Medication-related safety incidents causing death in primary care: a mixed methods study

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Medication-related safety incidents causing death in primary care: a mixed methods study

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Background and aim

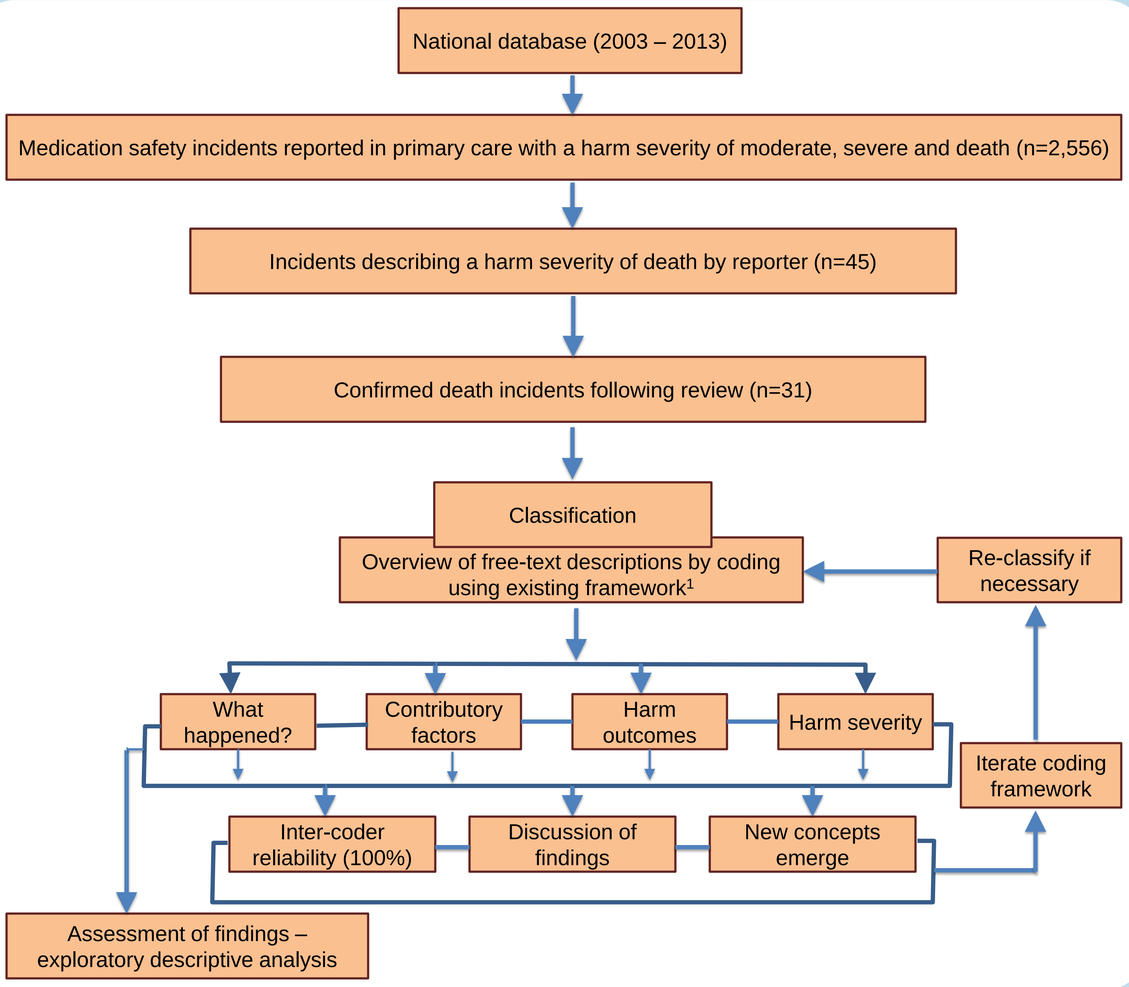
There is limited research to understand medication-related safety incidents in community settings. In 2003, a national patient safety incident reporting system was established to learn from incidents occurring to NHS patients in England and Wales.

The aim of this study was to describe medication incidents resulting in death and to propose further work.

Methods

- A cross-sectional study of incident reports between 2003 – 2013 was undertaken.
- The sample was identified and coded by two pharmacists using an existing patient safety classification system[1] by reading the free-text narratives in reports.
- Exploratory descriptive analysis methods were used to quantify the data and subsequent thematic analysis to appreciate context.
- Figure 1 shows a flow chart of methods used for this study.
- Box 1 shows examples of free-text descriptions of incidents that caused death in NRLS reports.

Figure 1. Flow chart of methods



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

Example 1:
A **frail elderly patient** who **lived independently** was taking 11 x 5mg i.e. 55mg of prednisolone for arthritis. GP changed to 2 x 25mg plus 1 x 5mg, pharmacy dispensed script which was **delivered** by driver. Change was **not communicated** to patient and patient continued to take 11 tablets i.e. 275mg daily for several days. Patient subsequently had a **fall** and was **admitted to hospital where he died**.

Example 2:
Angitil XL 300mg Capsules (diltiazem) was dispensed **against a prescription requesting Adipine XL 30mg Tablets** (nifedipine). Quantity dispensed was 56 capsules. Patient **already taking Atenolol 100mg** tablets. On 31st March, patient had a **fall** at home and was **admitted to hospital**. Dispensing error was noticed by hospital staff and phoned us to inform us of the error. Patient at this stage was in **bradycardia** and hospital was trying to stabilise her condition. Unfortunately, patient **passed away** the next day.

Example 3:
Patient **given 30mg** of diamorphine **instead of 5mg** Intravenously. Patient has **died** probably as a result of the injection.

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

- 45 incidents were reported as resulting in patient death over 2003 – 2013 from medication related incidents.
- After review, 31 reports were confirmed as having a death outcome.
- Table 1 shows the types of incidents that resulted in a death outcome.
- Patient frailty and issues relating to protocols and/or guidelines were the most common contributory factor themes identified (figure 2).
- Drugs most commonly associated with death incidents included opioid analgesics and antibiotics (table 2).

Table 1. Types of incidents causing death (n=31)

Incident type	Number of incidents	Percentage
Adverse drug event (ADE)	8	25.8
Medication overdose dispensed	3	9.7
Prescription to known allergic patient	3	9.7
Wrong dose administered	3	9.7
Lack of monitoring	2	6.5
Patient self-administered overdose (unintentional)	2	6.5
Medication overdose prescribed	2	6.5
Wrong or no advice/counselling given when appropriate during prescribing	2	6.5
Wrong medication dispensed	2	6.5
Clinical treatment decision errors involving medication	1	3.2
Medication not commenced in a timely fashion	1	3.2
Wrong number of doses prescribed – quantity	1	3.2
Other prescribing incidents	1	3.2
Total	**31**	**100.0**

Figure 2. Most frequent contributory factors

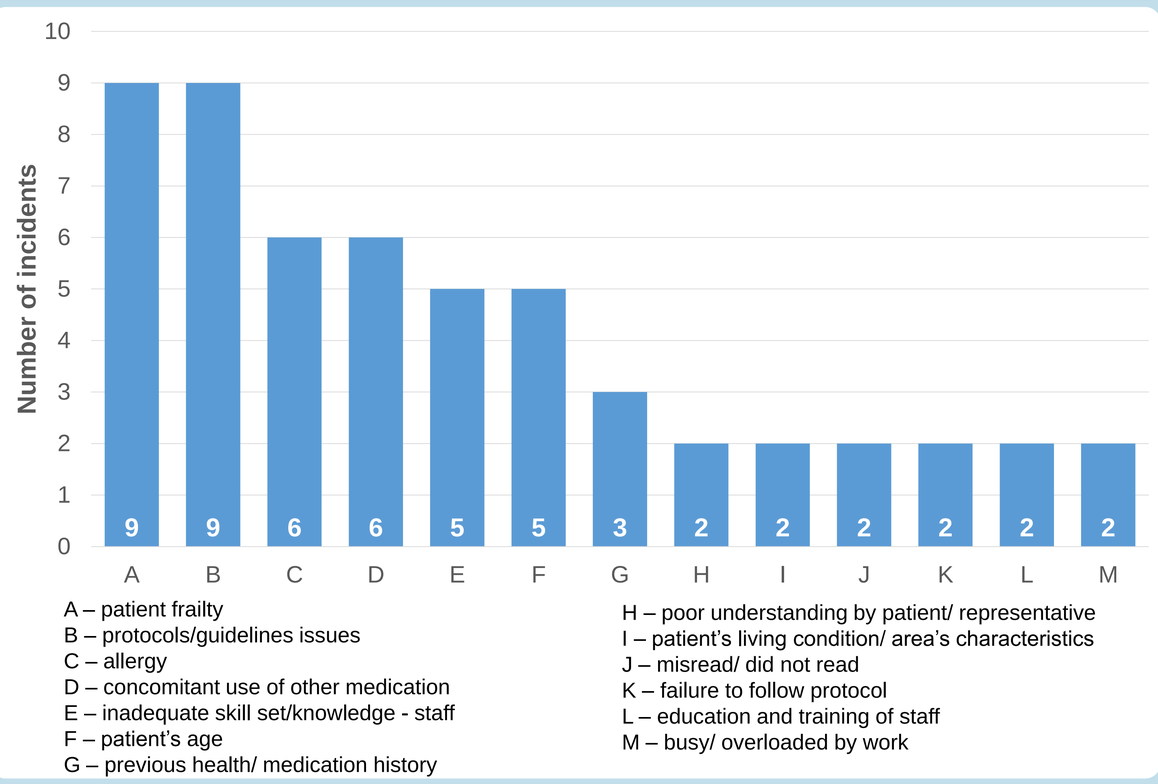


Table 2. Drugs/drug classes associated with the incidents (n=34)

Drug/ drug class	Frequency	percentage
Opioid analgesics	6	17.6
Antibiotics	6	17.6
Warfarin	5	14.7
NSAIDs	2	5.9
prednisolone	2	5.9
Digoxin	2	5.9
Calcium channel blockers	2	5.9
Diuretics	2	5.9
Candesartan	1	2.9
Epirubicin	1	2.9
Paracetamol	1	2.9
Amitriptyline	1	2.9
Amiodarone	1	2.9
Hyoscine hydrobromide	1	2.9
Glimepiride	1	2.9
TOTAL	**34**	**100.0**

Conclusion

The results suggest that approximately 74% of death causing incidents are preventable (excluding ADEs). Our results indicate that interventions in the areas of prescribing, dispensing and administration of certain medications to certain patient groups need to be evaluated and learning shared.

This study only looked at reports generated in primary care, so may not reflect all incidents from primary care that have led to death.

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