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A Study to Evaluate the Potential Contribution of Medication Use to Falls in Elderly Patients Presenting to an Acute Hospital

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INTRODUCTION

Falls in elderly patients is a growing burden on healthcare resources worldwide accounting for 10-15% of acute hospital presentations in patients ≥ 60 years old. As this is the fastest growing age group this will be a more significant issue in the future (6,10).
The cost of falls treatment in Ireland is anticipated to double in next 25 years. In 2020 the projected costs are anticipated to be in the range of €922 to €1077 million, while in 2030 the projected costs are expected to be in the range of €1587 to €2043 million (4). Polypharmacy is a modifiable extrinsic risk factor for falls in elderly patients. Medicine choice is also a modifiable risk factor for falls in the elderly, with specific medicines classified as Falls Risk Increasing Drugs (FRIDs) (2-6).
This study will focus on the top five classes of medicines based on a meta-analysis study of medication classes on falls in the elderly by Woolcott *et al* (11).
Clinical Pharmacists have a significant role to play in managing and reducing the risk of falls in this patient group by managing polypharmacy and FRID prescribing as part of multidisciplinary management of elderly patients (1,7-9).

AIMS

Aim:
Examine the role of medicines in acute falls in patients ≥65 years presenting at Our Lady of Lourdes Hospital Drogheda (OLOL)

Objectives:
1: Examine Polypharmacy
2: Examine Falls Risk Increasing Drugs (FRIDs)
3: Compare Medicine Profile of Long Term Care Facility (LTCF) v Community Patients
4: Examine the Role of Clinical Pharmacist in reducing Falls Risk

METHODS

Ethics approval was sought and granted from the HSE North-East Area Research Ethics Committee.
The acute admissions records in the Emergency Department (ED) and the Acute Medical Assessment Unit (AMAU) of OLOL were searched on a daily basis for patients ≥65 years who had presented due to an acute fall or due to injuries sustained as a result of an acute fall based on the inclusion and exclusion criteria as detailed in *Table 1*. Data was collected for a 6 week period from June 1st to July 13th 2018.

Table 1: Inclusion and Exclusion Criteria

Inclusion Criteria	**≥65 years , acute fall presentation**
Exclusion Criteria:	**≤65 years , non-acute fall presentation, fall as an inpatient, not on any regular prescribed medicine**

Informed consent for participation in the study was sought from the patient or next of kin as deemed appropriate by a Clinical Pharmacist. If consent was granted, the Clinical Pharmacist provided routine clinical pharmacy service to the patient which involved: medicines reconciliation, review of renal and hepatic function, review of observations, review of prescribed medicines for: polypharmacy, duplication of therapy, interactions & patient specific medicine appropriateness.

The Clinical Pharmacist made recommendations to the patient's medical team regarding their medicines with a view to reducing their risk of future falls. A data collection sheet was completed for each patient. All medical records were reviewed by a Clinical Pharmacist between July 16th and 20th 2018 to determine the extent of implementation of their recommendations.
Data collected was logged in a master spreadsheet, anonymised & analysed using quantitative statistical analysis. All date was stored securely.

RESULTS

94 patients were identified as presenting due to a fall and were approached for consent. Informed consent was obtained for 53 patients, 41 were excluded or did not give consent.
➢46.3% of those excluded had dementia or confusion when approached for informed consent. Next of kin were not available to discuss the study or to give informed consent on their behalf.
➢22% of those excluded were discharged before they could be approached for consent to participate in the study.
➢69.8% of patients recruited were admitted to wards without a clinical pharmacy service, leading to increased time required. It also proved difficult for the Clinical Pharmacist to discuss recommendations with medical teams and to have recommendations enacted.

Polypharmacy:
➢77% of those recruited were on ≥5 medicines on admission
➢32 % of those recruited were on ≥10 medicines on admission.
➢100% of patients prescribed benzodiazepines, sedatives and antipsychotic medicines were on ≥5 medicines on admission .
➢94% of those on antidepressants were on ≥5 medicines on admission.
➢76% of those prescribed antihypertensives were on ≥5 medicines on admission.

On review 83% of patients were on ≥5 medicines. The increase in the number of medicines was predominantly due to analgesics and laxatives. 47.2 % had in increase in the number of medicines prescribed, 20.8% of patients had a reduction in the number of medicines prescribed, while 32.1% were unchanged. It would have been desirable to review patients at a later point when analgesia and laxatives and acute medicines had ceased.

Classes of Medicines:

Table 2: Medicine Classes per Patient on Admission

	Male	Female	Total	%
Antihypertensives	**22**	**20**	**42**	**79.2%**
Antidepressants	**5**	**11**	**16**	**30.2%**
Benzodiazepines	**3**	**4**	**7**	**13.2%**
Antipsychotics	**0**	**1**	**1**	**1.9%**
Neuroleptics	**0**	**0**	**0**	**0**
Sedatives	**4**	**2**	**6**	**11.3%**

➢94.3% of patients on ≥ 1 FRID on admission
➢Total of 83 antihypertensive agents prescribed to 42 patients on admission
➢ On review, there was a reduction of 15 antihypertensive agents prescribed with 10 diuretics ceased.
➢ One sedative was stopped and two benzodiazepines were stopped while a further three patients had their benzodiazepine dose reduced with a view to cessation, however the process had not been completed at the time of review. Cessation of sedatives and benzodiazepines has to be completed slowly in a stepwise manner to minimise patient distress.

There was no reduction in the prescribing of antipsychotics and an increase of two patients prescribed antidepressants.

LTCF v Community Patients:
Only one LTCF patient was recruited therefore this objective could not be examined.

Role of the Clinical Pharmacist:
Clinical Pharmacists made recommendations for changes to patients medicines aimed at reducing the risk of future falls. The recommendations were reviewed by the patients medical team and discussed with the Clinical Pharmacist if necessary. 41.7% of recommendations were fully actioned. Based on the Woolcott *et al* meta-analysis the Falls Odds Risk Ratios (FROR) was calculated on admission and on review. FROR was reduced for benzodiazepines, diuretics, ACE inhibitors and Angiotensin Receptor Blockers. FROR was increased for antidepressants and unchanged for other classes of medicines.
The reduction in the FROR was not statistically significant (p=0.22).

CONCLUSIONS AND FUTURE RESEARCH

Clinical Pharmacists have a key role to play in identifying polypharmacy and FRIDs in elderly patients at risk of falls. There is a significant role for them as part of the multidisciplinary team in medicines management and reducing the risk of future falls in elderly patients therefore expansion of clinical pharmacy services is important in medicines management and reducing future falls risk. There is scope for significant future research in this area including: longer follow-up period for patients after Clinical Pharmacist review and review after discharge from hospital to determine if suggested changed to medicines have been implemented and sustained. Clinical Pharmacists can have input in development of education programmes for prescribers to highlight FRIDs and polypharmacy in elderly patients at risk of falls. There is Clinical Pharmacist involvement in development of a Falls Prevention Policy in the North-Eastern HSE area as a result of this research.

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