Session 2B Concurrent Falls prevention in institutions

Dr Fabio Feldman is the Fall Prevention lead for the Fraser Health Authority, British Columbia. He has been involved in the development and implementation of fall prevention initiatives in home, hospital and residential care settings. Dr Feldman holds a PhD in biomechanics from Simon Fraser University. His research is focused on prevention of falls and hip fractures.

Dr Kilian Rapp specialised in Internal Medicine. He did postgraduate studies in Public Health and worked at the Institute of Epidemiology, Ulm University, Germany. Currently he is working as a clinician at the Geriatric Rehabilitation Clinic of the Robert-Bosch-Hospital Stuttgart. Main research topics are cancer epidemiology and falls prevention in nursing homes.

Jeannette Kamar is a Registered Nurse with a Bachelor of Applied Science (Nursing). Currently she manages the Injury Prevention Unit at The Northern Hospital (TNH), Melbourne which includes Falls Prevention. Jeannette and has been the driving force behind the development of the TNH Falls Prevention Program and Falls Risk Assessment Tool.

Dr Carl Hanger is a generalist Geriatrician based in Christchurch. His clinical interests include management of frail older people in community settings (rural and urban), inpatient rehabilitation and he has a special interest in stroke. He dabbles in research based around common clinical questions that arise during his day-to-day work.

Willeke Walsh is a senior clinician physiotherapist and PhD candidate. Her study investigates falls risk assessment and prevention in the acute hospital setting. Willeke has worked clinically in the falls prevention field and co-managed a 3 year, multi-factorial falls prevention project, across hospital and residential aged care settings.

Anne-Marie Hill is a PhD scholar at The University of Queensland and holds The Menzies Foundation allied health sciences scholarship; 2009-2010. She is an APA Gerontological physiotherapist with 20 years clinical experience working with older people and a senior lecturer at the School of Physiotherapy, University of Notre Dame Australia.

DETERMINING THE ACCURACY OF FALLS INCIDENT REPORTS IN LONG-TERM CARE FACILITIES

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Aim:
Although fall incident reports are relied upon to guide intervention efforts, the accuracy of these data are poorly understood. In this study, we compared data from fall incident reports to information on the causes and activities associated with falls captured over a two year period by video surveillance cameras in long-term care (LTC) facilities.

Methods:
A team of experts reviewed 128 fall videos recordings to extract the cause of the fall (slip, trip/stumble, hit/bump, collapse, incorrect weight transfer, loss of support) and the activity at the time of the fall (getting up, sitting down, sitting, standing, walking). Cohen's kappa coefficient was used to determine the agreement between these data and the fall incident reports. The cause of fall was missing in 57% of incident reports, and the activity was missing in 33% of reports.

Results:
There was agreement between the video analysis and incident report on the cause of the fall in 46% of cases (kappa = 0.259), and on the activity at the time of the fall in 43% of cases (kappa = 0.158). Errors in the incident reports of particular note included exaggerated reporting of falls due to slips (observed from video analysis as due to incorrect weight transfer in 8 of 10 cases), under-reporting of hit/bump (reported as incorrect transfer in 5 of 12 cases), and under-reporting of falls occurring during standing (reported as walking in 14 of 24 cases, and rising in 7 cases).

Conclusion:
The ability to accurately identify potentially modifiable risk factors can strongly affect risk for future falls. However, the causes and activities associated with falls in LTC residents is often missing from fall incident reports, and when present, appears to be incorrect in more than 50% of cases. Therefore, alternative post-fall methods should be developed to identify the causes and circumstances of falls in this population.

REDUCTION OF FEMORAL FRACTURES IN NURSING HOMES: THE BAVARIAN FRACTURE PREVENTION STUDY

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Aim:
To evaluate the effect on the incidence of femoral fracture of the state-wide dissemination of a fall and fracture prevention program in nursing homes (Bavarian Fracture Prevention Study).

Methods:
An observational study of the implementation of a fall and fracture prevention program was performed in 1149 nursing homes in Bavaria, Germany. 13,653 residents from intervention homes and 31,668 residents from control homes were included in the analysis. The intervention consisted of staff education on fall prevention, advice on environmental adaptations, and progressive strength and balance training. The main outcome measure was the incidence of femoral fractures.

Results:
During the one-year intervention period femoral fracture rates were 33.6 and 41.0/1000 person-years in the intervention and control homes, respectively. The adjusted relative risk of a femoral fracture was 0.82 (95% CI 0.72 to 0.93) in residents exposed to the fall prevention program compared with residents from the control group. In the years before the intervention, risk of a femoral fracture did not differ between the groups.

Conclusion:
The state-wide dissemination of a multifactorial fall and fracture prevention program was able to reduce femoral fractures in residents of nursing homes.

INVESTIGATION INTO THE REDUCTION OF SERIOUS FALL INJURIES IN AN ACUTE HOSPITAL

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Aim:
Serious fall-related injuries are costly to individuals and the health care system. An nine-year evaluation at The Northern Hospital (TNH)[1] found a significant reduction in fall injuries after a targeted multifactorial falls prevention program was implemented. This study investigated changes in serious fall injuries.

Methods:
A retrospective audit of medical records of TNH inpatients reported to suffer a serious fall injury between 1999 and 2010 was undertaken. Rate changes were analysed using Poisson regression with monthly serious injury counts as the dependent variable, the month of observation the single explanatory variable and occupied bed days the exposure variable. The number of available high-low beds and relationship to changes in serious fall injury rates were also explored.

Results:
During the observation of 1108,265 inpatients, there were 4082 falls and 1026 fall injuries of which 60 were serious (55 fractures and five subdural haematomas). The rate of serious fall injuries declined significantly throughout the period (incidence rate ratio [IRR] 0.99, 95% CI 0.98 to 0.99, p = 0.001). When available high-low beds increased from 5 to13 there was no significant decrease in serious injuries (IRR 0.65; p = 0.116). A reduction in serious injuries occurred when an additional 32 high-low beds were available (IRR 0.41; p = 0.046). Other falls prevention activities at the time of this reduction and strategies to maximise appropriate utility of high-low beds will be discussed.

Conclusion:
The successful TNH falls injury prevention program has been in place for eight years. Serious fall injuries appeared to decrease when the number of high-low beds tripled, and the reduction sustained for three years. A randomised controlled trial is required to strengthen evidence for use of high-low beds in this high risk population.

References:
1. Barker A, Kamar J, Morton A et al. Bridging the gap between research and practice: review of a targeted hospital inpatient fall prevention programme. Qual Saf Health Care 2009;18(6):467-72.

FALLS IN A STROKE REHABILITATION UNIT: DIFFERENT FALLS AND DIFFERENT OUTCOMES

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Aims:
Unfortunately falls are not uncommon during stroke rehabilitation. Some phases of rehabilitation may be associated with greater risk of falling. Our hypothesis was that not all falls are the same. The aim was to define a falls classification based on activity and function at time of fall.

Methods:
This was a retrospective descriptive study of 241 falls that occurred in a stroke rehabilitation unit (SRU) from 01/01/08 to 30/09/09. Each fall was analysed based on activity being performed, and fall/ faller characteristics at the time of fall. An initial “a priori” taxonomy of falls was constantly refined throughout the data collection to create the classification system.

Results:
Fall rate was 18.2 per 1000 bed days, with 71% falls occurring in multiple fallers. Falls occurred throughout the admission and most occurred whilst transferring (68%).
The classification system developed included:
A. “I’m new here” Adjusting to a new environment (8%)
B. “I’m sick” Acute medical conditions directly contribute to the fall (16%)
C. “I shouldn’t have” Activity is inappropriate to stage of rehabilitation (32%)
D. “I’m giving it a go” Activity is appropriate to stage of rehabilitation (21%)
E. “It’s the meds” Medications directly contribute to fall (3%)
F. “It wasn’t me” Circumstances beyond control of the patient (6%)
G. “I’m very dependent” High physical dependency for basic cares (31%)
Some falls were included in more than one category and 3% were unclassified. There were between-groups differences in stroke type, continence, toileting, and mobility (e.g. 85% of D were continent of urine at time of fall versus 2% of B. Only 2% of C could walk independently at time of fall versus 35% of D).

Conclusion:
Falls after a stroke have different causes, different characteristics and different outcomes and so may require different preventative strategies.

HOSPITAL FALLS PREVENTION – DISCOURAGINGLY MINOR GAINS MADE

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Aim:
To review the effectiveness of a hospital based falls prevention programme in Older Persons Health wards over 16 years.

Methods:
Fall rates, adjusted for bed days occupied together with number of fall related fractures were collected from 1995-present. All the assessment strategies and interventions that have been tried were reviewed.

Results:
A wide range of interventions have been implemented in incremental fashion over the 15 years, ranging from reduction in bedrail use, to carpeting the floors, "traffic light" system for mobility status, sensor mats, modification of furniture and flooring, different staff education programmes and different fall risk assessment/intervention tools as well as attempts to reduce inappropriate medications. Total fall rates have remained high between 16 to 22 falls per 1000 bed days occupied, with only slight reduction over time. Injuries from falls occurred in a mean of 1.8% of all falls (mean of 16 fractures / year).

Conclusion:
The number of falls (and fallers) has remained high over several years despite considerable staff effort to reduce the risk of falling. Falls in hospital are heterogeneous, and several different and multifaceted strategies are required.[1, 2] There does not appear to be any single or simple intervention to dramatically reduce fall rates. Potential reasons for our difficulty in implementing strategies will be discussed.

References:
1. Oliver D, Connelly JB, Victor CR et al. Strategies to prevent falls and fractures in hospitals and care homes and effect of cognitive impairment: systematic review and meta-analyses. BMJ 2007;334(7584):82.
2. Cumming RG, Sherrington C, Lord SR et al. Cluster randomised trial of a targeted multifactorial intervention to prevent falls among older people in hospital. BMJ 2008;336(7647):758-60.

SUSTAINABILITY OF AN ACUTE HOSPITAL FALLS PREVENTION PROGRAM: 10 YEAR EVALUATION

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Aim:
To evaluate the immediate and sustained effect of a three year falls prevention program within an acute hospital population, by investigating falls rates before (1999 – 2001), during (2002 – 2004) and after (2004 – 2009) program implementation.

Methods:
This study used a multiple baseline, interrupted time series design. The falls prevention program utilised a staggered roll out of the program to acute wards within Western Health, Victoria, Australia. It consisted of staff education, post fall reviews, environmental audits and implementation of a falls risk screening/assessment process. Each ward roll out duration was three to four months and was followed by a time of active maintenance whilst the project was still occurring intensely on other wards. Falls data were collected via incident reporting systems.

Results:
Rates of falls per 1000 occupied bed days varied over the different phases of this evaluation (before: 7.6, during: 8.2, after: 5.9). The rate of falls after the program implementation period demonstrated a quadratic relationship with time, where falls rates gradually decreased for 2.5 years post program implementation, but then gradually increased for the following 2.5 years.

Conclusion:
Potential benefits of a falls prevention program appear to be sustainable in the medium term, however following withdrawal of active maintenance these appear to diminish after a few years. Long term sustainability appears to require ongoing active maintenance to prevent dilution of the influence of the program. This regression may occur due to a change in reporting culture, practice change, staff turnover and ward location changes. All of these can interfere with research and make maintenance of the program's effect difficult without a driver or accountability mechanism. Long term sustainability evaluation of the effects of a falls program is important to assist determination of what may be required to optimise this sustainability and provide ongoing benefit.

FACTORS AFFECTING COMPLIANCE WITH EXERCISE AFTER HOSPITAL DISCHARGE: AN OBSERVATIONAL STUDY

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Aim:
Older patients are at increased risk of falls after hospital discharge but older people have low self perceived risk of falls and identify barriers to engaging in falls prevention strategies such as exercise.[1,2] The aim of this study was to identify factors that predicted compliance with exercises after hospital discharge.

Methods:
An observational cohort study (n = 343) formed part of a randomised controlled trial (n = 1206). Participants (mean age 79.4 ± 8.5 years) were at the point of discharge from a metropolitan hospital and were followed up for six months after discharge. Self perceived awareness and risk of falls were measured at discharge using a custom designed survey addressing elements of the Health Belief Model (HBM). Knowledge of and participation in exercise programmes was measured at six months after discharge using a telephone survey.

Results:
At discharge 78.3% of participants agreed that older people were at risk of falls following discharge, but 54.6% disagreed that they were personally at risk. Six months after discharge 112 (37.7%) participants were engaging in exercises. Participants were significantly more likely to be engaging in exercises if they perceived they were at risk of serious injury from a fall ($p < 0.001$), were recommended to do so by the hospital physiotherapist ($p < 0.001$) and if they lived at home with their spouse ($p = 0.02$). Barriers identified by 168 (49%) participants included inadequate service delivery, medical problems and self-reported negative attitude towards exercise.

Conclusion:
Older patients have low participation rates in exercise programmes after discharge. Elements of the HBM, including self perceived risk and identified barriers to exercise, explain some of the variation in compliance to exercise but external factors also explain compliance to exercise. Health care workers may need to assist older patients to overcome identified barriers and facilitate an optimum environment to promote engagement in exercise after hospital discharge.

References:
1. Yardley L, Donovan-Hall M, Francis K et al. Attitudes and beliefs that predict older people's intention to undertake strength and balance training. J Gerontol B Psychol Sci Soc Sci 2007;62:119-25.
2. Bunn F, Dickinson A, Barnett-Page E et al. A systematic review of older people's perceptions of facilitators and barriers to participation in falls-prevention interventions. Ageing Soc 2008;28(4):449-72.