

and Health Sciences

Retrospective analysis of falls in 2015 and 2016 in patients taking antihypertensive medications

Introduction

- Falls are a significant public health problem, especially among the elderly. Falls are not only associated with morbidity and mortality in patients but can lead to a decrease in independence and early admission to long-term care facilities. Effective fall prevention can reduce injuries, emergency room visits, hospitalizations, and functional decline. Therefore, preventing and reducing the risk of falls is important.¹
- There are numerous risk factors associated with falls, including age, comorbidities and medications, specifically anti-hypertensives. Antihypertensive agents are used to treat conditions including heart failure and chronic kidney disease, making their use prevalent.
- According to JNC 8, patients aged 60 years and older should be treated if their systolic blood pressure is \geq 150mmHg or diastolic blood pressure is \geq 90mmHg.² Management of hypertension in older patients should include an evaluation for orthostatic hypotension.³
- When following the proper guidelines and following clinical judgement, antihypertensive medications become a modifiable risk factor for falls that pharmacists can play a role in addressing.

Objectives

- To determine whether there is an association between the number of antihypertensives a patient is on and the occurrence of a fall
- To examine the systolic blood pressures of elderly patients who are on antihypertensives, and whether there was adherence to the current blood pressure management guidelines
- To determine whether there is an association between a patient's fall and their systolic blood pressures before and after the fall

Methods

Literature Research

Inclusion and **Exclusion** Criteria



- After consultation of the 2015 Beer's Criteria along with a thorough literature search, a list of high "fall risk" medications was compiled. This list was then divided into its respective drug classes, which totaled 9 drug classes. We focused on the list of anti-hypertensive medications.
- Adult patients were included if they were admitted to Long Island Jewish Medical Center from January 2015 to December 2016, experienced one or more reported falls during admission, and were given at least one anti-hypertensive agent.
- Patients who were under the age of 18, experienced a fall in the emergency department or outpatient clinic, were not given an antihypertensive, or fell on a wet surface were excluded from the chart review.
- Information such as patient age, number of antihypertensive medications the patient was on, where medications were started, and patient's blood pressure before and after the fall were analyzed from patient electronic medical records.
- During review of patient charts, medications that were given within 48-hours of the reported fall event were stratified, and the duration between medication administration and fall events were recorded.
- The JNC 8 guidelines for treatment of hypertension in adults was used to evaluate proper management of hypertension.

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	Demog	graphics and Age	e Stratificati	ions ($n = 17$	4)			
Table 1: Demographics		Fall Dick Accord	ad and		[Fable 2: Age St	tratification Total	
Age	69 ± 15 years	Documented (%	eu anu 5)	171 (99%)	Age	patients	
Gender (%) Male	91 (52%)	Fall Risk Presen	nt (%)	161 (93%		Less than 60	39 (22%))
Female	83 (48%)				·)	60 - 70	43 (25%))
Mean number of anti- hypertensive drugs per patient	2.2 ± 1.2	Mean time to fain hypertensive add	ll after anti- ministration	4.2 ± 3.8 l	hr	70 - 80	49 (28%))
		nypertensive au				<u>> 80</u>	43 (25%))
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Results

our hundred and fifty-six patient charts were reviewed, and 174 patients met ne inclusion criteria. A little more than half of patients were male, and were bout 69 years old. A quarter of patients who both fell and were on antiypertensives were 80 years old or greater. The average number of ntihypertensive medications a patient was taking is 2.2. Systolic blood ressures before and after a fall were approximately the same, with a reading f 135.5 mm Hg. Blood pressure was taken on average 2.69 hours (\pm 2.09) efore a fall, and 1.47 hours (± 2.06) after a fall. Among patients 60 years of ge and older, 78% had a systolic blood pressure less than 150 mmHg before a all, of those 52% had a systolic blood pressures less than 130 mmHg before a all. After a fall, 73% had a systolic blood pressure less than 150 mmHg. Of nose, 59% had a systolic blood pressure less than 130 mmHg. Prior to a fall, 3% of patients 60 and older had a systolic blood pressure less than 110 mm g, with the lowest being 90 mm Hg. After the fall, 42% of patients 60 and lder had a systolic blood pressure of less than 110 mm HG, with the lowest eing 47 mm Hg.

Conclusion

ollowing analysis of blood pressure readings before and after falls in wo years of admissions, it is unclear if anti-hypertensive medications layed a role in patient falls. According to current hypertension nanagement guidelines, we cannot with certainty evaluate whether atients' high blood pressures were being properly managed. We cannot onclude that the cause of the falls studied was anti-hypertensive nedications. However, this study does not discount the need for harmacist review of anti-hypertensive medication regimens and patient ounseling, as the risk of hypotension and subsequent fall is still present. addition, it highlights the variability of when blood pressure checks re done after a fall and the need for evaluation of orthostatic ypotension performed on patients on anti-hypertensive medications. Itimately, long-term studies need to be done.

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Disclosures

uthors of this presentation have the following to disclose concerning possible nancial or personal relationships with commercial entities that may have a direct indirect interest in the subject matter of this presentation.

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