**Medicines and other factors causing deaths in English and Welsh care homes: five-years of preventing future death reports by coroners**

**Corresponding author**
Mr Malcolm Irons
Part time PhD student
School of Pharmacy and Biomedical Sciences,
University of Central Lancashire,
Preston,
Lancashire,
PR1 2HE, UK

mwirons@uclan.ac.uk

Dr Asa Auta
Senior Lecturer
School of Pharmacy and Biomedical Sciences,
University of Central Lancashire,
Preston,
Lancashire,
PR1 2HE, UK

Prof. Jane Caroline Portlock
Professor Emerita Life Sciences)
School of Life Sciences
University of Sussex,
Falmer,
Brighton,
BN1 9QG, UK

Prof. Andrea Manfrin
Visiting Professor
School of Pharmacy and Biomedical Sciences,
University of Central Lancashire,
Preston,
Lancashire,
PR1 2HE, UK

**Abstract**

Background:

Whilst information has been published on the impact, severity and causes of incidents involving medicines in care homes, it has not been systematically described. This review explored whether coroners' Preventing Future Death (PFD) reports involving medicines for people living in care homes could add to this evidence base.

Methods:

PFD reports made publicly available between 2017 and 2021 classified as "care home-related deaths" were reviewed. Reports describing medicines and/or medicines processes were identified. Contributory factors within these reports were then identified.

Results:

Within the timeframe, 156 reports were published, and 25 described medicines (n=27) or medicines processes (n=5) concerning people living in care homes. The impact of medicines and/or medicines processes was quantified as no impact (n=7), contributory (n=6) and direct (n=14) per report. Two key themes emerged. Four deaths had an association between their falls risk, prescribed anticoagulants, and the failure of the service to seek timely emergency care following a fall and two deaths concerned endocrine medicines, where people refused insulin or blood sugar monitoring and staff did not seek timely advice.

Conclusion:

This study demonstrated PFD reports provide an insight into the potential association between medicines, and other aspects of the person's care in causing harm.

## Introduction

Our recent scoping review described incident rates and types involving medicines in care homes. The review concluded that information has been published on the impact, severity and causes of incidents involving medicines in these settings, but had not been systematically described[1].

In England and Wales, His Majesty's (HM) coroners conduct inquests to establish the cause of unnatural deaths. During the inquest processes, if a coroner identifies a cause for concern that, if addressed, could prevent future deaths, they have a duty to write a "prevention of future death" (PFD) report (also referred to as a Reg 28 report)[2]. These PFD reports may be sent to anybody the coroner believes should take appropriate remedial action. Recipients of PFD reports have 56 days to respond.

In England and Wales, PFD reports have been reviewed generally[3,4] and specifically[5] concerning medicines-associated deaths. These reviews concluded that although PFD reports offer valuable insight, they rarely identify new medicines hazards. In addition, the learning is constrained by data quality and the limited geographical distribution of PFD reports.

This study aimed to review PFD reports, relating to the deaths of people living in care homes, with a view to identifying deaths involving medicines and/or medicines processes and other non-medicine related factors. Medicines processes have been described within NICE Social Care guideline SC1[6] and for example may include medicines reconciliation, prescribing, administering or monitoring. Publicly available responses to these PFD reports would be part of the next phase of investigation and were outside of the scope of this short report.

## Method

The lead author downloaded PFD reports made publicly available between 2017 and 2021 via http://www.judiciary.uk website classified as “care home health related deaths”. Reports were included in this review if they met the inclusion criteria of describing medicines or medicines processes.

Two authors analysed identified reports to describe the residence type, medicine(s), British National Formulary medicine category , medicines process(es), and the impact of the medicine(s) or medicines process(es) on the persons' death through deductive thematic analysis[7]. Whilst classified on the website as “care home health related deaths”, not all the reports related to care home residents. Therefore, only the reports relating to registered care homes were considered for further analysis. Using inductive thematic analysis[7] two authors identified and categorised the coroners’ administrative areas and other contributory factors (such as falls, care planning or non-escalation of care) in a style similar to that described by Leary *et al.*[3].

## Results

Hundred and fifty-six PFD reports were publicly available within the selected timeframe. Reports concerning 29 people described medicines and/or medicines processes. Of these 25, concerned care home residents. A further 4 people lived at other locations; therefore, these reports were excluded. The 25 reports (summarised in Table I) showed an uneven distribution with five coroner areas issuing two or more reports (46%). These were, Manchester South (n=3), Gloucestershire (n=2), Norfolk (n=2), Sunderland (n=2) and The Black County (n=2). Across these reports, 27 references were made to medicines and five to medicines processes (Table II). The impact of medicines and/or medicines processes on individual deaths were quantified

as “no impact” (n=7), “contributory” (n=6) and “direct” (n=14). Two reports described two or more medicines events. Considering the reports where medicines and/or medicines processes either contributed or had a direct impact, 56% of non-medicine contributary concerns were escalation of care (n=13), care planning (n=7), falls, hoist or trauma (n=6) and communication (n=5).

The main three classes of medicines that either contributed to or directly led to death were cardiovascular (n=7), central nervous system (n=3), endocrine (n=3). All seven cardiovascular medicines deaths were associated with anticoagulants, four with inadequate escalation of care following falls, one administered when contraindicated and, one omitted in error. Central nervous system medicines were associated with toxicity (n=2) and excess sedation (n=1). Two of the deaths relating to endocrine medicines involved patients living with dementia, refusing insulin or blood glucose monitoring. These involved staff not administering the insulin or obtaining expert advice. The third death occurred following the administration of insulin when the person was already hypoglycaemic.

## Discussions

### Main findings of this study

Two themes emerged from this review between medicines and other non-medicine contributory factors to the person’s care. The first theme concerned four reports describing patients prescribed an anticoagulant (likely to increase the risk of bleeding), who subsequently fell. Coroners highlighted the lack of escalation of care following the trigger fall. The second theme concerned people lacking capacity refusing a medicine difficult to administer covertly and that this combination was not identified and

managed effectively. Two cases concerned people living with dementia and diabetes, requiring insulin treatment.

## What is already known on this topic

The results show an uneven distribution of PFD reports, Ferner *et al.*[5] reported similar results. NICE guidance [NG 232] concerning head injuries initially published in 2003 and subsequently updated[8], whose intended audience included “people with a head injury, their families and carers” advises that people on anticoagulants (excluding aspirin) who sustain a head injury should be considered for a CT scan. However, the PFD reports show this was not described in the peoples care plans.

## What this study adds

This study has highlighted two groups of people at increased risk of premature death due to interaction of their medicines, co-morbidities and gaps in the planned support they receive from their health and social care providers. The first patient group were people with an increased falls risk, also prescribed an anticoagulant (likely to increase the risk of bleeding) combined with a delay in the escalation of their care following a fall. Whilst the second group were people living with dementia and diabetes, who refused either monitoring of their blood glucose levels or insulin administration.

## Limitations of this study

The period 2017-2021 included periods of national coronavirus lockdown from March 2020 to January 2022, these altered the profile of deaths and coroners’ activities. The study relied on the care home classification produced by the judicial website. This classified some services as care home that were not. Therefore, probably also omitted to classify other services that were care homes. As described in other papers across

England and Wales, there is a variation in the number of publicly available reports by coroner's area[4].

## Conclusions

This study showed PFD reports provide an insight into links between a person's medicines, and/or escalation of care in an emergency following an incident. This review identified two specific areas concerning two classes of medicines (anticoagulants and insulin injections), their interactions with other long-term conditions the person was living with, and the care they received. The findings suggest the need to conduct further research to understand the rationale for the distribution of PFD reports and to address medicines safety issues.

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Figure & Table Legends

Table I Summary of Coroners Preventing Death (PFD) Reports

Table II Summary of medicines and medicines processes, other factors and their impact on the persons death