

Effective Hospital-based Post-fall Interventions for Older Adults

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Question:	What are the acute care hospital-based post-fall effective interventions for older adults (>65) / patients that can change knowledge, attitudes, behaviour (as shown in 3 month follow-up) and prevent recidivism?
Purpose:	To support organizational decision making in developing an evidence-based in-hospital intervention/education for patients who've screened positive on a falls risk assessment and to change knowledge/ attitudes/ behavior in patients as well as prevent recidivism
Summary:	Effective fall prevention education interventions with older adults in hospital settings are those taking a tailored multifactorial approach when providing fall prevention information, education, risk reduction, and structured activity programs for patients, and providing post-discharge supports for continued fall prevention activities. Studies of hospital-based patient education intervention on fall risks and prevention showed varying degrees of behaviour change or sustained knowledge related to the intensity of education.

Summary of Evidence

Two strong systematic reviews (SRs) on interventions for fall prevention [7, 8] reinforce previous findings that tailored education and activity interventions for older adults at risk for falls are effective in hospital settings, and selective or tailored multifactorial interventions can lower risk of falls.

The RNAO Getting Started Toolkit and Best Practices Guidelines [2, 3] on preventing falls include universal falls precautions and guidance on patient-centred interventions and implementation of organizational policies and system-level supports. Based on peer reviewed literature since 2007, structured exercise programmes are the most effective component for preventing, or reducing rate of falls in older adults [9-11, 14]. Other components of multifactorial interventions in acute care include education, individualized care plans, environment assessment and inter-agency supports for post-discharge fall prevention activities [9-17].

Patient-centred and engaged fall prevention initiatives have had few strong trials and systematic reviews measuring effectiveness or describing key components for short-term in-patient interventions than community-based fall prevention [6, 8]. However good evidence from SRs [4, 5, 7], best practice guidelines [3] and toolkits [1, 2, 10] support hospital staff fall reduction initiatives. Australian programs are providing good evidence that intensive face-to-face education and use of multi-media materials result in more knowledge gain and awareness of fall risks than educational material alone in the hospital setting [7, 11, 12, 15]. Cautions about sustained behaviour change or uptake of fall prevention strategies post-discharge, and falls recidivism emphasize need for more research and evidence from acute care and outpatient fall prevention/reduction interventions [12, 13, 16, 17]

Fall Prevention Guidelines and Best Practices

1. Agency for Healthcare Research and Quality. **Preventing falls in hospitals. a toolkit for improving quality of care.** 2013 (updated 2018). Rockville, MD.

<http://www.ahrq.gov/professionals/systems/hospital/fallpxtoolkit/index.html>

Summary: Focuses on what's needed to develop, implement, and sustain a fall prevention program.

2. Canadian Patient Safety Institute & RNAO. **Reducing Falls and Injuries from Falls Getting Started Kit.** 2013. <http://www.patientsafetyinstitute.ca/en/toolsResources/Pages/Falls-resources-Getting-Started-Kit.aspx>

Summary: Comprehensive guide, containing fall-related tools, resources and experiences that reflect long-term care, acute care and home health care practice. Note S..A.F.E 'Engage' section for person-centred fall education content recommendations.

3. Registered Nurses Association of Ontario (RNAO). **Preventing Falls and Reducing Injury from Falls (4th ed.).** 2017. Toronto, ON. <http://rnao.ca/bpg/guidelines/prevention-falls-and-fall-injuries>

Summary: The revised best practice guidelines based on literature reviews, expert panels and stakeholders include universal falls precautions for hospitals, community and long-term care. The RNAO BPG includes updated information for assessments, individualized care plans, effective interventions and organizational implementation.

Systematic Reviews on Fall Prevention Interventions [strong ratings]

4. Avanecean D, Calliste D, Contreras, et al. **Effectiveness of patient-centered interventions on falls in the acute care setting compared to usual care: A systematic review** JBI Database of Systematic Reviews and Implementation Reports. 2017;15(12):3006-3048. [Abstract](#). [Evidence Summary](#)

Summary: The review found some studies showed that using patient-specific fall-prevention strategies were effective in reducing falls, however no specific combination of approaches were described.

5. Cameron ID, Dyer SM, Panagoda CE, et al. **Interventions for preventing falls in older people in care facilities and hospitals.** Cochrane Database Syst Rev. 2018 Sep;9:CD005465. doi:10.1002/14651858.CD005465.pub4. [PMC6148705 Full Text](#)

Summary: Update of 2012 Cochrane review finds evidence multifactorial interventions may reduce rate of falls in hospitals. Note that one trial an educational session by a trained research nurse targeting individual fall risk factors in patients at high risk of falling in acute medical wards achieved a significant reduction in risk of falling.

6. Guirguis-Blake JM, Michael YL, Perdue LA, Coppola EL, & Beil TL. (2018). **Interventions to prevent falls in older adults: Updated evidence report and systematic review for the US preventive services task force.** JAMA, 319(16), 1705-1716. [PMID:29710140](#)
doi:10.1001/jama.2018.3097 ([full-text available](#))

Summary: Multifactorial and exercise interventions were associated with fall-related benefit, with evidence most consistent across multiple fall-related outcomes for exercise.

7. Lee DC, Pritchard E, McDermott F, Haines TP. **Falls prevention education for older adults during and after hospitalization: A systematic review and meta-analysis.** Health Educ J 2014;73:530–44. [Full text](#) [Evidence Summary](#)

This systematic review found that falls prevention patient education programs were effective in reducing fall rates in hospital inpatients and post-discharge populations. Patient education generally increased knowledge about falls and awareness of prevention however limited behavioural change. Recommends the use of intensive face-to-face patient education with multimedia materials instead of provision of written information alone.

8. Tricco AC, Thomas SM, Veroniki AA, Hamid JS, et al. **Comparisons of interventions for preventing falls in older adults: a systematic review and meta-analysis.** JAMA. 2017 Nov 7;318(17):1687-1699. doi: 10.1001/jama.2017.15006. PMID: 29114830, [full text: PMC5818787](#)

Summary: The network meta-analysis identified combinations of interventions likely to be more effective than usual care for preventing injurious falls. Exercise alone and various combinations of interventions (e.g. combined exercise, vision assessment and treatment, and environmental assessment and modification) were associated with lower risk of injurious falls compared with usual care.

Hospital Fall Prevention Patient Education Interventions

9. Cumming RG, Sherrington C, Lord SR, et al. **Cluster randomised trial of a targeted multifactorial intervention to prevent falls among older people in hospital.** British Medical Journal, 2008: 336: 758–60. [Full text.](#)

Summary: A nurse and physiotherapist provided a targeted multifactorial intervention for elderly patients staying median of 7 days with a risk assessment, staff and patient education, drug review, modification of environments, an exercise program, and alarms. The program was not effective with short stay patients.

10. Dykes PC, Carroll DL, Hurley A, et al. **Fall prevention in acute care hospitals: A randomized trial.** JAMA: Journal of the American Medical Association, 2010: 304: 1912–18. [Full text PMC3107709/](#)

Summary: a fall prevention tool kit (FPTK) using health information technology (HIT) significantly decreased patient falls in hospitals. The FPTK produced bed posters composed of brief text with an icon, patient education handouts, and plans of care, all communicating patient-specific alerts. See [AHRQ Hospital FP toolkit 2013](#).

11. Haines TP, Hill AM, Hill KD, McPhail S, et al. **Patient education to prevent falls among older hospital inpatients: a randomized controlled trial.** Arch Intern Med. 2011 Mar 28; 171(6):516-24. [Abstract](#)

Summary: Multimedia patient education with trained health professional follow-up reduced falls among patients with intact cognitive function admitted to a range of hospital wards.

12. Haines TP, Day L, Hill KD, et al. **"Better for others than for me": a belief that should shape our efforts to promote participation in falls prevention strategies.** Arch Gerontol Geriatr 2014;59:136–44. [Abstract PMID](#)

Summary: A cross sectional survey of 394 older adult Australians found that to promote participation in evidence-based falls prevention strategies may need to convince older adults that they are at risk of falls and that what activities they are already doing may not provide adequate protection against falls in order to have greater effect.

13. Hill AM, Hoffmann T, McPhail S, et al. **Evaluation of the sustained effect of inpatient falls prevention education and predictors of falls after hospital discharge--follow-up to a randomized controlled trial.** J Gerontol A Biol Sci Med Sci 2011;66:1001–12. [doi:10.1093/gerona/glr085 Abstract PMID21743091](#)

Summary: A prospective cohort who received hospital falls prevention patient education were followed 6 months post-discharge. Education that effectively reduced inpatient falls appears to have no ongoing protective effect.

14. Lee SH, & Kim HS. (2017). **Exercise interventions for preventing falls among older people in care facilities: A meta-analysis.** *Worldviews on Evidence-Based Nursing*, 14(1), 74-80. [Abstract PMID27984675](#)

Summary: Programs that combine exercise and other fall-prevention strategies are an effective way to reduce falls in older adults living in care facilities. The review supports developing evidence-based exercise intervention protocols for older people living in care facilities.

Pilots and Protocols for tailored falls prevention patient education programs

15. Hill AM, Etherton-Beer C, Haines TP.. **Tailored education for older patients to facilitate engagement in falls prevention strategies after hospital discharge--a pilot randomized controlled trial.** *PLoS One* 2013;8:e63450. [Full text PMC3662677](#)

Summary: This tailored falls prevention patient education in hospital was received positively, resulted in increased engagement in falls prevention strategies after discharge, and is feasible to deliver to older hospital patients

16. Hill AM, Etherton-Beer C, McPhail SM, et al. **Reducing falls after hospital discharge: a protocol for a randomised controlled trial evaluating an individualised multimodal falls education programme for older adults.** *BMJ Open* 2017;7:e013931.

17. Naseri C, McPhail SM, Netto J, et al. **Impact of tailored falls prevention education for older adults at hospital discharge on engagement in falls prevention strategies post-discharge: protocol for a process evaluation.** *BMJ Open*. 2018 Apr 20;8(4):e020726. doi: 10.1136/bmjopen-2017-020726. PMID29678985 [Full Text PMC5914781](#)

Summary: This protocol describes evaluation plan of an Australian program providing tailored falls prevention education to older patients at and immediately after hospital discharge and how it affects engagement in falls prevention strategies in the 6-months postdischarge period.

Scanned Citations assessed as not directly relevant

Albert SM, King J, Boudreau R, Prasad T, Lin CJ, Newman AB. **Primary prevention of falls: effectiveness of a statewide program.** *Am J Public Health*. 2014;104(5):e77-84.

Batchelor FA, Hill KD, Mackintosh SF, Said CM, Whitehead CH. **Effects of a multifactorial falls prevention program for people with stroke returning home after rehabilitation: a randomized controlled trial.** *Arch Phys Med Rehabil*. 2012;93(9):1648-55. [Abstract](#)

This multifactorial falls prevention program was not effective in reducing falls in people with stroke who are at risk of falls nor was it more effective than usual care in improving gait, balance, and strength in people with stroke.

Dorresteyn TA, Rixt Zijlstra GA, Van Eijs YJ, Vlaeyen JW, Kempen GI. **Older people's preferences regarding programme formats for managing concerns about falls.** *Age Ageing*. 2012;41(4):474-81.

Greysen SR, Harrison JD, Kripalani S, et al. **Understanding patient centred readmission factors: a multi-site, mixed-methods study.** *BMJ Qual Saf* 2017;26:33-41.

Harper KJ; Barton AD; Arendts G; Edwards DG; Petta AC; Celenza.. **Controlled clinical trial exploring the impact of a brief intervention for prevention of falls in an emergency department.** *Emergency Medicine Australasia*. 2017; 29(5):524-530..

Heinrich S; Rapp K; Stuhldreher N; Rissmann U; Becker C; Konig HH. **Cost-effectiveness of a multifactorial fall prevention program in nursing homes..** *Osteoporosis International*. 2013; 24(4):1215-23.

Matchar DB, Duncan PW, Lien CT, Ong MEH, Lee M, Gao F, Sim R, Eom K. **Randomized controlled trial of screening, risk modification, and physical therapy to prevent falls among the elderly recently discharged from the emergency department to the community: The Steps to Avoid Falls in the Elderly study.** *Arch Phys Med Rehabil*. 2017; 98(6):1086-1096. [Abstract: PMID:28202303](#)

Mihaljcic T, Haines TP, Ponsford JL, et al.. **Investigating the relationship between reduced self-awareness of falls risk, rehabilitation engagement and falls in older adults.** *Arch Gerontol Geriatr* 2017;69:38–44. [Abstract](#)

Modig S, Kristensson J, Troein M, Brorsson A, Midlov P. **Frail elderly patients' experiences of information on medication.** A qualitative study. *BMC geriatr*. 2012;1246.

Reed-Jones RJ, Dorgo S, Hitchings MK, Bader JO. **Vision and agility training in community dwelling older adults: incorporating visual training into programs for fall prevention.** *Gait Posture*. 2012;35(4):585-9.

Robinson L, Newton JL, Jones D, Dawson P. **Promoting self-management and adherence with strength and balance training for older people with long-term conditions: a mixed-methods study.** *J Eval Clin Pract*. 2014 ;20(4):318-26.

Vivrette RL, Rubenstein LZ, Martin JL, Josephson KR, Kramer BJ. **Development of a fall-risk self-assessment for community-dwelling seniors.** *J Aging Phys Activity*. 2011;19(1):16-29.

Vlaeyen E, Coussement J, Leysens G, Van der Elst E et al. **Characteristics and effectiveness of fall prevention programs in nursing homes: a systematic review and meta-analysis of randomized controlled trials.** *J Am Geriatr Soc*. 2015 Feb;63(2):211-21. doi: 10.1111/jgs.13254 PMID: 25641225

Zavotsky K, Hussey J, Easter K, Incalcaterra E. **Fall safety agreement: a new twist on education in the hospitalized older adult.** *Clin Nurse Spec*. 2014 ;28(3):168-72.[Abstract](#)

This retrospective, quantitative, exploratory descriptive study suggests that providing appropriate structured fall education, in the form of a safety agreement, regardless of age, may reduce the degree of injury sustained.

Search Strategy & terms

Question: What are the clinical/acute care hospital-based post-fall [effective] interventions for older adults (>65) / patients that can change knowledge, attitudes, behaviour (as shown in 3 month followup) and prevent recidivism?

Dates Searched: May 18, 22, 31; June 12, 22, 24, 25

	Population	Intervention	Comparison	Outcome
Clinical Question	Older adults/senior in acute care hospital	Post-fall education, screening,	Usual care	Knowledge, attitudes, behaviour on falls risk prevent repeat falls
Synonyms/ keywords	Older adults Senior, elderly Hospital	in-hospital education, patient		
MeSH headings	Aged Inpatients	*Accidental Falls / pc [Prevention & Control] Hospitals Education Patient education as topic		Accidental Falls/ prevention & control*

Sources and Results

Level of Evidence	Source	Total No. Results
Summaries & Guidelines	Dynamed, Clinical Evidence, NGC (guidelines – RNAO, CMA, COT, NICE, USPSTF, CDC)	14 (4 relevant)
Syntheses	Health Evidence & Optimal Aging Portal Evidence-Based Nursing & Medicine Cochrane	8 (4 relevant)
Single studies -	PubMed MEDLine CINAHL McMaster PLUS: Evidence Updates, Nursing, Rehab	99 (from 19434) Reduced to 22

Primary relevance assessment – title and abstract screening: total after 22

Relevance criteria – in-hospital, education strategies, 60+ years, discharge.

Exclusion: staff education; in-hospital falls; community-based studies (w/out hospital); protocols, pilots

Quality assessment, measures/rating of effectiveness of systematic reviews minimum 3/5.

I scaled back on a full literature search, quality assessment and measures/rating of effectiveness of in-hospital fall prevention education interventions to focus in on trials of patient education programs.