

CADTH RAPID RESPONSE REPORT: SUMMARY OF ABSTRACTS

Nutritional and Exercise Interventions for the Delayed Progression or Reversal of Frailty: Cost-Effectiveness

Service Line: Rapid Response Service
Version: 1.0
Publication Date: June 8, 2018
Report Length: 6 Pages

Authors: Michelle Clark, Charlene Argáez

Cite As: Nutritional and exercise interventions for the delayed progression or reversal of frailty: cost-effectiveness. Ottawa: CADTH; 2018 Jun. (CADTH rapid response report: summary of abstracts).

Acknowledgments:

Disclaimer: The information in this document is intended to help Canadian health care decision-makers, health care professionals, health systems leaders, and policy-makers make well-informed decisions and thereby improve the quality of health care services. While patients and others may access this document, the document is made available for informational purposes only and no representations or warranties are made with respect to its fitness for any particular purpose. The information in this document should not be used as a substitute for professional medical advice or as a substitute for the application of clinical judgment in respect of the care of a particular patient or other professional judgment in any decision-making process. The Canadian Agency for Drugs and Technologies in Health (CADTH) does not endorse any information, drugs, therapies, treatments, products, processes, or services.

While care has been taken to ensure that the information prepared by CADTH in this document is accurate, complete, and up-to-date as at the applicable date the material was first published by CADTH, CADTH does not make any guarantees to that effect. CADTH does not guarantee and is not responsible for the quality, currency, propriety, accuracy, or reasonableness of any statements, information, or conclusions contained in any third-party materials used in preparing this document. The views and opinions of third parties published in this document do not necessarily state or reflect those of CADTH.

CADTH is not responsible for any errors, omissions, injury, loss, or damage arising from or relating to the use (or misuse) of any information, statements, or conclusions contained in or implied by the contents of this document or any of the source materials.

This document may contain links to third-party websites. CADTH does not have control over the content of such sites. Use of third-party sites is governed by the third-party website owners' own terms and conditions set out for such sites. CADTH does not make any guarantee with respect to any information contained on such third-party sites and CADTH is not responsible for any injury, loss, or damage suffered as a result of using such third-party sites. CADTH has no responsibility for the collection, use, and disclosure of personal information by third-party sites.

Subject to the aforementioned limitations, the views expressed herein are those of CADTH and do not necessarily represent the views of Canada's federal, provincial, or territorial governments or any third party supplier of information.

This document is prepared and intended for use in the context of the Canadian health care system. The use of this document outside of Canada is done so at the user's own risk.

This disclaimer and any questions or matters of any nature arising from or relating to the content or use (or misuse) of this document will be governed by and interpreted in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein, and all proceedings shall be subject to the exclusive jurisdiction of the courts of the Province of Ontario, Canada.

The copyright and other intellectual property rights in this document are owned by CADTH and its licensors. These rights are protected by the Canadian *Copyright Act* and other national and international laws and agreements. Users are permitted to make copies of this document for non-commercial purposes only, provided it is not modified when reproduced and appropriate credit is given to CADTH and its licensors.

About CADTH: CADTH is an independent, not-for-profit organization responsible for providing Canada's health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.

Research Questions

1. What is the cost-effectiveness of nutritional interventions for the delayed progression or reversal of frailty?
2. What is the cost-effectiveness of exercise interventions for the delayed prevention or reversal of frailty?

Key Findings

One systematic review and four economic evaluations were identified regarding the cost-effectiveness of nutritional or exercise interventions for the delayed progression or reversal of frailty.

Methods

A limited literature search was conducted on key resources 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. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, and meta-analyses, and economic studies. The search was limited to English language documents published between January 1, 2013 and May 29, 2018. Internet links were provided, where available.

Selection Criteria

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

Table 1: Selection Criteria

Population	Patients with frailty (living in the community, living in long term care, or in acute care)
Intervention	Q1: Nutritional interventions Q2: Exercise interventions
Comparator	Usual Care
Outcomes	Cost-effectiveness, cost utility, cost per quality-adjusted life year, healthcare dollars saved, health spending
Study Designs	Health technology assessments, systematic reviews, meta-analyses, economic evaluations

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 economic evaluations.

One systematic review and four economic evaluations were identified regarding the cost-effectiveness of nutritional or exercise interventions for the delayed progression or reversal of frailty. No relevant health technology assessments were identified.

Additional references of potential interest are provided in the appendix.

Overall Summary of Findings

One systematic review¹ was identified regarding the cost-effectiveness of nutritional or exercise interventions for the delayed progression or reversal of frailty. The authors of the systematic review evaluated the clinical and cost-effectiveness of reablement versus home care or waitlist for older adults who were at risk for functional decline.¹ They found that reablement was less costly than usual care but the conclusion was based on only one study that was determined to be of very low quality.¹

Four economic evaluations²⁻⁵ were identified. A cost-effectiveness model² of a physiotherapy-based intervention for frail older persons found an incremental cost per quality-adjusted life year (QALY) gained of \$8129 (Australian dollars) as compared with usual care; however, the model also identified a probability that usual care would be more effective and less costly than the physiotherapy intervention.²

A Japanese study³ assessed the cost-effectiveness of a community-based nutrition and oral health intervention for the prevention of disability in the frail elderly. Over the 28 months of the study, the intervention was found to be less expensive than usual care but the difference in cost was not statistically significant.³ A cost-utility analysis of the INTERACTIVE trial⁵ compared the management of elderly patients with a hip fracture by a physical therapist and dietician with social visits for six months. The administration costs between the intervention and control were not significantly different.⁵ There was a higher mean gain in QALYs in the intervention group but this difference was also not statistically significant.⁵ In another economic evaluation, a HomeHealth promotion intervention was compared with usual treatment for community-dwelling adults with mild frailty.⁴ Significantly better functioning, better grip strength, reduced psychological distress, and increased capability-adjusted life years were achieved after six months with the intervention.⁴ The difference in costs between the HomeHealth intervention and usual treatment were not reported in the abstract but the authors did indicate that the intervention was administered at a "modest cost."⁴

References Summarized

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

1. Cochrane A, Furlong M, McGilloway S, Molloy DW, Stevenson M, Donnelly M. Time-limited home-care reablement services for maintaining and improving the functional independence of older adults. *Cochrane Database Syst Rev*; 2016 Oct. <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD010825.pub2/full>
Accessed 2018 Jun 7

Economic Evaluations

2. Karnon J, Afzali HHA, Putro GVAA, Thant PW, Dompok A, Cox I, et al. A Cost-effectiveness model for frail older persons: development and application to a physiotherapy-based intervention. *Appl Health Econ Health Policy*. 2017 Oct;15(5):635-645.
[PubMed: PM28349499](#)
3. Tomata Y, Watanabe T, Sugiyama K, Zhang S, Sugawara Y, Tsuji I. Effects of a community-based program for oral health and nutrition on cost-effectiveness by preventing disability in Japanese frail elderly: a quasi-experimental study using propensity score matching. *J Am Med Dir Assoc*. 2017 Aug 1;18(8):678-685.
[PubMed: PM28412165](#)
4. Walters K, Frost R, Kharicha K, Avgerinou C, Gardner B, Ricciardi F, et al. Home-based health promotion for older people with mild frailty: the HomeHealth intervention development and feasibility RCT. *Health Technology Assessment*. 2017 Dec;21(73):1-128.
[PubMed: PM29214975](#)
5. Milte R, Miller MD, Crotty M, Mackintosh S, Thomas S, Cameron ID, et al. Cost-effectiveness of individualized nutrition and exercise therapy for rehabilitation following hip fracture. *J Rehab Med*. 2016 Apr;48(4):378-85.
[PubMed: PM26998949](#)

Appendix — Further Information

Previous CADTH Reports

6. Diabetic diets for frail elderly long-term care residents with type II diabetes mellitus: a review of guidelines. Ottawa (ON): CADTH; 2015 Jun.
https://www.cadth.ca/sites/default/files/pdf/htis/june-2015/RC0668_Diabetic%20diets%20for%20FE%20LTCR_Final.pdf
 Accessed 2018 Jun 8

Economic Evaluations – Intervention Unclear and Alternative Population

7. Bleijenberg N, Drubbel I, Neslo RE, Schuurmans MJ, Ten Dam VH, Numans ME, et al. Cost-Effectiveness of a proactive primary care program for frail older people: a cluster-randomized controlled trial. J Am Med Dir Assoc. 2017 Dec 1;18(12):1029-1036.e3.
[PubMed: PM28801235](#)

Evidence-Based Guidelines

8. NICE. Dementia, disability and frailty in later life: mid-life approaches to delay or prevent onset. London, England: National Institute for Health and Care Excellence (NICE); 2015 Oct. <https://www.nice.org.uk/guidance/ng16/resources/dementia-disability-and-frailty-in-later-life-midlife-approaches-to-delay-or-prevent-onset-pdf-1837274790085>
 Accessed 2018 Jun 7

Review Articles

9. Wilson MG. Rapid synthesis: examining the effectiveness and cost-effectiveness of rehabilitation-care models for frail seniors. Hamilton (ON): McMaster Health Forum, McMaster University; 2013 Sep. <https://www.mcmasterforum.org/docs/default-source/product-documents/rapid-responses/examining-the-effectiveness-and-cost-effectiveness-of-rehabilitation-care-models-for-frail-seniors.pdf?sfvrsn=0>
 Accessed 2018 Jun 7

Additional References

10. EnhanceFitness: evidence-based physical activity program for older adults. Arlington (VA): National Center for Healthy Aging ; 2017 Jul. <https://www.ncoa.org/wp-content/uploads/EnhanceFitness-Program-Summary.pdf>
 Accessed 2018 Jun 7