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ORAL/PODIUM PRESENTATIONS

Is Living in a Rural Community Associated with an Increased Risk of Dementia?

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Background Information: Limited research has suggested that rural residents are at increased risk of dementia.

Objective: The objective of this study is to determine if rural residence is associated with dementia using both cross-sectional and prospective analyses.

Methods: In 1991, 1763 community-dwelling adults aged 65+ participated in the Manitoba Study of Health and Aging (MSHA), which sampled all regions of the province of Manitoba. Baseline measures included age, gender, years of education, the Modified Mini-Mental State Examination (3MS), and rural/urban status. Rural was defined as a census subdivision with a population <20,000 and urban as 20,000+. Dementia was diagnosed in participants with a 3MS score <78 and clinical examination applying DSM-IIIR criteria at baseline and at follow-up five years later. All other participants were categorized as not demented. Two analyses were conducted: 1) a cross-sectional analysis (N=1,763), and 2) a prospective analysis of those who did not have dementia at time 1, and who survived to time 2 (N=1,079).

Results: Forty per cent (n=703) of participants were rural residents. Participants in urban areas had a mean 3MS score of 86.1 vs. 84.2 in rural areas (p = .001). Mean number of years of education in urban areas was 10.0 vs. 8.3 in rural areas (p < .001). In multivariate logistic regression models adjusting for age, gender, and education, living in a rural area was not significantly associated with dementia in either cross-sectional (adjusted Odds Ratio (AOR)=1.03, 95% CI=0.59–1.81) or prospective analyses (AOR=0.78; 95% CI=0.51–1.21).

Conclusion: Rural residents had significantly lower educational attainment and 3MS scores than urban residents. However, rural residence was not associated with dementia in either cross-sectional or prospective analyses. Further study into heterogeneity between rural areas is warranted.

Variability in the Montreal Cognitive Assessment (MoCA) Test in Mild Cognitive Impairment Patients

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Background Information: The MoCA is a widely accepted screening tool which tests multiple cognitive domains. It is currently being used to diagnose degree and types of cognitive impairment.

Objective: The aim of our study is to identify and measure test variability between two or more tests among a group of patients diagnosed with mild cognitive impairment (MCI).

Methods: A retrospective study was performed on a sample of patients attending the Memory Clinic of Jewish General Hospital between January 2005 and December 2012. Inclusion criteria included: aged 60 and over who had a minimum of two visits and were diagnosed with MCI and who remained clinically stable over follow-up. The data were analyzed using SPSS, then a repeated ANOVA model was performed to test the variation in the mean between each group. The groups were analyzed according to age gender, education level, and MoCA score.

Result: 345 MCI individuals met these criteria. Visits range from 2–5 (mean of 2.8) with MoCA testing over 2–7 years of follow-up. Mean MoCA score was initially 23.49 (SD of 2.95). The study showed no significant changes in MoCA score over time. Evaluation of 37 patients who had 5 visits showed a variance ranging from 1–11 points during the study

period. 35% showed a score range of 4 points, 29.7% showed a variance greater than 4 points (max 11), while 35% showed only 1–3 points score difference over the follow-up period.

Conclusion: Even in MCI patients who did not progress, the MoCA usually varies by 4 points during follow-up visits. A change in MoCA score from one visit to the next should not be taken as inevitable evidence of progression.

Glycemic Control in Type 2 Diabetes and the Risks of Cognitive Decline and Dementia: a Systematic Review and Meta-Analysis

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Background Information: Individuals with diabetes are at an increased risk of cognitive decline and dementia compared to age-matched, non-diabetic controls. Recent population cohort studies further suggest that higher blood glucose levels among individuals with diabetes incrementally increased the risks for developing dementia even after controlling for major cardiovascular risk factors. Thus, improving glycemic control in adults with diabetes has been postulated as a potential modifiable risk factor for preventing cognitive impairment and dementia.

Methods: Database searches of CENTRAL, Embase, MEDLINE, and Ovid HealthSTAR were conducted from 1966 to December 2013, and supplemented with searches of conference proceedings and manual reviews of bibliographies of retrieved articles. Randomized controlled trials (RCTs) examining the risk of dementia, global cognition, and psychomotor efficiency among individuals achieving intensive glycemic control (i.e., HbA1c $\leq$ 7.0%) compared to standard glycemic control (i.e., HbA1c > 7.0%) were included.

Results: Seven RCTs were included in the systematic review and meta-analysis. Achieving intensive glycemic control was not associated with benefits in global cognition (SMD: 0.07, 95% CI: -0.29 to 0.42) or psychomotor efficiency (SMD: 0.55, 95% CI: -0.08 to 3.24). One RCT examined the association between intensive glycemic control and dementia, and no statistically significant reduction in the relative risk was observed.

Conclusion: There is currently insufficient evidence to support the hypothesis that achieving intensive glycemic control is associated with benefits in cognition among adults with type 2 diabetes. Furthermore, these estimates of effect need to be interpreted with caution given the presence of statistical heterogeneity.

Use of Antipsychotics in Behavioural Units

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Objective: Antipsychotics are commonly used in behavioural and psychological symptoms of dementia (BPSD). However, due to safety profile, the medical literature supports their use only in severe cases. Currently, there is a paucity of data regarding their use in short-stay units. Our primary objective was to determine which antipsychotics were most frequently used in the short-stay behavioural unit of the Montreal General Hospital. Our secondary objective was to determine their efficacy and incidence of side effects.

Methods: This is a retrospective chart-review study of 88 patients admitted between May 2009 and July 2012 with an average age of 80 years old. BPSD were divided in categories inspired by the "Neuropsychiatric Inventory", including agitation, paranoid ideas, etc.

Results: Only 13 patients (14.8%) did not receive antipsychotics. At admission, 30 patients (34.1%) were already on an antipsychotic; however, 51 patients (58%) were discharged on an antipsychotic. Regularly administered Quetiapine was the most commonly prescribed first line agent (28.4%), followed by Haloperidol as needed (26.1%). A second antipsychotic was needed in 54 patients (61.3%). The most common BPSD encountered was agitation (29.2%) and 37 side effects were noted, including sedation (12.5%) and falls (10.2%). Furthermore, there was a significant loss of autonomy in that 39 patients newly required long-term placement and there was more than a 20% decline observed in the independence for ADLs (activities of daily living).

Conclusion: Antipsychotics were frequently used in our unit and were associated with significant side effects, including sedation and loss of autonomy. We believe that such a high use of antipsychotics was associated with the observed functional decline. Quetiapine was the most commonly used, possibly because of the desired sedation effect.

An Audit on the Use of Specific `As Needed' Medications in Patients Aged 75 Years and Older Discharged from the Medical and Acute Geriatric Medicine Units over a Four-Week Period

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Background Information: The evidence on the use of 'as required' or prn medications in the older population is limited.

Objectives: To determine the appropriate use of opioid analgesics, benzodiazepines, antipsychotics, antiemetics, and non-steroidal anti-inflammatory drugs (NSAIDs) for patients aged 75 years and older.

Methods: A list of patients aged 75 years and older discharged from medical and acute geriatric medical units within a consecutive four-week period were generated. Patients with a change of care and those deceased were excluded. The remainder were investigated for the presence of prn medications in their discharge summary. The demographics included age, gender, and residence. Indications for the prn medications and geriatric syndromes (falls, delirium, and dementia) were also obtained.

Results: A total of 24 prn medications were present in 23 of the 104 discharged patients. Of these, 8 were new and 16 were pre-existing. Only 10 of the latter were used during admission. Seventy per cent were discharged home. Half of the prn medications were opioid analgesics, followed by benzodiazepines (21%), antiemetics and antipsychotics (both 13%), and NSAIDs (4%). Eleven of the 23 patients had one or more of the geriatric syndromes.

Discussion: Twenty-two per cent of older patients discharged in a four-week period have a prn medication documented in the discharge medication list. Majority of these patients are home-dwelling and nearly half of the patients have one or more of the geriatric syndromes. As such these patients are more prone to adverse effects. Over one-third of the pre-existing prn medication were not used during the admission, but documented in the discharge medication list.

Conclusion: Prn medications should be reviewed during admission and be judiciously documented in the discharged medication list.

Cognitive Assessments in Multicultural Populations—a Systematic Review of the RUDAS

Raza Naqvi, Sehrish Haider, Shabbir Alibhai. University of Toronto, Toronto, ON.

Background Information: With the growing immigrant population in Canada, an accurate assessment tool is needed for those who are from culturally and linguistically diverse backgrounds. Many common cognitive screening tools are not ideal for these populations due to the dependency on English proficiency. In 2004, the Rowland Universal Dementia Assessment Scale (RUDAS) was created to address cognitive screening in culturally and linguistically diverse populations. A systematic review of the literature is warranted to determine whether the RUDAS has been validated in a diversity of populations as this may provide another easily administered and freely available cognitive screening tool for clinicians.

Methods: A literature search was performed in MEDLINE, Embase, PsycINFO, CINAHL, and other relevant databases from date of onset to January 2014. Reference lists of articles were hand-searched and authors were contacted for further relevant studies. All studies comparing the RUDAS with other cognitive testing or a neuropsychological assessment were included. Abstracts and full-text of articles were reviewed independently by two authors. The data were extracted using a standardized protocol and the quality of studies was evaluated using the QUADAS-2 tool.

Results: Ten studies meeting the pre-specified inclusion criteria were found from five different countries. A total of 3,194 patients were analyzed with varying levels of cognitive impairment. Results indicate that the sensitivity and specificity of the RUDAS is superior to the MMSE. Furthermore studies indicate that the RUDAS is more useful in those with lower education and those from linguistically diverse backgrounds. There was stronger clinician preference for RUDAS compared to the MMSE.

Conclusions: The RUDAS is a useful short cognitive screening tool, particularly for individuals from linguistically diverse backgrounds.

NON-DISCUSSED POSTER

Prevalence and Distribution of Vertebral Fractures Is Dissimilar Among Patients with Intertrochanteric and Subcapital Hip Fractures

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Background Information: There are two types of hip fractures: intertrochanteric and subcapital. Both types can have associated vertebral fractures. In this study, we explored the nature of vertebral fractures in the two hip fracture populations in an effort to gain insight into their etiology.

Methods: This was a retrospective analysis of 120 patients: 40 with subcapital fractures and vertebral fractures, 40 with intertrochanteric fractures and vertebral fractures, and 40 with vertebral fractures only. Based on Genant's semiquantitative assessment method, the distribution, type, and severity of each patient's vertebral fractures were described.

Results: Patients with subcapital fractures had significantly fewer total vertebral fractures (p = .005 and p = .019), vertebral fractures from T4-T10 (p = .005 and p = .042), and vertebral fractures at the T7-T8 peak (p = .002 and p = .003) than patients with intertrochanteric fractures and those with vertebral fractures alone. The number of vertebral fractures from T11-L4 and at the T12-L1 peak did not differ among the groups. Patients with subcapital fractures were more likely to have only one vertebral fracture (p < .001). Only the distribution of vertebral fractures between those with intertrochanteric fractures and those with vertebral fractures alone was significantly correlated (r = .6496, p = .009).

Conclusion: The distribution of vertebral fractures among patients with subcapital fractures differed from the other fracture groups. Patients with subcapital fractures were more likely to have only a single vertebral fracture, while patients with intertrochanteric fractures and those with only vertebral fractures were more likely to have multiple vertebral fractures throughout the thoracolumbar spine. The subcapital and vertebral fractures of some patients may be a consequence of trauma and not osteoporosis.

A Systematic Review of Online Supports Tailored to Caregivers of Persons with Dementia

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Background Information: Over 35 million people worldwide currently live with dementia. A phenomenal proportion of the care provided to these individuals is provided by unpaid, family caregivers. These caregivers are often overwhelmed by the numerous stresses imposed on them, resulting in deterioration of their own health, social isolation, loss of income, and distress. Caregiver interventions have been shown to improve caregiver mood and morale, to reduce caregiver strain and to delay transition of the person with dementia to long-term care. Due to the nature and intensity of care that is required, flexible and user-friendly methods of providing interventions to caregivers have been explored.

Objective: The purpose of this review was to evaluate the evidence regarding Web-based resources as an avenue for providing support to caregivers.

Methods: We performed a systematic review of the literature using search terms such as "dementia", "caregiver", "support", and "interventions". We searched Ovid Medline, PubMed, Embase, and CINAHL to October 2013. The abstracts were reviewed and full text articles were included. Studies were included if they were in English and were systematic reviews, randomized controlled trials or other intervention studies that examined internet or Web-based interventions for caregivers of persons with dementia.

Results: Only 13 studies met all eligibility criteria. Positive outcomes from included studies of internet caregiver resources demonstrated increased caregiver confidence in decision-making, increased self-efficacy, improved perceptions of the positive aspects of caregiving, and significant reductions in stress, strain, anxiety, and depression in caregivers.

Conclusion: Family caregivers are an integral, yet increasingly overburdened, part of the health care system. Given the many demands placed on family caregivers of persons with dementia, the potential for caregivers to access support services from the convenience of their own home, such as Internet resources, is attractive.

Remember DLB: Sleep Behaviour Disorder Is Not Associated with the Progression of Dementia with Lewy Bodies

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Background Information: There is a strong predilection for REM sleep behavioural disorder (RBD) to occur in synucleinopathies, a group of neurodegenerative disorders that includes Parkinson's Dementia and Dementia with Lewy Bodies (DLB). RBD often precedes the onset of Parkinsonism and degenerative dementia in both Parkinson's disease and Dementia with Lewy Bodies. This suggests an interconnection between RBD and degenerative dementias.

Objective: To identify the interplay between the presence of RBD and the progression of DLB.

Method: In this single centre, retrospective study, the medical charts of 47 patients with clinically suspected DLB were reviewed. Baseline demographic data were collected with respect to presenting cognitive and functional scores, age of dementia onset, DLB clinical characteristics, gender, ethnicity, education, co-morbidities, use of medication, and RBD age of onset/symptomology/treatment when applicable. Progression is defined by the average change over a three-year period in cognitive (3MS) and activities of daily living (Lawton Scale) scores. Chi square tests were performed between the control (patients with DLB without REM sleep behaviour disorder) and experimental (patients with DLB and REM sleep behavioural disorder) groups with respect to changes in cognitive (3MS) and activities of daily living (Lawton Scale) scores over time.

Results: Chi square tests demonstrate no significant difference between the progression of DLB with or without RBD (p value of .333).

Conclusion: An association cannot be made between RBD and DLB progression. The frequent tendency of RBD to occur in synucleinopathies and rarely in tauopathies supports the concept of a selective vulnerability in key neuronal networks. This selective vulnerability may result in RBD development in, but not progression of, RBD.

Screening for Early Identification of Mental Health Issues in Seniors: the Development of an Evidence-based Standardized, User-Friendly Toolkit for Use in the Primary Care Setting

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Background Information: Historically, identification rates of mental health disorders in seniors presenting in primary care settings are low. There have been repeated calls for standardized 'screening' of mental health disorders for seniors, with the goal of enhancing detection and more timely intervention.

Objective: The primary objective of this grant-funded project was to develop a standardized, user-friendly toolkit for the early identification of mental health issues in seniors for use in both rural and urban primary care settings in Alberta.

Methods: Systematic reviews of the literature initially were conducted for anxiety, dementia, depression, and substance use disorder. Studies meeting inclusionary criteria (e.g., assessment of predictive properties, used a gold standard for diagnosis, targeted the population of interest, etc.) were included. Following the systematic reviews, an external Expert Panel provided validation of the selected psychometrically sound tools for use in the toolkit. Health-care professionals in both rural and urban primary care settings then provided input on the feasibility of use of the selected tools in their setting.

Results: Screening tools were identified for each of the four disorders, with all tools meeting a number of criteria, including a high degree of accuracy in identifying those with and without the disorder, ease of administration (e.g., short, easy to score), and non-proprietary.

Conclusion: The development of a standardized, user-friendly toolkit for the early identification of mental health issues in seniors for use in both rural and urban primary care settings in Alberta represents an important and foundational step toward increasing rates of early detection and improving treatment of mental disorders. To facilitate uptake, Web-based and print versions of the toolkit will be developed and available to health-care professionals.

An Examination of the Effectiveness of Community-based Comprehensive Day Programs for Seniors

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Background Information: Day centre programs, such as CHOICE, help support older people who are experiencing multiple ongoing health problems, with the goal of allowing them to remain living independently in their own homes longer, and to reduce their use of in-patient and emergency unit services. Since CHOICE's inception, there have been changes to the health-care system, including an increased orientation to 'aging in the right place'. Goals of this research were to describe the characteristics of CHOICE clients and to determine their use of other segments of the health-care system (e.g., Emergency room visits).

Methods: Retrospective chart review of 195 clients at two Edmonton CHOICE Day Care sites.

Results: Mean age was 79.91 (SD=8.09); 56% were female; with an average of 6.78 (SD=2.58) co-morbidities; 45% of the clients had a dementia. Clients scored below the cut-offs for impairment on all cognitive (MMSE/MoCA) and functional (FAB/Berg/Tinetti) tests, except the Tinetti on admission. Emergency room visits (1.26 vs. 0.52) and hospitalizations (1.26 vs. 0.52) decreased significantly in the one-year period pre- vs. post-CHOICE admission. Incidence of falls declined by 80% from pre-admission to one-year post-admission.

Conclusion: CHOICE client profiles are consistent with the program's mandate. Attendance at the CHOICE program was found to be associated with significant decreases in emergency room visits, hospitalizations, and incidence of falls. Day programs appear effective in not only reducing the use of acute care costs by medically complex community dwelling seniors, but also in allowing CHOICE attendees to remain living independently in their own homes longer.

Advance Care Planning Preferences: Would Physician Exploring their own Preferences Enhance the Likelihood of them Exploring those of their Patients?

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Background Information: In the absence of an advance care plan (ACP), patients with end-stage serious illnesses or injuries who can no longer speak for themselves may be subjected to unwanted invasive treatments or interventions. Hospitalist physicians can contribute to the quality and dignity of end-of-life care by eliciting advance care preferences with patients and families while the patient is still capable of consenting to, or refusing, treatment or other care.

Objective: The purpose of this study was to determine whether physician-to-physician conversation about their own advance care preferences increases the likelihood that they may talk with patients about the patient's ACP.

Methods: Over a two-week period, the hospitalist study lead engaged 107 physician colleagues in informal conversations about their own advance care planning. After responding to two standard questions, the physician received an "Advance Care Planning Matters!" button and information card. A follow-up survey was delivered two weeks later.

Results: 72% of survey respondents (n=46) spent time thinking more about their own advance care preferences subsequent to the conversation and 18 (39%) discussed these preferences with loved ones. Sixteen (35%) then explored their loved ones' ACP preferences. Eight (17%) indicated they now had an increased level of comfort talking about ACP with patients. Thirty-eight (82%) thought physicians who have gone through their own ACP journey are more likely to talk with patients about ACP, and 38(82%) thought physician-to-physician conversations can increase their comfort in doing so.

Conclusion: Physicians who journey through their own ACP may be more likely to talk with patients about ACP, and physician-to-physician conversations can increase their comfort in initiating these talks.

Social Specialized Geriatric Services Outreach Teams and the Home and Community-based Network Analysis of Frail Seniors Discharged from Acute Care

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Background Information: In a series of four case studies, frail seniors recently discharged from an acute care admission and referred to geriatric outreach teams were asked to identify the 'team' helping to keep them independent at home and to rate their perceptions of the relationships between each provider. Providers were then contacted and their perceptions of the inter-relationships were rated.

Methods: The patient and provider inter-relationship ratings were then analyzed using social network analysis.

Results: The analysis reveals the complexity and diversity of home and community-based 'teams', compares the perceptions of patients and providers, and indicates the 'centrality' of outreach teams in these post-discharge situations.

Pharmacy-managed Anticoagulation Service in Supportive Living

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Background Information: In recent years there has been an increase in pharmacist-managed anticoagulation programs. However, anticoagulation management services (AMS) for patients in supportive living have not been examined.

Objective: This study examines pharmacist-managed versus comprehensive multidisciplinary physician-managed anticoagulation monitoring.

Methods: We conducted a retrospective review of patients enrolled in a seniors' day program (physician-managed) vs. Pharmacare's supportive living AMS (pharmacist-managed) using case control methodology. The primary outcome was time in therapeutic range (TTR), with TTR determined by using both the fraction of International Normalized Ratio (INR) values method and Rosendaal's linear interpolation method. Secondary outcome measures were frequency of INR testing and adverse events, including major bleeding and thromboembolic events.

Results: The pharmacist-managed AMS had a TTR of 69.8% vs. 64.7% ($p < .01$) in the physician-managed group using fraction of INRs method, with TTR values of 74.0% vs. 75.3% respectively ($p < .01$) using the Rosedaal method. Pharmacist-managed AMS had a lower, but non-significant, sub-therapeutic frequency (INR < 1.5) of 2.8% vs. 1.9% using fraction of INRs method and higher, 1.0% vs. 1.1% using the Rosendaal method. Pharmacist-managed AMS had a higher, but non-significant, supra-therapeutic frequency (INR > 5) of 0.9% vs. 0.7% using fraction of INRs and 0.5% vs. 0.2% using the Rosendaal method. The percentage of patients experiencing adverse events was non-significant

in pharmacist-managed vs. physician-managed AMS, with major bleeding events at 4.4% vs. 4.7%, respectively; thromboembolic events at 2.2% vs. 3.7%, respectively.

Conclusion: Pharmacist-managed AMS demonstrated non-inferiority compared to the multidisciplinary physician-managed AMS. Differences in TTR varied as a function of methodology (e.g., use of fraction of INRs or the Rosendaal linear interpolation method), with these differences confounded by practice settings and access to INR testing.

Feasibility of Measuring the Physical Activity of Older In-Patients

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Background Information: There is extensive evidence that exercise, even moderate amounts, improves health. The literature also shows that decreased activity or inactivity is detrimental to health and wellness. This study examined the feasibility of measuring physical activity of in-patients in a geriatric rehabilitation setting using a custom-built, tri-axial accelerometer, in preparation for a study of the effectiveness of a mobility program.

Methods: A tri-axial accelerometer housed in a custom-built package was used to track the ambulatory movement of patients in a tertiary rehabilitation hospital. Patients were asked to participate once they were assessed as 'Independent' or 'Supervised' by a physical therapist. Those who agreed to participate were asked to wear the device until discharge. The device was secured to the lower leg. Each accelerometer was individually calibrated using a standardized distance and validated throughout the trial. Ambulation was determined using the horizontal and vertical components of the acceleration data. A thermometer was used to confirm that the device was being worn.

Results: 13 patients (8F 5M) agreed to take part. The average age was 83 yrs. Six were classified as 'Independent' walkers and 7 as 'Supervised'. Ten patients completed the study; one withdrew and two were stopped due to changes in their medical condition. Total distance walked in the 6 days prior to discharge averaged 6,529 m (+ 4,313 m), 4,152 m (+ 1,331 m) for females and 8,917 m (+ 5,126 m) for males. Thermometer data confirmed the wear time indicated by the accelerometer measure.

Conclusion: Measuring physical activity in an older population presents challenges. This study demonstrated that measuring ambulation with a custom-designed/built device is feasible in an older in-patient population.

Mortality Statistics Show Canadians with Multiple Sclerosis (MS) Are Living Longer

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Background Information: In the past, persons with MS died younger than the general population. Since the 1990s, important treatment-related changes, including disease modifying drugs, have been introduced which might influence MS outcomes. This study examined whether such changes are reflected in Canadian MS mortality rates.

Methods: Statistics Canada provided data on deaths due to MS from 1975 to 2009 and population statistics. Average annual MS mortality rates per 100,000 population were calculated for each 5-year period within this time span, along with rates for each year and for the entire 35-year period, by gender and age.

Results: The 35-year Canadian MS mortality rate was 1.23; trend analysis indicated that annual rates were stable over this time span. The 35-year rate for females was higher (1.45) than for males (0.99), with both female and male rates remaining stable over time. Regardless of gender, trend analysis showed a significant decrease in mortality rates for persons with MS under age 40 and a significant increase for persons over 60. The mortality rate for females under 40 dropped from 0.11 in 1975–79 to 0.05 in 2005–09 and rose from 0.51 to 1.00 for those over 60. The mortality rate for males under 40 dropped from 0.06 to 0.03 and rose from 0.34 to 0.52 for those over 60.

Discussion: More persons with MS still die under age 60 than members of the general population. However, there has been a shift to later age at death, according to Canadian MS mortality rates, that has especially benefited women. The fact that persons with MS are living longer suggests that more health and social services will be required to meet the particular needs of those aging with MS.

Adherence to Guidelines in Hospital-acquired Pneumonia

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Background: What is the adherence to guidelines in Hospital-acquired pneumonia? What is the adherence to guidelines in aspiration pneumonia?

Methods: Ethics and a site approval Chart Review from Grey Nuns Community Hospital. 207 charts were pulled; 108 charts with diagnostic code hospital acquired pneumonia were pulled, from 10/1/2008 to 09/30/2011. 227 charts with diagnostic code aspiration pneumonia were found, from 10/1/2008 to 09/30/2011; 99 charts were randomly selected out of those 227 charts. Information on demographic, comorbidities, antibiotics used and length of therapy, mortality, ICU admission, mortality, and admitting services was gathered. Information on whether or not swallowing assessment was done, and on chest X-ray, MRSA positive, and VRE positive was also gathered from the charts.

Results: Hospital-acquired pneumonia group, guidelines were followed in 44.9% of the time Aspiration pneumonia group, guidelines were followed 64.5% of the time.

Discussion: This study showed that the guidelines were commonly noted when it came to hospital-acquired pneumonia. The dose of levaquin was often followed n too low, which could be explained by the fact that Alberta Health has a pathway for community-acquired pneumonia but nothing for hospital-acquired pneumonia. Mortality rates were higher in the group where guidelines were followed, which could be explained by the fact that the sicker patients were more likely to have guidelines followed, and the sicker patients were more likely to pass away.

Conclusion: A revised standard order sheet for hospital pneumonia would be beneficial.

Enhancing Community-based Care for the Elderly: Geriatric Consult Team Evaluation Based on Stakeholders Experience

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Background information: Edmonton's Home Living Geriatric Consult Team (GCT) is a community-based interdisciplinary team that provides in-home comprehensive geriatric assessment and interventions for unstable elders receiving home care (HC) support. It was designed with the goal of reducing avoidable emergency department visits, hospital admissions, and early institutionalization through the early identification of high-risk elders and immediate intervention.

Objective: The purpose of this project was to evaluate the effectiveness of the GCT based on the experiences of its stakeholders: geriatric patients, their caregivers, HC case managers, and family physicians.

Methods: Data from family physicians were collected through anonymous surveys while semi-structured interviews were conducted for HC case managers, patients, and their caregivers. Both quantitative and qualitative analysis of data will be performed. Ethical considerations have been supported by ARECCI guidelines.

Results: Results to date include interview responses from six patients and eight caregivers. Overall, patients and caregivers reported that: 1) They felt involved in GCT discussions and decisions about care; 2) They believed GCT involvement was necessary and played a direct role in allowing patients to remain at home; and that 3) GCT involvement lessened the burden of being a caregiver. Results from family physicians and HC case managers are pending and will be incorporated once complete.

Discussion: Given its unique position in primary care, the GCT has the ability to facilitate collaboration between HC case managers and family physicians in the parallel care of complex geriatric patients, thus bridging the gap between these two major care providers. An understanding of GCT stakeholders' experiences and perceptions is fundamental to program success.

Conclusion: Although the primary intention of this project was for GCT quality improvement, our findings may also have useful implications for future innovation in geriatric care.

Improving Diabetic Care on a Geriatric Rehabilitation Unit: Piloting the Feasibility of Using a Diabetes Management Flow Sheet

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Background Information: Type 2 diabetes is a common condition in hospitalized geriatric patients. We modified the Canadian Diabetes Association (CDA) flow sheet for use on a geriatric in-patient rehabilitation unit to evaluate our performance on indicators of quality care and feasibility of using this tool to optimize diabetes management.

Methods: The flow sheet was piloted from October 2011 to October 2012. The care of diabetic patients was guided by the flow sheet, but was otherwise "as usual" care with no other formal interventions.

Results: 28 diabetic flow sheets were collected, with completion rates for each item ranging from 61% to 100%. House staff required reminders to complete the flow sheet and its use varied with different attending physicians. 89% of patients

had an A1c ordered or available, 32% had an ACR done in hospital, and 64% a documented sensory foot exam. 71% were on a statin, 64% on ASA, and 50% on an ARB/ACEi. 25% of patients had an annual eye exam arranged and 18% had nail care arranged. 43% had the influenza, and 21% the pneumococcal vaccines.

Discussion: House staff regularly checked A1c and ensured patients were on appropriate medications. However, clarification of the status of interventions usually done as outpatients (eye exams, community nail care, and vaccinations) was less commonly completed.

Conclusion: Use of a modified CDA flow sheet with geriatric in-patients is feasible to audit and encourage guideline-directed diabetes care. Better integration into the patient's chart, use within an electronic patient record, and house staff training would improve its utilization and effectiveness. The diabetes flow sheet may have a role as a communication tool with primary care physicians to identify items requiring follow-up upon discharge.

Health Professional Contributions to the Initiation of a Benzodiazepine De-prescribing Guideline

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Background Information: Benzodiazepines are frequently used for extended periods of time and are associated with significant morbidity in older adults.

Objective: The purpose of this presentation is to describe the contributions from health professionals in the development and implementation of an interprovincial benzodiazepine de-prescribing guideline.

Methods: Canadian Institute of Health Research funding was received to conduct an expert and stakeholder 1.5 day planning meeting regarding interprofessional approaches to benzodiazepine tapering. Objectives were to discuss challenges related to benzodiazepines, critique a proposed interprofessional model for de-prescribing benzodiazepines, and identify interventions and evaluation strategies for implementing the model. Discussions and presentations were recorded and transcribed. Activities and outcomes are presented descriptively.

Results: Nineteen local service providers and 14 stakeholders, in addition to the 5 members of the research team, participated in the meeting. Key messages identified by the participants were: adaptability of the de-prescribing model, the need to address the challenges of implementing changes in a structured and highly regulated environment such as long-term care, the impact or liability of de-prescribing on the prescriber and other health professionals, and the challenge of changing practice amongst established health professionals. Development and implementation of a benzodiazepine 'de-prescribing guideline' was discussed. The RE-AIM (reach, effectiveness, adoption, implementation, maintenance) model (a 5-dimensional framework that increases chances of an intervention being successful in "real world" settings) was chosen to frame further intervention and evaluation work.

Conclusions: Health professionals are supportive of guidelines for benzodiazepine de-prescribing. Evidence to support positive impact of benzodiazepine tapering is available to guide development of a de-prescribing guideline. The primary concern is related to usability of such a guideline and implementing the practice into a culture of prescribing.

Geriatrics Pre-clerkship Observerships: a Strategy To Increase Early Exposure and Interest in Geriatric Medicine

Marie Leung[1], Christopher Frank[2], Michelle Gibson[2], Peng You[1]. [1]Queen's University, Kingston, ON; [2]Division of Geriatric Medicine, St. Mary's of the Lake, Kingston, ON.

Background Information: The Queen's Geriatric Interest Group (QGIG) is a student-based initiative developed to foster interest in the field of geriatric medicine, with goals of increasing overall knowledge of geriatric care and to increase recruitment to geriatric-focused fields. Pre-clerkship observerships have been documented as valuable methods in increasing exposure and interest to a given specialty of medicine. QGIG leaders collaborated with the Division of Geriatric Medicine to arrange scheduled observerships at St. Mary's of the Lake Hospital, a health-care centre with a focus on specialized geriatrics and complex continuing care.

Methods: Given challenges of student and preceptor schedules, four-hour observerships were organized for weekend mornings. Students participated in "on-call rounds" on the geriatric rehabilitation unit under supervision of the resident and/or attending physician. Students were given small roles including patient assessment, appropriate chart documentation, and reviewing medication lists. After each experience, students were asked to comment on strengths, weaknesses, and recommendations for the experience. The UCLA Geriatric Attitude Survey (GAS) was used pre- and post-observership to determine changes in participant attitudes towards geriatric medicine.

Results: A total of 50 students participated in the observership program between February 2013 and January 2014. Students viewed the observerships as providing excellent role models for geriatric care and subjectively increased their interest in the specialty. Analysis of student attitudes towards geriatrics pre- and post-observership is ongoing.

An Electronic System for Managing a Specialized Geriatric Research Clinic

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Background Information: Current electronic medical record systems are not tailored to the workflow of a specialized geriatric clinic. Systems that can be adapted to meet the needs of a geriatric clinic rarely allow the collected data to be analyzed for research purposes. Also, mobile touch-based computers have become popular amongst health-care workers, but this technology has not been quickly supported by health-care organizations. Many software solutions are not practical and lack usability due to the usage of small buttons, fonts, complex menu systems, and challenging user interfaces.

Method: We have developed a Web-based geriatric patient registry system that is usable on both desktop and tablet computers. The system was designed to allow for the capture of all data points commonly collected in a comprehensive geriatric assessment, including patient demographics, referral information, histories, review of symptoms, physical assessment, differential diagnosis, and plans for future care.

Results: The system allows for the user to digitally capture tests including the SMMSE, GDS, BNA, ADL, FAQ, and Zarit Burden Interview, among others. From collected data, the system generates clinic notes and reports, potentially reducing, or in some instances eliminating, dictation time. Lastly, the system has been designed for use in clinical research, with data anonimization and analytical tools built into the application. Data can also be analyzed using statistical analysis software such as SPSS and SASS.

Conclusion: Through the use of this system, we anticipate an increase both the quality of care provided to patients and efficiency of clinical practice. Although this system is in its "beta testing" stage, we anticipate this system will decrease visit length and dictation time, facilitate clinical research, and accurately measure quality of care indicators.

The Effect of a Structured vs. Non-structured Homebound Seniors Program on Resident Attitudes Toward House Calls

Jain Rahul, Jocelyn Charles, Annie Hadi, Debbie Elman, Jennifer Kong. University of Toronto, Toronto, ON.

Background Information: As the number of Canadians aged 65 years and older continues to rise, more attention has been given to home-based health care. Homebound seniors have higher rates of diseases, chronic medication use, emergency department visits, hospitalizations, and challenges in accessing care. Despite this growing concern, the number of physicians participating in house calls is declining. Family Medicine residents have generally perceived lack of training as a significant factor limiting their likelihood of pursuing house calls in the future. Many academic centres have looked into instituting a structured homebound seniors program as part of residency training to improve resident knowledge, skills, attitudes, and confidence in performing house calls.

Method: A survey was distributed to Family Medicine residents from all 15 teaching sites at the University of Toronto. Sites having either a structured or non-structured homebound seniors program implemented in the residency curriculum were compared to assess if there is a difference in resident perception of house calls. A needs assessment of resident perspective on improving the house call curriculum was also performed.

Results: The study demonstrated with strong statistical significance that structured programs compared to non-structured programs increase resident exposure, positive attitudes, confidence, and plans of pursuing house calls in their future practice. Similarly, a strong correlation of increasing exposure to house calls was associated with higher resident satisfaction. The needs assessment demonstrated that training on billing, procedures, having increased supervision, and greater exposure to house calls would improve their experience during residency.

Conclusions: There are positive implications of this study for the health-care system, medical education system, practitioners, patients, and families in improving and sustaining care for homebound seniors, which can be implemented at a national level.

Prevalence of Possible Metabolic Drug Interations in Octogenarians at a Geriatric Outpatient Clinic

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Background Information: The use of psychotropic and analgesic medications is common in older adults and may be associated with drug–drug interactions (DDI) and adverse effects. DDI can be based on Phase 1 metabolism (oxidation/reduction, including the cytochrome p 450 system) or phase 2 metabolism (conjugation or the UGT and ABC transporters). ***Objective:*** The aim is to assess the prevalence of possible metabolic drug interactions with psychotropic and analgesic medications in octogenarians.

Methods: Retrospective chart review of all consecutive patients seen at the outpatients Senior's Clinic at the University of Alberta in 2012. Each subject's medication list was analyzed and coded, regarding substrate and inhibitor of enzymes in Phase I and Phase II systems and for polypharmacy (use of 5 or more prescribed medications). Psychotropic and pain medications were analyzed for interaction with the phases of metabolism. Simple descriptive statistics, chi-square and logistic regression analysis were done using SPSS.

Results: Mean age was 85.9 years (SD 4.09) and 259 (69%) were females. Polypharmacy was seen in 253 (68%) subjects. Out of 372 subjects, 90 subjects (24%) were found to have potential drug interactions within their list of medications. Fifteen subjects (4%) who were taking pain medications and 75 subjects (20%) who were taking psychotrophic medications had possible metabolic drug interactions. Polypharmacy was associated with a 3.5 fold increase in the risk of metabolic drug interactions, OR 4.46, 95% CI 2.27–8.74 ($p < .0001$).

Conclusion: In this study, a significant proportion of octogenarians who were on pain and psychotrophic medications had possible metabolic drug interactions within their list of daily medications. Increasing awareness and knowledge of metabolic drug interactions is important to choose safe drug combinations and to prevent toxicity.

DISCUSSED POSTER PRESENTATIONS

Factors Associated with Osteoporosis Screening and Bisphosphonate Therapy Among Older Adults in Primary Care

Karen Leung, Haley Abrams, Shakibeh Edani, MichaelLa, Michael Allan. University of Alberta, Edmonton, AB.

Background Information: Fragility fractures secondary to osteoporosis are associated with excess mortality and disability among older individuals. Studies have consistently reported low rates of osteoporosis screening; however, few have examined which patient and physician factors influence screening uptake and pharmacotherapy for osteoporosis.

Methods: A retrospective chart review was conducted among 455 individuals (281 women and 174 men) age 65 or greater with at least one clinic visit between 2011 to October 2013. Components of the Fracture Risk Assessment Tool (FRAX), Charlson Comorbidity Index, Osteoporosis Self-Assessment Tool (OST) score, and patient and physician sociodemographic variables were extracted using a standardized data extraction form. The outcomes of interest were the proportions of individuals who received bone mineral density screening and subsequent bisphosphonate therapy.

Results: Three hundred seventy-one patients (69.7%) had received at least one bone mineral density screening. Multivariate analysis revealed that women compared to men were more likely to receive osteoporosis screening (OR=4.17, 95% CI: 2.47–7.02). Furthermore, individuals with a female physician (OR=3.87, 95% CI: 2.20–6.81), previous fragility fracture (OR=14.92, 95% CI: 3.41–65.22), previous breast or prostate cancer (OR=4.43, 95% CI: 1.17–16.87), and a positive screen on the OST (OR=2.40, 95% CI: 1.32–4.362.20–6.81) were more likely to receive bone mineral density test. Male and female physicians were equally as likely to prescribe bisphosphonates for individuals with osteoporosis. However, individuals with an active solid or hematological malignancy were less likely to receive bisphosphonate therapy (OR=0.49, 95% CI: 0.07–0.75).

Conclusions: Compared to women, men continue to be underscreened for osteoporosis. Screening and pharmacotherapy for osteoporosis is multifactorial and influenced by patients' current co-morbidity burden and fracture risk.

The Effects of Tumor Necrosis Factor Inhibitors and Corticosteroids on Bone Mineral Density in Patients with Rheumatoid Arthritis and Ankylosing Spondylitis: a Meta-Analysis of Randomized Controlled Trials

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Background Information: Inflammation is a risk factor for osteoporosis. Treating inflammation may improve bone mineral density (BMD).

Objective: This study aimed to examine if anti-rheumatic drugs for rheumatoid arthritis (RA), psoriatic arthritis (PsA), psoriasis (PSO), and ankylosing spondylitis (AS) improve BMD.

Methods: MEDLINE, Embase, and Cochrane were searched from 1960 to present for English-language randomized controlled trials conducted in adults. Studies were grouped based on disease, treatment type, and site of BMD measurement. Differences in change of BMD (ΔBMD) between treatment and control were standardized across included studies to yield standardized mean difference (SMD).

Results: 13 studies were eligible (11 RA, 0 PsA, 0 PSO, 2 AS). For RA, less hand bone loss was seen with TNF inhibitors (TNFi) (SMD ΔBMD = 0.33, 95% CI 0.13–0.53, p = .001, I2=0%) and corticosteroids (SMD ΔBMD = 0.51, 95% CI 0.20–0.81, p =.001, I2=0%). TNFi had neutral effect on lumbar spine (LS) and hip BMD. Corticosteroids had negative effect on LS (SMD ΔBMD = -0.30, 95% CI -0.55 to -0.04, p =.02, I2=52%) but neutral effect on hip. For AS, increase in BMD was seen with TNFi on both LS (SMD ΔBMD = 0.96, 95% CI 0.64–1.27, p < .001, I2=16%), and hip (SMD ΔBMD = 0.38, 95% CI 0.13–0.62, p = .003, I2=0%). There was insufficient data to meta-analyze other diseases and other DMARDs.

Conclusion*:* Based on our RA analysis, TNFi yielded less hand bone loss, where synovitis is often present, but had no effect on LS and hip BMD. Corticosteroids also yielded less hand bone loss, but it had negative effect in LS and not the hip. For AS, TNFi increased BMD.

Improving the Care of Geriatric Patients on a Provincial CTU

Katalin Balogh, Jenny Basran, Samuel Alan Stewart, Heather Ward, Ada Lam. University of Saskatchewan, Saskatoon, SK.

Background Information*:* Geriatric patients are at high risk for in-hospital deconditioning, malnutrition, and polypharmacy, resulting in delayed discharge and iatrogenic complications. Parameters for improving the care of geriatric patients on the Clinical Teaching Unit (CTU) were proposed by internal medicine residents during academic half-day. The parameters include: 1) obtaining patient's body weight (admission & weekly); 2) supplementing all patients with daily oral Calcium and Vitamin D, and weekly bisphosphonate, where appropriate; and 3) reviewing patient's diagnoses and medications weekly in writing.

Methods: Reminders in person/in writing to all (1st intervention) and in email to senior residents (2nd intervention) were implemented to improve compliance with the above measures. Electronic progress forms were initiated as a 3rd intervention. During the second year of the study, we developed a pre-printed CTU admission order set that included multiple "elderly-friendly" measures (4th intervention). Retrospective chart review was performed of all geriatric patients discharged from CTU at Royal University Hospital in Saskatoon from September 2012 to April, 2014.

Results: In the first year 317 charts were reviewed. Our study found that the 1st intervention resulted in improvement in ordering of weights during admission (from 33% to 38%), Ca/Vitamin D supplementation (from 33% to 56% and from 45% to 65%, respectively), and medication reconciliation (from 20% to 35%). The 2nd intervention was found to be less effective, with medication reconciliation dropping to 32%; returning to 34% after initiating the 3rd intervention. The 3rd intervention was paradoxically associated with decreased ordering of weights. Final evaluation of the impact of the pre-printed CTU admission orders is pending.

Conclusion: Education and active involvement of residents can improve the implementation of "elderly-friendly" basic health measures on a provincial CTU.

Is Bilingualism Associated with a Lower Risk of Dementia in Community-Living Older Adults? Cross-sectional and Prospective Analyses

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Objective: To determine whether bilingualism is associated with dementia in cross-sectional or prospective analyses of older adults.

Methods: In 1991, 1616 community-living older adults were assessed and followed five years later. Measures included age, gender, education, subjective memory loss (SML), and the modified Mini-Mental State Examination (3MS). Dementia was determined by clinical examination in those who scored below the cut point on the 3MS. Language status was categorized based upon self-report into three groups: Monolingual English, Bilingual English, and English as a Second Language (ESL).

Results: The ESL category had lower education, lower 3MS scores, more SML, and were more likely to be diagnosed

with Cognitive Impairment, No Dementia (CIND) at both time 1 and time 2, compared to English-speakers. There was no association between being bilingual (ESL and English bilingual vs. Monolingual) and having dementia at time 1 in bivariate (OR (95% CI)=0.76 (0.41, 1.43)) or multivariate analyses (OR (95% CI)=0.84 (0.77, 0.92)). In those who were cognitively intact at time 1, there was no association between being bilingual and having dementia at time 2 in bivariate (OR (95%)=0.99 (0.61, 1.59) or multivariate analyses (OR (95%)=0.94 (0.88, 1.01).

Conclusions: We did not find any association between speaking more than one language and dementia.

Is Urinary Incontinence Associated with a History of Falls Among Chronic Benzodiazepine Users?

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Background Information: The association between benzodiazepines and the risk of falls in the elderly is well described. It remains unknown whether urinary incontinence mediates this risk.

Objective: The aim of this study was to assess the impact of urinary symptoms on the risk of falls among chronic benzodiazepine users.

Methods: A cross-sectional analysis was conducted using baseline data from 303 older benzodiazepine users enrolled in a randomized trial. A history of falls was ascertained by self-report. The presence of incontinence was defined as a score ≥ 1 on the International Consultation on Incontinence Questionnaire (ICIQ). Medication history, including daily benzodiazepine dose (converted to lorazepam equivalents), was obtained from pharmacy renewal profiles. The Montreal Cognitive Assessment (MoCA) was used to ascertain cognitive status. The prevalence of falls in participants with and without incontinence was compared with descriptive statistics; the magnitude of association was ascertained using univariate logistic regression.

Results: Of 303 chronic benzodiazepine users (mean duration of use = 10 years), 85 (28%) reported a history of falls and 66 (21.8%) reported incontinence. Participants reporting incontinence were twice as likely to report a history of falls than continent individuals (40.9% vs. 24.5%, respectively, $p = .01$, OR 2.1; 95% CI 1.2–3.8). Age (mean 74.5 vs. 74.9,), MoCA score (mean 25.8 vs. 25.3), and benzodiazepine dose (mean 1.3 mg lorazepam/day vs. 1.2 mg/day) did not differ between the incontinent and continent participants ($p > .05$).

Conclusion: Urinary incontinence was significantly associated with a history of falls in this older cohort of chronic benzodiazepine users. Further investigation is required to elucidate the temporal relationship between "rushing to the bathroom" and falling, as well as the causal contribution of other functional/mobility impairments.

Profile of a Geriatric Assessment and Treatment Unit in a Chronic Hospital/Rehabilitation Setting

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Background Information: Geriatric assessment and treatment units (GATUs) in acute care hospitals that electively admit frail older adults have all but disappeared.

Objective: The study objective is to describe the characteristics and outcomes of patients admitted to a GATU located in a chronic hospital/rehabilitation setting, which primarily admits patients from the community, distinguishing it from Acute Care for Elders units.

Methods: A retrospective chart review was conducted on patients discharged from the GATU between April 9, 2012 and June 3, 2013. Descriptive statistics were used to characterize the patient sample. Statistical differences were explored using paired *t*-tests.

Results: 102 patients were included, representing 111 admissions. The mean age was 82.0 (±7.9) years. Most patients were female (81.4%), widowed (61.8%), and admitted from the community (76.5%). The most common reasons for admission were pain management, falls, and deconditioning. The average number of co-morbidities per patient was 7.9 (range 2–19). On admission, the average Berg Balance Scale score was 28.5 (±13.0) and 74.2% were at medium or high risk for falls. Patients stayed on the unit an average of 28.3 (±12.0) days. On discharge, 72.1% were independent in ambulation vs. only 47.1% on admission ($p < .0001$), while 75.8% were independent in transferring vs. 66.7% on admission ($p = .15$). On discharge, 82.7% used a walker vs. 69.3% on admission ($p = .03$). The average Functional Independence Measure total score on discharge was 97.4 (±15.1) vs. 93.0 (±15.2) on

admission ($p < .0001$). Of those admitted from the community, 89.7% returned to the community.

Conclusions: The majority of patients on the GATU improved in mobility and functional status and returned to the community, demonstrating that frail patients with complex needs can benefit from a GATU in a non-acute care setting.

Improving Pain Control Following Fractures; Towards An Elder Friendly Emergency Department (Painfree) – Preliminary Results

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Background Information: Rapid detection and relief of pain is challenging when caring for older patients in the Emergency Department (ED). Fractures, a common reason for ED visits cause acute pain, which if relieved rapidly, improves well-being and reduces adverse events. The aim of this quality improvement initiative was to improve pain management and reduce adverse events including delirium, length of stay, and return visits in patients 75 years and older presenting with a fracture at any of three hospital EDs in Montreal, Canada.

Methods: A multifaceted intervention was developed based on data collected from electronic medical records and surveys of ED professionals and patients. A stepped-wedge design was used to implement the intervention sequentially; data are collected each time a site begins the intervention. Primary outcome is time to optimal pain management.

Results: Prior to intervention, we identified 95 patients (67% women, mean age 84 6 years) with 102 fractures over a two-month period. Median length of stay was 11 (IQR: 7.1–23.3) hours. Pain score was documented during the ED stay in 44% of patients with median time to documentation of 5 (IQR: 2.2–7.2) hours; 25% had no score documented. The median time to first analgesic was 3.4 (IQR: 1.8–5.5) hours, 27% did not receive any analgesia. Surveys distributed to 81 physicians and 198 nurses identified barriers to optimal pain management: time constraints, lack of resources and monitoring and potential adverse events. Results post-implementation at two EDs will be presented.

Conclusion: There is an important care gap in documentation and timely management of pain. Anticipated contributions of the PAINFREE initiative will be the development of tools to facilitate best practices for pain control and consequently improve outcomes.

Feasibility of Real-time Measurement of Stability and Vital Signs in an Older Population

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Background Information: Population aging has contributed to increasing falls in the older population. Fall detection has been widely studied, but most studies have not addressed possible physiological causes. This study examined the feasibility of simultaneously measuring stability and vital signs in real time to better understand the possible linkages.

Methods: The tilt angle of the body was logged while walking. Detection of a "near fall" or "fall" event was defined as a tilt angle greater than 45° and an impact acceleration > 2g, respectively. Oxygen saturation, heart rate, and body temperature were sampled once per minute and synchronized with the fall detector.

Results: Devices were tested on 7 healthy subjects performing activities of daily living between 16 to 40 hours over 5 days. The mean tilt angle was 24°±15°. The false-positive rate was 0.11%. The mean heart rate, oxygen saturation, and skin temperature were 72.2±10.0 heart bpm, 97±2% and 29.7±1.8°C, respectively. An 84-year-old woman volunteered to test the device at home for 6 hours: average tilt angle was 28°±17°; heart rate, oxygen saturation, and body temperature averaged 75.4±6.9 bpm, 94.6±1.7%, and 33.0±0.8°C, respectively.

Conclusion: This study supported the feasibility of combining fall detection with real-time physiological monitoring. Measurements taken by the physiological monitor agreed with expected values from the literature. These results were based on a one-day trial and further study is required to correlate the vital signs and the risk of falls.

A Review of Hospital-based Interventions To Improve In-patient Pneumococcal Vaccination

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Background Information: To review the impact of provider-based, organizational strategies in acute care settings to improve pneumococcal vaccination rates among patients at risk of pneumococcal disease (i.e., those over 65 years, and 2–64 years of age with high-risk medical conditions).

Methods: A search was conducted using MEDLINE, Scopus, CINAHL, and Web of Science databases for hospital-based, in-patient studies which evaluated strategies to improve pneumococcal vaccination rates. Studies published in English from 1983–2013 were included.

Results: A total of 34 studies were included; 14 studies evaluated physician reminders such as chart or paper reminders, pre-printed orders (PPOs), and computerized reminders, and 26 standing orders programs (SOPs). Pre/post design was the most common study design; only 7 studies had a control group. Overall, 31 studies showed improvements in the rate of pneumococcal vaccination following intervention, of which 18 were statistically significant. Physician reminders resulted in 29%–67% immunization rate, PPCO 5%–42%, and SOPs 3%–78%.

Discussion: Although this review found higher immunizations rates with SOPs, the impact on immunization rates in eligible patients varied significantly. The quality and design of the studies makes interpretation of the best approach challenging. High-quality, randomized-controlled studies are required to determine the true effect of each type of institutional immunization strategy.

Conclusion: Hospital-based interventions improve pneumococcal vaccination in older adults and younger individuals at risk. Further research is required to determine the ideal intervention.

Geriatrician/Care of the Elderly Physician Resource Planning: Are We Fulfilling Projected Societal Needs for Elder Care Physicians?

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Background Information: The Canadian Association of Interns and Residents (CAIR) Specialist Forum Project Proposal September 2013 was aimed to create a health human resources platform in Canada by providing residents with reliable information on physician employment opportunities in Canada.

Objectives: 1. Determine number of Specialist Geriatricians (SpGrtn) in geriatrics; 2. Estimate the societal need; 3. Project the number of SpGrtns physicians retiring in geriatrics within the next 5 to 10 years.

Methods: In the absence of an available benchmark, we used a physician/population ratio of 1.25 SpGrtns/10,000 people 65+2 or 1 SpGrtn/ 4,000 people 75+3, and 2011 Canadian Census data (med population projections 65+ or 75+) over ten years. We estimated the anticipated retirement of present Canadian SpGrtns as 40 years beyond their medical degree (MD).

Results: In January 2014, there were 285 practicing SpGrtns and 134 Care of the Elderly (CoE) trained physicians, an increase of 11% and 30%, respectively, from the 2011 estimate. The calculated need in 2014 is 445 SpGrtns (1.25/10,000 65+) or 610 (1/4,000 75+). The calculated need for SpGrtns in 2021 is 567 (1.25/10,000 65+) or 756 (1/4,000 75+). Across Canada, at least 10 SpGrtns are trained annually (100 in 10 years). Between 2012 and 2021, approximately 95 of the existing SpGrtns will have practiced 40 years.

Conclusions: As a preliminary response to the CAIR initiative, we have estimated that in 2021 there will be 290 SpGrtns (285-95+100) resulting in a shortfall 277 SpGrtns (567-290) in Canada. This is sufficient justification for continued efforts to attract Canadian medical trainees to the field of Geriatric Medicine and to recruit geriatric specialists to Canada. Caveat: Not all SpGrtns and Coe MDs are working full time in geriatrics, so the short fall will be even worse.

Cerebral Hypoperfusion Is Exaggerated with an Upright Posture in Heart Failure

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Background information: Cognitive impairments are prevalent in heart failure and have been mechanistically linked to cerebral hypoperfusion. This relationship has been based solely on measurements of cerebral blood flow (CBF) in the supine position; however, upright postures common to daily living may pose an additional challenge.

Objective: The purpose of this study was to examine CBF in response to upright sitting in heart failure patients and healthy controls.

Methods: Twenty-two heart failure patients (age=69±9 years, ejection fraction=33±11%) were age- and sex-matched to twenty-two healthy controls (age=70±9 years). Participants were administered the Montreal Cognitive Assessment (MoCA) to assess global cognition. Gait speed was calculated by utilizing an 8 m usual speed walking test. The right internal carotid artery diameter and mean flow velocity was obtained with ultrasound when supine and seated to provide a quantitative measure of CBF.

Results: Heart failure patients scored lower on the MoCA (24±3) than their healthy counterparts (28±1; $p < .001$) and had a slower gait speed (heart failure=0.98±0.2 m/s, control=1.3±0.2 m/s; $p < .001$). Furthermore, the drop in CBF from supine to seated was greater in the heart failure patients (-40 mL/min) than healthy controls (-5 mL/min; $p = .001$) and translated to a 15% and 0.02% average drop from baseline values, respectively.

Conclusions: Importantly, this is the first time CBF has been measured in an upright position in a heart failure population. The found reduction from supine may have important clinical implications on cognition.

Is Depression Appropriately Measured in Geriatric Outpatient Clinics? Rasch Analysis of the Geriatric Depression Scale-15 (GDS-15)

Mei Huang, Lisa Koski, McGill University, Montreal, QC.

Background Information: Previous studies using Rasch analysis in Brazilian, US, and Chinese samples have yielded mixed conclusions regarding the unidimensionality of the GDS-15, suggesting that differences in test language or sample characteristics may influence psychometric properties.

Objective*:* To estimate the psychometric properties of the GDS-15, including the extent to which they are influenced by test language and cognitive ability among Canadian elders referred to a university-based geriatric outpatient clinic.

Methods: Patient data were obtained through retrospective analysis of a clinical database in two geriatric outpatient clinics in Montréal, Québec. GDS data (n = 214) were recorded from 178 patients (M=81.0, SD=6.3, 68% females) tested with English (n = 130), French (n = 64) or Italian (n = 20) test forms. Cognitive ability was measured by the Mini-Mental State Examination and Montreal Cognitive Assessment. Data analysis in RUMM 2030 was conducted to determine whether the GDS fit a Rasch Measurement Model based on item response theory.

Results: A significant item-trait interaction indicated poor fit of the GDS-15 to a unidimensional Rasch model (chi^2=83.5, $p < .001$). Three misfit items were "Feeling life is empty" (overfit), "Prefer to stay at home" and "Problems with memory" (underfit). Removal of these items yielded a unidimensional dataset (chi^2=35.9, $p = .06$). The item "feeling happy" showed differential item functioning (DIF) by test language and the question "afraid that something bad will happen" showed DIF by cognitive ability.

Conclusion: Fear about the future contributes more to severity of depressive symptoms among more cognitively intact patients. Revisiting the French translation of item "feeling happy" may further improve the validity of this tool. Clinicians should consider administering a 12-item GDS to obtain the most psychometrically valid measure of depressive symptoms in geriatric outpatient settings.

Deficits in Specific Cognitive Domains Affects Gait Performance: Results from the Gait and Brain Study

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Background Information: The perception that gait is an automatic motor task, requiring minimal cognitive processes, is too simplistic. It is well established that at least one cognitive domain, executive function (EF), plays an important role in controlling gait, its dysfunction and falls. Nonetheless, the role of additional cognitive domains, including memory, remains unknown. Individuals with mild cognitive impairment (MCI) are at greater risk for falls, mobility decline and, as expected, cognitive deterioration—representing an ideal target population to explore this relationship.

Objective: Our aim is to identify associations between deficits in specific cognitive domains and gait variability (GV), an accepted marker of gait control and future falls.

Methods: Older adults with MCI were cognitively assessed for EF (Trail Making A&B), attention (Digit Span), language (Boston Naming), working (Letter Number Sequencing), and episodic memory (Rey Auditory Verbal Learning). Gait assessments performed under usual gait (UG) and dual-tasking (DT) conditions using an electronic walkway (GaitRITE®). Gait variability was evaluated using the co-efficient of variation.

Results: Sixty-four MCI participants (Mean age: 76.0±6.7 and 57% males) were included. Multi-variable linear regression analysis (adjusted for potential confounders) indicated under both walking conditions EF, attention, working memory, and episodic memory were significantly associated with GV ($p <$ .05). DT gait also revealed significant associations with the language domain ($p = .05$) not seen under UG.

Conclusions: Deficits in cognitive domains beyond EF, including working and episodic memory, are associated with poorer gait performance. These associations suggest gait control shares similar neural brain circuits as memory and language. Our result s may help to understand the role of cognition in fall risk of cognitively impaired older adults.

Drug-related Problems in the Elderly Home Care Population: What Is the Impact of the Pharmacist Home Visit on Medication Adjustment?

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Background Information: Frail elderly home care patients are at high risk of drug-related problems (DRPs). While the involvement of a pharmacist has been shown to reduce polypharmacy in the geriatric population, the role of the pharmacist in home care remains poorly defined.

Purpose: To determine the frequency of DRPs in the elderly home care population and the uptake of medication modification recommendations made by pharmacists to physicians after a home visit.

Methods: In this cross-sectional observational study, the pharmacist performed a medication assessment by chart review for 81 home care patients (age ≥ 65). The Pharmaceutical Care Network Europe Drug Related Problems (PCNE) classification system and the 2012 Beers List of drugs to avoid in the elderly were systematically applied to patients' medication profiles by a pharmacist to determine the frequency of DRPs. Forty-one patients additionally received pharmacist home visits. The uptake of pharmacist recommendations by the treating physician was recorded.

Results: Pharmacists identified 213 DRPs (mean 2.63±1.9 per patient), with 41% of patients receiving at least one inappropriate Beers list medication. Home visits significantly increased the detection of DRPs from 1.5±1.2 DRPs prior to the visit, to 2.9±1.8 after the home visit ($p < .001$). The most frequent DRPs were a potential or manifest adverse drug event (49%), an untreated indication (20%) or a non-optimal drug treatment (19%). The treating physicians adopted 70% of pharmacist recommendations.

Discussion: Home visit by a pharmacist facilitate the detection of DRPs among high-risk home care patients. This is the first study to use the PCNE classification to evaluate DRPs in the home care setting.

Conclusion: The results support the inclusion of home-based medication assessment by pharmacists for high-risk home care patients.

Direct Patient Education Reduces Inappropriate Benzodiazepine Prescriptions Among Older Adults: the Empower Cluster Randomized Trial

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Background Information: Despite guidelines recommending against the use of benzodiazepine drugs for older adults aged 65 years and older, their use is still highly prevalent in Canadian elders and may be responsible for hundreds of millions of dollars in extra medical expenditures. The effect of direct patient education to catalyze collaborative care for reducing inappropriate prescriptions remains unknown.

Objective: The objective of this study was to compare the effect of a direct-to-consumer educational intervention against usual care on benzodiazepine discontinuation in community-dwelling older adults.

Methods: This was a cluster-randomized trial set in the general community. A total of 303 chronic benzodiazepine users, aged 65–95 years, were recruited from 30 community pharmacies. The active arm received a de-prescribing patient empowerment intervention describing the risks of benzodiazepine use and a step-wise tapering protocol, while the control arm received usual care. The main outcome consisted of benzodiazepine discontinuation at 6 months post-randomization, ascertained by pharmacy medication renewal profiles. General estimating equations were used to account for possible clustering.

Results: Two hundred and sixty-one participants (86%) completed the 6-month follow-up. Sixty-two per cent of recipients in the intervention group initiated conversation about benzodiazepine cessation with a physician and/or pharmacist. At 6 months, 27% of the intervention group had discontinued benzodiazepine use compared to 5% of controls (risk difference 23%, 95% CI 14–32%, ICC 0.008, NNT=4). Dose reduction occurred in an additional 11% (95% confidence intervals 6–16%). Neither age greater than 80, sex, duration of use, indication for use, dose, previous attempt to taper nor concomitant polypharmacy (≤ 10 drugs/day) had a significant interaction effect with benzodiazepine discontinuation in multivariate sub-analyses.

Conclusion: Direct-to-consumer education effectively elicits de-prescribing of benzodiazepines in older adults.

Increased Waking Sedentary Time Predicts Reduced Sleep Efficacy in Community-dwelling Older Adults

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Background Information: Previous studies have demonstrated that aerobic exercise interventions have a positive impact on sleep quality in older adults. Little work has been done however, on the impact of sedentary behaviour (such as sitting, watching television, etc.) on sleep efficacy.

Methods: 54 community-dwelling men and women > 65 years of age living in Whistler, British Columbia (mean 71.5

years) were enrolled in this cross-sectional observational study. Subjects were in good health and free of known diabetes. Measures of sleep efficiency, as well as average waking sedentary (ST), light (LT), and moderate (MT) activity, were recorded with SenseWear accelerometers worn continuously for 7 days. An initial univariate analysis of activity measures, alcohol consumption, sleep efficiency, age, and gender was performed and significant variables ($p < .10$) were then entered into a stepwise multivariate regression model.

Results: From the univariate regression analysis, there was no association between sleep efficiency and the predictors LT and MT. There was a small negative association between ST and sleep efficiency that remained significant in our multivariate regression model containing alcohol consumption, age, and gender as covariates. (Standardized Beta Correlation Coefficient -0.322, $p = .019$). Although significant, this effect was small (an increase in sedentary time of 3 hours per day was associated with an approximately 5 per cent reduction in sleep efficiency).

Conclusions*:* While light and moderate physical activity had no association with sleep efficiency, sedentary behaviour had a statistically significant, but clinically small, negative association with sleep efficiency. This suggests that interventions to reduce sedentary time will have a beneficial, but small, impact on quality of sleep in older adults

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The Motor Signature of Mild Cognitive Impairment: Results from the Gait and Brain Study

Karen Gopaul[1], Manuel Montero-Odasso[1], Olivier Beauchet[2], Mark Speechley[3], Afua Oteng-Amoako[1], Susan Hunter[3], Cedric Annweiler[2]. [1]Gait and Brain Lab, Lawson Health Research Institute, London, ON; [2]Department of Neuroscience, Division of Geriatric Medicine, University Memory Center, University of Angers, France; [3]The University of Western Ontario, London, ON.

Background Information: Early motor changes associated with later adult aging predicts cognitive decline, suggesting that a "motor signature" can be detected in pre-dementia states.

Objective: Our aim was to determine whether gait performance in older adults with mild cognitive impairment (MCI) differs based on their cognitive subtype classification: amnestic (a-MCI) or non-amnestic type (na-MCI).

Methods: Older adults with MCI and cognitively healthy controls (CHC) from the "Gait and Brain Study" were assessed for global cognition and specific cognitive domains with a neurocognitive test battery. Mean gait velocity and stride time variability were evaluated with the GaitRITE® under usual and three dual-task conditions. The relationship between cognitive group (a-MCI vs. na-MCI) and gait parameters, including velocity and variability, was evaluated with linear regression models and adjusted for potential confounders.

Results: Ninety-eight older participants, 56 MCI (mean age 76.3±7.2 years and 50.9% female) and 42 CHC (mean age 71.2±4.50 and 73% female) were included. Thirty-eight participants were a-MCI and 18 were na-MCI. Groups were similar in age, co-morbidities, and history of falls. Amnestic-MCI participants walked slower than na-MCI in all test conditions ($p < .05$). Multivariable linear regression (adjusted for age, sex, physical activity level, number of co-morbidities and executive function), showed a-MCI was significantly associated with slower gait under usual and dual-task conditions and higher variability under dual-task ($p < .01$).

Conclusion: Participants with a-MCI, specifically with episodic memory impairment had poor gait performance, particularly under dual-task. Our findings suggest that slow gait and higher stride time variability is a distinct 'motor signature" in a MCI.

Deficit Accumulation in Relation to the Risk of Death and Dementia—a Ten-Year Follow-Up Study

Xiaowei Song, Kenneth Rockwood, Arnold Mitnitski. Dalhousie University, Halifax, NS.

Background Information: Many age-related health problems have been associated with dementia, leading to the hypothesis that late-life dementia may be determined less by specific risk factors and more by the operation of multiple health problems in the aggregate. Our study addressed: 1) how the predictive value of dementia risk varies by the number of deficits considered, and 2) how traditional and nontraditional risk factors compare in their predictive ability.

Methods: Older adults in the Canadian Study of Health and Aging who were cognitively healthy at baseline were analyzed (men = 2,902, women = 4,337). Over 10 years, 44.8% men and 33.4% women died; 10.2% men and 9.1% women developed dementia. Forty-two self-rated health problems, including, but not restricted to, dementia risk factors were coded as deficit present/absent. Variable numbers of potential deficits were randomly selected to construct an index of proportional presentation of the deficits.

Results: Age-adjusted odds ratios per additional deficit were 1.27 (95% CI 1.23–1.34) in men and 1.16 (1.12–1.19) in women in relation to death, and 1.18 (1.12–1.25) in men and 1.08 (1.04–1.11) in women in relation to dementia. The

index's predictive value increased with the number of deficits considered, regardless whether they were known dementia risks. The index constructed using all the available deficit measures in the dataset best predicted death and dementia in both men and women (C-statistics: 0.71±0.02 for death; 0.67±0.03 for dementia).

Conclusions: The variety of items associated with dementia suggests that some part of the risk might relate more to aberrant repair process, than to specifically toxic results.

Mortality in Relation to Fragility in Patients Admitted to a Specialized Geriatric Intensive Care Unit

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Background Information: Older adults admitted to the intensive care unit (ICU) are seriously ill, but many are also frail. Here we evaluated the frailty of older ICU patients using a Frailty Index (FI) based on health deficit accumulation. We examined the FI in relation to short-term survival in a specialized geriatric ICU, in comparison with several prognostic ICU scores.

Methods: Geriatric ICU patients (aged 65+ years) at the Liuhuaqiao Hospital, Guangzhou, China, admitted between July and December 2011, were studied (*N*=155; age 82.7±7.1 years; 87.1% men). Patients were followed to 300 days, by which 38.7% had died (*n*=60; including 27 who died within 30 days). The FI was calculated as the proportion.

NON-DISCUSSED POSTERS

Developing Cultural Competency Skills Through Effective Communication

Jean Triscott, Earle Waugh, Roger Parent, Susan Chadoir, Olga Szafran. University of Alberta, Edmonton, AB.

Background Information: In a culturally diverse and ageing society like Canada, the development of cultural competency skills has become a necessity for health professionals. Research in cultural studies has given rise to effective methods and practices for working with ethnicities.

Objective: To develop communication and learning tools to assist health professionals to provide culturally competent care through effective communication with their patients.

Methods: Based on ethno-cultural and multicultural theoretical perspectives, we used communication tools in the published literature and developed new self-assessment and cultural understanding tools for cultural competency skill development. Eleven teaching videos based on our research in ageing ethnic communities were also incorporated.

Results: This work resulted in an eight-module, structured course on cultural competency skill development. The tools utilized for cultural competency skill development include: 1) the Health Professionals Self-Assessment of Cultural Competency (HPSACC) Questionnaire—used for self-assessment of one's own beliefs, values, and attitudes; 2) cultural understanding and insight into patients values, beliefs and attitudes—gained through the BRIDGES model; 3) the LEARN Model—facilitates intercultural communication; and 4) strategies for life-long learning are identified. The range of issues addressed by the videos include: (a) traditional roles of family care; (b) cultural issues in obtaining consent; (c) cultural issues in compliance; (d) language diversity in health care; (e) generational views on personal directives; (f) cultural issues in end-of-life; (g) challenging cultural norms; and (h) cultural influence in family decisionmaking. An evaluation component is also included.

Discussion: The tools can be applied to a wide range of health professionals' learning and provide effective methods for working with ageing populations.

Conclusion: The development of cultural competency skills is a life-long process that requires ongoing training and practice.

Comparison of a 4-Week Geriatric vs. an Integrated Care of the Elderly Learning Option for Family Medicine Residents at the Department of Family Medicine and Division of the Care of the Elderly, University of Alberta

Alexandra Marin[1], Shelly Veats[2], Leslie Charles[2]. [1]Dept. Family Medicine, University of Alberta, Edmonton, AB; [2]University of Alberta, Edmonton, AB.

Background Information: Family doctors play a central role in looking after the complex medical needs of growing population of seniors in Canada. The University of Alberta Family Medicine Residency training program is expanding its options for training a new generation of family physicians

competent in providing care to the elderly in line with the College of Family Physicians of Canada Triple C curriculum and the mandate for more integrated experiences.

Methods: The traditional Care of the Elderly rotation is offered to the Family Medicine residents on their second year of training (PGY-2).The rotation includes 4 weeks at one of the acute care sites and provides residents with the combination of acute care and ambulatory experience under the preceptorship of the Care of the Elderly physicians. In 2011, a formalized Integrated Care of the Elderly option became available for PGY-1 residents. This option provides a longitudinal experience under the supervision of a family medicine preceptor and a Care of the Elderly mentor. It is enhanced by long-term care, community, and specialty clinic experiences during PGY-1 and PGY-2 training.

Results: The enrolment: 2011–2012: 5 (8%), 2012–2013: 8 (13%), 2013–2014: 8 (13%). The study will compare the educational, clinical, and academic activities offered within the 4-week and integrated learning options.

Conclusion: In summary, there is an obvious interest in Integrated Care of the Elderly as a viable alternative to the more traditional 4-week rotation in geriatrics. More research is needed to assess the strengths and areas for improvement for both models to ensure that future family physicians have adequate skills and knowledge to look after Canada's aging population.

Interventions for Mild Cognitive Impairment: Systematic Review

Jillian Alston. University of Toronto, Toronto, ON.

Background Information: Mild cognitive impairment is a growing public health concern, affecting up to 19% of the population aged 65 and older. Approximately 10% of those with MCI will convert to dementia every year. Thus, there is a focus on identifying effective strategies to prevent its progression to dementia and limit associated morbidity. Our systematic review aims to evaluate high-quality evidence on interventions for MCI.

Methods: We included randomized clinical trials (RCTs) and systematic reviews evaluating pharmacologic or non-pharmacologic interventions on patients 65 years of age or older with MCI. Studies were eligible if they were published in English, included a comparison group, and evaluated cognitive, functional, quality of life or safety outcomes. Studies that examined patients of normal cognition or dementia were included if outcomes of MCI patients were reported separately. Literature was obtained by performing a comprehensive search of MEDLINE, Embase, CINAHL, and Cochrane Central Register of Controlled Trials. Two reviewers independently assessed 6,078 titles and abstracts and 237 full-text articles for eligibility.

Results: Thirty-two articles met our inclusion criteria and have been included for data-extraction and quality assessment using the Cochrane Effective Practice and Organization of Care (EPOC) risk of bias tool. Eight of the studies were systematic reviews and 23 were RCTs. Twenty studies investigated acetylcholinesterase inhibitors, including two that studied acetylcholinesterase inhibitors combined with antidepressants and one trial with a Vitamin E treatment arm. Two studies investigated other pharmaceuticals (Piribedil, transdermal nicotine). Five studies investigated natural supplements, vitamins or Chinese herbal remedies. Five studies investigated non-pharmaceutical interventions including brain stimulation, dietary interventions, and cognitive-training programs.

Conclusions: Various strategies for MCI have been evaluated. Data synthesis is underway and results will be available by March.

Mind the Gap: Translating Best Practice into Reality

Breanne Paul, Doris Milke, James Leask. Capital Care, Edmonton, AB.

Background Information: A gap exists between research and clinical practice in long-term care (LTC). While there is ample literature discussing interventions for dealing with behavioural and psychological symptoms of dementia (BPSDs), not all of these strategies are practical or easy to implement in a clinical environment. BPSDs are expressed differently in each person, which makes predicting problematic behaviours and finding appropriate solutions difficult. Sensory integration is one promising area of therapeutic interventions for BPSDs. This annotated literature review will provide staff with a useful summary of new and current interventions for addressing BPSDs in LTC.

Methods: A literature review of sensory integrative interventions designed to reduce BPSDs will be completed. Sensory systems that will be studied include proprioception, vestibular sensation, tactile senses, audition, and vision. Staff members with different clinical roles will also be interviewed. They will judge the utility of the interventions and be asked to comment or revise the approaches. Staff interviews will also uncover what are perceived to be barriers to implementing interventions in clinical practice. This project will expose new interventions and confirm the use of current interventions for ameliorating BPSDs.

Results: Results are forthcoming. This will include a staff annotated literature review which will provide an up-to-date summary of practical interventions for use in LTC.

Conclusion: The transmission gap between evidenced-based interventions and clinical implementations in LTC needs to be addressed. This review will help staff make more informed care decisions and improve the quality of care they are able to provide. This review will also uncover areas where an organization can better support staff willing to implement evidence-based interventions.

A Successful Knowledge Translation Intervention in Long-term Care: Results from the Vitamin D and Osteoporosis (VIDOS) Cluster Randomized Trial

Courtney Kennedy[1], Suzanne Morin[2], Mary-Lou van der Hors[1], Robert Josse[3], Lisa Dolovich[1], Richard Crilly[4], Lynne Lohfeld[1], Carly Skidmore[1], Lehana Thabane[1], Anna Sawka[3], Lora Giangregorio[5], Glenda Campbell[6], Ravi Jain[7], Laura Pickard[1], George Ioannidis[1], Lynn Nash[1], Johnathan Adachi[1], Alexander Papaioannou[1], Sharon Marr[1], Jackie Stroud[6]. [1]McMaster University, Hamilton, ON; [2]McGill University, Montreal, QC; [3]University of Toronto, Toronto, ON; [4]Western University, London, ON; [5]University of Waterloo, Waterloo, ON; [6]Medical Pharmacies Group, Pickering, ON.

Background Information: The objective of the ViDOS cluster randomized trial was to evaluate the feasibility and effectiveness of a knowledge translation (KT) intervention aimed at integrating evidence-based osteoporosis/fracture prevention strategies in long-term care (LTC) homes. The target audience was interdisciplinary care teams (physicians, nurses, pharmacists, dietitians).

Methods: We randomized 40 LTC homes in Ontario, Canada to intervention (n=19) or control (n=21) arms. The 12-month intervention included three interactive educational meetings presented by an expert opinion leader, action planning for quality improvement, audit and feedback review, and distribution of educational materials. Prescribing outcomes were collected at baseline and at twelve months. The primary outcome was prescribing of Vitamin D ≥ 800 I U/day; secondary outcomes were calcium ≥ 500 mg/day and osteoporosis medications (high-risk residents only). The difference between treatment arms in mean home-level prescribing change is reported with 95% confidence intervals (95% CIs) adjusted for clustering. Analyses were intention to treat.

Results: At baseline, 5,478 residents, mean age 84.4 (SD 10.9) years, 71% female, resided in 40 LTC homes, mean size=137 beds (SD 76.7). Post-randomization, seven LTC homes declined to participate. Over 12-months, the mean home-level prescribing change for vitamin D ≥ 800 IU/day was 22.2% in the intervention arm vs. 7.5% in the control arm (between group difference = 14.7%, 95% CI: 13.1, 16.2). Mean home-level prescribing change for calcium ≥ 500 mg/day was 8.8% in the intervention arm vs. 1.8% in the control arm (between group difference = 7.0%, 95% CI: 6.2, 7.9). There was no significant difference in prescribing between arms for osteoporosis medications.

Conclusion: Our KT intervention significantly improved prescribing of vitamin D and calcium, and is a model that could potentially be applied to other topics requiring quality improvement.

Vitamin D Supplementation in Long-term Care: Comparative Characteristics of Supplemented and Un-supplemented Residents

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Background Information: Vitamin D status is low in the elderly and especially in long-term care (LTC) residents. Low Vitamin D is associated with increased risk for osteoporotic fracture. Osteoporosis Canada recommends Vitamin D supplementation in all patients at high risk of fracture.

Objective: The purpose of this study is to evaluate the prevalence of Vitamin D supplementation in LTC residents, and the characteristics of those with and without supplements.

Methods: Ethics approval was obtained. Subjects were recruited from five LTC facilities in Edmonton, Alberta. After consent, chart review, clinical evaluation, and blood work was completed.

Results: 100 subjects (29 men, 71 women) were recruited with an average age of 81 years (range 59–93). Vitamin D levels ranged from 13–243 nmol/l, with an average of 75.1 nmol/l. 29% had levels below 50 nmol/l and 63% below 80 nmol/l. The rate of Vitamin D supplementation was 63% in total, but 48% in men versus 69% in women. Age, history of falls, history of fractures, MMSE, BMI, and calcaneal ultrasound were comparable in the two groups. The diagnosis of osteoporosis was higher in the supplement group (57% vs. 18%). The level of 25(OH)D was 113.5 nmol/l (75–243) in the supplement group and 46.7 nmol/l (13–69) in the non-supplemented group.

Conclusions: This study documents the high prevalence of Vitamin D insufficiency in this group of LTC residents. Men had lower Vitamin D status than women, and a lower level of

supplementation. The risk of falls was high in those on and off supplements. This study highlights the need for further education on Vitamin D supplementation.

Validity, Reliability, and Acceptability of the Team Standardized Assessment of Clinical Encounter Report (StACER)

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Background Information: The Team Standardized Assessment of a Clinical Encounter Report (StACER) was designed for Geriatric Medicine residency programs to evaluate Communicator and Collaborator competencies. There are no studies of validity, reliability or acceptability in spite of its mandatory use. It is unknown whether a geriatrician's assessment reflects the observations made by the interdisciplinary team.

Objective: To determine the inter-rater reliability of the items on the Team StACER among interdisciplinary team members and between geriatricians. Other objectives were to determine the face validity, discriminatory power, and acceptability of the instrument as a feedback tool.

Methods: Postgraduate trainees in Family, Internal, and Geriatric Medicine at the University of Toronto were recruited from July 2010 to November 2013. The Team StACER was completed by two geriatricians and interdisciplinary team members based on observations during a geriatric medicine team meeting. Raters completed a survey that was previously administered to Canadian geriatricians to assess face validity. Trainees completed a survey to determine the usefulness of this instrument as a feedback tool. Inter-rater reliability was determined using the Prevalence Adjusted Bias Adjusted Kappa (PABAK). Comments were reviewed by thematic analysis by two reviewers.

Results: 30 postgraduate trainees from three sites participated. A mean of 5.67 Team StACERs were completed per trainee, with 93% completed by two geriatricians. The PABAK range for Communicator and Collaborator items were 0.87–1.00 and 0.86–1.00, respectively. The instrument lacked discriminatory power, as all trainees scored "meets requirements" in the overall assessment. Face validity was limited by dichotomous choices. 93% and 86% of trainees found feedback based on the instrument useful for developing Communicator and Collaborator competencies, respectively.

Conclusion: The Team StACER has adequate inter-rater reliability, but poor discriminatory power. Trainees felt it provided useful feedback on Collaborator and Communicator competencies.

Canadian Drug Product Monographs: Analysis of Geriatric Content

Cheryl Sadowski, Matthew Cor. University of Alberta, Edmonton, AB.

Background Information: Medication use and prescribing in older adults can be challenging due to lack of geriatric-specific health information. Health professionals refer to product monographs for this information; however, there are situations where there is little information regarding older adults.

Objective: The purpose of this study was to examine the geriatrics-specific content in product monographs for products introduced to the Canadian market.

Methods: Products approved since 1994 were identified through Health Canada. Medications or biological products that could be used by older adults were included. Information related to the geriatric population was abstracted from the standard monograph categories: general information, pharmacokinetics, pharmacodynamics, precautions, warnings, adverse effects/events, dosage information, clinical trial inclusion, and geriatric specific clinical trials. Data were analyzed descriptively.

Results: A total of 296 drug monographs were evaluated from 75 different drug manufacturing companies. Antineoplastic agents had the highest proportion of drugs studied, 36 out of 296 (12%). Two hundred eighty-two (95%) included general information on the geriatric population; 147 (50%) had information on dosing in the geriatric population. Inclusion of reference to geriatrics in the section on clinical trials was noted at 173 (58%), whereas only 11 (4%) included specific details about geriatric-focused clinical trials. The majority (200 [67.6%]) included geriatric pharmacokinetics content, and 6 (2%) included pharmacodynamics content. The adverse effects information specific to geriatrics was found in only 31 (10%) of the product monographs.

Discussion: Many product monographs include general precautions about drug use in the elderly. However, disclaimers and encouraging prescribers to use caution, or noting that information is not available, is inadequate to support safe and effective drug use in seniors.

Conclusions: Most drug product monographs in Canada have limited information that is specific to the elderly population.

Validation of the Test Your Memory (TYM) Self-administered Cognitive Screening Test in a Canadian Geriatric Assessment Clinic Population

Karen Chan, Lesley Charles, Rhianne McKay, Bonnie Dobbs. University of Alberta, Edmonton, AB.

Background Information: Two commonly used cognitive screening tools in Canada are the Folstein Mini-Mental State Examination (MMSE) and the Montreal Cognitive Assessment (MoCA). In 2009, Brown et al. created a new cognitive screening test called the Test Your Memory (TYM), which is unique in the fact that it is a patient self-administered exam. In a system where family physicians and other specialists are pressed for time, the TYM offers a potential to save screening time.

Objective: This study aimed to determine the validity of the TYM tool in comparison to the traditional MMSE and the MoCA in a Canadian Geriatric Assessment clinic setting.

Methods: Patients aged 65 and older attending a regularly scheduled appointment at one of three geriatric clinics in Edmonton, Alberta were invited to participate in the study. Participants had to complete the self-administered Test Your Memory tool in addition to the MMSE ± the MoCA as part of their geriatric assessment.

Results: A total of 36 participants completed the study. The Pearson correlation coefficient between the TYM and MMSE is $R^2 = .689$ and the coefficient between the TYM and the MoCA is $R^2 = .508$. Scores for the TYM had statistically significant correlation to the MMSE and MoCA, but sensitivity, specificity, and positive predictive value of the TYM was poor.

Conclusions: This study was not able to validate the TYM as a good clinical cognitive screening tool. The greatest value of the TYM may be in its negative predictive value.

A Sustainability Study of a Proactive Geriatric Trauma Consultation Service (GTCS)

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Background Information: The proactive geriatric trauma consultation service started at St. Michael's Hospital (SMH) in September 2007. Patients aged ≥ 65 years admitted to the Trauma service are referred to the GTCS for a comprehensive geriatric assessment within 72 hours. The GTCS includes a geriatrics nurse specialist and geriatrician. Recommendations focus on early involvement in prevention and management of age-specific complications, and discharge planning. In a previously published before and after case series, we demonstrated a significant decrease in delirium, consultations to Internal Medicine and Psychiatry, and discharge to long-term care.

Objective: To determine the sustainability of impact of a proactive GTCS.

Methods: Patients aged ≥ 65 years admitted to the Trauma service from July 2012 to December 2013 were prospectively recruited for this sustainability case series and received a proactive geriatric trauma consultation. Geriatric specific in-hospital complications, trauma quality indicators, discharge destination, rate of recommendation adherence, and consultations were determined. Proportions were compared using the Fisher exact test.

Results: 138 patients were identified and 82 (59.4%) patients consented to participate. 66 charts have been reviewed thus far. Compared to the post-intervention phase of the case series, there was no difference in the sustainability phase in Internal Medicine consultation ($p = .10$), Psychiatry consultation ($p = 1.0$) or delirium rates ($p = 0.57$). The rate of adherence to recommendations made by the GTCS team was 80.8% during the sustainability study, which was not different from the post-intervention phase ($p = .72$). No patients were discharged to long-term care.

Conclusions: Decreases in delirium, consultations to Internal Medicine and Psychiatry, and discharge to long-term care were sustained outcomes in this proactive geriatric trauma consultation model. A prospective interrupted time-series study is underway at a second site, Sunnybrook Health Sciences Centre, and will guide the feasibility and generalizability of impact on quality outcomes.

Validation of the Falls Risk Awareness Questionnaire (FRAQ)

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Background Information: Understanding the awareness of fall risk factors by adults is an important start to educational interventions. Since its development in 2002, the Falls Risk Assessment Questionnaire (FRAQ) has been administered in older adults to assess awareness and perception of falls risk.

Objective: The objective of this pre/post study was to further validate the FRAQ as being responsive to change.

Methods: Seniors (≥ 65 years) who attended one of six standardized 1-hour falls education programs in the community offered by Alberta Centre for Injury Control and Research from Sep-Dec 2013 were recruited. The presentation focused on fall risks and prevention strategies. Each participant completed the FRAQ before and after the presentation. The FRAQ is a 22-item questionnaire that assesses the knowledge of risk factors (medical, environmental, pharmacologic, physical) for falling, as well as demographics, medical, and fall history, and risk factors. A score of 1 was given for each correct answer, with a summative score of 32.

Results: Of 46 seniors who completed the survey, 36 completed both the pre- and post- measures. The mean age was 84.7±6.6 years; 83.7% (36) female. Arthritis or rheumatism was the most commonly reported condition (55.8%, *n*=24). The mean score before the educational intervention was 15.75 (SD 4.08). A total of *n*=25 (69.4%) had improved scores on the post-test.

Conclusion: Initial results indicate responsiveness of the FRAQ in assessing falls risk awareness is congruent with increased knowledge and awareness.

The Integrated Community Care Team: Description of an Innovative Care Model for Frail Older Adults

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Background Information: Baycrest, the Toronto Central and Central Community Care Access Centres and North York General Hospital (NYGH), together with the Regional Geriatric Program, have established a model of integrated care for frail, older adults who are at high risk for ED visits, hospitalization, and institutionalization. The model, "The Integrated Community Care Team (ICCT)", connects older adults living in north Toronto to a dedicated, inter-professional team consisting of primary, community, and specialty care resources. The ICCT model is unique in that it is not only client/family caregiver-centred, but it also tailors its services to the specific needs of community primary care physicians through a consultation, shared care or transfer of care approach. The ICCT model is further enhanced through a link with NYGH and Baycrest's in-patient specialty services to ensure that major components of the patient journey across the continuum of care are integrated as part of the intervention.

Objective: Its dual aim is to support medically frail older adults to experience care from one team and to support community primary care physicians with an integrated interdisciplinary team.

Methods: An early phase mixed methods formative evaluation of the ICCT model is under way. The design emphasizes a quality improvement approach with the aim to provide continuous rapid-cycle improvement to the team. The quantitative evaluation will include data from the Resident Assessment Instrument–Home Care to describe the patient population, process measures to document service provision, the Zarit Burden Interview to capture caregiver burden, and the Dimensions of Teamwork Survey to evaluate inter-professional team function. The qualitative evaluation includes interviews with patients and their caregivers, primary care physicians, and team members to document the implementation experience and satisfaction with the model.

Care of the Elderly (COE) Core Competencies

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Background Information: The COE Diploma Program is an accredited 6–12 month Enhanced Skills Program after 2 years of Family Medicine Certification (CCFP). In recognition of the growing mandate for COE Programs to directly assess residents' clinical competence, we developed 85 Core Competencies (CCs) for COE residents (Year 3) and introduced them in 2010. Research objectives were to examine the effectiveness of the CCs for assessing COE residency competency and graduate ratings related to the CCs on the Un. of Alberta COE Graduates Survey.

Methods: Data extraction from preceptor-completed resident evaluations on skills/abilities (e.g., comprehensive geriatric history, triaging patients) based on 5-point Likert ratings (e.g., rarely meets to consistently exceeds), with the items similar across rotations, and from graduate ratings on aspects of program (e.g., orientation, evaluation process, preparedness for practice) gathered from the Graduates Survey. Analyses were based on differences in preceptor and graduate ratings as a function of CCs implementation (e.g., post- vs. pre-implementation of the CCs).

Results: Preceptor evaluations: *n*=9 and 8 for the pre- and post-CCs, respectively. Likert ratings overall were high across both time periods, with increases on 27/37 Objectives and all CanMEDS roles, though the increase was non-significant. COE Graduates Survey: *n*=7 and 5 for the pre- and post-CCs,

respectively. Compared to pre-CCs, post-CCs graduates rated the admission process, orientation to the program, and the evaluation process of residents significantly higher ($p = .014$, .038, .038, respectively).

Conclusion: The main purpose of the 85 CCs is to directly assess residents' clinical competence. Residents have improved on most objectives of their evaluations since CCs implementation. Graduates also rated their evaluation process significantly higher since CCs introduction.