Plenary 4 Session Theme: Falls prevention in high risk groups

Karim Khan
Centre for Hip Health and Mobility, University of British Columbia, Vancouver, BC, Canada

Professor Karim Khan, MBBS, PhD, FACSP is an Australian-trained clinician-scientist based at the University of British Columbia in Vancouver, Canada. He is part of the leadership team at the Centre for Hip Health and Mobility, a nationally-funded research centre dedicated to providing solutions to the problems of fall-related fractures. Karim is the co-Director of the Falls Prevention Clinic which has served over 1000 fallers since 2005.
Along with Vancouver colleagues and international collaborators, Professor Khan has sought effective, and cost-effective, interventions for seniors at high risk of fall-related injuries. The target populations have included people with osteoporosis, those with previous injurious falls, as well as more recently those with mild cognitive impairment. The Vancouver group's research has focused on interventions that include strength and balance training.
Among his over 200 coauthored publications, he has contributed to two highly regarded textbooks – 'Physical Activity and Bone Health' and 'Clinical Sports Medicine'.

Terrence Haines
Monash University, Clayton, VIC, Australia

Associate Professor Terry Haines has a background in physiotherapy and health economics and is the Director of the Allied Health Clinical Research Unit for Southern Health (Australia) and Director of Research for the Southern Physiotherapy Clinical School, Monash University. Associate Professor Haines has attracted over $AUD 5.5 million in research grants and tenders since completing his PhD in 2005 including a National Health and Medical Research Council Career Development Award (2010-2013). His principal area of research is the prevention of falls amongst hospital patients where he has led randomised trials, a cluster-randomised trial and several prospective cohort observational studies. The largest intervention trial he has led is a randomised controlled trial of a multi-media patient education program conducted across acute and subacute hospital wards (n=1206). This multi-media education program is the second version of an education program that Associate Professor Haines designed and evaluated in the first randomised trial of an intervention program to reduce falls in the hospital setting.

Jacqueline Close
Prince of Wales Hospital, Sydney, NSW, Australia

Associate Professor Jacqueline Close is a Consultant Geriatrician at Neuroscience Research Australia in Sydney where she runs the Falls, Balance and Bone Health Service. She is a Senior Research Fellow at Neuroscience Research Australia and is currently undertaking a number of clinical risk factor and intervention studies including understanding risk of falls in people with cognitive impairment, and piloting interventions to prevent falls in people with dementia. She has many years of clinical and research experience in falls risk assessment and prevention which has generated a particular interest in translational research to ensure that evidence based interventions reach the intended target populations.

FALLS PREVENTION IN FRAIL SENIORS: A CANADIAN PERSPECTIVE

Khan KM
Centre for Hip Health and Mobility, University of British Columbia, Vancouver, BC, Canada

The aim of the presentation is to share some perspectives on falls prevention from the far side of the Pacific Ocean. Various Canadian researchers are presenting their own work at this meeting (i.e., Dr Liu-Ambrose and Lindsay Nagamatsu, exercise and cognition in falls; Dr Feldman, analysis of fall videos in residential care; Dr Davis, economic evaluations and falls). I will focus on three complementary issues.

1) *'Secondary' prevention: identifying and managing the high risk faller*
In conjunction with Antipodean colleagues, we seek to develop a user-friendly, falls risk calculator for use by both physicians and by patients/family members. The simple analogy is to the Framingham risk score for cardiac disease; a more recent parallel is the FRAX score for osteoporotic fracture. The calculator will distinguish 'non fallers' from 'two or more' fallers. Important (but not novel!) predictors include previous fall, indoor/outdoor fall. Although the concept is very straightforward, there are two challenges. The first is to make the calculator widely available (overcoming a 'distribution' hurdle). The second is to link the outcome risk factors to management plans (guideline care). The latter could be assisted by the use of appropriate 'informatics' algorithms.

2) *Emergency department as a 'hot spot' for fall risk identification and management*
Since Dr Close's landmark Lancet study there has been increasing interest in the emergency department as a setting that captures seniors at high risk of further falls. Some authors have explored risk assessment in the emergency department, including fear of falling. Subtle presentation of intracranial haemorrhage has been noted among this cohort (10%). In our followup studies of community-dwelling seniors who presented to the emergency department with a fall, only 4% of seniors received guideline care. To round out the possibilities of interventions being launched from the emergency department we see some reports where falls were reduced and other cases where interventions appeared unsuccessful. Our recent data suggest that the cost of falls in the emergency department exceeds $CAD 11,000 per fall. Thus, the emergency department is fertile for research, and research in this setting can be rapidly translated.

3) *The final part of this presentation addresses the Vancouver version of falls prevention clinics which aim to provide a one-stop shop to individuals with increased fall risk*
At Vancouver General Hospital (VGH) our referral-basis clinic delivers the Physiological Profile Assessment (PPA) for all patients as well as a dedicated geriatrician consultation. Because physiotherapy is not widely available without private payment, most patients do not receive the Otago Exercise Programme (OEP) – strength and balance training program. But if patients are eligible for a research study of the program they have a 50% chance of being randomized to the OEP. This program of exercise was found in a systematic review to provide the best value for money among interventions to reduce falls. The falls clinic setting provides lessons for researchers, clinicians, and policymakers.

PREVENTING FALLS IN HOSPITALS: UNDERSTANDING INTERACTIONS BETWEEN STAFF, ENVIRONMENT AND PATIENTS

Haines T
Monash University, Melbourne, VIC, Australia; Southern Health, Cheltenham, VIC, Australia

The rates of falls in older hospital patients are amongst the highest documented from any setting. There are many factors that are thought to contribute to this problem, and consequently, there have been many approaches attempted to reduce hospital falls. Previous randomised trials to prevent hospital falls paint a confusing picture for hospital clinicians and administrators attempting to prevent falls locally.

This presentation will consider the problem of falls primarily as a consequence of patient behaviours and actions that can be influenced by the actions of staff and the hospital environment. The interactions between staff, the environment and patients will be discussed. Patient attitudes towards falls, the staff that care for them and strategies that they believe can prevent falls will be contrasted with the attitudes of staff towards falls, the patients they care for and the strategies they believe that can prevent falls. Emergent from this work is a framework that describes the problem of falls in the hospital setting that explains key differences in research findings between this setting and other settings. This framework will be used, along with considerations of methodological strengths and weaknesses, to interpret the findings of previous research.

Building from this framework will be description of a recently completed randomized trial of a multimedia patient education program for the prevention of falls. Participants for this trial were drawn from a metropolitan teaching hospital in Brisbane, and a suburban community hospital in Perth, Australia. Participants (n = 1206) were recruited from a mixture of acute and subacute hospital wards and then randomly allocated into one of three groups. The interventions were a multi-media patient education program based on the health–belief model combined with trained health professional follow-up (complete program), multi-media patient education materials alone (materials only), and usual care (control). Falls data were collected by research assistants blind to group allocation by reviewing hospital incident reports, hand-searching medical records and conducting weekly patient interviews.

Rates of falls per 1000 days did not differ significantly between groups (control: 9.27, materials only: 8.61, complete program: 7.63), however there was a significant interaction between the intervention and presence of cognitive impairment. Falls were less frequent amongst cognitively intact patients in the complete program group (4.01 per 1000 days) compared with cognitively intact patients in the materials only group [8.18 per 1000 days, adjusted hazard ratio 0.51 (95% CI 0.28 to 0.93)] and control group [8.72 per 1000 days, adjusted hazard ratio 0.43 (95% CI 0.24 to 0.78)].

These findings indicate that multi-media patient education with trained health professional follow-up reduces falls amongst patients with intact cognitive function admitted to a range of hospital wards, and that providing education materials alone has no effect. The implications of this research to clinical practice are clear, yet, further work is still required, particularly to identify effective strategies for people with cognitive impairment.

PREVENTING FALLS IN PEOPLE WITH DEMENTIA – IS THERE ANY EVIDENCE?

Close JCT
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There is now good evidence that falls can be prevented in older people through a number of different intervention strategies including exercise, medical and medication review, environmental assessment, cataract extraction, use of vitamin D as well as multifaceted interventions which combine interventions based on identified risk factors. However the majority of the published intervention studies have intentionally excluded people with cognitive impairment despite this being a strong predictor of both falls and fractures in this population. The presence of cognitive impairment approximately doubles the risk of falls and fall related injury. At this point in time, it is unclear as to whether the risk factor profile and the relative contribution of different risk factors in older people with cognitive impairment is comparable to that of cognitively intact individuals. This information is important to know as it may well shape approaches to intervention in this high risk population.

An ongoing risk factor study in people with cognitive impairment and dementia in Sydney, Australia is showing clear evidence of significant differences between cognitively intact and cognitively impaired older people in measures of physiological performance including strength, balance and reaction time – all measures previously shown to increase a person's risk of falling. The data suggest that people with cognitive impairment have deficits which are potentially amenable to intervention. However the presence of cognitive impairment is likely to impact on the ability to safely and effectively deliver particular approaches to intervention. Strategies which take into account cognitive performance combined with targeting known falls risk factors, are likely to be the most effective approaches. These are currently being piloted.

In the interim, it is important not to exclude older people with cognitive impairment from fall and injury related interventions which are largely not affected by the presence of impaired cognition, for example cataract extraction, avoidance of unnecessary CNS medications, prescription of vitamin D supplementation and treatment of osteoporosis.
