

Key Literature on Seniors Falls Prevention (2005)

Background

At the request of Alberta seniors falls prevention stakeholders, the Alberta Centre for Injury Control and Research (ACICR) conducted a literature search in Winter 2004 to identify key literature surrounding seniors and falls prevention. The following cited literature is a result of this search and ACICR will house hardcopies of all the literature listed.

Methodology

A review of the literature by keyword search (subject, title headings, and all text) was conducted and limits were set to search only peer-reviewed literature on the following databases:

- I. Cochrane Reviews (1800-2004)
- II. Additional EBM Databases
 - i) DARE, CENTRAL (no date)
 - ii) ACP Journal Club (no date)
 - iii) BMJ Clinical Evidence (no date)
 - iv) Trip Database (no date)
- III. Medline (1966-2004)

The results of this search were derived from the following keywords: “senior(s),” “fall(s),” “prevent(s/ed/ion/ing),” “injur(ed/es/y/ies),” “control,” “osteoporosis,” and “best practice(s).” Additional search parameters were added such as “elder(ly)” and “age(d).”

Keywords were entered into the various search fields of the cited databases. The results of these searches are presented chronologically and alphabetically under the headings of Cochrane Reviews and Other Systematically Reviewed Literature. Additional literature identified outside of these databases included books, reports, documents, and web links similarly presented under Other Sources. Because the Cochrane systematic reviews are considered to represent the highest quality of clinical evidence sources, they have been separated from the rest of the identified key literature.

Key literature identified in Medline and the additional EBM database searches is included together under the heading of “Other Systematically Reviewed Literature.”

Searches conducted outside the Cochrane Library were limited to “systematically reviewed” and where possible “full text” literature. However, we cannot comment on the degree of scientific rigor or strength of the systematic review.

Any duplications across databases have been removed.

Key Literature Identified: Cochrane Reviews

Gillespie, L.D., Gillespie, W.J., Robertson, M.C., Lamb, S.E., Cumming, R.G., Rowe, B.H. (2001/2004). Interventions for preventing falls in elderly people (Cochrane Review). *The Cochrane Library, Issue 3*. Chichester, UK: John Wiley & Sons, Ltd.

Gillespie, W.J., Avenell, A., Henry, D.A., O'Connell, D.L., Robertson, J. (2004). Vitamin D and vitamin D analogues for preventing fractures associated with involutional and post-menopausal osteoporosis. *Cochrane Database of Systematic Reviews*.

Latham, N., Anderson, C., Bennett, D., Stretton, C. (2004). Progressive resistance strength training for physical disability in older people (Cochrane Review). *The Cochrane Library, Issue 3*. Chichester, UK: John Wiley & Sons, Ltd.

Lyons, R.A., Sander, L.V., Weightman, A.L., Patterson, J., Jones, S.A., Lannon, S., Rolfe, B., Kemp, A., Johansen, A. (2004). Modification of the home environment for the reduction of injuries (Cochrane Review). *The Cochrane Library, Issue 3*. Chichester, UK: John Wiley & Sons, Ltd.

Parker M.J., Gillespie L.D., Gillespie W.J. (2004). Hip protectors for preventing hip fractures in the elderly. *The Cochrane Database of Systematic Reviews*, Issue 3.

Neutel, C.I., Perry, S., Maxwell, C. (2002). Medication use and risk of falls. *Pharmacoepidemiology and Drug Safety*, 11: 97-104

Gillespie, W.J., Avenell, A., Henry, D.A., O'Connell, D.L., Robertson, J. (2000). Vitamin D and vitamin D analogues for preventing fractures associated with involutional and post-menopausal osteoporosis. *Cochrane Database of Systematic Reviews*, (1):CD000227.

Lowery, K., Buri, H., Ballard, C. (2000). What is the prevalence of environmental hazards in the homes of dementia sufferers and are they associated with falls? *International Journal of Geriatric Psychiatry*, 15: 883-886.

Gillespie, L.D., Gillespie, W.J., Cumming, R., Lamb, S.E., Rowe, B.H. (1998). Interventions to reduce the incidence of falling in the elderly. *The Cochrane Database of Systematic Reviews*.

Other Systematically Reviewed Literature

Marks R., Allegrante J.P. (2004). Falls-prevention programs for older ambulatory community dwellers: from public health research to health promotion policy. *Sozial- und Praventivmedizin*, 49(3): 171-8.

- Weatherall, M. (2004). Prevention of falls and fall-related fractures in community-dwelling older adults: a meta-analysis of estimates of effectiveness based on recent guidelines. *Internal Medicine Journal*, 34(3): 102-108.
- Verhagen A.P. Immink M. van der Meulen A. Bierma-Zeinstra S.M. (February 2004). The efficacy of Tai Chi Chuan in older adults: a systematic review. *Family Practice*, 21(1): 107-13.
- Chang, J.T., Morton, S.C., et al. (March 20, 2004). Interventions for the prevention of falls in older adults: systematic review and meta-analysis of randomized clinical trials. *BMJ*, 328(7441): 680.
- Richy, F., Ethgen, O., Bruyere, O., Reginster, J.Y. (April 2004). Efficacy of alphacalcidol and calcitriol in primary and corticosteroid-induced osteoporosis: a meta-analysis of their effects on bone mineral density and fracture rate. *Osteoporosis International*, 15(4): 301-10.
- Bischoff-Ferrari, HA., Dawson-Hughes, B., et al. (April 28, 2004). Effect of Vitamin D on falls: a meta-analysis. *JAMA* 291(16): 1999-2006.
- Hainsworth T. (May 4-10, 2004). The role of exercise in falls prevention for older patients. *Nursing Times*, 100(18): 28-9.
- Browne J.A. Covington B.G. Davila Y. (July-September 2004). Using information technology to assist in redesign of a fall prevention program. *Journal of Nursing Care Quality*, 19(3): 218-25.
- Meyer G, Warnke A, Bender R, et al. (2003). Effect on hip fractures of increased use of hip protectors in nursing homes: cluster randomised controlled trial. *BMJ*, 326: 76–80.
- Moreland, J., Richardson, J., Chan, D.H., O'Neill, J., Bellissimo, A., Grum, R.M., Shanks, L. (2003). Evidence-based guidelines for the secondary prevention of falls in older adults. *Gerontology*, 49(2): 93-116.
- van Schoor N.M, Smit J.H, Twisk J.W.R, et al. (2003). Prevention of hip fractures by external hip protectors: a randomised controlled trial. *JAMA*, 289:1957–1962.
- Tinetti M.E. (January 2, 2003). Clinical practice. Preventing falls in elderly persons. *New England Journal of Medicine*, 348(1): 42-9.
- Shaw F.E., Bond J., Richardson D.A., Dawson P., Steen I.N., McKeith I.G., Kenny R.A. (January 11, 2003). Multifactorial intervention after a fall in older people with cognitive impairment and dementia presenting to the accident and emergency department: randomised controlled trial. [erratum appears in *BMJ*. 2003 March 29, 326(7391): 699]. *BMJ*, 326(7380): 73.

- Skelton, D.A., Beyer, N. (February 2003). Exercise and injury prevention in older people. *Scandinavian Journal of Medicine & Science in Sports*, 13(1): 77-85.
- Brouwer B.J., Walker C., Rydahl S.J., Culham E.G. (June 2003). Reducing fear of falling in seniors through education and activity programs: a randomized trial. *Journal American Geriatric Society*, 51(6): 829-34.
- Cameron I.D., Cumming R.G., Kurrle S.E., Quine S., Lockwood K., Salkeld G., Finnegan T. (June 2003). A randomised trial of hip protector use by frail older women living in their own homes. *Injury Prevention*, 9(2): 138-41.
- Singh M.M., Malhotra H.S. (July 2003). Falls in the elderly--clinician's approach. *Journal of the Indian Medical Association*, 101(7): 420, 422, 424 passim.
- Semin-Goossens A., van der Helm J.M., Bossuyt P.M. (July-September 2003). A failed model-based attempt to implement an evidence-based nursing guideline for fall prevention. *Journal of Nursing Care Quality*, 18(3): 217-25.
- Shanley, C. (August 2003). Falls and injury reduction in residential aged care: translating research into practice. *Contemporary Nurse*, 15(1): 81-93.
- Close J.C. McMurdo M.E. (September 2003). Falls and bone health services for older people. British Geriatrics Society Falls and Bone Health Section. *Age & Ageing*, 32(5): 494-6.
- Gourlay, M., Richy, F., Reginster, J.Y. (September 2003). Strategies for the prevention of hip fracture. *American Journal of Medicine*, 115(4): 309-17 [erratum appears in *American Journal of Medicine*. (October 15, 2003). 115(6): 509].
- Hauer, K., Pfister, M., Schuler, M., Bartsch, P., Oster, P. (October 2003). Two years later: A prospective long-term follow-up of a training intervention in geriatric patients with a history of severe falls. *Archives of Physical Medicine & Rehabilitation*, 84(10): 1426-1432.
- Gourlay, M. Richy, F. Reginster, J.Y. (October 15, 2003). Strategies for the prevention of hip fracture. *American Journal of Medicine*, 115(4): 309-17.
- Feldstein, A.C., Nichols, G.A., Elmer, P.J., Smith, D.H., Aickin, M. Herson, M. (December 2003). Older women with fractures: patients falling through the cracks of guideline-recommended osteoporosis screening and treatment. *Journal of Bone & Joint Surgery - American Volume*, 85-A(12): 2294-302.
- Jensen, J., Lundin-Olsen, L., Nyberg, L., et al. (2002). Fall and injury prevention in older people living in residential care facilities. *Annals of Internal Medicine*, 136: 733-741.

Hill-Westmoreland E.E., Soeken K., Spellbring A.M. (January-February 2002). A meta-analysis of fall prevention programs for the elderly: how effective are they? *Nursing Research*, 51(1): 1-8.

Wu G. (April 2002). Evaluation of the effectiveness of Tai Chi for improving balance and preventing falls in the older population--a review. *Journal of the American Geriatrics Society*, 50(4): 746-54.

Sambrook, P.N., Seeman, E., Phillips, S.R., Ebeling, P.R. (April 15, 2002). Osteoporosis Australia. National Prescribing Service. Preventing osteoporosis: outcomes of the Australian Fracture Prevention Summit. *Medical Journal of Australia*, 176 Suppl: S1-16.

Robertson, M.C., Campbell, A.J., Gardner, M.M., Devlin, N. (May 2002). Preventing injuries in older people by preventing falls: a meta-analysis of individual-level data. *Journal of the American Geriatrics Society*, 50(5): 905-911.

Rossignol, M., Moride, Y., Perreault, S., Boivin, J.F., Ste-Marie, L.G., Robitaille, Y., Poulin de Courval, L., Fautrel, B. (Summer 2002). Recommendations for the prevention of osteoporosis and fragility fractures. International comparison and synthesis. *International Journal of Technology Assessment in Health Care*, 18(3): 597-610.

Gatti J.C. (June 1, 2002). Which interventions help to prevent falls in the elderly? *American Family Physician*, 65(11): 2259-60.

Shigematsu R., Chang M., Yabushita N., Sakai T., Nakagaichi M., Nho H., Tanaka K. (July 2002). Dance-based aerobic exercise may improve indices of falling risk in older women. *Age Ageing*, 31(4): 261-6.

Binder S. (December 2002). Injuries among older adults: the challenge of optimizing safety and minimizing unintended consequences. *Injury Prevention*, 8 Suppl 4: IV2-4.

Monagle, S. (December 2002). Reducing falls in community dwelling elderly: The role of GP care planning. *Australian Family Physician*, 31(12): 1111-1115.

van Schoor N.M., Deville W.L., Bouter L.M., Lips P. (December 2002). Acceptance and compliance with external hip protectors: a systematic review of the literature. *Osteoporosis International*, 13(12): 917-24.

Carter N.D., Kannus P., Khan K.M. (2001). Exercise in the prevention of falls in older people: a systematic literature review examining the rationale and the evidence. *Sports Medicine*, 31(6): 427-38.

Cummings, R.G., Thomas, M., Szonyi, G., Frampton, G., Salkeld, G., Clemson, L. (2001). Adherence to occupational therapist recommendations for home modifications for falls prevention. *American Journal of Physical Therapy*, 55(6): 641-648.

Harada A, Mizuno M, Takemura M, et al. (2001). Hip fracture prevention trial using hip protectors in Japanese nursing homes. *Osteoporos Int.*, 12: 215–221.

Hubacher M., Wettstein A. (2001). Acceptance of hip protectors for hip fracture prevention in nursing homes. *Osteoporos Int.*, 12(9): 794-9.

Tromp, A.M., et al. (2001). Fall-risk screening test: a prospective study on predictors for falls in community-dwelling elders. *Journal of Clinical Epidemiology*, 54: 837-844.

Robertson, M.C., Devlin, N, Gardner, M.M., Campbell, A.J. (March 24, 2001). Effectiveness and economic evaluation of a nurse delivered home exercise programme to prevent falls. *BMJ*, 322: 697-701.

Feder, G., Cryer, C., Donovan, S., Carter Y on behalf of the Guidelines' Development Group. (May/June 2001). Guidelines for the prevention of falls in people over 65. *ACP Journal Club*, 134(3): 100.

Boers, I., Gerschlager, W., Stalenhoef, P.A., Bloem, B.R. (June 15, 2001). Falls in the elderly. II. Strategies for prevention. *Wiener Klinische Wochenschrift*, 113(11-12): 398-407.

Boers, I., Gerschlager, W., Stalenhoef, P.A., Bloem, B.R. (June 15, 2001). Falls in the elderly. II. Strategies for prevention. *Weiner Klinische Wochenschrift*, 113(11-12): 398-407.

Weigand J.V., Gerson L.W. (August 2001). Preventive care in the emergency department: should emergency departments institute a falls prevention program for elder patients? A systematic review. *Academic Emergency Medicine*, 8(8): 823-6.

Patrick L., Blodgett A. (October 2001). Selecting patients for falls-prevention protocols: an evidence-based approach on a geriatric rehabilitation unit. *Journal of Gerontological Nursing*, 27(10): 19-25.

Stevens M., Holman C.D., Bennett N. (November 2001). Preventing falls in older people: impact of an intervention to reduce environmental hazards in the home. *J Am Geriatr Soc.* 49(11): 1442-7.

Stevens M., Holman C.D., Bennett N., de Klerk N. (November 2001). Preventing falls in older people: outcome evaluation of a randomized controlled trial. *J Am Geriatr Soc.* 49(11): 1448-55.

Carson M., Cook J. (2000). A strategic approach to falls prevention. *Clinical Performance & Quality Health Care*, 8(3): 136-41.

Gardner, M.M., Robertson, M.C., Campbell, A.J. (2000). Exercise in preventing falls and fall related injuries in older people: a review of randomised controlled trials. *British Journal of Sports Medicine*, 34(1): 7-17.

Steinberg, M., Cartwright, C., Peel, N., Williams, G. (2000). A sustainable program to prevent falls and near falls in community dwelling older people: results of a randomized control trial. *Journal of Epidemiology and Community Health*, 54(3): 227-232.

Gardner M.M., Robertson M.C., Campbell A.J. (February 2000). Exercise in preventing falls and fall related injuries in older people: a review of randomised controlled trials. *British Journal of Sports Medicine*, 34(1): 7-17.

Steinberg M., Cartwright C., Peel N., Williams G. (March 2000). A sustainable programme to prevent falls and near falls in community dwelling older people: results of a randomised trial. *Journal Epidemiol Community Health*, 54(3): 227-32.

van Haastregt J.C., Diederiks J.P., van Rossum E., de Witte L.P., Crebolder H.F. (March 18, 2000). Effects of preventive home visits to elderly people living in the community: systematic review. *BMJ*, 320(7237): 754-8.

Feder G., Cryer C., Donovan S., Carter Y. (October 21, 2000). Guidelines for the prevention of falls in people over 65. The Guidelines' Development Group. *BMJ*, 321(7267): 1007-11.

Leipzig, R.M., Cumming, R.G., Tinetti, M.E. (1999). Drugs and falls in older people: a systematic review and meta-analysis. I. Psychotropic drugs. *Journal of the American Geriatrics Society*, 47(1): 30-39.

Leipzig, R.M., Cumming, R.G., Tinetti, M.E. (1999). Drugs and falls in older people: a systematic review and meta-analysis. II. Cardiac and analgesic drugs. *Journal of the American Geriatrics Society*, 47(1): 40-50.

Man-Son-Hing, M., Nichol, G., Lau, A., et al. (1999). Choosing antithrombotic therapy for elderly patients with atrial fibrillation who are at risk for falls. *Archives of Internal Medicine*, 159: 677-685.

Whooley, MA., Kip, KE., Cauley, JA., et al. for the Study of Osteoporotic Fractures Research Group. (March 8, 1999). Depression, falls, and risk of fracture in older women. *Archives of Internal Medicine*, 159: 484-90.

Man-Son-Hing M., Nichol G., Lau A., Laupacis A. (April 12, 1999). Choosing antithrombotic therapy for elderly patients with atrial fibrillation who are at risk for falls. *Archives of Internal Medicine*, 159(7): 677-85.

- Blank, R.D., Bockman, R.S. (Winter 1999). A review of clinical trials of therapies for osteoporosis using fracture as an end point. *Journal of Clinical Densitometry*, 2(4): 435-52.
- Peel, N., Cartwright, C., Steinberg, M. (1998). Monitoring slips, trips, and falls in the older community: preliminary results. *Health Promot J Aust*, 8(2): 148-150.
- Campbell, A.J., Robertson, M.C., Gardner, M.M., et al. (1997). Randomized controlled trial of a general practice programme of home based exercise to prevent falls in elderly women. *BMJ*, 315: 1065–1069.
- Oliver, D., Britton, M., Seed, P., et al. (October 25, 1997). Development and evaluation of evidence based risk assessment tool (STRATIFY) to predict which elderly inpatients will fall: case-control and cohort studies. *BMJ*, 315: 1049–53
- Rizzo, J.A., Baker, D.I., McAvay, G., Tinetti, M.E. (1996). The cost-effectiveness of a multifactorial targeted prevention program for falls among community elderly persons. *Medical Care*, 34(9): 954-969.
- Myers, AH., Young, Y., Langlois, J.A. (January 1996). Prevention of falls in the elderly. *Bone*, 18(1 Suppl): 87S-101S.
- NHS Centre for Reviews and Dissemination and Nuffield Institute for Health. (April 1996). Preventing falls and subsequent injury in older people. *Effective Health Care*, 2: 1-16.
- Province, M.A., Hadley, E.C., Hornbrook, M.C., Lipsitz, L.A., Miller, J.P., Mulrow, C.D., Ory, M.G., Sattin, R.W., Tinetti, M.E., Wolf, S. (1995). The effects of exercise on falls in elderly patients. *Journal of the American Medical Association*, 273: 1341-7.
- Lappe, J.M. (March – April 1994). Bone fragility: assessment of risk and strategies for prevention. *JOGNN - Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 23(3): 260-8.
- Wagner E.H., LaCroix A.Z., Grothaus L., Leveille S.G., Hecht J.A., Artz K., Odle K., Buchner D.M. (November 1994). Preventing disability and falls in older adults: a population-based randomized trial. *Am J Public Health*, 84(11): 1800-6.
- Meunier P.J. (November 30, 1993). Prevention of hip fractures. *American Journal of Medicine*, 95(5A): 75S-78S.
- Reinsch S., MacRae P., Lachenbruch P.A., Tobis J.S. (August 1992). Attempts to prevent falls and injury: a prospective community study. *Gerontologist*, 32(4): 450-6.
- Rose, S., Maffulli, N. (1991). Hip fractures. An epidemiological review. *Bulletin of the Hospital for Joint Diseases*, 58(4): 197-201.

Other Sources (Books, reports, and documents).

Smartrisk. (2004). *Smart moves: information about falls prevention for older adults*. Smartrisk.

Scott, V., Kendall, PR., Peck, S. (January 2004). *Prevention of falls and injuries among the elderly: a special report from the office of the provincial health office.*”

Hill, K., Vrantsid, S.F., Haralambous, B., Fearn, M., Smith, R., Murray, K., Sims, J., Dorevitch., M. (February 2004). *An Analysis of Research on Preventing Falls Injury in Older People: Community Residential Care and Hospital Settings (2004 Update)*. Commonwealth of Australia 2004.
(<http://www.health.gov.au/internet/wcms/publishing.nsf/Content/health-pubhlth-strateg-injury-falls-index.htm>).

Koepsell, TD., Wolf, ME., Buchner, DM., Kukull, WA., LaCroix, AZ., Tencer, AF., Frankenfeld, CL., Tautvydas, M., Larson, EB. (September 1, 2004). Footwear style and risk of falls in older adults. *Journal of the American Geriatrics Society*, 52(9): 1495-1501.

Calgary Health Region. (March 2003). *A framework for the prevention of falls and fall injuries in older adults: A shared responsibility*. Calgary Health Region.

NSW Department of Health. (April 2003). *Management Policy to Reduce Fall Injury Among Older People: Detailed Strategies and Performance Requirements 2003-2007*. NSW Department of Health 2003. (<http://www.health.nsw.gov.au/pubs/m/pdf/fallsinjury.pdf>).

NSW Department of Health. (April 2003). *Management Policy to Reduce Fall Injury Among Older People: Policy Brief 2003-2007*. NSW Department of Health 2003. (http://www.health.nsw.gov.au/pubs/m/pdf/fallsinjury_brief.pdf).

Scott, VJ., Donaldson, M., Gallagher, EM. (September 2003). *A Review of the Literature on Best Practices in Falls Prevention for Residents of Long-term Care Facilities*. Long Term Care Falls Review.

Gallagher, EM., Scott, V., Bhatia, H., Frost, L. (2002). *Research, policy and practice to prevent falls and injury among older adults*. University of Victoria.

Government of Canada. (2002). *Falls prevention information for seniors and veterans: you can prevent falls*. Minister of Public Works and Government Services Canada.

Soubhi, H., Raina, P., Lisonkova, S., Brussoni, M. (2002). *Unintentional fall-related injuries and deaths among seniors in British Columbia: trends, patterns, and future projection (1987-2012)*. British Columbia Injury Research and Prevention Unit (BCIRPU).

Lilley, S. (2001). *Taking steps to prevent falling in Nova Scotia*.

NSW Health Department. (2001). *Preventing Injuries from Falls in Older People: Background Information to Assist in the Planning and Evaluation of Local Area-based Strategies in New South Wales*. NSW Health Department.
(http://www.health.nsw.gov.au/pubs/p/pdf/prevent_falls_old.pdf)

On behalf of the Federal/Provincial/Territorial Committee of Officials (Seniors) for the Ministers Responsible for Seniors. (September 2001). *A Best Practices Guide for the Prevention of Falls Among Seniors Living in the Community*.

On behalf of the Federal/Provincial/Territorial Committee of Seniors for the Ministers Responsible for Seniors. (September 2001). *An inventory of Canadian programs for the prevention of falls among seniors living in the community*. Minister of Public Works and Government Services Canada.

Parra, EK., Stevens, JA. (2000). *U.S. fall prevention programs for seniors*. National Center for Injury Prevention and Control.

The Injury Risk Management Research Centre UNSW. (December 2000). *Falls Injury – Overall Briefing Paper*. Injury Prevention and Policy Unit, NSW.
http://www.health.nsw.gov.au/public-health/health-promotion/injury-prevention/types-of-injury/overview_fall_injury.pdf

Centres for Disease Control and Prevention. (1999). *A tool kit to prevent seniors falls*. National Center for Injury Prevention and Control Division of Unintentional Injury Prevention.

National Fire Protection Association Center for High Risk. (1999). *A fire and fall prevention program for older adults – Part I and II*. NFPA Center for High-Risk Outreach.

Gallagher, EM., Scott, VJ. (1995). *The steps project: a project to reduce falls in public places among seniors and persons with disabilities*. University of Victoria.

Gallagher, E., Scott, V. (No Date). *Taking steps: modifying pedestrian environments to reduce the risk of missteps and falls*. University of Victoria.