ECRI The Most Trusted Voice in Healthcare

Falls: Current Strategies for the Enduring Challenge

Shannon Rose, MPH, COTA/L, CPASRM
Patient Safety Analyst II, ECRI

1

Learning Objectives

- Describe current trends in CHI falls claims.
- Identify 3 variables contributing to falls and their associated risk mitigation strategies.
- Review 2 fall prevention technologies and consider usefulness in your environment.

2

Success Story – Falls Collaborative

- 12 large, multisite CCRCs participated from 2019 – 2021
  - Quarterly webinars, PIPs, monthly fall rates
- Decrease in fall rates (from 2019 through June 2021)
  - 11% decrease in overall fall rates and 20% decrease in LTC fall rates
- Decrease in claims $ paid
  - Annual average number of falls claims decreased by 8.4%
  - 2019 through 2020, saved an estimated $643K on claims per year
- Facilitated evaluation of falls programs and implementation of appropriate intervention

Current Challenges to Preventing Falls for Healthcare Providers

- What we see
  - Frequent fallers
  - Staff education and training
  - Root Cause Analysis
  - Data collection, tracking, analysis
  - Setting realistic expectations
- What we hear
  - "This is the way we've always done it"
  - "If everyone is a high falls risk then no one is"
  - "We have too many other priorities"
  - "We currently don't have the staffing levels to support our falls program"

Current Evidence-based Research

- Outdated Interventions and Processes
  - Bed and chair alarms[1]
  - Ineffective Assessments[2]
- Mobility devices increase risk for falls[3, 4, 5]
  - When using or not using a recommended device
- Technology is helping but be wary of initial results[6, 7, 8]
  - Low quality studies, controlled environments, non-older adult samples
- Focus on preventing injuries[9]
  - Bone health risks, exercise, environment
- Dementia specific research still lacking[10, 11, 12]
  - Significant increase in risk for falls and number of risk factors
  - Non-pharmacological interventions are best
- Most research focuses on community-dwelling older adults

Maintain mobility, independence, and autonomy
+
Prevent falls
=
?

Exploring Technology to Prevent Falls[13]

- First, be ready to:
  - Be cautious with the research
  - Talk to actual users about the tech
  - Determine staff needs and preferences
  - Assess your readiness for technology
  - Assess system needs for technology
  - Have questions and concerns ready during demo
    - Ask about compliance concerns
    - Ask about data security
- Then, discuss implementation with your staff:
  - Is it appropriate for patient/resident population?
  - Is it manageable and easy to use?
  - Is it efficient?
  - Is it easy to clean and disinfect?
  - Is it readily available?
  - Is it compatible with other products or systems in use?
  - Does it have appropriate security features?

Considerations for Fall Prevention Technology[14]

- Does it meet basic requirements of safety and efficacy?
- What configuration is most appropriate based on your facility's existing workflow and clinical needs?
- Do you need two-way audio and video connectivity, or is one-way communication sufficient?
- Do you want to send data from cameras to the patient's electronic medical record (EMR)?
- Do you want the system to interface with peripheral devices or systems?
- Have you made sure to consider all associated costs?

7

Current Fall Prevention Technology[15]

- Prescriptive analytics[16]
  - Reviews a patient's EMR and identify specific fall risk factors
  - Qventus
- Predictive analytics
  - Foresight[17]
    - Sensor systems ("sitter")
    - No sensors in bathroom
    - Predictive (based on gait and speed) and detective
  - VirtuSense (VSTOne)
    - Continuous video monitoring
    - Virtual rounding (vitals, telemetry, telehealth)

- Video review system
  - SafelyYou[18]
    - Falls detection only
    - Decrease time on ground
    - Immediate review of fall to determine cause and potential for head injury
- Bed-exit alarm system
  - VirtuSense (VSTAlert)
    - Bed and chair exits
    - Staff may have to adjust camera throughout the day

8

Medications and Fall Risk

- Opioids[19, 20]
  - Increased risk of falls, fall injuries, and fractures
    - Within 2 weeks of filling opioid prescription were 2.4 times more likely to have a fall
- Polypharmacy
  - Increases the odds of adverse related hospital visits by 88%[21]
    - Fall-related fractures make up 10% - 25%
  - Independent factor for both increased fall risk and hospitalization[22, 23]
  - More medications = higher their fall risk[24]
    - ≥4 medications increases fall risk by 18%
    - ≥5 medications by 21%
    - 10 or more medications increases fall risk by 50%
- Anesthesia[25, 26]
  - Not directly associated to falls
  - Peripheral nerve blocks not associated with increased risk for falls
- Surgery [27, 28]
  - Periop fall risk associated with age, frailty
  - Postop period risk for falls based on preop medical status, surgery type, hospitalization, pain meds

9

Preventing Medication-related Falls

- Common medication errors related to falls[29]
  - Failure to anticipate inherent risks for medications
  - Inadequate proactive clinical assessments
  - Communication gaps
    - Medication Reconciliation
  - Failure of medication-use processes
- Medication Reviews[30]
  - Prevents fall-related injuries and fractures
  - LTC – Med Directors & Pharmacists
  - Pharmacist Fall Risk Assessment

Facilitators to Improving Medication Review Processes[31]

- Ability to prioritize medications through resident collaboration
- Use of screening tools/decision aids
- Unfamiliarity with the actual resident, leading to unbiased decisions
- Education through multidisciplinary team collaboration
- Full medical chart for pharmacist review

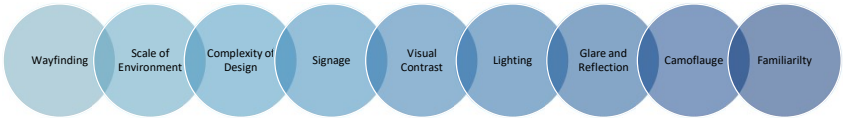
Barriers to Improving Medication Review Processes[31]

- Lack of collaboration with residents who have cognitive deficits
- Unfamiliarity with screening tools and/or decision aids
- Unfamiliarity with the actual resident, leading to dependence on clinical literature
- Multidisciplinary team lack of understanding of each other's roles
- Physicians limiting the roles of nurses and pharmacists
- Postponed new medication orders
- Lack of time for nurses to participate in medication reviews
- Difficulty educating resident on medication changes or difficulty reaching a resident representative

10

Dementia-related Falls

- Non-pharmacological interventions need to be first line intervention to reduce behavioral & psychological symptoms in dementia (BPSD)
  - Exercise
    - Long term exercise (≥1 year) can decrease risk of falls and decrease risk of injurious falls[32]
  - Sleep
    - Predicts mental well-being, ability to perform ADLs, fall risk, risk of hospitalization[33]
    - Lowest risk of falls 7-8 hours of sleep per day[34]
  - Therapeutic Activities
    - Reduce BPSD through activity kits, sensory stimulation, recreational activities[35]
  - Environment[36]
    - Greater declines in vision and hearing, visual-spatial orientation, and misperceptions of visual images (shadows)



11

Mitigating Risk of Falls and Risk of Claims

- What is working
  - Huddles
  - Purposeful Rounding
  - Staff education and training
  - Falls Leader
  - Internal benchmarking

- What we also recommend
  - Setting realistic expectations
  - Patient/resident education
  - Disclosure
  - Culture of safety

12

Recommendations to Endure the Challenge

- Evaluate fall risk assessment for appropriateness
- Focus on internal benchmarks
- Take the time to assess your needs for technology and discuss with staff
- Evaluate medication review processes for effectiveness
- Strive for person-centered interventions for dementia residents
- Collaborate with other providers
- Rely on your Therapy staff for fall prevention strategies, interventions, education, etc.

13

References

1. LeLaurin JH, Shorr RI. Preventing Falls in Hospitalized Patients: State of the Science. *Clin Geriatr Med.* 2019;35(2):273-283. doi:10.1016/j.cger.2019.01.007
2. Matarese M, Ivziku D, Bartolozzi F, Piredda M, De Marinis MG. Systematic review of fall risk screening tools for older patients in acute hospitals. *J Adv Nurs.* 2015;71(6):1198-1209. doi:10.1111/jan.12542
3. Thies, S.B., Bates, A., Costamagna, E. *et al.* Are older people putting themselves at risk when using their walking frames?. *BMC Geriatr* **20,** 90 (2020). https://doi.org/10.1186/s12877-020-1450-2
4. Clare Luz, PhD, Tamara Bush, PhD, Xiaoxi Shen, MS, Do Canes or Walkers Make Any Difference? NonUse and Fall Injuries, *The Gerontologist*, Volume 57, Issue 2, 1 April 2017, Pages 211–218, https://doi.org/10.1093/geront/gnv096
5. Muir-Hunter SW, Montero-Odasso M. The attentional demands of ambulating with an assistive device in older adults with Alzheimer's disease. *Gait Posture.* 2017;54:202-208. doi:10.1016/j.gaitpost.2017.03.011
6. Lapierre N, Neubauer N, Miguel-Cruz A, Rios Rincon A, Liu L, Rousseau J. The state of knowledge on technologies and their use for fall detection: A scoping review [published correction appears in Int J Med Inform. 2018 Aug;116:9]. *Int J Med Inform.* 2018;111:58-71. doi:10.1016/j.ijmedinf.2017.12.015
7. Huter K, Krick T, Domhoff D, Seibert K, Wolf-Ostermann K, Rothgang H. Effectiveness of Digital Technologies to Support Nursing Care: Results of a Scoping Review. *J Multidiscip Healthc.* 2020;13:1905-1926. Published 2020 Dec 9. doi:10.2147/JMDH.S286193
8. Cooper K, Pavlova A, Greig L, et al. Health technologies for the prevention and detection of falls in adult hospital inpatients: a scoping review. *JBI Evid Synth.* 2021;19(10):2478-2658. Published 2021 Jun 18. doi:10.11124/JBIES-20-00114
9. Bischoff-Ferrari HA, Bhasin S, Manson JE. Preventing Fractures and Falls: A Limited Role for Calcium and Vitamin D Supplements? *JAMA.* 2018;319(15):1552–1553. doi:10.1001/jama.2018.4023
10. Fillit H, Aigbogun MS, Gagnon-Sanschagrin P, et al. Impact of agitation in long-term care residents with dementia in the United States. *International Journal of Geriatric Psychiatry.* 2021;36(12):1959-1969. doi:10.1002/gps.5604
11. Fernando E, Fraser M, Hendriksen J, Kim CH, Muir-Hunter SW. Risk Factors Associated with Falls in Older Adults with Dementia: A Systematic Review. *Physiother Can.* 2017;69(2):161-170. doi:10.3138/ptc.2016-14
12. Burgon C, Darby J, Pollock K, et al. Perspectives of healthcare professionals in England on falls interventions for people with dementia: a qualitative interview study. *BMJ Open.* 2019;9(2):e025702. Published 2019 Feb 11. doi:10.1136/bmjopen-2018-025702
13. ECRI. Falls Toolkit, 2021 Dec [cited 2022 Jan 7]. https://www.ecri.org/EmailResources/PSRQ/CaringComm/Falls%20Toolkit%20Revision%202021-%20FINAL%2012-3.pdf
14. ECRI. Key Considerations for Selecting a Tele-Sitting System. 2020 Nov [cited 2022, Jan 7]. https://www.ecri.org/components/HDJournal/Pages/Key-Considerations-for-Selecting-a-Tele-sitting-System.aspx
15. Oh-Park, Mooyeon MD; Doan, Thao MD; Dohle, Carolin MD; Vermiglio-Kohn, Valerie RN, MSN, CRRN; Abdou, Andrew DO Technology Utilization in Fall Prevention, American Journal of Physical Medicine & Rehabilitation: January 2021 - Volume 100 - Issue 1 - p 92-99 doi: 10.1097/PHM.0000000000001554
16. Bertsimas D, Li ML, Paschalidis ICh, Wang T. Prescriptive analytics for reducing 30-day hospital readmissions after general surgery. Yeh CC, ed. *PLOS ONE.* 2020;15(9):e0238118. doi:10.1371/journal.pone.0238118
17. Potter P, Allen K, Costantinou E, et al. Evaluation of Sensor Technology to Detect Fall Risk and Prevent Falls in Acute Care. *The Joint Commission Journal on Quality and Patient Safety.* 2017;43(8):414-421. doi:10.1016/j.jcjq.2017.05.003
18. Bayen E, Nickels S, Xiong G, Jacquemot J, Subramaniam R, Agrawal P, Hemraj R, Bayen A, Miller BL, Netscher G Reduction of Time on the Ground Related to Real-Time Video Detection of Falls in Memory Care Facilities: Observational Study J Med Internet Res 2021;23(6):e17551 doi: 10.2196/17551
19. Daoust R, Paquet J, Moore L, et al. Recent opioid use and fall-related injury among older patients with trauma. *CMAJ.* 2018;190(16):E500-E506. doi:10.1503/cmaj.171286
20. Aya Yoshikawa, DrPH, PhD, Gilbert Ramirez, DrPH, MPH, Matthew Lee Smith, PhD, MPH, CHES, Margaret Foster, MS, MPH, AHIP, Anas K Nabil, MBBS, MPH, Sagar N Jani, MBBS, Marcia G Ory, PhD, MPH, Opioid Use and the Risk of Falls, Fall Injuries and Fractures among Older Adults: A Systematic Review and Meta-Analysis, *The Journals of Gerontology: Series A*, Volume 75, Issue 10, October 2020, Pages 1989–1995, https://doi.org/10.1093/gerona/glaa038
21. Bourgeois FT, Shannon MW, Valim C, Mandl KD. Adverse drug events in the outpatient setting: an 11-year national analysis
22. . Bor, A., Matuz, M., Csatordai, M. *et al.* Medication use and risk of falls among nursing home residents: a retrospective cohort study. *Int J Clin Pharm* **39,** 408–415 (2017). https://doi.org/10.1007/s11096-017-0426-6
23. Hoel RW, Giddings Connolly RM, Takahashi PY. Polypharmacy Management in Older Patients. *Mayo Clinic Proceedings.* 2021;96(1):242-256. doi:10.1016/j.mayocp.2020.06.012
24. Dhalwani NN, Fahami R, Sathanapally H, *et al.* Association between polypharmacy and falls in older adults: a longitudinal study from England *BMJ Open* 2017;**7**:e016358. doi: 10.1136/bmjopen-2017-016358
25. Eduardo PC, Aniza Surinam GL, Giselle Andrea UC, et al. Lumbar-Sacral Plexus Block Anesthesia versus General Anesthesia for Total Hip Arthroplasty: Case Control Study. *Open Journal of Anesthesiology.* 2021;11(09):259-268. doi:10.4236/ojanes.2021.119025
26. Turbitt LR, McHardy PG, Casanova M, Shapiro J, Li L, Choi S. Analysis of Inpatient Falls After Total Knee Arthroplasty in Patients With Continuous Femoral Nerve Block. *Anesthesia & Analgesia.* 2018;127(1):224-227. doi:10.1213/ane.0000000000002703
27. Fortes Vitor A, Alves Moura L, Nunes De Lima Fernandes A, Rocha Botarelli F, Naiara De Medeiros Araújo J, Caroline Da Costa Vitorino I. *RISK for FALLS in PATIENTS in the POSTOPERATIVE PERIOD.* https://docs.bvsalud.org/biblioref/2016/07/594/38509-151063-1-pb.pdf
28. Kronzer VL, Wildes TM, Stark SL, Avidan MS. Review of perioperative falls. *Br J Anaesth.* 2016;117(6):720-732. doi:10.1093/bja/aew377
29. Ming Y, Zecevic AA, Hunter SW, Miao W, Tirona RG. Medication Review in Preventing Older Adults' Fall-Related Injury: a Systematic Review & Meta-Analysis. *Can Geriatr J.* 2021;24(3):237-250. Published 2021 Sep 1. doi:10.5770/cgj.24.478
30.. Institute for Safe Medication Practices Canada (ISMP Canada). Medication incidents that increase the risk of falls: a multi-incident analysis. Safety Bulletin 2015 Dec;15(12). https://www.ismp-canada.org/download/safetyBulletins/2015/ISMPCSB2015-12_Falls.pdf
31. Wouters H, Foster JM, Ensink A, O'Donnell LK, Zuidema SU, Boersma F, Taxis K. Barriers and facilitators of conducting medication reviews in nursing home residents: a qualitative study. Front Pharm
32. de Souto Barreto P, Rolland Y, Vellas B, Maltais M. Association of Long-term Exercise Training With Risk of Falls, Fractures, Hospitalizations, and Mortality in Older Adults: A Systematic Review and Meta-analysis. *JAMA Intern Med.* 2019;179(3):394–405. doi:10.1001/jamainternmed.2018.5406
33. Dzierzewski JM, Dautovich ND. Who Cares about Sleep in Older Adults?. *Clin Gerontol.* 2018;41(2):109-112. doi:10.1080/07317115.2017.1421870
34. Wu L, Sun D. Sleep duration and falls: a systemic review and meta-analysis of observational studies. Journal of Sleep Research. 2017;26(3):293-301. doi:10.1111/jsr.12505
35. de Oliveira AM, Radanovic M, de Mello PC, et al. Nonpharmacological Interventions to Reduce Behavioral and Psychological Symptoms of Dementia: A Systematic Review. *Biomed Res Int.* 2015;2015:218980. doi:10.1155/2015/218980
36. Orfield SJ. Dementia Environment Design in Seniors Housing: Optimizing Resident Perception and Cognition. Seniors Housing & Care Journal. 2015;53:58-69.

14

Questions