | Process |
| Is the stock physically available in pharmacy? | Process |
| Are the CMM stock levels correct? | Balancing |
| Was the courier necessary? | Outcome |

The various process measures were used to determine availability of stock and would demonstrate if alternative locations were checked to source medications before booking a courier. The balancing measure of checking CMM stock levels was included because if stock is used from other locations or stock in pharmacy is used that is not on the system, this could lead to incorrect stock levels. Resultantly service levels could be affected as inaccurate stock levels could impact stock ordering and thus availability of future medications. Ultimately, the aim of this quality improvement project is to determine whether the couriers booked were necessary, hence was included for each item as an outcome measure.

To collect data, an email was sent to staff working the weekend, detailing the project and contained a table to complete (Table 2), with instructions to send back to the QI lead. On the following Monday, the QI lead ensured all relevant information was received and chased up missing information if required. The data collection form (Appendix 1) was filled in with all information collected. If couriers were booked, the dispensary where the courier was booked from was contacted and a member of staff physically checked stock levels to confirm stock was unavailable. Also, CMM was used to determine if couriered items were kept as stock on wards or in the emergency drugs cupboard (EDC). Drugs were also evaluated for their criticality by using the Trust's 'Critical Medicines Not to be Omitted' guideline on the Intranet.³ After all information was gathered, the necessity of the courier was evaluated. If the medication could have been sourced by alternative means, either in pharmacy, from another ward or in the EDC, the courier was deemed unnecessary.

Table 2. Table emailed to weekend teams

| | Courier 1 | Courier 2 |
|--|-----------|-----------|
| Date | | |
| Site courier booked from (CXH, HH or SMH) | | |
| Site courier booked to (CXH, HH or SMH) | | |
| Drug name | | |
| Drug strength | | |
| Drug form (tabs, caps, inj, liquid etc,) | | |
| Quantity (Number of dose units or boxes) | | |
| Patient MRN (or ward if ward stock) | | |

Design and application of PDSA methods (Improvement approach)

Baseline data showed over half (51%, n=47) of medicines couriered between sites over the weekend could have been sourced by other means. During meetings with the QI team, several improvements were suggested (Figure 4). It was jointly agreed the most likely factor was the variability of awareness of where to source stock, before resorting to a courier. This led to the decision to make a flowchart to aid decision making. The flowchart was signed off by the QI team before use, then was printed and sent to each dispensary for display (Figure 5). Alongside this, each week the weekend team were emailed the flowchart and a table to complete with details of couriers booked (Table 2), with the same process for inputting data into the data collection form (Appendix 1) as when collecting baseline data.

Figure 5. Weekend cross-site courier flowchart

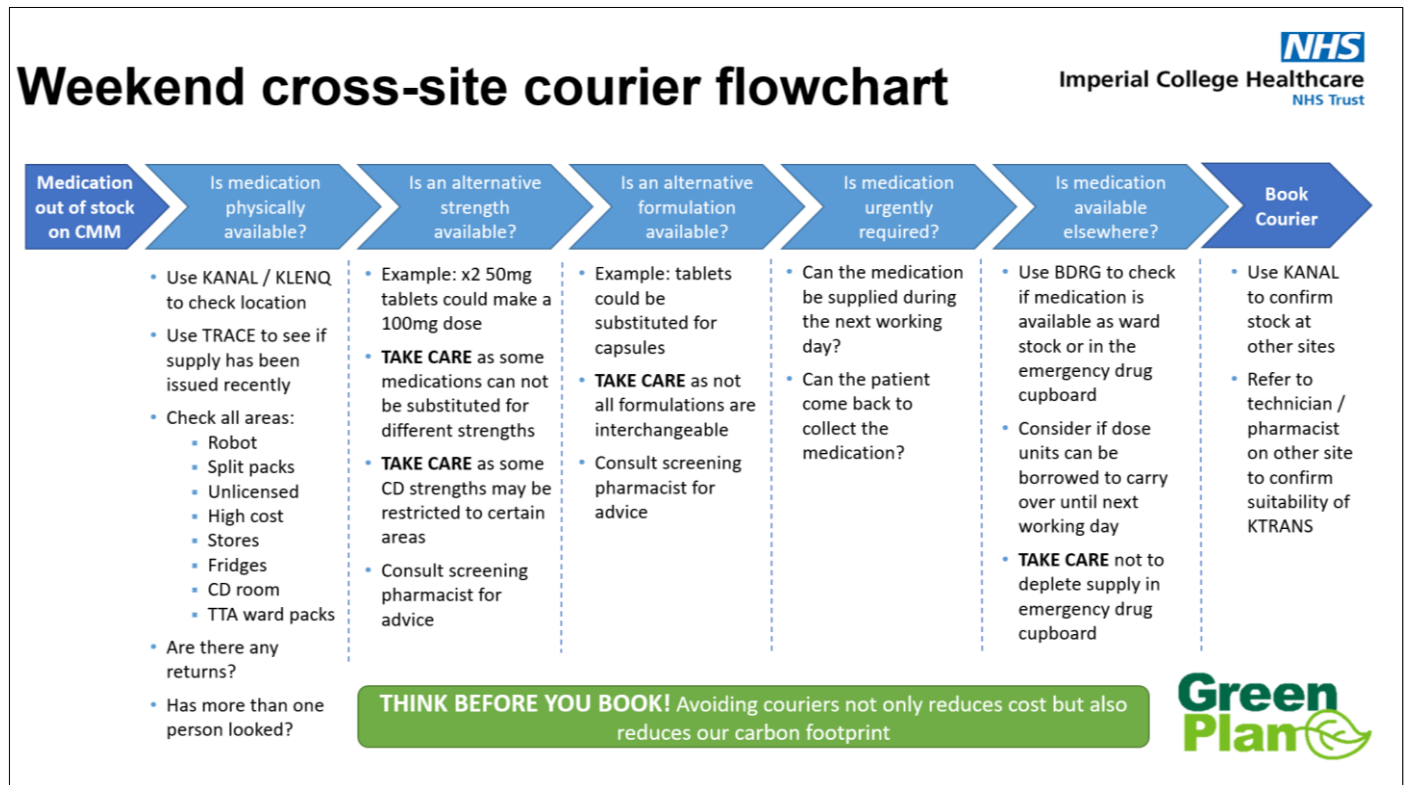


Figure 6. Total number of medicines couriered between hospital sites on weekends

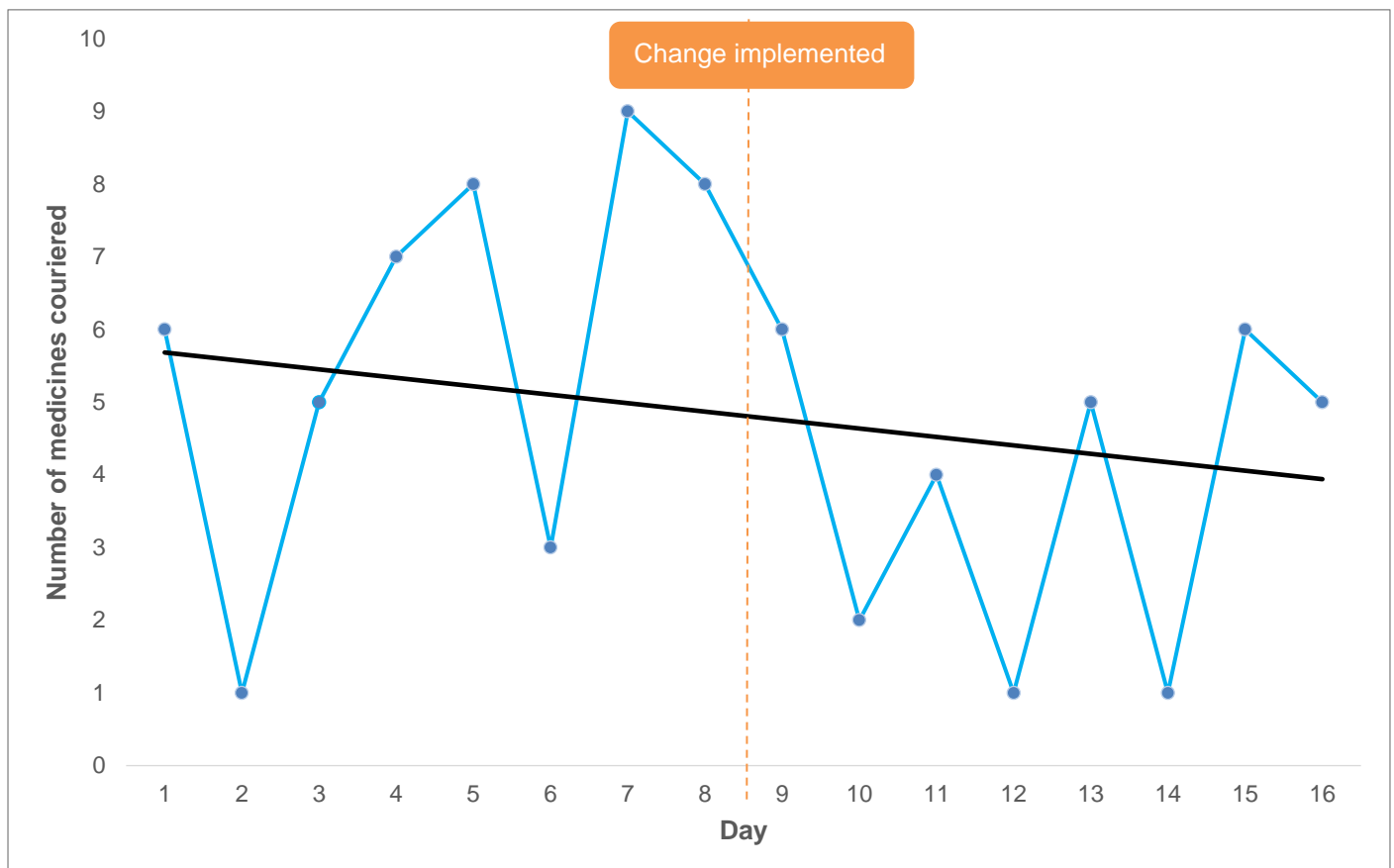


Figure 7. Number of medicines couriered between hospital sites on weekends, separated by site

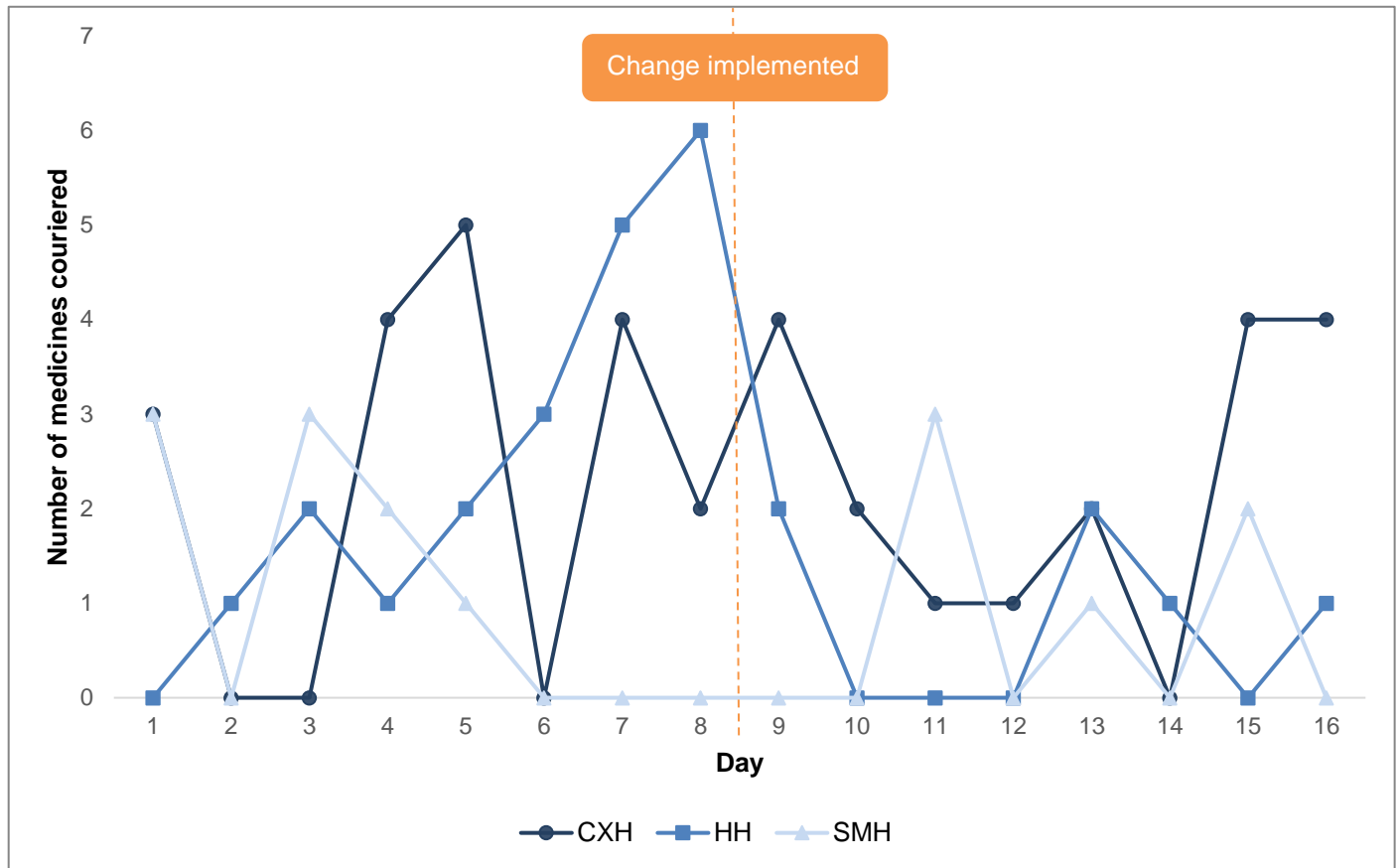


Figure 8. Total number of unnecessary medicines couriered between hospital sites on weekends

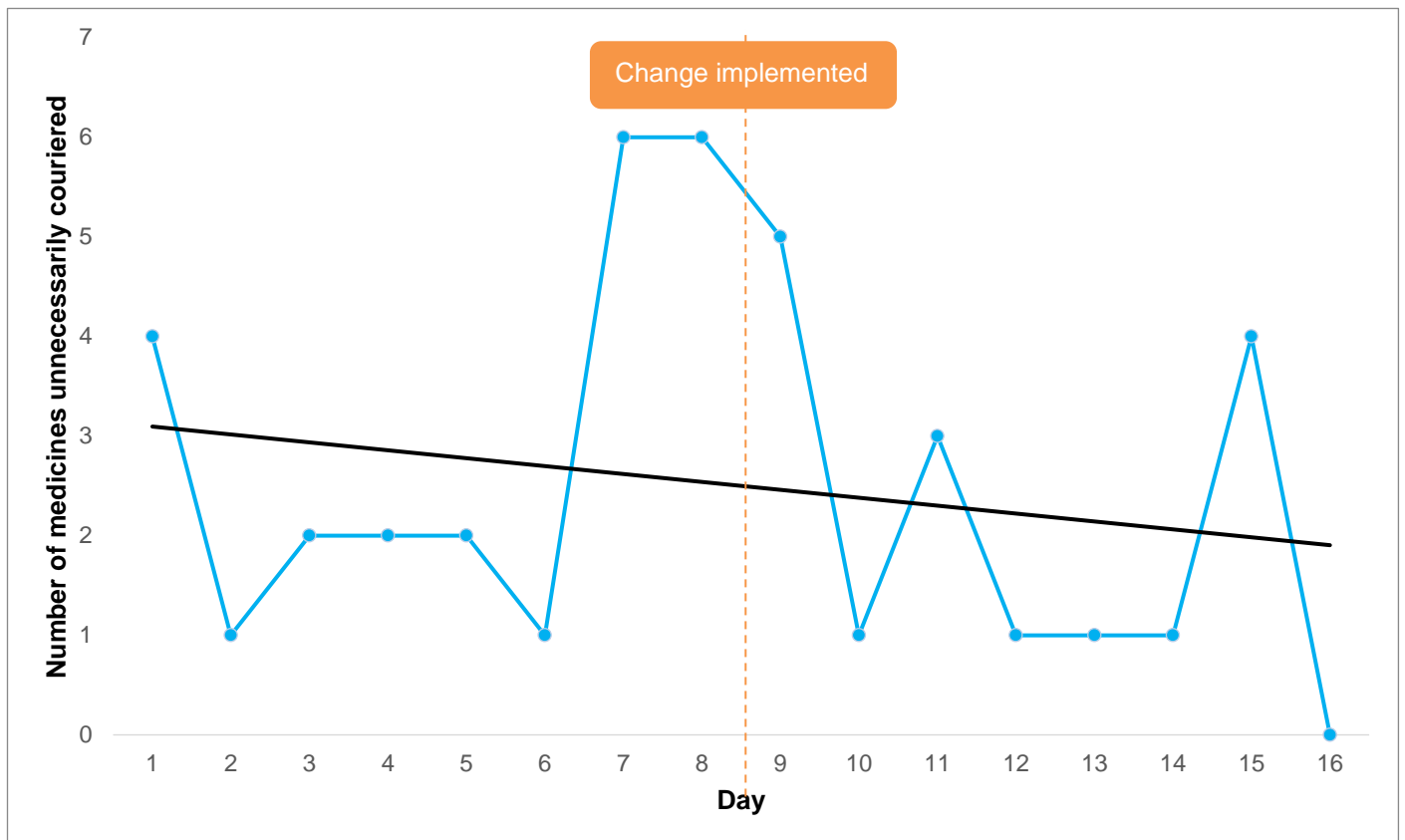
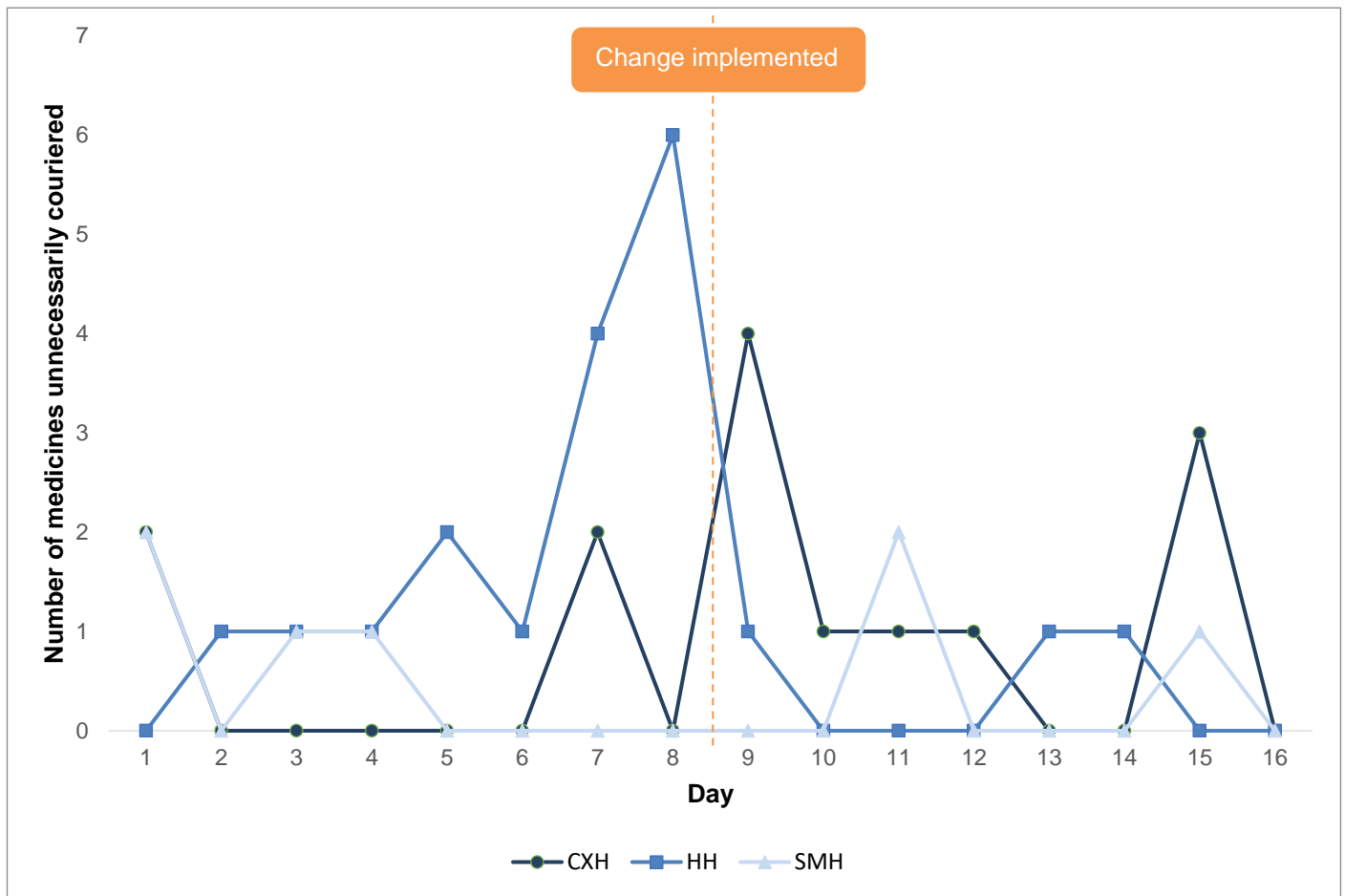


Figure 9. Number of medicines unnecessarily couriered between sites on weekends, separated by site



Overall, the flowchart was positively received and most found it helpful. There was some feedback that the flowchart was too wordy and caused delays when having to try and source stock, however this view was in the minority. Furthermore, despite being emailed the flowchart and having it displayed in the dispensary, some staff still were not aware of the flowchart and would book couriers without using the resource. This was made evident when the weekend team were chased up the following Monday for information regarding the couriers booked. Due to this, the next PDSA cycle will be look to change the protocol, with only weekend team leaders (who will be aware of the flowchart) able to authorise couriers. This will hopefully build upon the success of the flowchart, which team leaders can use to aid their decision making when booking a courier.

Critical evaluation of findings

Overall courier use improved, as demonstrated by a 36% (n=77) reduction in the number of medicines couriered between hospital sites after introduction of the flowchart. When reviewing this by site, there was a 0% (n=36) change for CXH, a 70% (n=26) reduction for HH and a 33% (n=15) reduction for SMH. This indicates a significant improvement in the number of medicines couriered for HH and SMH, but not for CXH.

When reviewing the absolute number of medicines unnecessarily couriered, there was a 50% (n=40) reduction after implementation of the flowchart. By site, there was a 60% (n=14) increase for CXH, a 33% (n=7) reduction for SMH and over a 100% improvement for HH, with a 4.3 fold reduction (n=19). However proportionally, 51% (n=24) of couriers were unnecessary during baseline data collection, vs. 53% (n=16) of couriers that were unnecessary after implementation of the flowchart.

CXH is subjectively the busiest site, therefore a potential reason for variability was due to staff not having time to review the flowchart or alternative ways to source medications. This is a key negative impact to be learnt from this project, as although a reduction in couriers decreases potential delays to our patients, there is a potential increase in workload for staff. Another potential factor for site variability, is staff's familiarisation with the QI lead. As they are based at HH, it is possible they had a stronger influence over staff based there. This is important to take into consideration, as this could be learned from for future PDSA cycles, whereby senior staff members could promote an intervention to their respective base sites to have more influence. Additionally, the resident pharmacist is based at CXH so staff based at this site are less likely to be cautious when booking a courier, as they do not need to wait for the courier to arrive. Based on staff feedback, it is the potential delay to finish times that encourages staff to avoid booking a courier the most.

There are some limitations to this project, one of them being that staff were emailed the flowchart and table each weekend to promote the project. This would not occur outside of this project, so could impact the sustainability of the results. One way to increase sustainability is for dispensary leads to include the flowchart in their weekly weekend-working reminder emails. Another limitation is the method of data collection relied on staff members providing accurate and timely information. Often, the information was received late which could impact results, as the physical stock check may not be accurate when confirming unavailability of stock. Also, it is possible staff may have provided incomplete or inaccurate information.

Overall, this project has shown some improvement in the number of medicines couriered, as well as a reduction in the number of unnecessary bookings. With continued promotion of the flowchart via weekend working emails and display in the dispensaries, these results will hopefully be sustained and will continue to improve with future PDSA cycles. The next steps for this project are to run another PDSA cycle, with an additional intervention of weekend team leaders authorising courier booking. Hopefully, in combination with the flowchart this will lead to a sustainable decrease in the number of unnecessary bookings.

References

1. National Patient Safety Agency (NPSA) (2010). Reducing harm from omitted and delayed medicines in hospital. Available from: <https://docplayer.net/5695517-Rapid-response-report-npsa-2010-rrr009-reducing-harm-from-omitted-and-delayed-medicines-in-hospital.html> [Accessed 07/08/2022].
2. National Institute for Health and Care Excellence (NICE) (2018). QS164 – Parkinson's disease. Available from: <https://www.nice.org.uk/guidance/qs164/chapter/Quality-statements> [Accessed 07/08/2022].
3. Imperial College Healthcare NHS Trust (2022). Critical list of medicines not to be omitted or delayed. Available via Trust intranet [Accessed 07/08/2022].

