



Canadian Agency for
Drugs and Technologies
in Health

RAPID RESPONSE REPORT: SUMMARY OF ABSTRACTS



TITLE: Fall Prevention Strategies for Adult Patients: Comparative Effectiveness, Cost-Effectiveness, and Guidelines

DATE: 15 January 2016

RESEARCH QUESTIONS

1. What is the comparative effectiveness of fall prevention strategies, versus fall risk assessments alone or fall risk assessments and fall prevention strategies for adult patients?
2. What is the cost-effectiveness of fall prevention strategies for adult patients?
3. What are the evidence-based guidelines regarding the use of fall prevention strategies, or fall risk assessment, or both, in adult patients?

KEY FINDINGS

Nine economic evaluations and two evidence-based guidelines were identified regarding fall prevention strategies for adult patients.

METHODS

A limited literature search was conducted on key resources including Ovid Medline, PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. To address question one, methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, and non-randomized studies. To address question two, methodological filters were applied to limit retrieval to economic studies. To address question three, methodological filters were applied to limit retrieval to guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2013 and January 5, 2016. Internet links were provided, where available.

Disclaimer: The Rapid Response Service is an information service for those involved in planning and providing health care in Canada. Rapid responses are based on a limited literature search and are not comprehensive, systematic reviews. The intent is to provide a list of sources of the best evidence on the topic that CADTH could identify using all reasonable efforts within the time allowed. Rapid responses should be considered along with other types of information and health care considerations. The information included in this response is not intended to replace professional medical advice, nor should it be construed as a recommendation for or against the use of a particular health technology. Readers are also cautioned that a lack of good quality evidence does not necessarily mean a lack of effectiveness particularly in the case of new and emerging health technologies, for which little information can be found, but which may in future prove to be effective. While CADTH has taken care in the preparation of the report to ensure that its contents are accurate, complete and up to date, CADTH does not make any guarantee to that effect. CADTH is not liable for any loss or damages resulting from use of the information in the report.

Copyright: This report contains CADTH copyright material and may contain material in which a third party owns copyright. **This report may be used for the purposes of research or private study only.** It may not be copied, posted on a web site, redistributed by email or stored on an electronic system without the prior written permission of CADTH or applicable copyright owner.

Links: This report may contain links to other information available on the websites of third parties on the Internet. CADTH does not have control over the content of such sites. Use of third party sites is governed by the owners' own terms and conditions.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

SELECTION CRITERIA

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria	
Population	Adult patients in health care facilities or community programs (e.g., acute care, long-term care, community-based or outpatient programs, home care)
Intervention	Fall prevention strategies without fall risk assessments
Comparator	Q1: Fall risk assessments alone, or in combination with fall prevention strategies/interventions Q2: Any fall prevention or fall risk assessment strategies Q3: No comparator required
Outcomes	Q1: Clinical effectiveness, harms, clinical benefit Q2: Cost-effectiveness Q3: Guidelines and recommendations regarding best practice (e.g., fall prevention strategies be done alone or in combination with fall risk assessments)
Study Designs	Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, economic evaluations, and evidence-based guidelines

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, economic evaluations, and evidence-based guidelines.

Nine economic evaluations and two evidence-based guidelines were identified regarding fall prevention strategies for adult patients. No relevant health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, or non-randomized studies were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

No relevant literature was identified on the comparative effectiveness of fall prevention strategies, versus fall risk assessments alone or fall risk assessments and fall prevention strategies for adult patients.

Nine economic evaluations¹⁻⁹ were identified regarding the cost-effectiveness of fall prevention strategies for adult patients. The nine economic evaluations¹⁻⁹ are summarized in Table 2. Most of the economic evaluations^{1-6, 8-9} suggested the use of fall prevention programs to save costs.

Two evidence-based guidelines¹⁰⁻¹¹ were identified regarding the use of fall prevention strategies, or fall risk assessment, or both, in adult patients. One of the evidence-based guidelines¹⁰ recommends the use of physical therapists to screen patients and manage the risk of falling in older adults. The second evidence-based guideline¹¹ recommends nurses identify and provide interventions to patients who may be at higher risk of falling.

Table 2: Summary of Included Economic Evaluations

Author, Year	Type of Evaluation	Patient Population	Setting	Main Findings
Carande-Kulis, 2015 ¹	Cost-benefit analysis	Patients aged 65 and older	NR	The fall prevention interventions in this study delivered positive net benefits—the benefits covered the implementation costs and surpassed direct program delivery costs.
Church, 2015 ²	Markov model	Older patients (age not specified)	RACFs	This study found the use of vitamin D treatment in older adults living in RACFs was a cost-effective intervention that resulted in a reduction of falls and health care costs.
Frag, 2015 ³	Markov model	Older patients (age not specified)	NR	This study found that a public health fall preventions program was a cost-effective option.
Howland, 2015 ⁴	Cost-savings analysis	Older patients (age not specified)	NR	According to the study’s authors, if older adult patients who presented in emergency departments with a fall-related injury were treated with evidence-based fall prevention programs, successive falls and related treatment costs could be reduced.
Muller, 2015 ⁵	Markov model	Elderly patients (age not specified)	Nursing homes	The study suggested a multifactorial fracture prevention program as a cost-effective way to prevent fractures in nursing home residents.
Poole, 2015 ⁶	Markov model	Patients aged 60 and older	NR	According to the study’s authors, the use of vitamin D treatment to prevent falls in the elderly would result in significant cost-savings and reduced mortality.
Spetz, 2015 ⁷	Cost-savings analysis	NR	Hospitals	The study concluded that fall prevention programs have the possibility of reducing treatment cost; however, there are many scenarios where the costs of these programs were higher than cost savings.
Haines, 2013 ⁸	Cost-effectiveness analysis	Acute and rehabilitation inpatients	Hospitals	According to the study’s authors, the fall prevention program will prevent falls and reduce costs for a health service, as long as 4% or more of patients are cognitively intact under usual care.
Heinrich, 2013 ⁹	Cost-effectiveness analysis	Patients aged 65 and older	Nursing homes	According to the study’s authors, the multifactorial fall prevention program may result in cost savings within the first year.

NR = Not Reported; RACFs = Residential Aged Care Facilities; ROI = Return on Investment

REFERENCES SUMMARIZED

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

No literature identified.

Randomized Controlled Trials

No literature identified.

Non-Randomized Studies

No literature identified.

Economic Evaluations

1. Carande-Kulis V, Stevens JA, Florence CS, Beattie BL, Arias I. A cost-benefit analysis of three older adult fall prevention interventions. *J Safety Res.* 2015 Feb;52:65-70.
[PubMed: PM25662884](#)
2. Church JL, Haas MR, Goodall S. Cost Effectiveness of falls and injury prevention strategies for older adults living in residential aged care facilities. *Pharmacoeconomics.* 2015 Dec;33(12):1301-10.
[PubMed: PM26242882](#)
3. Farag I, Howard K, Ferreira ML, Sherrington C. Economic modelling of a public health programme for fall prevention. *Age Ageing [Internet].* 2015 May [cited 2016 Jan 14]; 44(3):409-14. Available from:
<http://ageing.oxfordjournals.org/content/44/3/409.full.pdf+html>
[PubMed: PM25523025](#)
4. Howland J, Shankar KN, Peterson EW, Taylor AA. Savings in acute care costs if all older adults treated for fall-related injuries completed matter of balance. *Inj Epidemiol [Internet].* 2015 [cited 2016 Jan 14];2(1):25. Available from:
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4594092>
[PubMed: PM26457239](#)
5. Muller D, Borsi L, Stracke C, Stock S, Stollenwerk B. Cost-effectiveness of a multifactorial fracture prevention program for elderly people admitted to nursing homes. *Eur J Health Econ.* 2015 Jun;16(5):517-27.
[PubMed: PM24818587](#)
6. Poole CD, Smith J, Davies JS. Cost-effectiveness and budget impact of Empirical vitamin D therapy on unintentional falls in older adults in the UK. *BMJ Open [Internet].* 2015 [cited 2016 Jan 14];5(9):e007910, 2015. Available from:
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4593147>
[PubMed: PM26419680](#)

7. Spetz J, Brown DS, Aydin C. The economics of preventing hospital falls: demonstrating ROI through a simple model. *J Nurs Adm.* 2015 Jan;45(1):50-7.
[PubMed: PM25479175](#)
8. Haines TP, Hill AM, Hill KD, Brauer SG, Hoffmann T, Etherton-Beer C, et al. Cost effectiveness of patient education for the prevention of falls in hospital: economic evaluation from a randomized controlled trial. *BMC Med* [Internet]. 2013 [cited 2016 Jan 26];11:135. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3668305>
[PubMed: PM23692953](#)
9. Heinrich S, Rapp K, Stuhldreher N, Rissmann U, Becker C, Konig HH. Cost-effectiveness of a multifactorial fall prevention program in nursing homes. *Osteoporos Int.* 2013 Apr;24(4):1215-23.
[PubMed: PM22806557](#)

Guidelines and Recommendations

10. Avin KG, Hanke TA, Kirk-Sanchez N, McDonough CM, Shubert TE, Hardage J, et al. Management of falls in community-dwelling older adults: clinical guidance statement from the Academy of Geriatric Physical Therapy of the American Physical Therapy Association. *Phys Ther* [Internet]. 2015 Jun [cited 2016 Jan 14];95(6):815-34. Available from; <http://ptjournal.apta.org/content/95/6/815.full.pdf+html>
[PubMed: PM25573760](#)
11. Jung D, Shin S, Kim H. A fall prevention guideline for older adults living in long-term care facilities. *Int Nurs Rev.* 2014 Dec;61(4):525-33.
[PubMed: PM25212122](#)

PREPARED BY:

Canadian Agency for Drugs and Technologies in Health
Tel: 1-866-898-8439
www.cadth.ca

APPENDIX – FURTHER INFORMATION:

Review Articles

12. Holte HH, Underland V, Hafstad E. Review of systematic reviews on prevention of falls in institutions [Internet]. Oslo (NO): Norwegian Knowledge Centre for the Health Services; 2015. [cited 2016 Jan 14]. (Rapport fra Kunnskapssenteret nr. 13 – 2015). Available from: <http://www.kunnskapssenteret.no/en/publications/Review+of+systematic+reviews+on+prevention+of+falls+in+institutions;jsessionid=2051266DF6D4A9B7C3443A78B9FF59A0>

Subscription Based Access

13. Fall prevention (older person): interventions. Adelaide (AU): The Joanna Briggs Institute; 2015.