



©2018 Iowa Geriatric Education Center

---

*September 2018*

*Vol. 20, No. 9*

---

***Our Mission:*** Helping to prepare Iowa's health practitioners to care for our growing population of elders. *E-NEWS* is one of our methods of teaching through technology.

Each month, *E-NEWS* delivers abstracts from current multidisciplinary healthcare journal articles related to a specific geriatric topic. This month's *E-NEWS* focuses on MEDICATION-RELATED FALLS IN DEMENTIA.

---

## MEDICATION-RELATED FALLS IN DEMENTIA

**In this issue of the *E-NEWS*, you will find abstracts for:**

- A study that evaluates medication use and risk of falls among nursing home residents.
  - An article that presents the pharmacist as key facilitator in assessing for falls risk.
  - A study that aims to demonstrate how drugs can contribute to falls and the role of therapeutic drug monitoring.
  - An article that discusses interdisciplinary collaboration in medication-related falls prevention in older adults.
  - An article that describes a palliative approach to falls in advanced dementia.
  - An article that explores the role of pharmacists in preventing falls among older adults.
  - An article that examines factors related to the high fall rate in long-term care residents with dementia.
  - An article that reviews the impact of medications and polypharmacy on recurrent fallers.
  - An article that assesses deprescribing benzodiazepines in older adults.
  - A study that analyzes the associations between fall risk and nonpsychotropic and noncardiovascular medications.
  - A study that investigates fall and fracture risk in nursing home residents with moderate to severe behavioral symptoms of Alzheimer's disease and related dementias initiating antidepressants or antipsychotics.
-

- Bor A, Matuz M, Csator dai M, Szalai G, Bálint A, Benkó R, Soós G, Doró P. Medication use and risk of falls among nursing home residents: a retrospective cohort study. *Int J Clin Pharm.* 2017 Apr;39(2):408-415.

Background: Geriatric falls are leading causes of hospital trauma admissions and injury-related deaths. Medication use is a crucial element among extrinsic risk factors for falls. To reduce fall risk and the prevalence of adverse drug reactions, potentially inappropriate medication (PIM) lists are widely used. Objective: Our aim was to investigate the possible predictors of geriatric falls annualized over a 5-year-long period, as well as to evaluate the medication use of nursing home residents. Setting: Nursing home residents were recruited from the same institution between 2010 and 2015 in Szeged, Hungary. Method: A retrospective epidemiological study was performed. Patient data were analyzed for the first 12 months of residency. Chi-squared test and Fisher's-test were applied to compare the categorical variables, Student's t test to compare the continuous variables between groups. Binary logistic regression analysis was carried out to determine the association of falls with other variables found significant in univariate analysis. Microsoft Excel, IBM SPSS Statistics (version 23) and R (3.2.2) programs were used for data analysis. Main outcome measure: Falls affected by age, gender, number of chronic medications, polypharmacy, PIM meds. Results: A total of 197 nursing home residents were included, 150 (76.2%) women and 47 (23.8%) men, 55 fallers (annual fall prevalence rate was 27.9%) and 142 non-fallers. Gender was not a predisposing factor for falls (prevalence in males: 23.4 vs 29.3% in females,  $p > 0.05$ ). Fallers were older (mean years  $\pm$  SD;  $84.0 \pm 7.0$ ) than non-fallers ( $80.1 \pm 9.3$ ,  $p < 0.01$ ). The age  $\geq 80$  years was a significant risk factor for falls ( $p < 0.001$ ). The number of chronic medications was higher in male fallers ( $12.4 \pm 4.0$ ) than in non-fallers ( $6.9 \pm 4.2$ ,  $p < 0.001$ ). Polypharmacy (taking four or more chronic medications) was a significant risk factor of falls ( $p < 0.01$ ). Those PIMs carrying fall risk were taken by 70.9% of fallers and 75.3% of non-fallers ( $p > 0.05$ ). Taking pantoprazole, vinpocetine or trimetazidine was a significant risk factor for falls. Conclusion: Older age, polypharmacy and the independent use of pantoprazole, vinpocetine, and trimetazidine were found to be major risk factors for falls. Further real-life epidemiological studies are necessary to confirm the role of particular active agents, and to help professionals prescribe, evaluate and review geriatric medication use.



- Fritsch MA, Shelton PS. Geriatric Polypharmacy: Pharmacist as Key Facilitator in Assessing for Falls Risk. *Clin Geriatr Med.* 2017 May;33(2):205-223.

This article highlights the significant health impact of falls among older adults. An emphasis is placed on the vital role of the pharmacist, regardless of practice setting, in assessing and reducing falls risk for this growing population. In addition, the importance of a stepwise comprehensive approach to falls assessment by pharmacists in collaboration with other clinicians is elucidated.



- Hartholt KA, Becker ML, van der Cammen TJ. Drug-induced falls in older persons: is there a role for therapeutic drug monitoring? *Ther Adv Drug Saf.* 2016 Apr;7(2):39-42.

BACKGROUND: Falls are the leading cause of injuries among older persons. Because of ageing societies worldwide, falls are expected to become a prominent public health problem. The usage of several types of drugs has been associated with an increased fall and fracture risk. In order to reduce future falls, preventative measures are needed. Therapeutic drug monitoring may help to identify persons who are at risk for falls due to drug use. The aim was to demonstrate how drugs can contribute to falls and the role of therapeutic drug monitoring. METHODS: We present a descriptive case series of four patients. RESULTS: All patients were referred to the geriatric outpatient clinic of a university medical center. The presented cases contained different underlying mechanisms contributing to an increased fall risk in older adults, including renal failure, genetic variation, overdose and ageing. CONCLUSION/DISCUSSION: Older adults are more prone to the side effects of drug use, including falls. Therapeutic drug monitoring may be useful to identify the patients who have an increased drug-related fall risk and to prevent future falls by individualizing the drug regime.



- Huang L, Turner J, Brandt NJ. Interdisciplinary Collaboration in Medication-Related Falls Prevention in Older Adults. *J Gerontol Nurs.* 2018 Apr 1;44(4):11-15.

The older adult population continues to steadily increase. Largely attributed to longer life spans and aging of the Baby Boomer generation, continued growth of this population is expected to affect a multitude of challenging public health concerns. Specifically, falls in older adults are prevalent but overlooked concerns. Health care providers are well-positioned to provide valuable interventions in this aspect. An interdisciplinary, team-based approach of health care providers is required to maximize falls prevention through patient-centered and collaborative care. The current article highlights the implications of inappropriate medication use and the need to improve care coordination to tackle this public health issue affecting older adults.



- Iaboni A, Van Ooteghem K, Marcil MN, Cockburn A, Flint AJ, Grossman D, Keren R. A Palliative Approach to Falls in Advanced Dementia. *Am J Geriatr Psychiatry.* 2018 Apr;26(4):407-415.

Falls are viewed as a preventable cause of injury, functional loss, and death in older adults with dementia, and have been used as a marker of quality of care in long-term care facilities. Despite intensive intervention around fall prevention in these settings, falls and injury remain frequent, particularly among residents in the advanced stages of dementia. In this clinical review, we consider the common challenges and pitfalls in both the management of falls and the provision of palliative care in advanced dementia. We then describe a palliative approach to falls in advanced dementia that involves identifying individuals who would benefit from this care approach, framing falls and loss of mobility as a quality of life issue, and devising an individualized symptom assessment and management plan. A palliative approach can lead to recognition and acceptance that recurrent falls are often symptomatic of advanced dementia, and that not all falls are preventable. We conclude that falls in the advanced stage of dementia can be sentinel events indicating the need for a palliative approach to care. Rather than replace falls prevention activities, a palliative approach to falls prompts us to select dementia stage-appropriate interventions with a focus on symptom management, comfort, and dignity.



- Karani MV, Haddad Y, Lee R. The Role of Pharmacists in Preventing Falls among America's Older Adults. *Front Public Health.* 2016 Nov 9;4:250.

Falls are the leading cause of both fatal and non-fatal injuries in people aged 65 years and older and can lead to significant costs, injuries, functional decline, and reduced quality of life. While certain medications are known to increase fall risk, medication use is a modifiable risk factor. Pharmacists have specialized training in medication management and can play an important role in fall prevention. Working in a patient-centered team-based approach, pharmacists can collaborate with the primary care providers to reduce fall risk. They can screen for fall risk, review and optimize medication therapy, recommend vitamin D, and educate patients and caregivers about ways to prevent falls. To help health-care providers implement fall prevention, the Centers for Disease Control and Prevention developed the Stopping Elderly Accidents, Deaths, and Injuries (STEADI) initiative. Based on the established clinical guidelines, STEADI provides members of the health-care team, including pharmacists, with the tools and resources they need to manage their older patients' fall risk. These tools are being adapted to specifically advance the roles of pharmacists in reviewing medications, identifying those that increase fall risk, and communicating those risks with patients' primary care providers. Through a multidisciplinary approach, pharmacists along with other members of the health-care team can better meet the needs of America's growing older adult population and reduce falls.



- Kosse NM, de Groot MH, Vuillerme N, Hortobágyi T, Lamoth CJ. Factors related to the high fall rate in long-term care residents with dementia. *Int Psychogeriatr.* 2015 May;27(5):803-14.

BACKGROUND: Falls in long-term care residents with dementia represent a costly but unresolved safety issue. The aim of the present study was to (1) determine the incidence of falls, fall-related injuries and fall circumstances, and (2) identify the relationship between patient characteristics and fall rate in long-term care residents with dementia. METHODS: Twenty long-term care residents with dementia (80 ± 11 years; 60% male) participated. Falls were recorded on a standardized form, concerning fall injuries, time and place of fall and if the fall was witnessed. Patient characteristics (66 variables) were extracted from medical records and classified into the domains: demographics, activities of daily living, mobility, cognition and behavior, vision and

hearing, medical conditions and medication use. We used partial least squares (PLS) regression to determine the relationship between patient characteristics and fall rate. RESULTS: A total of 115 falls ( $5.1 \pm 6.7$  falls/person/year) occurred over 19 months, with 85% of the residents experiencing a fall, 29% of falls had serious consequences and 28% was witnessed. A combination of impaired mobility, indicators of disinhibited behavior, diabetes, and use of analgesics, beta blockers and psycholeptics were associated with higher fall rates. In contrast, immobility, heart failure, and the inability to communicate were associated with lower fall rates. CONCLUSIONS: Falls are frequent and mostly unwitnessed events in long-term care residents with dementia, highlighting the need for more effective and individualized fall prevention. Our analytical approach determined the relationship between a high fall rate and cognitive impairment, related to disinhibited behavior, in combination with mobility disability and fall-risk-increasing-drugs (FRIDs).

---

- Ming Y, Zecevic A. Medications & Polypharmacy Influence on Recurrent Fallers in Community: a Systematic Review. *Can Geriatr J.* 2018 Mar 26;21(1):14-25.

The purpose of this systematic review is to summarize information about the impact different classes of medications and polypharmacy have on recurrent falls, defined as two or more falls in a 12-month period, in community-dwelling older adults. After adjustment for confounders such as age, gender, weight or depression symptoms, the reviewed studies suggested that older adults who use antidepressants, sedatives or hypnotics and anti-epileptics were more likely to experience recurrent falls than non-users. Polypharmacy (use of four or more prescription medications daily) caused 1.5-2 times higher possibility of recurrent falls in older adults. As a high-risk group, recurrent fallers require meaningful intervention. Medications are believed to be a modifiable risk factor in falls prevention; hence, special consideration should be taken to balance the benefit and harm in initiating, continuing or increasing certain classes of medications in elderly recurrent fallers.

---

- Ng BJ, Le Couteur DG, Hilmer SN. Deprescribing Benzodiazepines in Older Patients: Impact of Interventions Targeting Physicians, Pharmacists, and Patients. *Drugs Aging.* 2018 Jun;35(6):493-521.

Benzodiazepines (BZDs; including the related Z-drugs) are frequently targets for deprescribing; long-term use in older people is harmful and often not beneficial. BZDs can result in significant harms, including falls, fractures, cognitive impairment, car crashes and a significant financial and legal burden to society. Deprescribing BZDs is problematic due to a complex interaction of drug, patient, physician and systematic barriers, including concern about a potentially distressing but rarely fatal withdrawal syndrome. Multiple studies have trialled interventions to deprescribe BZDs in older people and are discussed in this narrative review. Reported success rates of deprescribing BZD interventions range between 27 and 80%, and this variability can be attributed to heterogeneity of methodological approaches and limited generalizability to cognitively impaired patients. Interventions targeting the patient and/or carer include raising awareness (direct-to-consumer education, minimal interventions, and 'one-off' geriatrician counselling) and resourcing the patient (gradual dose reduction [GDR] with or without cognitive behavioral therapy, teaching relaxation techniques, and sleep hygiene). These are effective if the patient is motivated to cease and is not significantly cognitively impaired. Interventions targeted to physicians include prescribing interventions by audit, algorithm or medication review, and providing supervised GDR in combination with medication substitution. Pharmacists have less frequently been the targets for studies, but have key roles in several multifaceted interventions. Interventions are evaluated according to the Behaviour Change Wheel. Research supports trialling a stepwise approach in the cognitively intact older person, but having a low threshold to use less-consultative methods in patients with dementia. Several resources are available to support deprescribing of BZDs in clinical practice, including online protocols.

---

- Seppala LJ, van de Glind EMM, Daams JG, Ploegmakers KJ, de Vries M, Wermelink AMAT, van der Velde N; EUGMS Task and Finish Group on Fall-Risk-Increasing Drugs. Fall-Risk-Increasing Drugs: A Systematic Review and Meta-analysis: III. Others. *J Am Med Dir Assoc.* 2018 Apr;19(4):372.e1-372.e8.

BACKGROUND AND OBJECTIVE: The use of psychotropic medication and cardiovascular medication has been associated with an increased risk of falling. However, other frequently prescribed medication classes are still under debate as potential risk factors for falls in the older population. The aim of this systematic review

and meta-analysis is to evaluate the associations between fall risk and nonpsychotropic and noncardiovascular medications. METHODS AND DESIGN: A systematic review and meta-analysis. A search was conducted in Medline, PsycINFO, and Embase. Key search concepts were "falls," "aged," "medication," and "causality." Studies were included that investigated nonpsychotropic and noncardiovascular medications as risk factors for falls in participants  $\geq 60$  years or participants with a mean age  $\geq 70$  years. A meta-analysis was performed using the generic inverse variance method, pooling unadjusted and adjusted odds ratio (OR) estimates separately. RESULTS: In a qualitative synthesis, 281 studies were included. The results of meta-analysis using adjusted data were as follows (a pooled OR [95% confidence interval]): analgesics, 1.42 (0.91-2.23); nonsteroidal anti-inflammatory drugs (NSAIDs), 1.09 (0.96-1.23); opioids, 1.60 (1.35-1.91); anti-Parkinson drugs, 1.54 (0.99-2.39); antiepileptics, 1.55 (1.25-1.92); and polypharmacy, 1.75 (1.27-2.41). Most of the meta-analyses resulted in substantial heterogeneity that did not disappear after stratification for population and setting in most cases. In a descriptive synthesis, consistent associations with falls were observed for long-term proton pump inhibitor use and opioid initiation. Laxatives showed inconsistent associations with falls (7/20 studies showing a positive association). CONCLUSION: Opioid and antiepileptic use and polypharmacy were significantly associated with increased risk of falling in the meta-analyses. Long-term use of proton pump inhibitors and opioid initiation might increase the fall risk. Future research is necessary because the causal role of some medication classes as fall-risk-increasing drugs remains unclear, and the existing literature contains significant limitations. © AMDA.

---

- Wei YJ, Simoni-Wastila L, Lucas JA, Brandt N. Fall and Fracture Risk in Nursing Home Residents With Moderate-to-Severe Behavioral Symptoms of Alzheimer's Disease and Related Dementias Initiating Antidepressants or Antipsychotics. *J Gerontol A Biol Sci Med Sci*. 2017 May 1;72(5):695-702.

Background: Both antidepressants and antipsychotics are used in older adults with behavioral symptoms of Alzheimer's disease and related dementias. Despite the prevalent use of these agents, little is known about their comparative risks for falls and fractures. Methods: Using 2007-2009 Medicare claims data linked to Minimum Data Set 2.0, we identified new users of antidepressants and antipsychotics among nursing home residents with Alzheimer's disease and related dementias who had moderate-to-severe behavioral symptoms. Separate discrete-time survival models were used to estimate risks of falls, fractures, and a composite of both among antidepressant group versus antipsychotic group. Results: Compared to antipsychotic users, antidepressant users experienced significantly higher risk for fractures (adjusted hazard ratio = 1.35, 95% confidence interval = 1.10-1.66). The overall risk of falls or fractures remained significant in the antidepressant versus antipsychotic group (adjusted hazard ratio = 1.16, 95% confidence interval = 1.02-1.32). Conclusions: Antidepressants are associated with higher fall and fracture risk compared to antipsychotics in the management of older adults with Alzheimer's disease and related dementias who experience moderate-to-severe behavioral symptoms. Clinicians need to assess the ongoing risks/benefits of antidepressants for these symptoms especially in light of the increasingly prevalent use of these agents. © The Author.

---

---

---

*Next Month's Issue:*

Healthy Aging Strategies to Maximize  
Mobility, Cognition, and Function

---

---

**Why not share *E-NEWS* with your colleagues? Forward a copy of this issue.  
Subscription information is found below.**

To subscribe to *E-NEWS*, fill out the form on the following website:  
<https://igec.uiowa.edu/e-news/subscribe-unsubscribe>

To unsubscribe to *E-NEWS*, fill out the form on the following website:  
<https://igec.uiowa.edu/e-news/subscribe-unsubscribe>

---

---