

# Community Pharmacy medication safety incidents resulting in significant harm reported to the National Reporting and Learning System (NRLS)

Khalid W Muhammad<sup>1</sup>, Andrew Carson-Stevens<sup>2</sup>, Huw Williams<sup>2</sup>, Anthony J Avery<sup>3</sup>, Matthew J Boyd<sup>1</sup>

<sup>1</sup>Division of Pharmacy Practice & Policy, School of Pharmacy, University of Nottingham, Nottingham, UK.

<sup>2</sup>Division of Population Medicine, School of Medicine, Cardiff University, Wales, UK.

<sup>3</sup>School of Medicine, University of Nottingham, Nottingham, UK.

## Introduction and aim

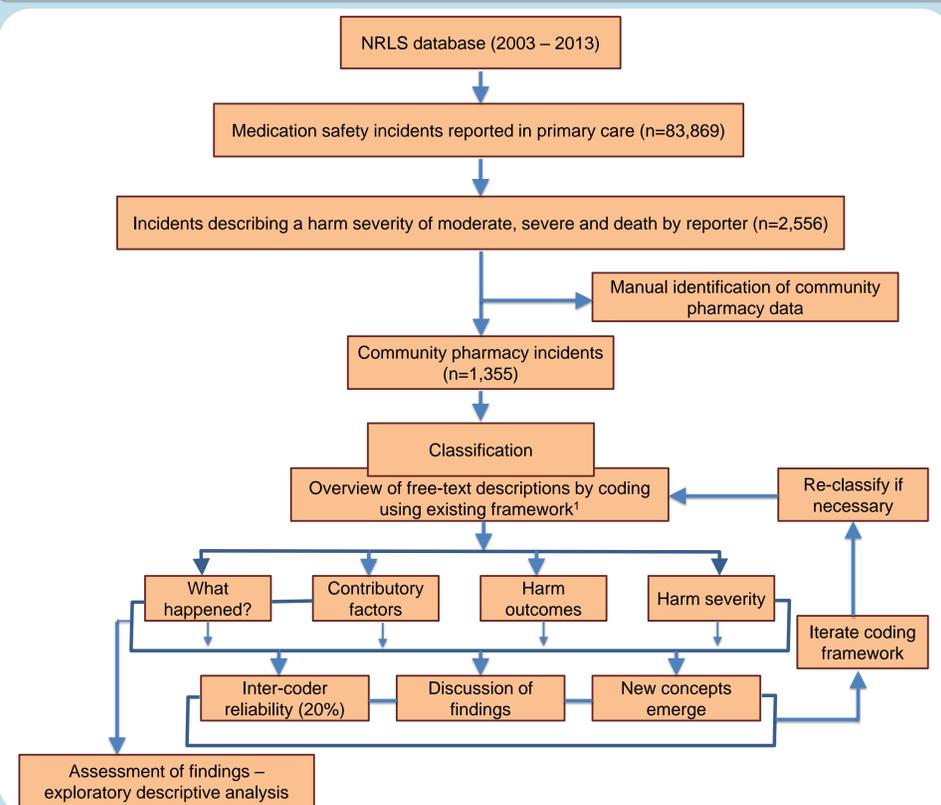
Few studies have investigated medication safety incidents in community pharmacy (CP) and the factors associated with them to identify priority areas for interventions to improve medication safety. In 2003, NRLS was created to learn from patient safety incidents occurring to NHS patients in England and Wales.

The aim of this study was to describe the nature, range and severity of medication incidents occurring in community pharmacy reported to the NRLS with a confirmed outcome severity of moderate or severe harm or death.

## Methods

- A retrospective cross-sectional study of incident reports was undertaken using NRLS data reported between 2003 – 2013.
- The sample was identified and coded using an existing patient safety classification system<sup>1</sup> by reading the free-text narratives in reports.
- Figure 1 shows a flow chart of methods used for this study.
- Box 1 shows examples of free-text descriptions of incidents in NRLS reports.

Figure 1. Flow chart of methods



Box 1. Edited extracts of incident reports (important points highlighted)

**Example 1: Moderate**  
 What happened: warfarin 3mg tablets were dispensed when warfarin 1mg should have been. Labelled correctly but dispensed incorrectly. Admissions unit at Hospital have telephoned today to tell us she had been admitted to hospital with an INR of 20. Not known who dispensed/checked it as 2 pharmacists were present and medication is currently at hospital.  
 Apparent causes: Pressure - very busy, similar product name

**Example 2: Severe**  
 What happened: Prescription for Tamsulosin 400mcg capsules, dispensed Tolterodine 4mg capsules. Patient (90 years) admitted to hospital with urinary retention. Patient now discharged but catheterized.  
 Actions preventing reoccurrence: Warning issued to be alert for similar medication names especially where drugs are used in similar conditions (e.g. both for urinary conditions). Stock moved to separate shelves, strict procedures in place where self-checking is unavoidable.  
 Apparent causes: Drugs for same physiological area, same form and similar name and strength.

**Example 3: Death**  
 Patient was given a script by a Community Matron for Oramorph 2.5ml 4-6 hourly as required but the label on the bottle said take 2 and a half 5ml spoonfuls, a total of 12.5ml. This is 5 times the prescribed amount on the script. The patient had 3 doses over 12 hours and passed away at 00.01am.

## Reference

1. Carson-Stevens A, Hibbert P, Avery A et al., A cross-sectional mixed methods study protocol to generate learning from patient safety incidents reported from general practice. *BMJ Open*, 2015. 5(12).

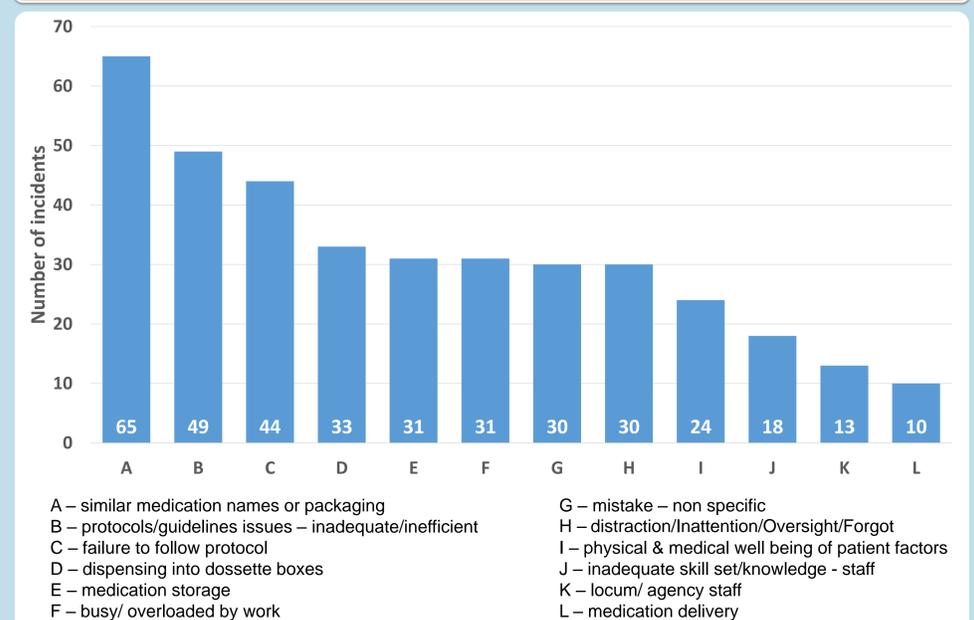
## Results

- 1,355 incident reports were identified from CP. 1,243 (92%) were categorised by the reporter as having an outcome severity of moderate, 102 (7%) as severe and 10 (1%) as death.
- After coding, only 289 (21%) clearly resulted in moderate harm, 23 (2%) severe harm and 6 (<1%) death. These were included in the analysis (table 1).
- 1,037 (77%) incident reports were excluded from analysis due to misclassification of harm severity (443, 33%) or insufficient information was available to determine harm severity (594, 44%) after coding.
- Similarity of medication names or packaging, issues with protocols or guidelines and failure to follow protocol were the most common contributory factor themes identified (figure 2).
- Drugs that were mostly associated with these incidents include opioid analgesics (n=43), diuretics (n=27), calcium channel blockers (n=27), warfarin (n=26), antibiotics (n=21) and beta blockers (n=21).

Table 1. Most frequent incident types and their harm severity (n=318)

Incident type	Harm severity			Total (%)
	Moderate (%)	Severe (%)	Death (%)	
Wrong medication dispensed	122 (42)	12 (52)	2 (33)	136 (43)
Wrong strength dispensed	73 (25)	4 (17)	0 (0)	77 (24)
Medication not dispensed	16 (6)	2 (9)	0 (0)	18 (6)
Overdose (label) dispensed	14 (5)	0 (0)	3 (50)	17 (5)
Medication dispensed to wrong patient	15 (5)	2 (9)	0 (0)	17 (5)
Wrong formulation dispensed	8 (3)	0 (0)	0 (0)	8 (3)
Wrong label on medication (transposition)	6 (2)	0 (0)	0 (0)	6 (2)
Underdose (label) dispensed	4 (1)	1 (4)	0 (0)	5 (2)
Wrong dose dispensed (u/o not stated)	5 (2)	0 (0)	0 (0)	5 (2)
Wrong advice at dispensing stage	4 (1)	1 (4)	0 (0)	5 (2)
Stopped medication being dispensed	5 (2)	0 (0)	0 (0)	5 (2)
Other medication incidents	17 (6)	1 (4)	1 (17)	19 (6)
<b>Total</b>	<b>289 (100)</b>	<b>23 (100)</b>	<b>6 (100)</b>	<b>318 (100)</b>

Figure 2. Most frequent contributory factor themes identified



## Conclusion

The results suggest that most significant harm is caused by incorrect medication dispensing often due to similar names and/or packaging. The results re-iterate the need for robust checking processes. This study only looked at incidents resulting in significant harm so may not reflect all errors in community pharmacy.