

# An evaluation of the types and contributing factors of dispensing errors in hospital pharmacy

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## Background:

Dispensing medication is a chain of multiple stages, and any error during the dispensing process may cause high potential risk for the patient. According to NHS England, there are 100-40 dispensing errors occurred usually in an average acute hospital in England<sup>1</sup>. The dispensing error rate detected in hospital pharmacies was between 0.0147% and 33.5% of dispensed items<sup>2</sup>. Few research studies have investigated the nature and the contributory factors that are associated with dispensing errors in hospital pharmacies.

## Objectives:

To determine the nature and severity of unprevented dispensing errors reported in the hospital pharmacy at Luton and Dunstable (L&D) University Hospital NHS Foundation Trust in the UK; and to explore the pharmacy staff's perceptions of contributory factors to dispensing errors and strategies to reduce these errors.

## Methods:

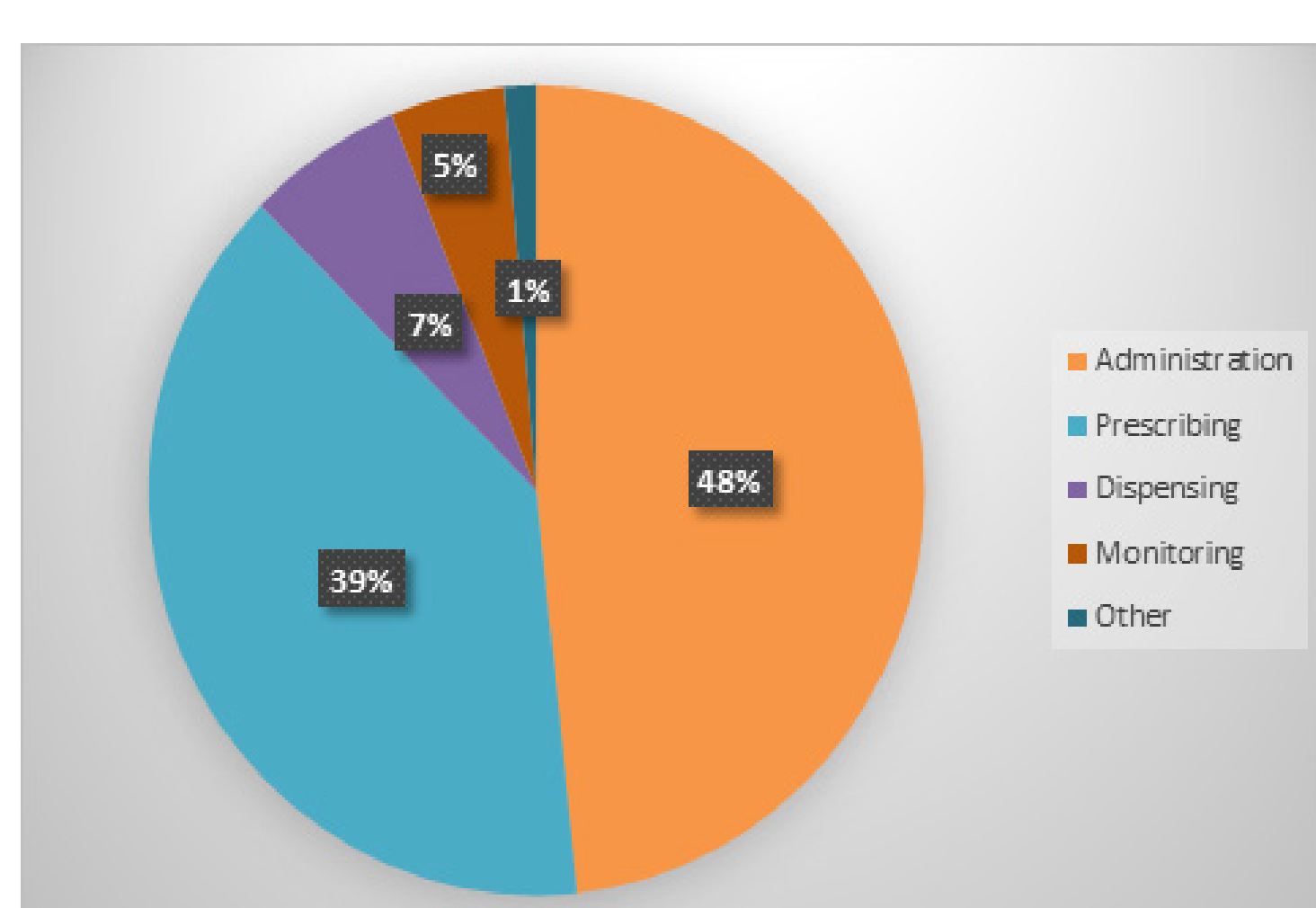
A mixed method approach was used and encompassed two phases.

**In Phase I**, a retrospective review of dispensing error reports for an 18-month period from 1st January 2012 to 30th June 2013 was conducted at L&D hospitals. The potential clinical significance of the dispensing errors were assessed. Data was analysed using descriptive statistics in SPSS (V.20).

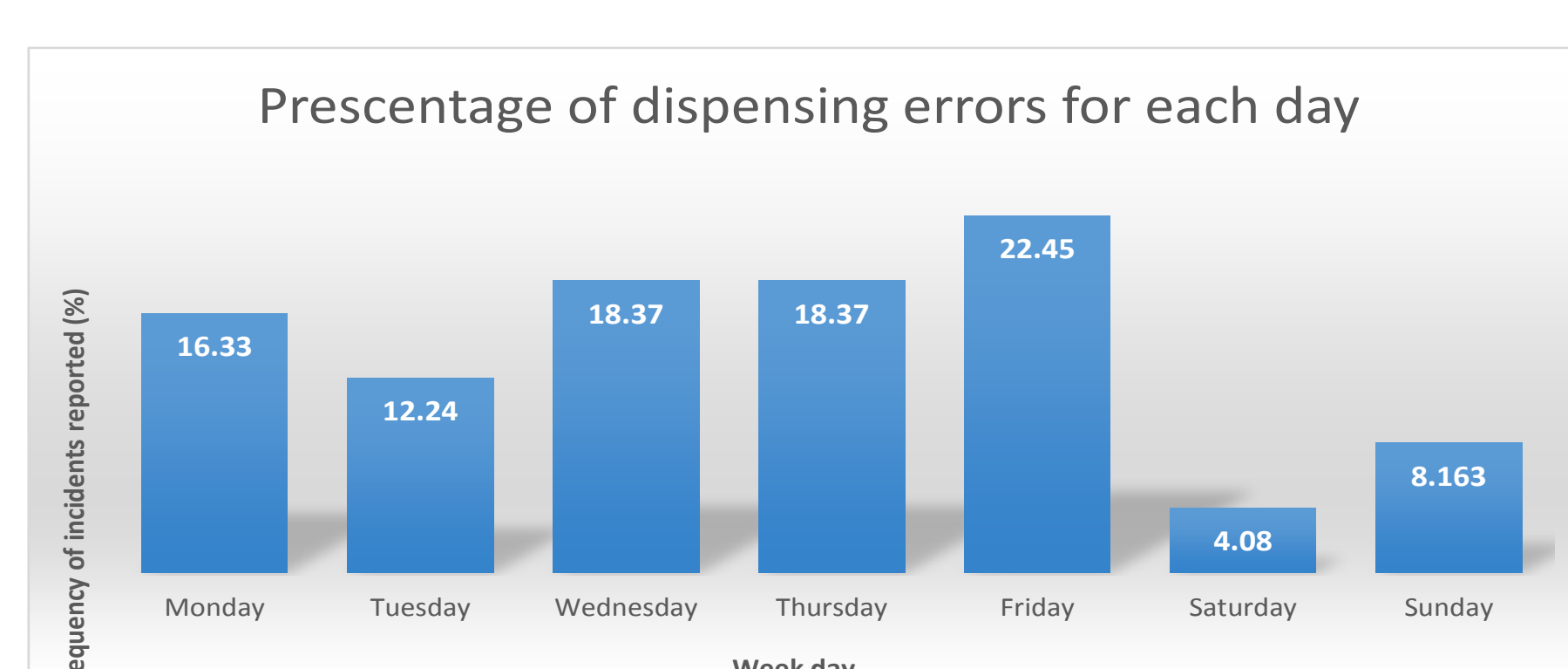
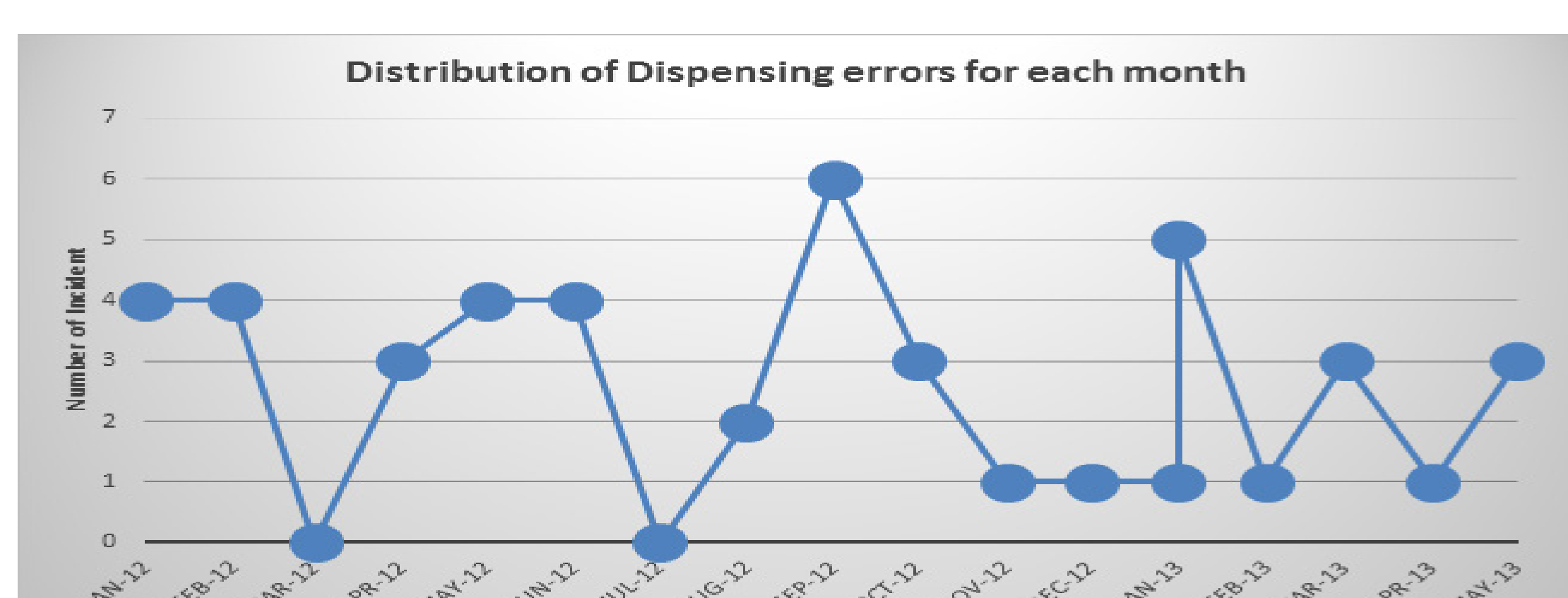
A self-administered qualitative questionnaire was distributed to the dispensary team in L&D hospitals **in Phase II**. Content analysis was applied to the qualitative data using NVivo software (V. 10) to analyse staff responses

## Result:

A total of 766 medication error reports were documented and 49 (6.4%) reports were related to unprevented dispensary errors. The most frequently reported dispensing errors were: dispensing the wrong medicine (n = 9, 18.4%), labelling the wrong strength (n = 8, 16.3%) and dispensing the wrong strength (n = 7, 14.3%).



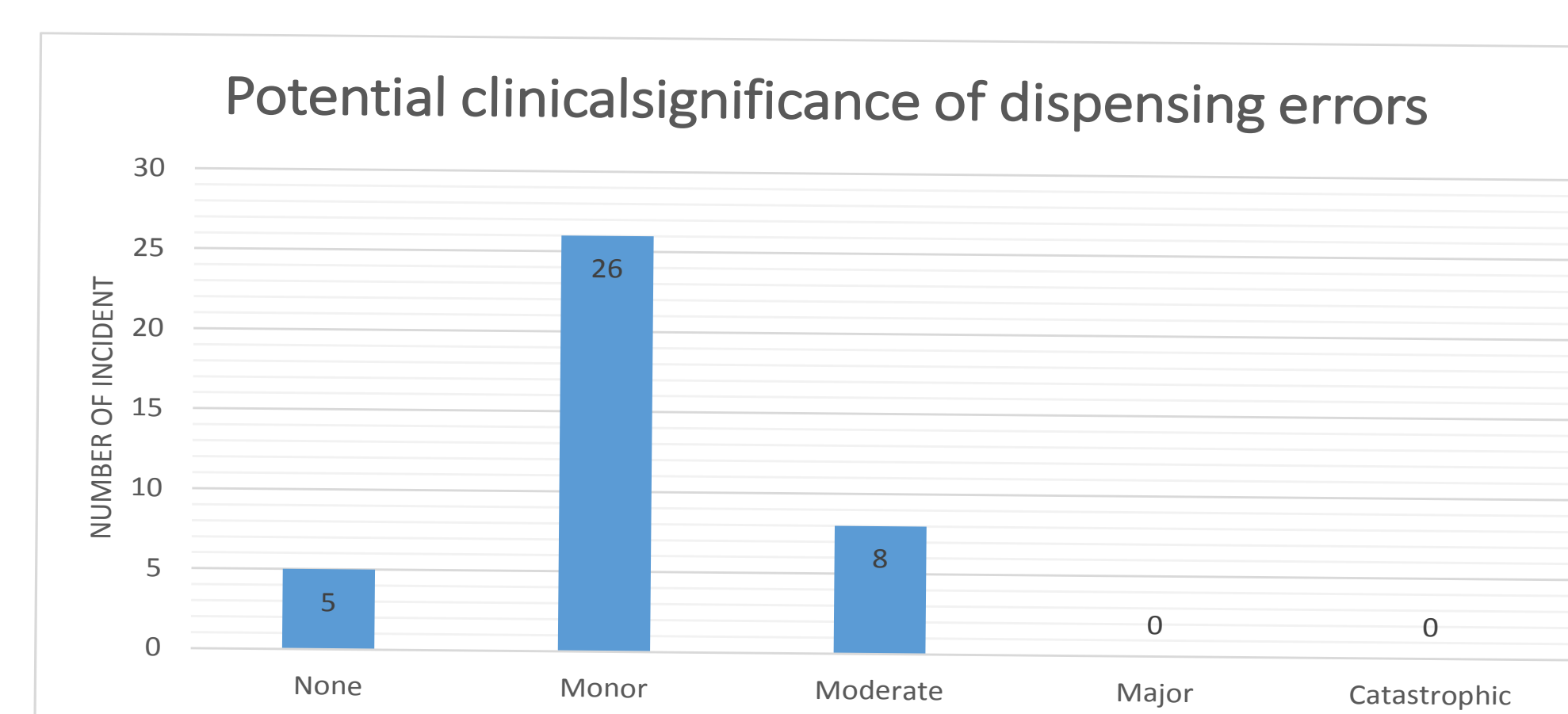
The following diagrams show the distribution of the dispensing errors for each month and each day. The dispensing errors rates are not constant each month and the errors in weekend have a lower frequency compared with other days.



The most common medicines classes involved in dispensing error reports were:

- Central nervous system (n = 14 reports)
- Malignant disease and immunosuppression (n = 8 reports)
- Nutritional and blood (n = 5 reports)

An expert panel categorised 66.6% (n=26) of the dispensing errors as minor potential clinical significance if the error had not been intercepted and the patient took the medicine.



Several dispensing errors contributing factors emerged from the dispensary teams' responses as shown in the below Table.

Task related errors-provoking factors	Personnel related errors-provoking factors	Work environment errors-provoking factors
Sound-alike drug names	Inexperienced staff	Distractions and interruptions
Similarity of packaging	Loss of concentration and fatigue	High workload and Low staffing
Complex prescriptions	Careless checking and low morale	Protocols not followed
Illegible handwriting	Urgent deadlines or hurrying through tasks	Inadequate education
	Communication problems	

Strategies were proposed to decrease dispensing errors such as decreasing distractions and stress. Furthermore, monitoring and reporting errors and educating the dispensary team about these errors are also suggested. E-prescribing systems may help to improve dispensing efficiency and safety.

## Discussion:

Labelling errors were common in the hospital (51%). Most of the contributed factors that associated with dispensing errors were human factors related to loss of concentration and hurrying through tasks. Some errors occurred related to latent factors such as high workload, poor supervision or training.

## Conclusions:

The findings of this study reemphasise the fact that dispensing errors are established in hospital pharmacy. Therefore, efficient interventions need to be implemented to mitigate these errors these can include automation and e-prescribing.

## Reference

1. NHS (2015). National Medication Safety Network: Incident reporting overview. National Health Service. London.
2. Aldhwaihi, K., Umaru, N., Pezzolesi, C. & Schifano, F. 2016. A systematic review of the nature of dispensing errors in hospital pharmacies. Integrated Pharmacy Research and Practice, 5, 1-10.

## Acknowledgements

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