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# Improving medicines reconciliation rates at Ashford and St. Peter's Hospitals NHS Foundation Trust

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**To cite:** Doolub R. Improving medicines reconciliation rates at Ashford and St. Peter's Hospitals NHS Foundation Trust. *BMJ Quality Improvement Reports* 2017;**6**:e000064. doi:10.1136/bmjquality-2017-000064

## ABSTRACT

Medicines reconciliation is integral to patient safety, symptom control and reducing patient anxiety. During a 3-month period on the respiratory ward at St. Peter's Hospital, 54% of drug charts were not reconciled with pre-admission medicines at the point of discharge for admissions up to 17 days. Only 18% were reconciled within 24 hours of admission. 50% of drug charts were missing 0-2 pre-admission medicines and 50% were missing 3-5 pre-admission medicines. The most common medicines that were not reconciled included topical applications which included eye, ear, nasal and skin applications (14%); vitamins i.e. vitamin B12 and thiamine, analgesia, PRN inhalers (11% individually); antidepressants and lipid regulators (6% individually); amongst a range of other medications including antiplatelets, calcium channel blockers, ACE inhibitors and diuretics.

Two interventions were carried out to improve the rate of medicines reconciliation onto hospital drug charts with pre-admission medicines. These were: 1) a green sticker placed in the medical notes by the pharmacist when drug charts were incomplete, which required a date and signature from the doctor when the drug chart had been reconciled 2) the placing of the loose medicines reconciliation record (a list of pre-admission medicines retrieved from a reliable source usually by the pharmacist) to the front of the drug chart. These measures were designed to alert the doctors that the drug chart was incomplete.

After 2 PDSA cycles, the results showed positive outcomes. In 75% of the cases where the interventions were used, medicines reconciliation was complete at the point of discharge with 34% of drug charts reconciled within 24 hours of admission. Of the 25% of drug charts that were not reconciled despite the use of the interventions, 100% of them were missing 0-2 medicines however 0% were missing 3-5 medicines. This highlights that the interventions were effective in improving the rates of medicines reconciliation.

## PROBLEM

When patients are admitted to St. Peter's hospital, a medicines reconciliation record is completed by the ward pharmacist. This has a list of the patient's pre-admission medicines which is often collated from GP summaries,

previous medical notes, previous discharge summaries, patient's repeat prescriptions and the patient themselves. The medicines reconciliation record is meant to be completed within 24 hours of the patient being admitted and the doctors are then expected to reconcile any medication on the medicines reconciliation record to the drug chart. Some ward pharmacists write with green ink on the front of the drug chart or even speak to the doctors on the ward, to highlight any medicines that have not been reconciled.

However, this is not consistent within all wards of the hospital. Despite these measures, many junior doctors over the years have found that at the point of discharge, when they are writing discharge summaries and therefore reviewing the drug chart, many pre-admission medicines are not reconciled. This may cause harm to the patient and inconvenience especially with regards to symptom control. Both of which could prolong hospital admission. A lack of medicines reconciliation may also cause patient anxiety especially if they have not been given an explanation as to why they are no longer prescribed certain pre-admission medicines. This may lead to issues with patient concordance.

## BACKGROUND

Medicines reconciliation is not well achieved on a global scale and therefore it has become a popular topic for academic and practice-based research worldwide.

The Institute for Healthcare Improvement defines medicines reconciliation as the process of identifying the most accurate list of a patient's current medicines and comparing them to the current list in use; recognising any discrepancies and documenting any changes. This results in a complete list of medicines, accurately communicated.<sup>1</sup> It is well-documented that incomplete or inaccurate communication with regards to



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medicines at the time of admission to hospital, lead to prescribing errors in up to 67% of all admissions.

Studies show that 30-50% of the errors related to discrepancies between pre-admission medicines and medicines on admission have the potential to translate into adverse events. These adverse events include prolonged inpatient stay, immediate and long term patient harm and even death.<sup>2 3</sup> Due to this, key organisations such as the National Institute for Health and Clinical Excellence (NICE), the National Patient Safety Agency (NPSA) and the Royal Pharmaceutical Society of Great Britain, highlight the importance of medicines reconciliation as a vital patient safety initiative and have produced guidance on how to improve the process. This includes the recommendation that medicines reconciliation should be conducted within 24 hours of hospital admission.<sup>1 3 4</sup>

The MARQUIS study has been a key development in the area of medicines reconciliation. The study created a toolkit to disseminate best practices in inpatient medication reconciliation which focusses on the pre admission, admission and discharge process and the opportunities at each stage to maximise medicines reconciliation and minimise error. Key limitations were found with the toolkit however it still presents useful suggestions to improve the medicines reconciliation process.<sup>5</sup>

## BASELINE MEASUREMENT

Over a 3-month period, the drug charts, discharge summaries and medical notes of 28 patients were chosen at random on the respiratory ward at St. Peter's Hospital and analysed. Patients with no medicines reconciliation record were excluded, reducing the sample size to 26 patients. The following information from the patient's relevant documents were obtained: demographics, length of admission, any medications not reconciled at the point of discharge and their details, delayed reconciliations and for which medicines.

It was found that only 46% of patients had their medicines reconciled at the point of their discharge for a range of admissions up to 17 days. Of the 54% of patients who did not have their medicines reconciled at the point of discharge, 50% were missing 0-2 medicines and the other 50% were missing 3-5 medicines. The most common medicines that were not reconciled included topical applications which included eye, ear, nasal and skin applications (14%); vitamins i.e. vitamin B12 and thiamine, analgesia, PRN inhalers (11% individually); antidepressants and lipid regulators (6% individually); amongst a range of other medications including antiplatelets, calcium channel blockers, ACE inhibitors and diuretics.

Only 18% of patients had their medicines reconciliation completed within 24 hours of admission. Some patients had delayed medicines reconciliation- after 24 hours of admission. 12% between 24 and 48 hours, 8% between 48 and 72 hours and 8% greater than 72 hours.

## DESIGN

After discussion with doctors and the pharmacy department, two interventions were decided upon to increase the rates of medicines reconciliation. The first intervention involved the ward pharmacist putting a green sticker in the medical notes of a patient whose drug chart is missing pre-admission medicines or has an error with their pre-admission medicines at the time their medicines reconciliation record is being completed. The green sticker informs the doctor that the medicines reconciliation record is complete for the patient and the drug chart needs reconciling. It is named, signed and dated by a pharmacist with details of their bleep number. When the doctor completes the medicines reconciliation, they are to record the date, their name, signature and bleep number. The colour green for the sticker was chosen as it notoriously represents pharmacy who use green ink to write with on drug charts. Additionally, the placement of the sticker in the medical notes as opposed to on the drug chart or anywhere else, was carefully considered. The rationale was that doctors on ward round, would inevitably read the medical notes from the previous day to check for any changes with the patient overnight. The green sticker would be eye-catching and would prompt them to add medicines reconciliation to their list of tasks for the day.

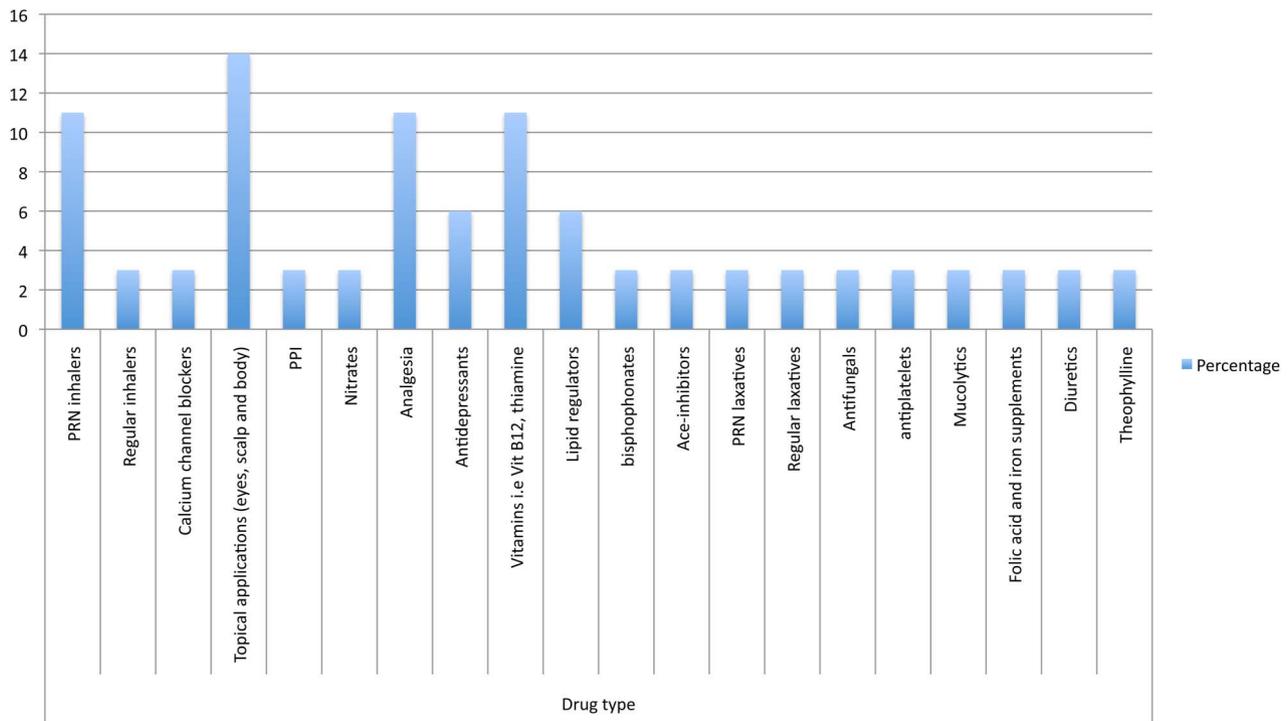
The second intervention was to attach the loose medicines reconciliation record on top of the drug chart when medicines required reconciling, acting as a visual prompt for the doctor. Previously, the medicines reconciliation record would be attached to the back of the drug chart and it was rarely studied due to its lack of visibility.

Both these interventions are simple and cost effective.

## STRATEGY

The first PDSA cycle took place on the same respiratory ward and over a 6 week period. All doctors and pharmacists on the ward were educated about the interventions both face to face and by email. In the first PDSA cycle, due to the exclusion criteria, the sample size was small at 19. The exclusion criteria included drug charts with no medicines reconciliation record and medical notes without a green sticker despite the indication. This resulted in 9 from the sample size being excluded. The results showed that the interventions prompted 57% of drug charts to be reconciled at the point of discharge compared to prior to any intervention, when it was 46%. Additionally, with the interventions in place, more drug charts were reconciled sooner after admission overall although, less were reconciled within 24 hours. 7% of patient's medicines had been reconciled within 24 hours which pre-intervention was 18%. 25% had delayed reconciliation of medicines between 24 and 48 hours, which prior to any intervention was 12%; 25% had delayed reconciliation between 48 and 72 hours, which prior to any intervention was 8% and 0% had delayed

## Medicines not reconciled



A graph of medicines not reconciled

reconciliation 72 hours post admission, which prior to any intervention, was 8%. However, the sample size being 19 was not sufficient to conclude the efficacy of the interventions. It was also noted that during the period of data collection, there were many bank holidays resulting in a lack of pharmacy cover which had a direct impact on the number of drug charts that needed to be excluded due to the lack of a medicines reconciliation record. In addition to this, despite the face to face discussion and emails sent to the doctors on the wards, raising awareness of the interventions and attempting to engage them with the interventions, some doctors were still not responding to them.

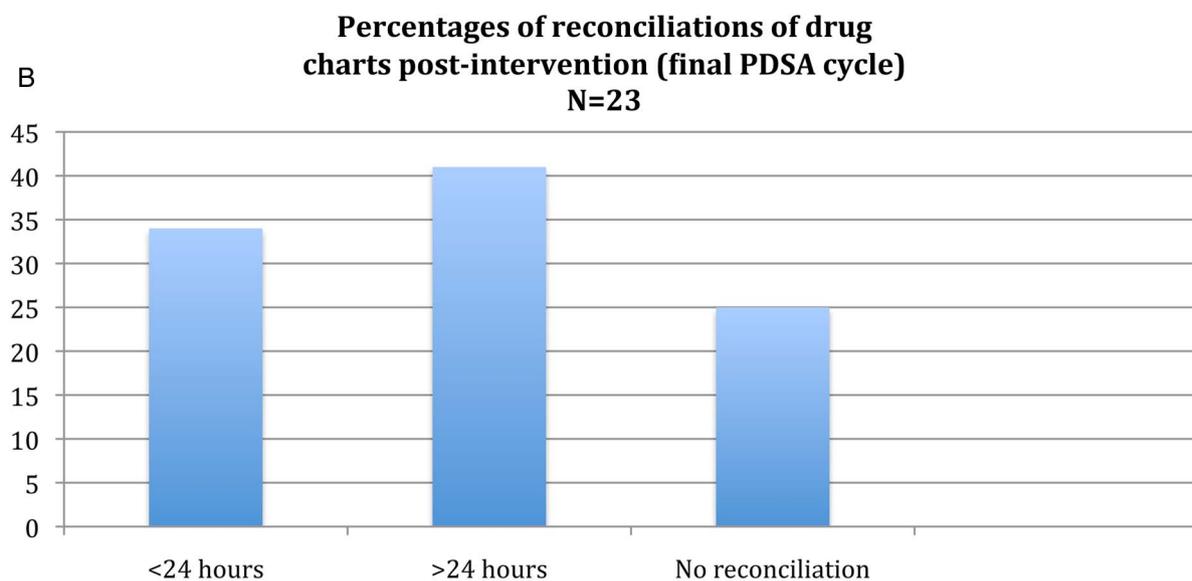
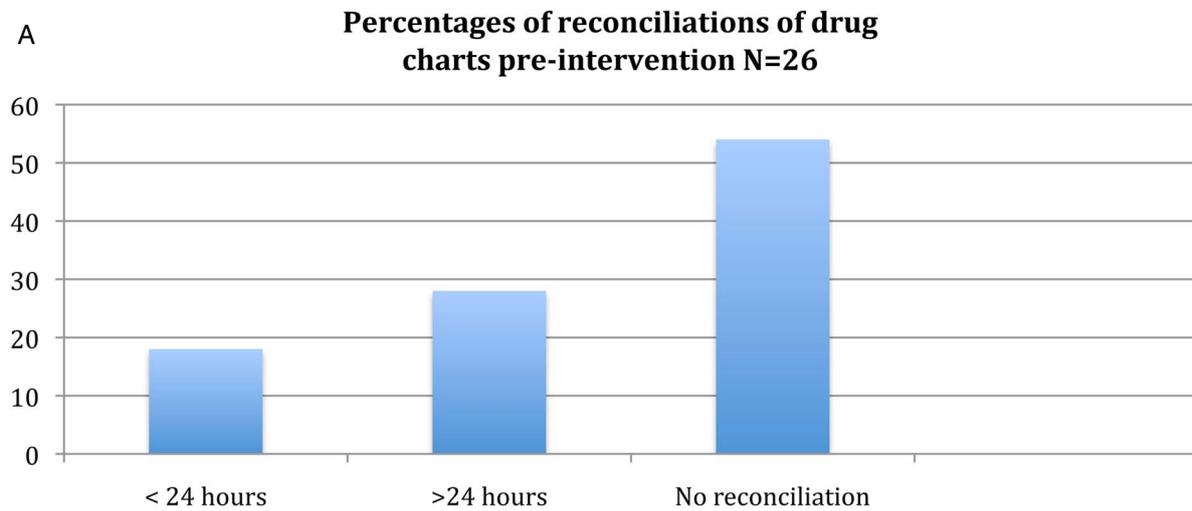
The second PDSA cycle was structured in the same way as the first one. All doctors and pharmacists were again educated with regards to the interventions through several teaching sessions, emails and repeated one to one interactions. These were carried out frequently to accommodate for the rotation of doctors through the department and to improve the level of engagement and response from the doctors compared to the last PDSA cycle. A larger sample of data was collected over a 5 week period on the same ward. Since, the project was testing the efficacy of the interventions, only the notes and drug charts that had interventions applied were used for data collection for this PDSA cycle. This was to avoid a large exclusion criteria caused by human error where green stickers were not applied when they were required and medicines reconciliation

records that had not been completed. A larger sample size would ensure a more accurate conclusion.

During the 2 PDSA cycles, the interventions in themselves did not require changing as the feedback from the doctors and other healthcare professionals were positive and they were yielding a good response.

### RESULTS

The same form was used to collect data throughout the project. This included data collection on the following information: demographics, length of admission, any medications not reconciled at the point of discharge and their details, delayed reconciliations and for which medicines. The results showed that the interventions prompted 75% of drug charts to be reconciled prior to discharge compared to the 46% prior to any intervention. It also showed an improvement in the number of medicines reconciled: of the 25% who did not have their drug charts reconciled prior to admission, 100% were missing 0-2 medicines whereas 0% were missing 3-5 medicines. This was 50% for both parameters previously. 34% of drug charts were reconciled within 24 hours. Pre-intervention this was 18%. Therefore, there was an improvement in the medicines reconciliation rate within 24 hours. 12% of drug charts were reconciled between 24 and 48 hours post admission, 5% between 48 and 72 hours and 24% greater than 72 hours after admission. This highlights a larger proportion of drug charts being



Graphical representations of results

reconciled late as opposed to never after the introduction of interventions.

### LESSONS AND LIMITATIONS

There were limitations that could have affected my results. This includes a small sample size and a high turnover of staff, particularly junior doctors. Other limitations include the lack of continuity of care in the present day management of hospitals, with patients moving wards more frequently due to bed capacity issues combined with doctors on a shift based rota. This can have a negative impact on medicines reconciliation. Further limitations include the heavy workload of doctors, who may not prioritise medicines reconciliation as an important task compared to their other tasks; new foundation year 1 doctors in particular may be unaware of the practicalities of the medicines reconciliation process and unaware that this task is primarily their responsibility as one of the ward doctors.

A limitation to this project is the inability to measure the intervention involving the placement of the medicines reconciliation record on the top of the drug chart, as this is moved to the back once the medicines are reconciled. Therefore, it's efficacy cannot be measured on it's own against the green sticker. However, the intervention in itself received only positive feedback.

During the course of this project, raising awareness amongst colleagues in order for them to be engaged and participate in the project was key. Therefore, significant effort to raise and maintain awareness and encourage colleagues is required throughout the quality improvement process. This needs to be maintained to sustain the improvement in medicines reconciliation. When planning a project, it is also better to choose periods of data collection, which avoid periods that are not accurate representations of normal working patterns i.e bank holidays when pharmacy cover is limited. Although this period is best avoided, it highlights gaps

in the service that could be further explored and used as leverage to improve services.

## CONCLUSION

The green sticker and placement of the medicines reconciliation record on top of the drug chart when required, has significantly improved the rates of medicines reconciliation prior to discharge and within 24 hours of admission which is the current recommendation. These changes are simple and with the continued awareness of the healthcare staff involved in the medicines reconciliation process could be sustainable although this has not been formally tested. It is inexpensive to implement and is vital to patient safety and care.

**Acknowledgements** Dr Keefai Yeong, supervisor, consultant in orthogeriatric medicine Sumbal Chaudhry, pharmacist, Taz Comar, pharmacist Holly Mitchell, pharmacist

Thank you to all others within the pharmacy department for their support and involvement. Thank you to all the doctors who engaged in the project and for their assistance in data collection.

**Declaration of interests** Nothing to declare

**Ethical approval** According to local policies at Ashford and St. Peter's Hospitals NHS Foundation Trust, this work met criteria for a quality

improvement project rather than research, therefore is exempt from ethics review.

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