

## INTRODUCTION

A dispensing error is 'a failure in the treatment process that leads to, or has the potential to result in harm to the patient'; they can be prevented and unprevented errors<sup>[1]</sup>. Prevented dispensing errors or 'near misses', are errors detected by the final accuracy checker before the patient or representative receives the medications - a prevented error causes no harm to the patient<sup>[1]</sup>. Up to 2.7% of UK dispensed medications include an error. There are no reliable estimates on the prevalence of near misses<sup>[2]</sup>. Previous audits have defined a local near miss rate, most recently in 2013 (0.7%). However recent changes in automation and staffing structure highlighted the need for re-audit.

## OBJECTIVES

To determine the 1. Frequency, 2. Time, 3. Staff group and 4. Potential for patient harm of dispensing errors identified at the final accuracy checking stage. To explore the reasons why errors occurred, to make recommendations for error prevention, and to compare these results to previous audits.

## METHOD

**Standard: 100% of all dispensing errors identified by the final accuracy checker to be recorded as near misses on the data collection tool**

- Data collection took place in a large UK teaching hospital with one non-robotic (paediatric) and two automated (acute & specialist) dispensaries.
- An interprofessional audit group represented by all stakeholders was established with responsibility for the design and delivery of the audit.
- A data collection tool derived from the UK Centre for Pharmacy Postgraduate Education standards was created to record type, time and staff group<sup>[3]</sup>
- Robustness of the data collection process and data collection tool were piloted, with minor improvements implemented prior to live data collection.
- Data were collected during normal working hours (9am-6pm) over 7 consecutive days in mid-September 2019.
- Final accuracy checkers completed the data collection tool for each prescription where a dispensing near miss was identified.
- Three medication safety pharmacists independently rated the likelihood of patient harm for each near miss.
- This study took place in a large UK teaching hospital with one non-robotic (paediatric) and two automated (acute & specialist) dispensaries.

## RESULTS

2.2% of items dispensed had a prevented error; ranging between dispensaries 1.1% (specialist), 1.4% (paediatrics) and 3.1% (acute), Chi-square  $p < 0.001$

Table 1 - Number of near misses

Dispensary	No. of Near Misses	Near Miss % of Items Dispensed
Acute	145	3.1% (145/4686)
Specialist	31	1.1% (31/2805)
Paediatric	14	1.4% (14/992)
<b>Total</b>	<b>190</b>	<b>2.2% (190/8483)</b>

Table 2 - Near misses graded by harm potential

	No. of Near Misses
Likely potential to cause harm	71% (n=135)
Unlikely potential to cause harm	29% (n=55)

Table 3 - Comparison to previous audits

Year	Acute	Specialist	Pediatric	Average
2006	0.5%	5%	N/A*	0.9%
2011	0.8%	1.3%	N/A*	1.1%
2013	0.5%	1.0%	0.7%	0.7%
2019	3.1%	1.1%	1.4%	2.2%

\* Not audited

- 71% (135) of prevented errors rated as potential to cause harm, with label directions causing incorrect doses and course lengths the most frequent.
- Pre-registration Technicians and Pharmacists accounted for a significantly higher number of prevented errors (Chi-square =  $< 0.001$ ).
- The end of day 5-6pm timeslot had a statistically significant rise in prevented errors as opposed to the other timeslots (Chi-square =  $< 0.0001$ ).

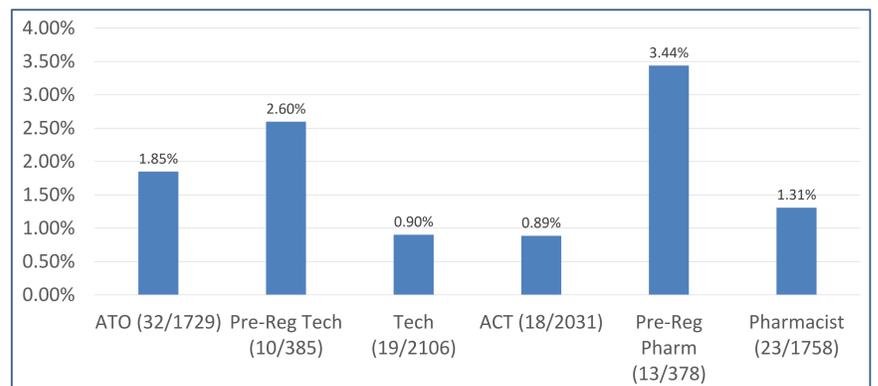


Figure 1 - Near miss rate per items dispensed for each job role

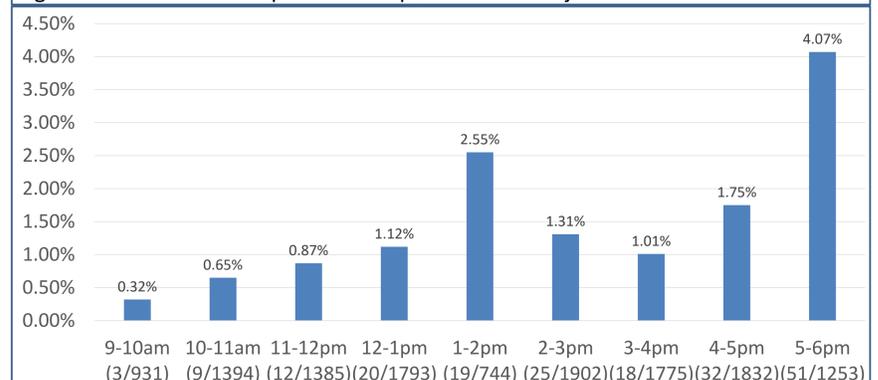


Figure 2 - Near miss rate per items dispensed in each hourly timeslot

## DISCUSSION

The 2019 near miss rate (2.2%) was considerably higher than 2013 (0.7%) despite implementation of automatic drug selection; loss of very senior pharmacist staff may have contributed, especially in the acute dispensary where the staff members departed between 2013 to 2019.

Pre-registration pharmacists and technicians accounted for the highest number of near misses per items dispensed at 3.4% (13/378) and 2.6% (10/385) respectively. This is an expected finding due to the individuals in this role working through a structured education and training post before formal registration.

The 5-6pm period accounted for a significantly higher rate of near misses than the expected average - likely due to the end of day rush.

Further differences between 2019 data collection and previous audits was the decriminalisation of dispensing errors in the UK, which could have consciously or subconsciously contributed.

**Limitations:** Self reporting by the final accuracy checker allowed for simultaneous multi-site data collection, however, reliability of this collection method may be limited by conscious or unconscious 'social desirability' influence of reporting individual errors.

## CONCLUSION

Previous audits observed lower prevented error rates than found in 2019, contributory factors included loss of three senior experienced pharmacists in 2015-18 in the acute dispensary which may have affected supervision of newly-qualified staff. Hurrying to complete work may account for the higher error rate between 5-6pm. The specialist dispensary implemented automation of drug selection in 2009, which may account for the 3.9% reduction in near misses thereafter.

## REFERENCES

- [1] Pharmaceutical Services Negotiating Committee, Patient Safety Incident Reporting. Available from: <http://psnc.org.uk/contract-it/essential-service-clinical-governance/patient-safety-incident-reporting/>. Date accessed: 02.10.19.
- [2] Unprevented or prevented dispensing incidents: which outcome to use in dispensing error research? James KL, Barlow D, Burfield R, Hiom S, Roberts D, Whittlesea C Int J Pharm Pract. 2011 Feb; 19(1):36-50.
- [3] Centre for Pharmacy Postgraduate Education. Accuracy Checking Pharmacist Technician Programme. Available from: <https://www.cppe.ac.uk/career/acpt>. Date accessed: 02.10.19.

