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AAT- Falls: Adherence to antihypertensive therapeutic guidelines and association with falls in a long-term care facility

Kimberly Grant, Pharm.D., Christine O'Neil, BS, Pharm.D., CGP, BCPS, FCCP, Jordan Covvey, Pharm.D., Ph.D., BCPS
Duquesne University Mylan School of Pharmacy, Pittsburgh, PA

Background

- JNC 8 guidelines recommend patients over the age of 60 diagnosed with hypertension be treated to a goal blood pressure less than 150/90 mm Hg based upon data from HYVET, Syst-Eur, SHEP, JATOS, VALISH, and CARDIO-SIS in order to reduce stroke, heart failure and coronary heart disease.[1]
  - These studies showed that treatment to a SBP <140 mm Hg provided no additional benefit compared to a SBP between 140-149 mm Hg.
- Preliminary data from SPRINT (Systolic Blood Pressure Intervention Trial) suggests that more intensive target SBP (120 mm Hg) may be beneficial for those over the age of 50 in regards to decreased stroke, heart disease, progression of chronic kidney disease, and age-related losses of memory and thinking.[2]
- The ageing process results in functional decline and increased frailty which make the elderly population more prone to falls. Cardiovascular disease states, such a hypertension are very prevalent among this population and may also cause some cognitive or functional decline. Also, many medications have the potential to cause adverse effects such as orthostasis, confusion, unsteadiness, etc. which may increase the chance of a fall.[3]

Objective

To assess the relationship between hypertension treatment goals and fall prevalence in a skilled nursing facility the following objectives will be explored:

1. Determine how current blood pressure treatment goals of hypertensive residents compare to current clinical practice guidelines
2. Assess the relationship between current blood pressure treatment goals of hypertensive residents and fall prevalence

Methods

Study design

- Retrospective, observational cohort study
- Approved under Institutional Review Board (IRB)

Table 1: Primary and Secondary Outcomes

Variable	Fall Patients (N = 27) *no. of patients (%)*	No fall Patients (N= 63) *no. of patients (%)*	P value
Age			0.461
<85 years old	11 (40.7)	31 (49.2)	
≥ 85 years old	16 (59.2)	32 (50.7)	
Sex			0.96
Female	19 (70.3)	44 (69.8)	
Male	8 (29.6)	19 (30.1)	
BMI < 18	3 (11.1)	2 (3.2)	0.161
BMI 18-24.9	10 (37.0)	21 (33.3)	0.933
BMI 25-29	7 (25.9)	17 (26.9)	0.75
BMI ≥ 30	6 (22.2)	16 (25.3)	0.601
Average Systolic Blood Pressure			
≤ 120 mmHg	3 (11.1)	22 (34.9)	0.376
121-139 mmHg	21 (77.7)	31 (49.2)	0.189
≥ 140 mmHg	3 (11.1)	9 (14.2)	0.204
Medications			
Beta-blocker	15 (55.6)	25 (39.6)	0.133
ACE inhibitor	8 (29.6)	8 (12.7)	0.034
ARB	3 (11.1)	9 (14.2)	0.118
Calcium channel blocker	3 (11.1)	14 (22.2)	0.027
Comorbidities			
Renal	1 (3.7)	3 (4.8)	0.179
Neurological	6 (22.2)	16 (25.4)	0.189
Psychological	8 (29.6)	26 (41.2)	0.097
Mobility	4 (14.8)	18 (28.6)	0.05
Urinary	8 (29.6)	7 (11.1)	0.003
Hold parameters on medication order(s)			0.028
Hold parameters present	0	10 (15.9)	
No hold parameters	27 (100)	53 (84.1)	

Assessment

- Blood pressure data was compared against JNC 8 guidelines for blood pressure treatment goals in patients with hypertension by the clinical pharmacy staff at a skilled nursing facility.
- Blood pressure data was then compared with falls occurrence..

Discussion

- According to blood pressure goals as determined by JNC 8, there was no significant difference in terms of fall prevalence according to goal chosen
- In this exploratory analysis, it can be seen that the following variables showed an increase in fall prevalence: treatment with an ACE inhibitor or calcium channel blocker, diagnosis of a urinary comorbidity, and presence of hold parameters on blood pressure-lowering medications
- Those residents with hold parameters on medication orders experienced zero falls. This may represent and area for pharmacy intervention, as many other variables studied are not modifiable for this population.
- Limitations of this study may include a lack of standardization of blood pressure data. While many long-term care facilities record daily or weekly blood pressures, the facility utilized in this study does not have a protocol regarding this practice. Therefore, a lack of data may influence results.

Reference

1. James PA, Oparil S, Carter BL, et al. 2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults: Report From the Panel Members Appointed to the Eighth Joint National Committee (JNC 8). JAMA. 2014;311(5):507-520.
2. Landmark NIH study shows intensive blood pressure management may save lives. National Heart, Lung, and Blood Institute. National Institutes of Health. September 11, 2015. Available Online at: http://www.nhlbi.nih.gov
3. Rafiq M, et al. Falls in the elderly were predicted opportunistically using a decision tree and systematically using a database-driven screening tool. Journal of Clinical Epidemiology 2014; 67: 877-886.