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The Legalization of Medical Marijuana: Perception and Planning Responses of Nurse Clinical Leaders in Long-term Care

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Background: The Cannabis Act, which came into force in Canada in October 2018, has had immense impact in long-term care. New laws permitting cannabis use and sale has called for the balancing of rights in safely providing access to medical and recreational marijuana while respecting the rights, safety, and health, of residents, staff, and volunteers within the long term care setting. The purpose of this study is to explore the perceptions and planning responses by directors of care in long-term care settings.

Methods: A comprehensive review of new legislation was carried out. Employing a grounded theory approach, constant comparative analysis and theoretical sampling was used in semi-structured interviews with directors of care from 10 long-term care facilities in B.C. and Alberta. The iterative analysis resulted in adjusting questions as theory emerged. Developing themes were utilized to develop a set of open-ended questions used in two follow-up focus groups. The in-depth interviews explored perceptions of the directors of care to new legislation and their planned responses to new requirements in the long term care setting.

Results: The study identified several themes that were of importance to the directors of care: lack of supportive guidance and tools; lack of assistance in developing new policies; sensed inadequacy in supporting long term care residents to make fully informed decisions; concern implementing workable protocols; and anxiety navigating a confusing regulatory framework.

Discussion: Although directors of care are confident in their ability to manage the delivery of care, they face important barriers in fully understanding and navigating the new legislation permitting cannabis use and sale in Canada.

Conclusions: Educational supports and the development of guidelines and tools to assist directors of care were recommended by the survey participants.

The Predictive Value of the Clinical Frailty Scale on Complications and Mortality in Older Hip Fracture Patients

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Background: Guidelines recommend an assessment of frailty early in the course of a surgical plan of care. The Clinical Frailty Scale (CFS) is a validated frailty tool. Its utility in predicting clinical outcomes following hip fracture in older adults is unknown. The primary objective was to determine if the CFS was associated with adverse discharge destination. Secondary objectives were to determine if the CFS was associated with in-hospital complications and length of stay.

Methods: We conducted a 5-year retrospective cohort study of patients ≥65 years admitted with an isolated hip fracture. Pre-admission CFS was determined as part of routine clinical care prospectively and abstracted from the chart. We collected demographic and process data associated with adverse outcomes (age, sex, time to surgery, mode of anesthesia) and used multivariable logistic regression to determine the association between CFS and the various outcomes.

Results: There were 422 patients. Pre-admission frailty was independently associated with adverse discharge destination (adjusted odds ratio 23.0; 95% CI 3.0 to 173.5) and in-hospital complications (adjusted odds ratio 4.8; 95% CI 2.1 to 10.8) in a greater magnitude than traditional risk factors such as age, male sex, time to surgery and mode of anesthesia. There was a dose-response relationship between increasing frailty and length of stay ($p<.001$).

Discussion: Our study findings are congruent with other hip fracture studies which have demonstrated frailty in predicting increased mortality, length of stay and postoperative complications. Identifying frailty can help risk stratify and guide clinical decision making while increasing patient-centered care.

Conclusions: This is the first study to examine use of the CFS in predicting adverse outcomes following hip fracture. Pre-admission frailty as quantified by the CFS is associated with discharge destination, in-hospital complications, and length of stay.

Efficacy of a Medical Directive to Reduce Inappropriate Indwelling Urinary Catheter Use on Orthopedic Wards

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Background: Indwelling urinary catheters (IUC) are frequently used without appropriate guideline-based indications. Inappropriate catheter use, especially in older adults, is associated with catheter-related adverse outcomes including urinary tract infection, delirium, longer length of stay, immobilization, and mortality. This initiative assesses the efficacy of a medical directive for IUC use among orthopaedic inpatients at a large teaching hospital.

Methods: A medical directive was implemented enabling nurses to remove unnecessary IUCs in patients admitted to orthopedic wards. Catheter days and reasons for catheter use were abstracted manually from the electronic medical record. Pre-intervention (July 2017 to January 2018) catheter-days per patient days were compared to post-intervention (February to May 2018) rates.

Results: Catheter days per patient-days decreased by 31.5% (pre-intervention 11.8% vs. post-intervention 8.2%), representing an ARR of 3.62% (95% CI 2.33-4.86, $p < 0.0001$). There was also a 38.1% reduction (pre-intervention 6.8% vs. post-intervention 4.2%) in inappropriate catheter days per patient-days (ARR 2.59%, 95% CI 1.62-3.52, $p < 0.0001$). The most common approved conditions for indwelling catheter use were pre-operative hip fracture, immediately post-operative spine surgery patients, and pre-existing IUC.

Discussion: This project demonstrates that implementation of a medical directive is an effective strategy to reduce inappropriate urinary catheter use in a surgical inpatient setting. Further directions of this project include analyzing two other strategies to further reduce rates including modifying post-operative order sets to default to IUC removal and implementation of a restrictive IUC insertion medical directive in the emergency department.

Conclusions: This initiative demonstrates the effectiveness of implementation of a medical directive to reduce inappropriate urinary catheter use in an orthopaedic inpatient setting.

Do Interest Groups Cultivate Interest? Evaluating Career Trajectories Among Geriatric Interest Group Participants

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Background: Minimal exposure, misconceptions, and lack of interest have driven the shortage in older adult health-care providers. Experiences early in training are instrumental in shaping career trajectories of medical learners. This study aimed to determine how medical students' participation in the National Geriatrics Interest Group (NGIG) and local Geriatrics Interest Groups (GIGs) shapes their career development in the care of older adults.

Methods: An electronic survey consisting of quantitative and qualitative metrics to assess the influence of interest groups was distributed to all current and past members of local GIGs at Canadian universities as well as current and past executives of the NGIG. Descriptive statistics and thematic analysis were performed.

Results: Thirty-one responses (27.7% response rate) were collected from medical students (13), residents (16), and staff physicians (2). 79% of resident respondents indicated they will likely have a geriatrics-focused medical practice. 45% of respondents indicated GIG/NGIG involvement established strong mentorship. Several themes emerged on how GIG/NGIG promoted interest in older adult care: faculty mentorship, networking with colleagues, dispelling stigma, role clarification, and career advancement with a focus on research and leadership.

Discussion: This is the first study to systematically assess the impact of Canadian GIGs on the interest and career trajectories of their constituents. Limitations include response bias inherent with the survey methodology. The positive associations with the development of geriatrics-focused careers and mentorship compel ongoing support for these organizations as a strategy to increase the number of physicians in geriatrics-related practices.

Conclusions: Formative experiences such as geriatrics interest groups at the medical student stage foster mentorship and geriatrics-focused career development.

Does Level of Frailty, in Addition to Geriatrician's Clinical Impression, Predict Outcomes for Patients with Dementia?

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Background: The objective of the study was to determine whether the level of frailty, combined with geriatrician's clinical impression, predicted nursing home (NH) admission, Alternate Level of Care (ALC) hospitalization or death within one year.

Methods: We conducted a retrospective chart review of 361 persons with dementia (81.4 years±7.4, 63% female) followed in an Outpatient Geriatric Memory Clinic in Saint John, NB between January 1, 2015 and May 31, 2016. At the clinic visit, the geriatricians recorded the Clinical Frailty Scale (CFS) scores for each patient and their clinical impression with respect to whether the patient would have a NH admission, ALC hospitalization or death within one year. One year follow up data was also extracted.

Results: After one year, 54.3% of patients were at home, 24.7% had a NH admission or ALC hospitalization, and 9.1% died. Both CFS and geriatrician's clinical impression were independently predictive of NH/ALC admission. Patients with clinical impression that they would be admitted to NH/ALC within one year and with a CFS score of 7 (n=16) were 17.13 (5.04-58.15) times more likely to be in a NH/ALC within one year compared to those with a CFS score of 5 and without the clinical impression (n=106). Geriatrician's clinical impression of one-year mortality was not predictive of this outcome but CFS was. Patients with CFS 6 (n=199) and 7 (n=32) were 4.52 (1.31-15.58) and 5.71 (1.25-26.06) times more likely to die within a year compared to those with CFS 5 (n=109).

Discussion: The level of frailty added to the geriatrician's clinical impression regarding predicting outcomes at one year for NH admission, ALC hospitalization and death.

Conclusions: Determining the CFS score can help predict one-year outcomes.

How Residents Perceive and Enact Goals of Caring and Curing When Looking after Older Adults

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Background: A need for coexistence of caring and curing in medicine, particularly in the context of a complex and aging population, has been established in papers across fields. However, the terms caring and curing have been variably defined, and it is unclear how their value is perceived by physicians-in-training. Previous literature suggests negative attitudes towards older adults' increased need for care beyond curative measures. This study explored how residents manage expectations to provide holistic care to older adults.

Methods: In-depth, semi-structured interviews with 22 upper year residents were conducted, utilizing graphic elicitation technique. Interview transcripts were analyzed using constructivist grounded theory methodology to determine emergent themes.

Results: Residents understood caring as a means to achieve patient-centered goals, and curing as an action focused on resolving acute doctor-perceived medical problems. Residents agreed that their role extends past acute medical management, however shared feeling less liability to address aspects of care beyond cure. Additionally, residents felt unequipped to coordinate chronic and social aspects of health from their undergraduate medical education. Provision and prioritization of holistic care was further discouraged by systemic factors and institutional culture.

Discussion: Older adults often present with medical, functional, and social complexities. Residents recognized the value of developing a global view of geriatric patients but felt disempowered to address aspects of care beyond medical issues. This was attributed to feeling underprepared and overwhelmed, limited by time, and influenced by pressure and praise to arrange early discharges.

Conclusions: Thus, actions of caring and curing in medicine may be challenging for trainees to reconcile. Identifying factors which influence how residents navigate goals of care and cure can provide insight into how medical systems may better support residents in providing holistic care to our aging population.

Admission Diagnosis of "Failure to Thrive" in Older Adults is Associated with Delays in Hospital Care

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Background: "Failure to thrive" (FTT) is a non-specific term often applied to older adults when there is lack of diagnostic clarity. We investigated the effect of this admission diagnosis on delivery of patient care in a cohort of older adults admitted to a tertiary care teaching hospital in Vancouver, BC.

Methods: We conducted a retrospective matched cohort study in adults aged ≥ 65 years admitted with FTT to medicine wards between January 1, 2016 and November 1, 2017. Control cases were randomly generated, age-matched patients who met the same inclusion criteria but were admitted with other diagnoses.

Results: A total of 60 FTT cases were identified (average age 79.9 years), paired with 60 control cases (average age 79.4 years). The total time from triage to admission for the FTT group was 10 hours 40 minutes, compared to 6 hours 58 minutes for controls (p=0.02). In the FTT cohort, 53 cases (88%) had acute medical diagnoses at the time of discharge. The most common discharge diagnoses were infections, falls, cardiac disease, and drug side effects. The average length of stay in hospital was 18.3 days compared to 10.2 days for the controls (p=0.001).

Discussion: The times to admission and lengths of stay in hospital are significantly longer in older adults admitted with FTT compared with controls. The discordance between admission and discharge diagnoses indicate that these patients have acute medical issues that were not readily identified on admission.

Conclusions: Older adults admitted with FTT are medically active patients who experience significant delays in hospital care. The use of this non-specific label can lead to premature diagnostic closure, and reflects ageist attitudes in health care that should be avoided in clinical practice.

Congenital Heart Disease in Seniors: A Retrospective Study

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Background: The life expectancy of patients born with congenital heart disease (CHD) has increased significantly in the era of modern medicine. This brings new challenges as adult congenital heart disease (ACHD) patients develop acquired comorbidities and present to acute care wards. Currently, there is limited data examining this patient population.

Methods: Using the Southern Alberta ACHD Database, a retrospective chart review of ACHD patients over the age of 60 was conducted. Descriptive statistics were performed to characterize the population using SPSS.

Results: A total of 63 ACHD patients were identified (51% female), with a mean (SD) age of 68.0 (6.9) years. The majority of patients had either a severe (44%) or valvular CHD lesion (43%), with a mean age at diagnosis of 25.6 (24.1) years. With respect to arrhythmias, 19% had documented SVT, 19% had heart block, and 9.5% had a ventricular arrhythmia. There were high proportions of comorbidities associated with ACHD, which included hypertension (48%), atrial fibrillation (35%), heart failure (25%), and malignancy (9.5%). A total of 38% of patients were hospitalized with an average of 2.5 (2.3) admissions per patient and a median (IQR) length of stay of 7.0 (4.8-15.3) days. The majority of hospital admissions were for complications of cardiac disease (64%), most commonly arrhythmia, heart failure, or chest pain.

Discussion: ACHD patients are living to older ages even with severe cardiac lesions. This population, however,

commonly develops acquired cardiac co-morbidities, including hypertension, heart failure, and arrhythmias, which are the most common reasons for hospitalization.

Conclusions: These initial results provide insight into the disease characteristics of seniors with CHD. Further studies are needed to better understand this population and their associations to geriatric syndromes as they age.

Effect of Cognitive Training on Daily Function in Older People without Dementia: A Systematic Review

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Background: There is increasing interest in the effect of non-pharmacological treatments on preserving cognition and function in older adults without dementia. Multiple studies have shown that cognitive training can improve some domains of cognition. However, its effect on everyday function in terms of instrumental activities of daily living (IADL) is unclear. We conducted a systematic review to examine whether cognitive training, independent of other interventions, can improve IADL function in older adults with normal cognition or with mild cognitive impairment (MCI).

Methods: We searched multiple databases including MEDLINE, EMBASE and PSYCINFO and found 13 studies that met our inclusion criteria with 7130 participants in total. This review was registered on PROSPERO (CRD42018108108).

Results: Six out of thirteen studies reported a significant change on validated IADL assessment. On subgroup analysis, five of these studies included older adults with normal cognition and one included MCI. Twelve out of thirteen studies showed improvement in measures of cognition. None of the studies described changes in the ability to live independently.

Discussion: While variation in study protocol, outcome measurement and effect size reporting precluded further inferential statistical analysis, our review found a sizable number of studies showing improvement in IADL. These benefits appear to be maintained in one study that had follow-up at ten years.

Conclusions: Cognitive training may have some benefit in improving IADL function in older adults with normal cognition and those with MCI. Future long-term studies with more generalizable outcomes focusing on maintained IADL function and preserved independence are needed.

Effectiveness of a Multicomponent Intervention Sign for Delirium Prevention on an Orthopedic Unit

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Background: Multifactorial interventions are effective in preventing delirium. Orthopedic inpatients are at high risk with delirium rates as high as 50%. We sought to evaluate the impact of a multicomponent bedside sign on delirium prevalence and documentation of non-pharmacologic interventions on an orthopaedic unit.

Methods: Retrospective interrupted time series study evaluating the effectiveness of signs placed in four rooms on an orthopaedic unit in Hamilton, Ontario between July 2017 and May 2018. Signs were implemented in October 2017 and adherence was monitored with periodic audits. Outcome measures were incident delirium as measured by the Confusion Assessment Method (CAM), staff behaviour change as measured by the frequency of documented non-pharmacologic interventions, and a survey to explore nursing perspectives.

Results: Before sign implementation (July-September 2017), the mean monthly delirium prevalence as measured by incident CAM positive rates was 10% ±6.2%, as compared to 6.3% ±3.6%, from October 2017-January 2018 and 10% ±2.8%, from February-May 2018. There were no differences in the frequency of documented non-pharmacologic interventions. Audits showed that sign usage for target inpatients rose from 32% in October 2017 to 57% in March 2018. Eighteen of twenty-two nurses (82%) agreed or strongly agreed that the sign prompted non-pharmacologic interventions and 82% (18/22) wanted to continue to use the sign.

Discussion: A multicomponent intervention sign for delirium prevention did not have a significant effect on delirium prevalence on an orthopedic unit. The sign may increase delirium awareness amongst nurses and increase CAM documentation. Survey feedback demonstrated the sign to be useful for prompting non-pharmacologic interventions, which may impact quality and safety of patient care.

Conclusions: Though there was no measurable effect on delirium prevalence, the sign was well received by nurses and prompts use of non-pharmacologic interventions.

Impact of an Orthogeriatric Collaborative Care Model for Older Adults with Hip Fracture in a Community Hospital Setting

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Background: Systematic reviews of older adults admitted to orthopedic services with a hip fracture have demonstrated a reduction of length of stay (LOS), incidence of post-operative delirium, and time to surgery when patients were cared for by a multidisciplinary team that included hospitalists and geriatric specialists. Most of these studies were conducted in academic centres. We sought to determine if an orthogeriatric collaborative care model would improve key quality of care metrics in a community setting.

Methods: This was a single-site, pre-post retrospective study of 212 consecutive patients admitted for a hip fracture age ≥65 years to a community hospital between June 2015 and June 2017. There were 95 patients pre- and 117 patients post-establishment of a formal orthogeriatric collaboration. Primary outcomes were LOS and incidence of post-operative

delirium. Secondary outcomes included metrics from Health Quality Ontario's Quality-Based Procedures Clinical Handbook for Hip Fracture.

Results: LOS [8.1(6.3) vs. 9.1(11.5) days, p=0.16], incidence of delirium (26.3 vs. 26.5%, p=0.97), and time to surgery [25.1(14.8) vs. 27.5(16.5) hours, p=0.27] were similar between pre and post groups. There were significant improvements (p<0.001) in the rate of falls assessments (50.5 vs. 74.4%), osteoporosis assessments (11.6 vs. 47.0%), making antiresorptive therapy recommendations (27.4 vs. 61.5%), and prescribing vitamin-D/calcium (64.2% vs. 96.6%). Only 74% of patients in the post group were seen by geriatric medicine, averaging 2.7(1.8) days from time of diagnosis to geriatric consultation.

Discussion: n/a

Conclusions: An orthogeriatric collaborative care model for hip fractures in older adults improved rates of falls assessments, osteoporosis assessments, making antiresorptive therapy recommendations, and prescribing vitamin-D/calcium. LOS, incidence of delirium, and time to surgery were unchanged. A timelier course to geriatric assessment was identified as a key area for improvement.

Prescribing Outcomes of an Interdisciplinary Geriatric Clinical Pharmacology and Psychiatry Telemedicine Service: A Feasibility Study

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Background: Older adults are at increased risk of adverse drug events (ADEs) due to age-related pharmacologic changes, multimorbidity, cognitive impairment, multiple prescribers and polypharmacy. GeriMedRisk is an interprofessional telemedicine geriatric clinical pharmacology and psychiatry service developed in Waterloo, Ontario, that supports clinicians in mitigating ADEs. This feasibility study aimed to explore the prescribing outcomes of GeriMedRisk.

Methods: Following a pilot data extraction validation exercise, we analyzed medication lists and recommendations for participants of a pilot stepped-wedge cluster randomized controlled trial of GeriMedRisk in four Ontario long term care homes (LTCHs) between May 1 to December 31, 2017. The primary outcome was the change in the number of medications following a GeriMedRisk consultation. Secondary outcomes included daily pill count, and number of potentially inappropriate prescriptions as defined by the Beers and STOPP/START Criteria, psychotropics, long-acting opioids and diabetic medications before and after GeriMedRisk consultation, assuming adherence to recommendations.

Results: During the study period, there were 27 consultations on 23 LTCH patients. The mean number of prescriptions per participant was 17.96±5.65 (SD) pre- and 17.78+/-5.49 post-GeriMedRisk consult. An average of 0.96±1.16 medications per patient were decreased or discontinued. Average daily pill count decreased from 14.86±7.29 to 14.74±7.31. The average Beers Criteria score decreased from 5.63±2.98 to 5.30±3.01, and the average number of STOPP medications decreased from 4.37±2.20 to 4.11±2.22. The general trend for psychotropic medications, long-acting opioids and diabetic medications was towards deprescribing.

Discussion: This pilot study suggests that GeriMedRisk recommendations were consistent with a decrease in polypharmacy and potentially inappropriate prescribing.

Conclusions: Future work includes a larger trial to investigate GeriMedRisk's efficacy on prescribing and prevention of LTCH ADEs resulting in falls, hospitalizations and death.

Factors Associated With a Diagnosis of Failure to Cope in Older Medical Inpatients: A Case-Control Study

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Background: The diagnosis of "failure to cope" (FTC) is commonly used when frail older adults present to hospital. This term provides no clinical diagnosis, and implies the patient is at fault for not managing with a condition. These patients are perceived as burdensome, taking beds away from more deserving patients. The purpose of this study was to identify factors associated with receiving a diagnosis of FTC.

Methods: An age matched case-control study of patients 70 years of age or older admitted to a medicine team at London Health Sciences Centre. Univariate and multivariable logistic regression were used to identify factors associated with a diagnosis of FTC.

Results: The charts of 185 patients were reviewed, 99 patients with FTC, and 86 controls. Patient characteristics significantly associated with a diagnosis of FTC included a history of falls (aOR 4.33, 95% CI 2.11-8.90), readmission 30 days after discharge from hospital (aOR 3.70, 95% CI 1.73-7.89), living alone (aOR 3.58, 95% CI 1.7-7.52), living in an independent dwelling (aOR 2.61, 95% CI 1.11-6.11) and using a walker (aOR 2.20, 95% CI 1.04-4.62). A higher number of chronic comorbidities was associated with a lower likelihood of being diagnosed with FTC (aOR 0.84, 95% CI 0.71-0.98).

Discussion: A number of patient factors were found to be associated with a diagnosis of FTC including mobility, falls and living conditions. Patients who were "bounce backs" or had fewer comorbidities were more likely to be diagnosed with FTC, suggesting a judgemental use of the term.

Conclusions: This study has identified patient factors associated with a diagnosis of FTC. Further study is required to understand the consequences of this diagnosis on patient care and outcomes.

A Case Study in Medical Assistance in Dying (MAiD) and Frailty

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Background: MAiD was legalized in Canada in June 2016. From June 2016 to December 2017, it is estimated that just over 3,700 Canadians have undergone the MaiD procedure. This represents 1% of all Canadian deaths. While the

majority of MAiD procedures are in individuals with cancer, cardio/respiratory illness and neurological illnesses, there are individuals who received this procedure for frailty. This case study will be used to generate discussion about frailty as an indication for MAiD.

Methods: Description of a case involving a 96F residing in a retirement home, dependent for IADLs and ADLs requesting MAiD. She has some medical comorbidities, but none which make her death reasonably foreseeable. She is assessed for MAiD with frailty being the reason her death is reasonably foreseeable.

Results: This patient was denied as she was deemed to not be competent for making medical decisions at the time of the assessment.

Discussion: MAiD cases involving Frailty bring up a number of issues.

- Using the clinical frailty scale as a predictor of death.
- Is frailty a state of 'irreversible decline'?
- Adequate assessment of competence given the increased prevalence of dementia in advanced age and recent findings of frailty being an independent risk factor for dementia.
- Is frailty being used as a surrogate for ageism?

Conclusions: The number of requests for MAiD continue to increase; it is reasonable to expect more requests where frailty is the primary indication. This area requires more research and thoughtful discussions amongst the medical community.

"The Last Medical Stigma": A Quality Improvement Project Examining Addressment of Urinary Incontinence in Female Patients Enrolled in the Deer Lodge Centre PRIME Program

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Background: Stigma towards urinary incontinence persists within the medical community where symptoms may be neglected or disregarded. In older adults incontinence plays an important role in quality of life and precipitating admission to long term care. The Winnipeg Deer Lodge Center PRIME Program enrolls geriatric patients at high risk of entering long term care to optimize their ability to remain in the community. The objective of this chart audit was to examine medical addressment of incontinence in female patients enrolled at PRIME who had recorded daily use of incontinent products. Secondary outcomes examined offending medications and compounding illnesses.

Methods: A retrospective chart review was conducted on the electronic medical records of all female patients actively enrolled at the Deer Lodge Center PRIME Program. Charts were examined for medical diagnosis, assessment of urinary incontinence, and recorded daily incontinent product use. Previous and current interventions were tracked including non-pharmacologic, pharmacologic, and care giver education.

Results: Of 42 female patients 3 had a recorded diagnosis of urinary incontinence. In contrast 24 patients had recorded daily use of incontinence products. Offending medications were found in 22 of these patients, with an average of 2.9 per patient. No record of non-pharmacologic therapy was identified in any patient, while one patient was actively treated with mirabegron.

Discussion: These findings support that ongoing stigma towards urinary incontinence exists, reflected in the absence of intervention despite the known use of daily incontinence products. The importance of this finding is enhanced by the high number of potentially offending agents found and the paucity of potentially beneficial therapies.

Conclusions: Urinary incontinence is a prevalent diagnosis that continues to be under addressed by medical professionals, even those specifically designed to target at-risk geriatric patients.

Improving Outcomes in Geriatric Trauma Patients: A Pilot Project Investigating Geriatric Medicine Consultation in a Tertiary Trauma Centre

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Background: Older patients represent a significant portion of patients admitted to acute trauma services. The Geriatric Medicine Consult Team (GMCT) at the Ottawa Hospital has an ongoing research study examining ways to improve the care of older patients through early Geriatric medicine consultation.

Methods: REB exemption was obtained for this retrospective chart review, which included patients 75 years of age and over who were admitted to the Trauma service from November 1st 2017 to July 31st, 2018. This included patient characteristics, mechanism of injury, and analysis of medication reconciliation data. Data was analyzed using t-tests.

Results: The majority of older geriatric trauma patients at our site sustained injury secondary to falls. Most of the medication reconciliations were completed after 24 hours. There was a statistically significant increase in the number of high-risk meds on discharge when compared to admission (3.83 on discharge vs. 2.82 on admission, p=0.0036). Patients who were transferred to the Geriatric Medicine Unit (GMU) were less likely to be discharged home on high-risk medications.

Discussion: The majority of patients did not receive timely medical reconciliation and many patients are discharged on a greater number of high-risk medications than pre-admission. This increase is associated with medications being prescribed on the admission order sets. Patients who are admitted to the GMU are less likely to be discharged on high-risk medications.

Conclusions: Additional resources are needed to ensure accurate and timely completion of medication reconciliation. Other areas for improvement involve system changes such as creating separate evidence based order sets specific for elderly patients admitted to the trauma unit. Further analysis of this data will help determine which patients will benefit from a GMU admission and streamline the admission process.

Describing Practice Patterns Among Geriatric-Focused Physicians in Ontario by Using Administrative Claims Data

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Background: The number of physicians with the necessary expertise to care for medically-complex elderly patients is limited. A health care system focused on the needs of older adults should be comprehensive and, therefore, inclusive of all geriatric-focused physicians, including: family physicians with additional training in care of the elderly (COE), geriatric medicine subspecialists, and geriatric psychiatrists. Yet, we were unable to identify any human resource analyses that examine the practice patterns of geriatric-focused physicians as a whole. The objective is to create a comprehensive description of geriatric-focused care provided by Ontario physicians.

Methods: We will be analyzing the Ontario Health Insurance Plan (OHIP) administrative database linked with the Ontario Physician Database (OPD) at IC/ES. All geriatric-focused physicians will be identified using OHIP billing codes. We will then describe the practice patterns among geriatric-focused physicians and describe demographic information of patients that receive geriatric-focused care in Ontario.

Results: Results will be available February 2019.

Discussion: This will be the first census-level analysis of practice patterns among geriatric-focused physicians that has been reported. In Ontario, understanding who delivers care, where, how, and to whom is fundamental to health care system planning. In addition, these human resource issues raise important questions regarding how the scopes of practice shared between geriatric-focused physicians should be organized to create a comprehensive health care system for older adults.

Conclusions: Describing the practice patterns among geriatric-focused physicians will have important implications for planning and optimizing the health care system for older adults across Ontario.

Improving Osteoporosis Treatmentin Patients Admitted With a Hip Fracture: A Quality Improvement Project

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Background: Pharmacological treatment of osteoporosis initiated within 90 days of hip fracture improves mortality and reduces the risk of future fractures. At St. Joseph's Healthcare Hamilton (SJHH; Ontario) in 2017, only 25% of hip fracture patients were started on osteoporosis medications before discharge which highlights an osteoporosis care gap at our organization. Our aim was to improve rates of osteoporosis treatment in patients admitted with a hip fracture to 80% by March 2019.

Methods: Using a cause and effect diagram and stakeholder interviews we conducted multiple Plan-Do-Study-Act (PDSA) cycles from June 2018–January 2019. Primary outcome measure was the percentage of patients who received antiresorptive therapy on or before discharge. Process measures included percentage of patients seen by geriatric consult team, and percentage with osteoporosis listed in their discharge summary. Balancing measures included staff satisfaction and work load. Changes tested included a) standardizing geriatric consults to consistently highlight and address osteoporosis treatment, b) expanding prescribers on the rehabilitation unit through education, and c) partnering with pharmacists.

Results: By November 2018, 50% of patients admitted to SJHH with a hip fracture were prescribed pharmacological treatment for osteoporosis on or before discharge.

Discussion: We will be presenting our full results in annotated run charts, including further PDSA cycles completed from January to March 2019.

Conclusions: Using quality improvement methods, we improved rates of osteoporosis treatment from 27 % to 50 % in patients admitted to SJHH with hip fracture. Further PDSA cycles will be implemented to achieve a goal of 80%.

Frailty Impairs Obstacle Negotiation While Walking: Results from the Gait and Brain Study

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Background: Frail individuals have impaired gait performance which may affect navigation in complex terrains increasing their risk of falling. Walking assessments using obstacle negotiation tasks are ecological ways to evaluate an individual's ability to properly adjust gait parameters to avoid an obstacle contact while navigating. To evaluate gait performance of Pre- and Frail individuals during an obstacle negotiation task. We hypothesize that Frail individuals will perform gait adjustments that may negatively affect balance stability while avoiding an obstacle collision.

Methods: Frailty status was determined using the Frailty Phenotype which is based on five criteria: weakness, exhaustion, weight loss, low physical activity and slow gait; and scored from 0-5 as: Nonfrail=0; Pre-frail=1 or 2; and Frail ≥3. Gait variables were measured using a 6-meter electronic walkway adapted with unobstructed and obstructed conditions using an ad-hoc obstacle (15% participant's height). During the obstructed condition gait parameters were measured from the stride prior to obstacle crossing (pre-crossing phase) and from the crossing over stride (crossing phase). Gait variables from each phase were compared with baseline parameters (unobstructed) adjusted for important covariates.

Results: 195 older adults (72.1 ±5.4 years of age; 62.8% women) from the Gait and Brain Study cohort were assessed and stratified as Nonfrail (n=65), Pre-frail (n=108) and Frail (n=22). Interactions between frailty status and crossing phase gait performance were found for single support time (p<.001) and stride width (p=.03).

Discussion: Compared with Nonfrail, Frail individuals spent longer times on one leg while crossing the obstacle

which may have contributed to a larger medium-lateral balance destabilization.

Conclusions: Frailty status impairs obstacle negotiation and may contribute to the higher risk of falls seen among frail older adults. Obstacle negotiation difficulties can be a potential modifiable factor to prevent falls.

Steps per Day Post-fracture. What's the Story?

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Background: Tracking daily steps is recommended. These data are not often used optimally. This study illustrates how step-count data can be interpreted to inform recommendations during fracture recovery.

Methods: We used multiple single-subject data of participants in an intervention trial on fracture rehabilitation. Participants recorded steps daily over 107 days (mean); mobility and health indicators were assessed at 3-time points. We created 4 step-count categories based on mean, maximum, and reserve (maximum-mean) number of daily steps. Mobility and self-reported health indicators were linked to step-count categories to identify potential recommendation targets.

Results: Seventeen participants (mean age: 76; 65% women; hip fractures: 11) were classified into 4 categories. Those in Category A (n=6) had the highest average steps and reserve (≈7000-9000, >7000). They demonstrated normal mobility and higher self-rated general health. Conversely, those in Category D (n=4) showed lowest step-count and reserve (≈3500, 2000). Two were old-old, 89-97 years, yet had optimal-for-age mobility, suggesting functioning at physiological limit. A third participant had lower than norm gait speed, whereas the low reserve in the last participant was explained by poor general health. Three participants were assigned to Category B (≈5000, reserve ≈6000) and 4 to Category C (≈3500, reserve 3600-7500). The participant with the lowest step-count and reserve in Category C demonstrated lowest general health, highest pain and depressed mood. Hip fractures conveyed a larger impact on step-counts than other fractures.

Discussion: For the old-old and those who are very active, maintenance would be recommended. For members of lower activity categories, specific functional limitations, pain and mood symptoms need to be targeted.

Conclusions: This small sample can be used to inform a latent class analysis for a larger sample size.

Predictive Validity of Patient Belief and Attitude Questionnaires on Successful Deprescribing Among Older Adults

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Background: The ability of questionnaires such as the Patients' Attitudes Towards Deprescribing (PATD) questionnaire or the Beliefs about Medicines Questionnaire (Specific section) (BMQ-Specific) to successful identify older adults who will deprescribe remains unknown. This study aims to determine if specific screening questions assessing patients' attitudes and beliefs towards medications and deprescribing can predict successful deprescribing.

Methods: This is a post-hoc secondary analysis of the D-PRESCRIBE trial. 489 community-dwelling adults (≥65 years) who were chronic users (≥3 months) of a benzodiazepine, first-generation antihistamine, long-acting sulfonylurea, or non-steroidal anti-inflammatory drug, were randomized to a pharmacist-led educational intervention or usual care. Association between baseline responses to PATD and BMQ-Specific items and successful deprescribing at 6-months was calculated. To determine predictive ability of questionnaire items, receiver operating characteristic curves (ROC) were constructed and area under the curve was calculated.

Results: Eighty-six percent (95% confidence interval [CI] 83-89%) of participants indicated a willingness to deprescribe medications at baseline, yet only 41% (95%CI 37-46%) successfully deprescribed. Agreement with the BMQ item "I sometimes worry about the long-term effects of my medication" was most strongly associated with deprescribing (37% [95%CI 31-44%] of individuals who discontinued vs 24% [95%CI 19-29%] of those who persisted, odds ratio 1.89 [95%CI 1.27-2.81]). However, no PATD or BMQ-Specific item—either independently or in combination—was able to meaningfully distinguish which participants succeeded or failed deprescribing attempts (AUC < 0.7).

Discussion: Screening tools are needed to efficiently identify patients who are most likely to respond to deprescribing interventions. Regrettably, despite expressed motivation to deprescribe, the questionnaires employed in this trial failed to predict behaviour.

Conclusions: Current tools to assess patient's attitudes and beliefs towards medication use and/or deprescribing have low predictive validity for successful deprescribing.

The Association of Frailty with Mortality in Emergency Department Patients Referred to Internal Medicine

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Background: We examined how two frailty tools derived from a Comprehensive Geriatric Assessment (CGA)—the Clinical Frailty Scale (CFS) and a deficit accumulation frailty index (FI-CGA)—predicted mortality among older Emergency Department (ED) patients referred to internal medicine.

Methods: We report data on 1,009 ED older (aged 65+) patients (Mage = 80.1±8.8, 54.4% women) assessed by a geriatrician. Of these, 685 have mortality data available to

December 2015. The CFS recorded the patient's baseline health state and the FI-CGA the current state. Acuity was assessed using the Canadian Triage and Acuity Scale (CTAS).

Results: The mean FI-CGA score (± Standard Deviation) was 0.44±0.14 and the CFS was 5.55±1.63. The average length of stay was 15±16.9 days; 25% of patients stayed more than 2 weeks. In-hospital mortality was 20.9%. One-year mortality per CFS group ranged from 10% (CFS score 1-3) to 55.1% (CFS score 7-9). This increased to 35.3%-77.1% for five-year mortality. One-year mortality rates per FI-CGA group ranged from 9.1% (FI 0-0.2) to 39.9% (FI 0.5+) (range 22.2%-76.3% for five-year mortality). Both tools independently predicted one-year mortality, adjusted for age, sex, and CTAS. The hazard ratio was 1.02 (95%CI, 1.01-1.03) per 0.01-point FI-CGA increase. Compared to those with CFS scores ≤3, patients with CFS scores ≥5 had a significantly higher risk of mortality ranging from 2.35 (95%CI, 1.35-4.11) for mildly frail individuals (CFS 5) to 4.80 (95%CI, 2.77-8.32) for the severely frail (CFS 7-9).

Discussion: FI-CGA and CFS independently predict risk of time to mortality, with severely frail individuals facing the greatest risk.

Conclusions: Frailty significantly predicts mortality in ED patients. We are currently exploring whether it predicts the duration and frequency of subsequent hospitalizations.

Consideration of Medication and Polypharmacy in Frailty Assessment and Screening Tools

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Background: Frailty and polypharmacy are challenging to manage and associated with negative outcomes. Numerous instruments are available to assess frailty; however significant variability exists between them. The aim of this study was to review medication-related criteria within validated frailty tools.

Methods: Frailty tools were identified from recently published reviews. Tools were included if they were reported to be established or validated for frailty assessment. Each tool was reviewed to determine whether medication use was included and how this criterion contributed to the scoring/assessment of frailty.

Results: Fifteen frailty tools were included, seven of which considered use of medication. Five frailty tools included numerical criteria, while another used change in number or complexity of medications. The seventh tool included broader questions involving "medication issues" and "change in medications". Two of the seven tools also included criteria related to function/cognition, such as "requiring help taking/forgetting to take medications". Four of the seven tools included more than one medication-related criterion and one deemed polypharmacy alone as meeting their definition of frail.

Discussion: Frailty and polypharmacy are important considerations, individually and by their impact on each other, for clinicians caring for older adults. The majority of validated frailty tools do not include medication-related criteria. The tools which considered medication generally used a numerical cut-off; however the specific cut-off was not consistent. Few tools contained medication-related criteria as a marker for function and cognition. Consideration of incorporation of more comprehensive medication-related criteria, including appropriateness, is an area for further research.

Conclusions: Inclusion of medication-related criteria in frailty tools is highly variable. Future research is required to determine if incorporation of medication use into frailty assessment can impact outcomes in terms of frailty prevention and treatment.

Usage of Clinical Biomarkers in Frailty Prediction Models

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Background: Frailty can be challenging to measure in acute cardiac patients who are often unfit to complete questionnaires and physical performance tests. We sought to explore clinically-available biomarkers that could be used to assess frailty in this setting.

Methods: From January to August 2018, we conducted a cross-sectional study of older adults admitted to an inpatient cardiology unit. The biomarkers studied included clinically-indicated Results from the complete blood count and biochemistry panel as well as C-reactive protein, NT-pro-BNP, and levels of vitamin B12, C, and D (25-OH). Frailty was simultaneously ascertained by Rockwood's Clinical Frailty Scale (CFS), handgrip strength, and bioimpedance phase angle. In addition, we calculated Rockwood's Frailty Index Lab score (FI-LAB) and InSilico's Aging.AI score. The association between these biomarkers and frailty measures was assessed by a Spearman correlation matrix.

Results: The cohort consisted of 138 patients with a median age of 73 years (IQR 64-85) and 52% females. The proportion of patients classified as frail was 27%, 40%, and 55%, according to the CFS, handgrip strength, and phase angle. The biomarkers significantly correlated with two or more of these frailty measures were: NT-pro-BNP, blood urea nitrogen, creatinine, albumin, hemoglobin, and ferritin.

Discussion: Our biomarker score combining NT-pro-BNP, blood urea nitrogen, albumin and hemoglobin was correlated with all frailty measures (R 0.3-0.7, P<0.001), as were the FI-LAB and Aging-Ai scores. Hypovitaminosis was present in 33%, 68% for vitamins C and D, respectively. Circulating vitamin C and 25OHD concentrations did not correlate of the frailty measures.

Conclusions: Clinically-available laboratory tests can be used to generate biomarker scores that are associated with frailty and feasible in acutely ill cardiac patients. Hypovitaminosis C and D were highly prevalent in this population, but their clinical implications are neither expressed nor indicated by frailty.

Real-Time Auditory Feedback Induced Adaptation to Walking Among Seniors Using Heel2Toe Sensor: A Proof-of-Concept Study

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Background: Many seniors do not walk well enough to achieve a health benefit from walking. Evidence shows that gait training is effective in improving gait pattern but effects abate with cessation of training. During gait training therapists use a number of verbal and visual cues to place the heel first when stepping. This simple strategy changes posture from stooped to upright, lengthens the stride, stimulates pelvic and trunk rotation, and facilitates arm swing. These principles guided the development of Heel2Toe sensor that provides real-time auditory feedback for each 'good' step, in which the heel strikes first.

Objective: The objectives of this feasibility study of the efficacy potential for home use of the Heel2Toe sensor were to estimate changes in gait parameters after 5 training sessions and to identify pleasures and challenges with using the sensor.

Methods: A pre-post study, with a five-day training period in the person's residence, was carried out on a purposive sample of six seniors. Proportion of good steps, angular velocity at each step, and cadence, over a 2-minute period were assessed as was usability and experience.

Results: We found that the Heel2Toe sensor was feasible to use in the community setting with older adults and that they improved many gait parameters after only 5 training sessions with an average total training time of 73 minutes (range 43 to 114).

Discussion: Proportion of good steps and angular velocity improved without any detriment to cadence. All 6 participants showed longer duration of time spent in walking from the initial training days.

Conclusions: All participants showed improvement in proportion of good steps and angular velocity without any detriment to cadence, after a training ranging from 43 to 114 minutes. Duration of walking bouts also lengthened such that most participants could now meet physical activity guidelines. Coefficient of variation of angular velocity reduced, indicating higher consistency of stepping. Evidence of feasibility of the Heel2Toe sensor was demonstrated.

Health & Aging Program Interdisciplinary Staff Education Survey: An Education Quality Improvement Initiative

U. Ahmed. St. Joseph's Hospital.

Background: The purpose of the Education Committee is to monitor and review the educational activities that occur within the Program and to extract what quality improvements might be needed.

Methods: Using a survey and purposive sampling we conducted a review of health-care staff across the three sites of the Health and Aging Program at Horizon Health Network, Saint John NB.

Results: 126 surveys were completed, a response rate of 42% (38%; 32%; 31%, respectively)

Respondents: 78% nursing staff; 22% others including therapy staff and geriatricians. 42% currently engaged in continuing education opportunities. Case-based learning and case conferences were the most popular formats; followed by small group sessions, conferences, workshops and self-directed learning. One hour and half-day sessions were the preferred length of sessions (39-40%), followed by half hour sessions and full day (24-25%). Preferred time of day for learning sessions was the morning and evening. Weekdays were preferable over weekends. **Current attendance:** unit education (46%), workshops (31%), professional journals (29%), webinars (26%) and senior population education (24%). **Preference:** workshops (39%), conferences (35%), grand rounds (32%), seniors' education (30%), webinars (26%). **Enablers:** time, funding, cost free, cover, webinars, teleconferences, emails, events calendar. **Barriers:** lack of time, funding, staffing and childcare & costs.

Discussion: Interdisciplinary staff education improves team working in geriatrics practice, but achieving it is not easy. We sought to do that by getting the views of recipients.

Conclusions: Understanding the views of recipients is an essential first step to improving the quality of interdisciplinary staff education.

Common Typical Features of a Rare but Important Cause of Dementia

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Background: Creutzfeldt-Jakob disease (CJD) is a rare progressive dementia syndrome.

Methods: Case studies of two patients presenting with features of Heidenhain subtype of sporadic CJD (sCJD).

Results: Case 1: A 57 year old man presenting with visual distortions and confusion followed by rapid cognitive and functional decline, total dependence and death within two months. Case 2: A 72 year old man presenting with visual and auditory hallucinations, impaired mood, cognitive and functional decline, left-sided visual field defect, motor apraxia and myoclonic jerks. EEGs showed periodic slow wave complexes; MRI brain scans showed restricted diffusion in the occipital lobes bilaterally and right frontal & parietal lobes. Brain autopsies (CJDSS, Ottawa) were consistent with sCJD.

Discussion: There are numerous subtypes of sporadic CJD. All are fatal and have no available treatment. The rate of CJD is 1-2 cases per million population in Canada but in ages 70-79 the rate is over 7 cases per million. We report two cases of the Heidenhain subtype characterized by visual disorders of unclear origin and signs of rapidly progressive dementia and death.

Conclusions: Heidenhain type of sporadic CJD must be taken in to consideration in patients with visual disorders and signs of dementia.

Outcomes with Biological Disease-modifying Anti-rheumatic Drugs (bDMARDs) in Older Patients Treated for Rheumatoid Arthritis

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Background: Rheumatoid arthritis (RA) among older patients is common. Although treatment with biological disease-modifying antirheumatic drugs (bDMRADs) is recommended, older patients reportedly experience more adverse events (AEs). Using a patient registry we compared the relative effectiveness and associated AEs of bDMARDs in old (Group 1: 75+), young-old (Group 2: 65-74 years) and middle-aged (Group 3: 55-64 years) patients.

Methods: A retrospective cohort study utilizing the Alberta RAPPORT (Rheumatoid Arthritis Pharmacovigilance Program and Outcomes Research in Therapeutics) database was performed. We restricted our analyses to patients 55+ with RA seen between Jan 1, 2007 and July 31, 2009. Efficacy (based on Disease Activity Score) and AEs from the three age groups were compared. We performed an intention to treat analysis with chi-square testing for the significance of differences.

Results: There were a total 333 patients (70% female, 30% male) with 52, 125 and 156 patients from group 1, 2 and 3 respectively. Group 1 patients were more likely to experience an AE ($p<0.05$). AEs in group 1 patients were more likely to be infectious ($p<0.05$), life threatening or severe ($p<0.05$), cause of discontinuing treatment ($p<0.05$) and multiple ($p<0.05$) compared to the other two groups. The remission rate in group 1 was significantly higher than group 2 ($p<0.05$). Etanercept was the most commonly used drug in all age groups followed by adalimumab and infliximab.

Discussion: Risk of a significantly higher rate of AEs among older patients should be considered in treatment discussions. The better results found in those 75+ compared to those 65-74 warrant further study.

Conclusions: Patients 75+ treated with bDMRADs for RA are at a significantly higher risk of AEs.

Educational Goal-Setting on an Inpatient Geriatric Medicine Rotation

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Background: Formal goal-setting has been shown to enhance performance and improve educational experiences. This project aims to describe: 1) the impact of a goal-setting process on learning experiences for medical residents, 2) the feasibility in terms of resources required, specifically time and personnel, 3) the learning goals residents created in terms of content and quality.

Methods: We initiated a standardized goal-setting process for all residents rotating through the Geriatric Medicine consultation service at Sunnybrook Health Sciences Centre. A goal-setting form was provided at the beginning of their rotation and reviewed at the end of the rotation. Residents were invited to complete an anonymous online survey to gather feedback. Using iterative quality improvement methodology, feedback from the survey Results: was incorporated into the goal-setting process. The goal setting process is ongoing with plans to increase survey response rate.

Results: Between March and December 2018, 7/26 (26.9%) residents completed the survey. Of the 7 respondents, 4 (57.1%) found the goal-setting process helped them gain more value from the rotation. Almost all, 6 (85.7%), felt that all rotations should incorporate structured goal-setting and 3 (42.9%) felt that a coaching session on how to meet goals would be helpful. Barriers included limited protected time for faculty to engage in coaching and difficulty assisting residents in achieving goals when no clinical opportunities arose. Further results will be available by May 2019, including adherence rates to the goal-setting process and a description and analysis of the goals selected.

Discussion: With the increased uptake of Competency Based Medical Education curricula, educational goal-setting may be a useful tool for enhancing competency.

Conclusions: Residents valued an educational goal-setting initiative. It may be improved by coaching around goals, which may be difficult without protected time.

The Function of Care Management to Support Seniors Living in the Community with Combined Medical and Mental Health Concerns—A Multipronged Approach Involving Interprofessional Team, Monpharmacological Approaches and Navigational Support

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Background: The Centre for Seniors' Medical Psychiatry at Trillium Health Partners is anchored in primary care for seniors over 65 living in the community with at least one chronic physical condition impacting function and co-occurring symptoms of depression or anxiety. Care Management is provided to seniors in the community for up to 16 weeks.

Objective: To review the function of care management to build patient resiliency and to improve health outcomes.

Methods: The model combines the function of care management with the philosophy of collaborative care. Partnership across the care continuum is used as the guiding principle to deliver person-focused care. Structured care management is offered by nurses and allied health team members trained in geriatrics and psychiatry. This includes comprehensive assessments, system navigation, symptom monitoring and treat to target using regularly scheduled evidence based rating scales, and a modified problem solving and behavioural activation psychotherapy (ENGAGE). Cases are presented weekly at Systematic Case Reviews (SCR), where the team including a geriatrician, a geriatric psychiatrist, and a primary care physician, review the cases and provide recommendations.

Results: Treatment response and progress was monitored by the clinicians every two to three weeks either in person or over the phone based on client convenience. Rating scales were completed during every interaction. Appropriate referrals were made based on a needs assessment. Program satisfaction responses collected upon discharge indicated positive experiences with the care management model.

Discussion: Alliance with the community partners and other stakeholders has played a fundamental role on the clinical, organizational and the systems level in improving client outcomes and overall rating scores. The cases have remained under the care of primary care providers resulting in an efficient use of the specialists' time. Clients have reported high levels of satisfaction upon completion of the program.

Conclusions: An integrated multipronged care management approach to support seniors over the age of 65 has shown to be an effective means to efficiently manage their combined medical and mental health concerns.

Chronic Diseases Among Seniors—Population-based Data from the Canadian Chronic Disease Surveillance System

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Background: Recent statistics confirm that there are now more senior Canadians aged 65 and older than children and youth aged 15 years old or less. This increase in the aging population is reflected by the increasing number of seniors living with chronic conditions.

Methods: The Canadian Chronic Disease Surveillance System (CCDSS) collects data annually on more than 20 chronic conditions. Data sources are provincial and territorial physician billing claims and hospital discharge abstract records which are linked at the provincial and territorial level to health insurance registry records using a unique personal identifier. Where available, and specified by the case definition, data from prescription drug databases are also linked. Prevalence and incidence estimates for the most common conditions among seniors were calculated for the two oldest age groups (ages 65-79 and 80+). Trends and disaggregation by sex for these conditions will also be presented.

Results: In 2015-2016, among Canadian seniors 65-79— 60.3% had diagnosed hypertension with 85,940 new cases; 32.9% had diagnosed osteoarthritis with 61,840 new cases; 22.7% had diagnosed ischemic heart disease with 56,510 new cases; 25.4% had diagnosed diabetes with 53,110 new cases. Among Canadian seniors 80+: — 81.1% had diagnosed hypertension with 21,460 new cases; 50.2% had diagnosed osteoarthritis with 20,670 new cases; 39.5% had diagnosed ischemic heart disease with 28,250 new cases; 29.2% had diagnosed diabetes with 15,050 new cases.

Discussion: With the growth and aging of Canada's population, analysis of health data such as that provided by the CCDSS on Canadian seniors is essential to policy and program development.

Conclusions: The number of seniors living with a chronic condition is substantial. This highlights the possibility of seniors living longer with poorer quality of life. Disease management strategies will be increasingly important.

Screening for Older Inpatients at Risk for Long Length of Hospital Stay: Which Clinical Tool to Use?

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Background: Screening for older inpatients at risk for long length of hospital stay is the first step of an effective hospital care plan. The study aims to examine and compare the association of the risk stratification level of 6-item brief geriatric assessment (BGA) and "Programme de Recherche sur l'Intégration des Services pour le Maintien de l'Autonomie" (PRISMA-7) with length of stay (LOS) in older adults admitted to a geriatric acute care ward.

Methods: Based on an observational retrospective cohort design 166 inpatients aged ≥75 (75.3% women) admitted to a geriatric acute care ward of a University affiliated hospital were recruited. The risk stratification levels of 6-item BGA (low, moderate and high) and PRISMA-7 (low versus high) were calculated at baseline assessment. The LOS was calculated in number of days.

Results: Only 6-item BGA high-risk level was associated with a long LOS (Odd ratio=1.1 with p=0.028 and Hazard ratio=2.1 with p=0.004). Kaplan-Meier distributions showed that there was no significant difference for the delay of discharge to hospital between low and high-risk level with PRISMA-7 (p=0.381), whereas the three 6-item BGA risk levels differed significantly (p=0.008), individuals with high-risk level being discharged latter compared to those with low (p=0.001) and moderate (p=0.019) risk levels.

Discussion: The 6-item BGA risk stratification may be useful to predict LOS in older inpatients admitted to acute care ward, older adults classified at high risk having a greater risk of LOS compared to the other risk levels. In contrast, PRISMA-7 failed to identify older inpatients with long LOS.

Conclusions: The 6-item BGA risk level stratification and not PRISMA-7 was associated with LOS, low-risk level being associated with short LOS and high-risk level with long LOS.

Prediction of Unplanned Hospital Admissions in Older Community Dwellers Using the 6-Item Brief Geriatric Assessment: Results From REPERAGE, an Observational Prospective Population-based Cohort Study

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Background: The 6-item brief geriatric assessment (BGA) provides a priori risk stratification of incident hospital health adverse events, but it has not been used yet to screen the risk of unplanned hospital admission in primary care older patients. This study aims to examine the association between the a priori risk stratification levels of the 6-item

BGA performed by general practitioners (GPs) and incident unplanned hospital admissions in older community patients.

Methods: Based on an observational prospective cohort design, 668 participants (mean age 84.7±3.9 years; 64.7% female) were recruited by their GPs during an index primary care visit. The 6-item BGA was performed at baseline assessment and provides an *a priori* risk stratification in three levels (low, moderate, high). Incident unplanned hospital admissions were recorded during a 6-month follow-up period.

Results: The incidence of unplanned hospital admissions increased with the risk level of the 6-item BGA stratification, the highest prevalence (35.3%) being reported with the high-risk level (p=0.001). The risk for unplanned hospital admissions in the high-risk level was significant fully adjusted (Hazard ratio (HR)=2.81; p=0.035). The Kaplan-Meier's distributions of incident unplanned hospital admissions differed significantly between the three risk levels (p=0.002). Participants with a high-risk level were more frequently admitted to hospital than those in a low risk level (p=0.001). Criteria performances of all risk levels were poor, except the specificity of high-risk level that was 98.2%.

Discussion: The *a priori* 6-item BGA risk stratification was associated with incident unplanned hospital admissions in primary care older patients. However, its criteria performances were poor.

Conclusions: The results suggest that this tool is unsuitable for screening older patients at risk of unplanned hospital admissions in primary care setting.

Geriatrics in Germany in the Post-2003 DRG Era—Literature Review of Effects on Geriatric Care

C. Bobrowski. AGAPLESION Diakonie Kliniken Kassel.

Background: German society is aging fast. Old-age-dependency ratios in 2006/2015 were 28.9/32.0 (Canada 23.6/28.8). Hospital financing has changed by 2003/2004 because a DRG system was implemented. Statutory health insurance (SHI) may take hospitals into recourse for presumptively weak medical indications for geriatric care.

Methods: Literature search in MEDLINE using a defined query, in Deutsches Ärzteblatt (Journal of the German Physicians' Association), Google, Google Scholar, websites of societies Deutsche Gesellschaft für Geriatrie and Bundesverband Geriatrie (BVGERI). Review by author and selection pertinent to health services research, structure, quality—all not focusing on particular diseases.

Results: We identified 15 peer reviewed papers, one SHI report and the BVGERI whitepaper. There are three sectors: Inpatient acute care with early rehabilitation (ACER), rehabilitation clinics (REHC), outpatient geriatrics. ACER beds have increased by 33.8% from 2007 to 2013. ACER beds per 10,000 inhabitants aged 65+ varied by province (Länder) from 5 to 29, average (SD) 15.94 (5.87), median 16. Ratio of ACER cases to total inpatient acute care cases is reported between 1.4% to 1.7%. Unrealistically assuming that all geriatric patients have been identified for ACER and/or REHC care, an increase of cases by 2025 is estimated as 25.4%/22.4%. 88% of ACER hospitals are reachable within 30' by car. SHI recourse frequency is anecdotally reported as 20% to 30%, resulting in monetary shortfall if successful. Of all 406 ACER hospitals, 325 (80.0%) are BVGERI members, thus participating in quality measurement.

Discussion: Growth has been fast since 2003, but there are insufficient data to assure that needs for 2025 and beyond are addressed adequately. Quality measurements are established but voluntary. Reimbursement is an area of ongoing conflict.

Conclusions: Complexities of reimbursement and political planning may impede innovative solutions which are needed soon.

Antipsychotic Stewardship: A Stepping Stone to Addressing Responsive Behaviours in Older Adults

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Background: In hospital, older patients with dementia or delirium may exhibit behaviours, necessitating pharmacological intervention in certain circumstances. Evidence to guide appropriate use of antipsychotics in older patients is not robust and as a class, antipsychotics have significant adverse effects. Our objective was to implement and evaluate an antipsychotic stewardship program with the aim of optimized, appropriate use of neuroleptics for responsive behaviours in older patients in acute care.

Methods: We reviewed patients (>70 years) who had antipsychotics ordered on 3 acute care units. Stewardship activities included: review of the chart and assessment of the patient; determination of the antipsychotic effect on the target behaviour; ensuring appropriate assessment and investigations; determining if the antipsychotic was necessary; the appropriate drug and dose ordered; reinforcing the use of non-pharmacological interventions with the interprofessional team and ensuring that the patient's response was monitored.

Results: 120 patients were reviewed, mean age 82 years. Quetiapine and Haloperidol were the most frequently ordered antipsychotics at 43% and 41% of orders, respectively. We discontinued or decreased antipsychotics in 64% of orders. We increased awareness of appropriate dosing for prescribers and created a positive impact on delirium awareness with the interprofessional team. We have developed web-based educational tools for antipsychotic dosing and non-pharmacological strategies for responsive behaviours.

Discussion: Our support for non-pharmacologic strategies for behaviour management as an alternative or adjunct to antipsychotic use has helped to embrace interprofessional team functioning in addressing responsive behaviours in older patients. In addition, a plan for further antipsychotic stewardship implementation is being developed to assist with spread and sustainability throughout acute care.

Conclusions: Antipsychotic stewardship is a valuable opportunity for engaging the interprofessional team with

appropriate management of responsive behaviours in older patients in acute care.

What is Planned for Phase 2 of the CCNA (Canadian Consortium on Neurodegeneration in Aging)?

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Background: From 2014-2019, CCNA developed a cohesive community of dementia researchers in Canada, funded by CIHR plus partners to establish teams, platforms, and cross-cutting programs. The application of CCNA for a Phase 2 (2019-2024) was successful, and a five year 46 million dollar program is now beginning. We will review the major planned activities for the next five years.

Methods: The Phase 2 application was assessed, along with the Background: meetings and workshops that led to the proposal.

Results: After consultation with the Scientific Advisory Board, partners, Research Executive, and members, an ambitious plan was put forward for the next five years. There will be 19 teams under the themes of Basic mechanisms of dementia, treatment, and improvement of Quality of Life for people with dementia. Prevention will be stressed, both within the teams and with establishment of CAN-Thumbs UP, a national dementia prevention platform. A search for subgroups of dementia and personalized therapy will be carried out within the national cohort of NDD subtypes called COMPASS-ND, wherein over 2000 subjects with NDD (and normal controls) will be recruited and followed longitudinally. Data analysis of COMPASS-ND will be carried out. Treatment interventions will be piloted and the pilot Results: evaluated in Phase 2. Cross-cutting programs will carry out Knowledge Translation, Training, Women Sex and Gender, Inclusion of people with dementia and their caregivers, and ELSI (Ethical, Legal, and Social aspects of dementia research). A special group within three teams will focus on dementia stigma.

Discussion: This national initiative brings together 310 Canadian scientists working in the realm of dementia research.

Conclusions: The Phase 2 of CCNA will be ambitious, novel, and bold, and holds the promise of making significant progress towards treatment and prevention of dementia.

The Frequency and Quality of Delirium Documentation in Discharge Summaries

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Background: Hospitalized older adults are susceptible to developing delirium, which is associated with poor outcomes. Detailed documentation is therefore important for ensuring adequate follow-up care after hospitalization. Previous studies demonstrated that only 3-14% of cases have it documented in their discharge summaries. Our study characterized both the 1) frequency and 2) quality of delirium documentation in discharge summaries.

Methods: In this multi-center retrospective chart review, we identified patients aged ≥65 years with delirium admitted under a medical or surgical service using CHART-DEL, a validated delirium screening tool. We then evaluated the quality of delirium documentation in their discharge summaries using a framework created by the Joint Commission: Accreditation, Health Care, Certification (JCAHO). We used Chi-square tests to examine differences in documentation rates between medical and surgical specialties.

Results: 1291 patient charts were screened, of which 112 had delirium (8.7%). Seventy percent of cases contained "delirium" or a related term in their discharge summaries. This was not statistically significantly different between surgical (n=51) and medical (n=61) specialties (p=0.22). However, documentation quality was lower in surgical vs. medical specialties, notably in including delirium work-up (23% vs. 58%, p<0.001), causes (36% vs. 71%, p<0.001), treatment (38% vs. 67%, p<0.01), medication changes (44% vs. 100%, p<0.001), and follow-up plans (30% vs. 88%, p<0.002).

Discussion: The quality of delirium documentation varied across specialties. Further studies investigating the impact of documentation on patient outcomes will elucidate which elements of the JCAHO framework should be included in discharge summaries.

Conclusions: Frequency of delirium documentation is higher than previously reported. However, the quality of documentation remains subpar and highlights the need for further education around delirium documentation.

A Scoping Review on the Clinical Frailty Scale

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Background: Frailty is increasingly recognized as an important construct with health implications for older adults. The Clinical Frailty Scale (CFS) is a clinical judgement-based frailty tool that is valid, reliable and easy to administer. The CFS evaluates specific domains including comorbidity, function and cognition to generate a frailty score ranging from 1 (very fit) to 9 (terminally ill). The aim of this scoping review is to identify and document the nature and extent of research evidence related to the CFS.

Methods: We performed a comprehensive literature search to identify original studies that used the Clinical Frailty Scale. Medline OVID, Scopus, Web of Science, CINAHL, PsycINFO, Cochrane Library and Embase were searched from January 2005 to March 2017. Articles were screened by two independent reviewers. Data extracted included publication date, setting, demographics, purpose of CFS assessment, and outcomes associated with CFS score.

Results: Our search yielded 1,688 articles and 183 studies were included. Overall, 62% of studies were conducted after 2015 and for 63% of the studies CFS was measured in hospitalized patients. The association of the CFS with an outcome was examined 526 times; CFS was predictive in 74% of the cases. Mortality was the most common outcome examined with CFS being predictive 87% of the time. CFS was associated with comorbidity 73% of the time, complications 100%, length of stay 75%, falls 71%, cognition 94%, and function 91%. The CFS was associated with other frailty scores 94% of the time, demonstrating the scale's validity.

Discussion: This scoping review revealed that the CFS has been widely used in multiple contexts for a variety of research purposes.

Conclusions: The association of CFS score with clinical outcomes highlights its utility in the care of the aging population.

First and Second Year Medical Students' Attitudes Towards Physical Activity and Its Role in Medical Practice

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Background: Lack of education and training presents a major barrier to physicians' prescription of physical activity (PA) to patients, despite the increasing evidence of its role in improving long-term health. The purpose of this study was to determine Dalhousie University first and second-year medical students' attitudes towards PA in medical practice, their perceived learned body of knowledge, and their satisfaction with how these are aligned within the curriculum.

Methods: An online questionnaire (the Nutrition and Physical Activity Education Questionnaire, [NPAEQ]) was administered to 220 first and second-year Dalhousie University medical students. The NPAEQ comprised 11 questions related to physical activity, assessing three domains: attitudes, perceived learned knowledge, and satisfaction.

Results: Overall, 125 students responded to the survey, with a response rate of 56%. Attitude-related responses showed high agreement when it came to the positive influence of counselling (97.6%) and the physician's role in patients' physical activity (88%). Students perceived their learned knowledge to be high, particularly in understanding of basic concepts (88%). Participants who had previous PA education reported significantly higher agreement (73.2-95.1%) compared to those without (59.5-84.6%), (p=0.002-0.032). In assessing satisfaction, 42.4% felt that the PA component of the curriculum would not fully prepare them for their careers as physicians.

Discussion: First and second-year Dalhousie medical students feel strongly that physical activity is an important aspect of medical care, and physicians play a role in influencing patients' PA levels. Respondents believe they have a good understanding of a variety of concepts, but low agreement in terms of curriculum satisfaction suggests lack of PA education and integration.

Conclusions: PA education can be further improved to diminish the knowledge gap and better prepare students for their future careers as physicians, while improving patients' health outcomes.

I Don't Want to Visit Grandma: Gerontophobia and Gothicism

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Background: "Population ageing is poised to become one of the most significant social transformations of the twenty-first century." It is important to recognize that gerontophobia, the irrational fear of older people, is widespread and prevalent. Prejudices against the elderly have been shown to reduce effective care delivery, influence psychological and medical profiling, impact mental health, reduce wellbeing, and produce self-fulfilling prophecies.

Methods: A scoping literature review was conducted using both medical and humanities databases to identify gerontophobia in gothic media and to examine how gothic media perpetuates the fear of aging.

Results: The review identified 15 papers and 21 media examples discussing gerontophobia and gothicism. Common themes that emerged included generational conflicts disadvantaging older persons, social vulnerability of the elderly, non-natural deaths, and the frailty phenotypes of weakness, cognitive dysfunction, physical dependence, malnutrition, and unattractiveness. Data collection is ongoing.

Discussion: Gerontophobia is one of the most tolerated prejudices in media. Gothicism is the ideal lens for identifying and interrogating society's fear of aging because gothicism is informed by "the poetics of terror" and highlights aspects of dominant culture that are feared and repressed. Gothic narratives are guilty of representing a dearth of healthy, living senior characters and an abundance of monstrous bodies representing gerontophobia. For example, when the young, handsome vampire Lestat is killed in Interview with the Vampire, he rapidly ages, depicting the frailty phenotypes listed above. As his skin grows white and skeletal, the music suddenly changes, and Claudia--originally smiling--expresses signs of fear. Fear of Lestat is therefore intimately tied to his body representing signs of aging.

Conclusions: Gerontophobia appears frequently in popular gothic media and should be considered when addressing normalization and stigmatization of the elderly.

Walking Performance Decline Across the Cognitive Spectrum in a Clinical Setting

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Background: Gait performance decline is associated with increased cognitive impairment. Recently, poor dual-task gait (walking while performing a cognitively demanding task) has been linked to progression to dementia in mild cognitive impairment (MCI). However, gait performance across the cognitive spectrum has not previously been

studied in a clinical setting. The purpose of this study was to examine whether patients from a memory clinic show differences in usual and dual-task gait speed and dual-task cost (DTC) based on cognitive diagnosis.

Methods: Patients in the Aging Brain Memory clinic (London, ON) were timed over a six-meter path marked on the floor with a stopwatch. Patients were asked to perform a usual gait walk and three dual-task gait walks: counting backwards by ones, naming animals and counting backwards by seven (serial sevens) out loud. One-way ANOVA was performed to evaluate associations between gait speed and DTC across groups.

Results: Two-hundred four patients with subjective cognitive impairment (SCI; n=47), MCI (n=81), or dementia (n=76) were assessed. Performance in usual ($p<0.001$) and dual-task gait speed (counting gait $p<0.001$; naming animals $p<0.001$; serial sevens $p=0.012$) decreased across the spectrum of cognitive impairment. Dementia group had significantly higher DTC in both counting gait ($p=0.004$) and naming animals ($p=0.009$) conditions compared with patients with SCI and MCI, who had statistically similar DTC in all conditions.

Discussion: Dual-task gait performance significantly declined across the cognitive spectrum in a clinical setting. These results confirm in a clinical setting the previously described relationship between gait performance and cognitive impairments.

Conclusions: Our results support the use of a simple gait test as an aid to differentiate cognitive profiles. Further studies may determine if incorporating dual-task gait testing in clinics can help predict future cognitive decline.

Aging without a Place to Call Home: Comprehensive Review with a Systematic Approach on Pathways into Homelessness for Older Adults

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Background: Homelessness in Canada and internationally is expected to rise among older adults as a result of population aging. Older homeless adults represent an invisible group, highlighting the need for improved understanding of their pathways into homelessness.

Methods: A comprehensive review of the literature, using a systematic approach, was conducted to identify studies on persons over 50 years of age and pathways into homelessness. MEDLINE and AgeLine databases were searched from 1999-2018 using extensive search terms. 72 abstracts were reviewed, with a final 16 articles identified and confirmed by three authors to meet the pre-defined inclusion and exclusion criteria.

Results: Five themes emerged from the literature: (1) Two distinct pathways into homelessness, (2) Personal factors, (3) Precipitating events, (4) Unique population characteristics, and (5) Service challenges and barriers.

Discussion: A distinction was found between older adults experiencing homelessness for the first time in late life and those with prior experiences with homelessness. Among both groups there was a high burden of health problems, mental health problems, and substance use. Precipitating events, including the death of a loved one, disputes with a landlord or neighbour, or loss of employment, were found to destabilize vulnerable older adults and increase susceptibility to homelessness. Lack of appropriate formal services and barriers to their access, such as outdated inclusion criteria and unwelcoming prior experiences, were described.

Conclusions: Diverse population characteristics and varying definitions for aging and homelessness created methodological challenges in this review. Further research is needed to understand differing service needs for older adults who become homeless in late life compared to those who have been chronically homeless.

A Needs Assessment for the Implementation of a Geriatric Medicine Online Education Program

A. Day, K. Ng, E. Wong, V. Chau. University of Toronto.

Background: To evaluate the geriatric medicine educational needs of core internal medicine residents prior to the creation of an online resource.

Methods: Internal medicine residents from University of Toronto completed an online survey, which was complemented by an online survey of local staff geriatricians to address any unperceived needs.

Results: Twenty-five percent (n=57) of residents and 30% (n=19) of staff geriatricians responded to the survey. The majority (n=51) preferred the educational resource to be online, and 83 percent (n=47) reported that they would likely use such a resource in the future. Topics most commonly rated as "poorly understood" included frailty, functional decline, determining capacity, and depression. Internal medicine residents indicated a strong preference for material to be organized using a Royal College oral examination style approach (88%; n=50) and for content to make use of bulleted summaries (53%; n=30). Only 15 to 19 percent of students requested animation, video, or slideshows.

Discussion: The survey results encourage more emphasis on teaching materials related to frailty, functional decline, determining capacity and depression. Despite some recent trends of focusing new online materials around technologically enhanced formats (i.e. animation, video, and online slideshows, etc.), both students and staff geriatricians reported that they actually preferred learning from case scenarios presented in the format of the Royal College oral examination, and they also preferred simple point-form summaries.

Conclusions: This needs assessment identified topic areas and content delivery format that suit the needs of internal medicine residents developing their geriatric medicine skills.

Self-referral for Cognitive Study Enrollment: An Advertising-based Recruitment Strategy for Participants with Early Cognitive Decline

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Background: Recent randomized control trials and observational studies for cognitive impairment are seeking participants with early cognitive decline. The Case Finding Study, initiated in 2009, utilizes self-referral to identify and evaluate potential research participants for cognitive studies based on self-identified memory concerns.

Methods: Advertisements around London, Ontario, promoted the opportunity for participation in these studies. Inclusion criteria were subjective memory concerns, age ≥55 years old, and an interest in cognitive research. Exclusion criteria involved history of stroke or unmanaged depression. Participants' cognition, mood, and activities of daily living were assessed in-person by a research coordinator using clinical neurocognitive screening tools including the MoCA. A geriatrician determined a clinical suspicion of subjective cognitive decline (SCD), mild cognitive impairment (MCI), dementia, or "other condition". Longitudinal follow-up, every 1-2 years, was offered with tests sent to their family doctor. Participant demographics and study enrollment were analyzed retrospectively using t-tests, ANOVA, or chi-square analysis.

Results: Since 2009, 203 of 270 (75%) respondents presented for baseline in-person assessment. 95 participants (47%) were assessed as having SCD, 90 participants (44%) had MCI, and 18 (9%) had dementia. To date, 61 participants (30%) enrolled in cognitive studies, while 11 participants (5%) did not meet study screening criteria and 135 participants (65%) have not yet screened for additional studies.

Discussion: The Case Finding Study successfully identified motivated candidates for cognitive studies from the community and connected them to cognitive research opportunities. Limitations of this study included unavailable study enrollment records which may have understated participant study enrollment.

Conclusions: This approach facilitates study recruitment for participants with SCD and MCI, and provides for ongoing monitoring of potential participants' cognition and interest in a particular type of research study.

User Feedback of Electronic Medication Adherence Products for Older Adults: A Qualitative Analysis

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Background: Medication management among older adults continues to be a challenge, and has led to the development of innovative electronic medication adherence aids to resolve this concern. The aim of this study was to examine user experience, with particular emphasis on features, usefulness of and preference for particular medication adherence aids.

Methods: Older adults, health-care providers and caregivers tested the usability of 22 electronic medication adherence products. After testing 5 different products, participants were invited to participate in a one-on-one interview focused on examining the features, usefulness, preference for and recommendations of products tested. The interviews were audio-recorded, transcribed and analyzed using exploratory inductive coding to generate themes related to use of these products. The first interview was independently coded by two researchers and codes matched to ensure consistency in coding. A 78.5% inter-rater reliability was found between 2 researchers analyzing the first 13 interviews, after which a single researcher analyzed the remaining interviews.

Results: Of the 37 participants who participated in the interviews, 21 (56.8%) were older adults, 5 (13.5%) were caregivers and 11 (29.7%) were health-care providers. The themes and sub-themes generated from the qualitative analysis include functionality (sub-themes: usability, simplicity, portability, modernity and accessibility), safety, storage capacity, affordability and behaviour (frustration, peace of mind, privacy and comfort).

Discussion: Providing older adults with medication aids that enable independent medication management is of significant importance. Functionality and storage capacity are important considerations when developing electronic medication adherence for older adults.

Conclusions: Older adults, caregivers and health-care professionals prefer medication adherence products to be simple, safe to use, portable, with easy to access medication compartments and adequate storage capacity.

Factors Predicting Health Care Utilization in a Sex-stratified, Older Adult Population

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Background: Health and wellness are common goals for most older women and men as they age. As such, individuals aim to be low-cost users (LCU) of the health care system as this is a group that uses fewer health services, which may reflect better health and wellness. Given that LCU are potentially aging optimally, this study examines the health profiles of women and men who are LCU, and identify any gender-based differences for a range of sociodemographic, clinical, and behavioural health factors.

Methods: This study includes community-dwelling Ontarians aged 65 years and over, who are identified as LCU using health administrative data from IC/ES between 2005-2012 that were linked to self-reported data from four cycles of the Canadian Community Health Survey (CCHS). For each gender, we describe the frequencies of and associations between potentially modifiable health factors and cost use.

Results: In a sample of 32,631 adults, 65 and older (55% women), low-cost status is strongly associated good self-reported physical health, mental health, and life satisfaction. Similar trends are seen with food security, exercise, among many. When stratified by gender, new associations emerge: life satisfaction, overweight BMI, and living with others has greater significance in men, whereas food security, community belonging, and higher diet scores only show significance in women.

Discussion: Strong gender-specific associations between an individual's cost-use and food security, the intensity of exercise, or life satisfaction, among other factors, highlight ideal targets for policymakers and clinicians.

Conclusions: On a large scale, this study demonstrates the nuanced effect that certain behaviours and traits have on the health-care usage of older women and men, a proxy to evaluate their health status.

Medical Students' Perceptions of Nutrition in Medical Education and Future Practice

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Background: Physicians are relied upon as sources of nutrition counselling; however, research shows that most have low self-reported knowledge of nutrition information. The objective of this study was to determine Dalhousie first and second-year medical students' perceptions of nutrition education, in terms of their attitudes, learned body of knowledge, and satisfaction.

Methods: An online questionnaire (the Nutrition and Physical Activity Education Questionnaire [NPAEQ]) was administered to first and second-year Dalhousie University medical students. The NPAEQ has 11 questions on three domains: attitudes, perceived knowledge, and satisfaction. A Likert scale was used to compare the responses of first-year students with second-year students, and those with and without previous nutrition education.

Results: 125 students completed the survey (response rate 56%). 66% of respondents were female, 60% were in first-year, and 27% reported previous nutrition experience. In the attitudes section, 98% of participants agreed that nutrition counselling makes a positive difference in patient outcomes, with 91% agreeing that physicians play a key role in patients' nutritional habits. Knowledge of nutrition was strongest for basic nutrition concepts (90%), and lowest for the role of nutrition in the pathophysiology of diseases (56%). Students reported low levels of satisfaction with nutrition education (≤22% agreement). First-year students reported significantly higher agreement with all satisfaction-related questions, compared to second-year respondents (p values ranging from 0.001 to 0.045).

Discussion: The importance of nutrition in health outcomes and the role of physicians in nutrition counselling is agreed upon among first and second-year medical students. However, there is a discrepancy between students' attitudes towards nutrition, their knowledge base, and satisfaction with the level of nutrition education they receive.

Conclusions: There is room for improvement in nutrition education to increase self-perceived knowledge and better patient health outcomes.

Long-term Care Admissions Following Hospitalization: The Role of Social Vulnerability

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Background: We sought to understand the association between social vulnerability and the odds of long-term care (LTC) placement within 30 days of discharge following admission to an acute care facility and whether this association varied based on age, sex, or baseline frailty.

Methods: Patients admitted to hospital with acute respiratory illness were enrolled in the Canadian Immunization Research Network's Serious Outcomes Surveillance Network during the 2011/2012 influenza season. Participants (N=475) were 65 years or older (Mean=78.6) and over half were women (58.9%). Social vulnerability was measured using a Social Vulnerability Index (SVI) and frailty was measured with a Frailty Index (FI). Due to the rarity of incident LTC placement (N=15), we used penalized likelihood logistic regression.

Results: At age 65, social vulnerability was associated with lower odds of LTC placement at high levels of frailty (FI = 0.4; OR=0.15, 95%CI=0.03-0.61), but not at lower levels of frailty. At age 85 social vulnerability was associated with greater odds of LTC placement in the fittest patients (FI =0.0; OR=13.54, 95%CI=1.42, 131.76 and FI =0.1; OR=6.71, 95%CI=1.01, 40.43), but not at higher levels of frailty. Various sensitivity analyses yielded similar results.

Discussion: Social vulnerability interacted with frailty and age, but not sex. Although younger, frailer participants may need LTC, they may not have anyone advocating for them. In older, fitter patients social vulnerability was associated with increased odds of LTC placement, but there was no difference among those who were frailer, suggesting that at a certain age and frailty level, LTC placement is difficult to avoid even with a supportive social situation.

Conclusions: Social vulnerability may play a role in determining who receives LTC placement and could be considered when prioritizing LTC placements.

Interventions to Reduce the Rate of Inappropriate Oral Anticoagulant and Antiplatelet Therapy Prescription at Hospital Discharge: A Quality Improvement Report

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Background: Oral anticoagulants and antiplatelet agents are common medications taken by frail elderly patients. Several previous studies have identified anticoagulants as the drug class most commonly associated with adverse drug events requiring hospitalization. Combining anticoagulants and antiplatelet therapy further increases the risk of major bleeding events, but literature suggests up to 95.3% of patients on dual therapy do not have an accepted indication. The objective of the current study is to reduce the rate of elderly patients being discharged on inappropriate oral anticoagulant or antiplatelet therapy.

Methods: This was a single centre, prospective, non-randomised, controlled study utilizing quality improvement principles in a 21-bed inpatient, subacute-rehabilitation unit led by a geriatrician in a tertiary care centre in Hamilton, Canada. Planned iterative Plan-Do-Study-Act (PDSA) cycles aiming to trigger revaluation and adjustment of patients' anticoagulation/antiplatelet regimen at different points during their admissions include: PDSA #1—monthly

teaching sessions for the medical team on existing best practices; PDSA #2—design of new visual aids posted at physicians' workstations; and PDSA #3—a modified discharge prescription order set specifically drawing attention to anticoagulant/antiplatelet agents.

Results: At baseline, 48.1% of patients discharged from the unit were on oral anticoagulants alone or combined with antiplatelet therapy. Among these patients, 23.1% did not have appropriate indications for their regimen. We are currently collecting data with respect to the effect of our first PDSA cycle.

Discussion: We anticipate final results to be available for presentation in April 2019.

Conclusions: We anticipate final results to be available for presentation in April 2019, and are targeting a 50% relative reduction in the rate of inappropriate anticoagulant/antiplatelet prescription.

CFS Changes During Geriatric Rehabilitation

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Background: The Clinical Frailty Scale (CFS) is a nine-point scale to measure frailty which is routinely used in the Geriatric Assessment and Rehabilitation Unit (GARU) at St. Martha's Regional Hospital. The objective of this quality initiative was to examine whether there was a change in the CFS score after rehabilitation and whether CFS scores were different based on patients' characteristics.

Methods: Retrospective chart audit was completed for 77 patients (mean age 78±9.966, 56% females) discharged from GARU between June to December 2018. CFS was assessed and collected at baseline (pre-admission), admission to hospital, and discharge from GARU.

Results: Overall, 29% were diagnosed with stroke/TIA, 56% were complex medical cases, and 14% were orthogeriatric patients. The mean GARU length of stay was 29 ± 19.20 days; 79% were discharged home. Mean CFS scores at baseline, admission, and discharge were 4.53±1.05, 6.16±0.69, 5.78±0.91 respectively; all significantly different from each other. Those who were older than 85 and were admitted due to medical or orthogeriatric problems were frailer at baseline. Those who were discharged home and stayed in the GARU for less than 20 days were less frail. Most patients (78.2%) did not recover to their baseline CFS.

Discussion: Frailty improved during rehabilitation but fewer than a quarter of patients returned to their pre-admission level. Frailer patients were more likely to return to baseline, likely reflecting the role of disabling stroke as an indication for GARU admission amongst people with pre-hospital low CFS levels. Ongoing data collection will allow us to examine whether the CFS could assist in triaging referrals to the GARU and in setting up interdisciplinary team rehabilitation goals.

Conclusions: CFS is a valuable tool for capturing change after rehabilitation.

Brain Perivascular Space Volume is Associated with Poor Gait Reserve in Vascular Cognitive Impairment

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Background: Vascular cognitive impairment (VCI) is a major health problem among people >65 of age leading to vascular dementia. About 5% of the elderly experience VCI. Gait and balance impairments are common in VCI patients particularly following stroke, leading to impaired mobility. This increases risk of falls, cardiometabolic disorders, and subsequent strokes. Nonetheless, it is unknown how underlying VCI-related pathological alterations disturb motor function. This study examined the association between gait performance and volumetric measurements of cerebral tissues/lesions in VCI subjects.

Methods: We considered a subcohort of VCI participants from the Ontario Neurodegenerative Disease Research Initiative including 85 subjects (mean age=69.1±7.3, women=32%) with NIH stroke scale score of zero indicating no major gait impairment. All subjects underwent gait assessments by measuring their speed at usual, fast, and dual-task conditions (walking while counting, naming animal, and serial seven subtractions) and MR neuroimaging volumetric measurements (including the volume of 10 cerebral tissues/lesions types including deep and periventricular white matter hyperintensities/lacuna, perivascular spaces (PVS), and stroke). Associations between 10 cerebral regions/lesions and gait variables were assessed by partial correlation analyses adjusted for age, gender, education level, and MoCA score (mean=25.5±3). A Bonferroni correction was applied as correlation analyses were repeated 10 times for each gait variable (p =0.005).

Results: Higher PVS volume (greater pathology) was associated with lower motor indexes (reduction in fast gait velocity (r=-0.34) and capacity index (r=-0.32)). No other significant correlation between gait parameters and brain regions was observed.

Discussion: Increased PVS volume in VCI patients was associated with inability to maintain fast gait and with poor gait reserve (capacity index).

Conclusions: Our findings suggest that an increased PVS may reflect pathogenic mechanisms that affect gait performance.

Family and Palliative Care Physicians' Perceived Barriers, Facilitators and Strategies to Improve Supportive Care at End of Life for Older Adults with Frailty in Long-term Care: A Qualitative Descriptive Study

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Background: Physicians are responsible for meeting the challenging and changing medical needs of frail LTC residents throughout admission to end of life, yet little evidence exists of physicians' perspectives and practices of supportive care at end of life in LTC. We undertook a qualitative study to describe barriers, facilitators, and strategies to improve supportive end of life care in LTC.

Methods: We used a qualitative descriptive approach. Semi-structured telephone interviews were conducted with family and palliative care physicians practicing in LTC across Alberta, Canada. We included all consenting and eligible respondents. Transcripts were analyzed thematically taking a directed content analysis approach.

Results: In total 23 physicians were interviewed. The group included 11 men and 12 women, 13 participants were above age 50 years, and 12 had less than 20 years of practice. Participants included 18 family and 5 palliative care physicians. Perceived barriers to supportive end of life care included: managing family expectations, attending to patients' pain, mental health issues, and spiritual concerns, and considering LTC staff numbers and skills. Facilitators included establishing family expectations early, and utilizing assessment tools, community resources, and mentorship. Strategies for improving supportive end of life care in LTC included having standard care guidelines and providing specialized training for physicians and LTC staff.

Discussion: Physicians identified supportive end of life care for frail LTC residents as complex. Identified challenges included managing family expectations, care delivery, and team integration. Effective communication, specialized skills development, and appropriate tools and resources were identified as potential facilitators to providing supportive end of life care.

Conclusions: Development and evaluation of integrated strategies to address barriers faced by physicians is required to improve supportive end of life care in LTC.

Implementing Early Mobility Recommendations for Older Adults After a Fragility Hip Fracture: A Mixed Methods Study

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Background: More than 32,500 Canadians per year experience a fragility hip fracture. Health Quality Ontario (2017) published several best practices inclusive of promotion of early mobility, recommending mobilization at least once daily by health care providers and/or family where possible. Mobility activities within the first 24 hours after surgery can promote a faster recovery and help manage delirium. We do not know the rate of health care provider adherence to the mobility recommendations, nor do we know the contextual factors that impact recommendation implementation in this older adult population.

Methods: This study utilized a mixed methods approach to better understand early mobility activities after hip fracture repair. Phase 1 consisted of a retrospective chart review to determine the utilization of early mobility best practice recommendations by the interprofessional care team. Phase 2 examined the contextual factors affecting early mobility within an embedded case study approach.

Results: Phase 1 results—Although 88% of patients were assessed by physiotherapy on the first post-operative day, only 40% were mobilized up to chair. Phase 2—Patient and health-care interviews, behaviour mapping, and accelerometer data enabled an in-depth analysis of the factors which may impact early mobility activities.

Discussion: Prolonged periods of immobility post-operatively place an older adult at risk of significant complications. Historically, after experiencing a fragility hip fracture, older adult patients are unable to regain their pre-operative functional baseline. Rich narratives obtained in this study have provided us with an in-depth understanding of the contextual factors which impact early mobility.

Conclusions: Early mobility activities were similar regardless of pre-fracture levels of function or cognitive status. Patient and health care experiences provide insight as to difficulties experienced with early mobility.

Which Comes First, Optimism or Good Health? A Longitudinal Study of Adults Aged 50 to 104

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Background: Optimism, the general expectation that the future will be good, is one of the most studied psychosocial predictors of physical health. Yet chronically poor or failing health could result in reduced optimism, especially in older people who have reduced likelihood of physical improvement. This study aimed to test this reverse causality.

Methods: Data were from 7,873 adults ages 50 to 104 (M=77.2 in 2014, SD=8.1), collected by the U.S. Health and Retirement Study. Optimism was measured with the standard 6-item survey used in health research. Overall health was measured with a 59-item frailty index. Partial correlation compared the ability of frailty in 2000 to predict optimism in 2006-2008, with the ability of optimism in 2006-2008 to predict frailty in 2014, controlling for age, sex, income, and education.

Results: The average frailty index score was 0.12 in 2000 (SD=0.09) and 0.23 in 2014 (SD=0.14). Optimism averaged between "slightly agree" and "somewhat agree" with optimistic statements (M=4.45, SD=0.97). Frailty in 2000 explained 4% of the variability in optimism approximately 7 years later. In turn, optimism in 2006-2008 explained 4% of the variation in frailty approximately 7 years later, both $p < .0001$. Controlling for sociodemographics, both dropped to 3%. Age, sex, and especially education and income explained 20% of the variance in frailty measured concurrently, 6% of the variance in optimism 7 years later, and 16% of the variability in frailty 14 years later.

Discussion: Optimism may be a result as well as a cause of good health. While socioeconomic status has a stronger influence on frailty, optimism has been increased in well-designed studies with brief, inexpensive trainings.

Conclusions: Educational interventions could be a cost-effective approach to improving health in older adults.

Older Adult-Caregiver Dyad Discrepancies in Older Adult's Capacity to Manage Medications

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Background: Older persons report being less dependent on others when managing medications than caregivers do. The objective of this project was to examine the discrepancies between older adult and caregiver reports of limitations in the older adult's medication management capacity.

Methods: Older adult–caregiver dyads, recruited to participate in a study testing the usability of medication adherence aids, independently completed a 42-item scale, the Domain Specific Limitation Medication Management Capacity Tool (DSLMMC), which examines the domains and sub-domains of physical abilities (vision, dexterity, hearing), cognition (comprehension, memory, executive functioning), medication regimen complexity (dosing regimen, non-oral administration, polypharmacy), and access & caregiver (prescription refill, new prescription, caregiver) necessary for managing medications. The percent agreement in the scoring on the DSLMMC between older adult and his/her caregiver was determined to examine the discrepancies in reports of limitations in domain/sub-domain specific medication management capacity.

Results: Three older adult–caregiver dyads' independent completion of the DSLMMC was analyzed. The mean percent agreements between the older adult and his/her caregiver in the different sub-domains was 72% (vision, range 50–100%), 50% (dexterity, range 20–90%), and 33% (hearing), 17% (comprehension, range 0–100%), 67% (memory, range 0–100%), 8% (executive function, range 0–25%), 13% (dosing regimen, range 0–40%), 0% (non-oral administration), 33% (polypharmacy, range 0–100%), 44% (prescription refill, range 0–100%), 67% (new prescriptions, range 0–100%) and 83% (caregivers, range 0–100%).

Discussion: There is variable agreement between older adults and caregivers in many domains and sub-domains related to self-management of medication. To accurately and comprehensively examine an older adult's ability to independently manage medications, an assessment should be completed with both caregivers and older adults.

Conclusions: There is significant variation in caregiver reported abilities of medication management in comparison to self-reported ability by older adults.

Resistance Training But Not Leucine Can Reverse Frailty by Increasing Basal Muscle Protein Synthesis in Older Women Consuming Optimized Protein Intake

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Background: Frailty is a clinical condition associated with loss of muscle strength and mass (sarcopenia). Although sarcopenia has multifactorial causes, it might be partly attributed to a blunted response to anabolic stimuli. Leucine acutely increases muscle protein synthesis and resistance training (RT) is a strong anabolic stimulus to counteract sarcopenia. The effects of chronic leucine supplementation in conjunction with RT are unknown. The purpose of this double-blinded placebo-controlled study was to determine the effects of leucine supplementation and RT on muscle anabolism in pre/frail older women consuming optimal amounts of dietary protein.

Methods: Pre/frail elderly women (n=19, 77.5 ± 1.3 y, BMI: 25.1 ± 0.9 kg/m^2), based on the Frailty Phenotype, underwent 12 weeks of progressive RT with protein-optimized diet and were randomized in a double-blinded fashion to 7.5 g/d of leucine (Leu) supplementation or placebo alanine (Ala). The primary outcome was myofibrillar fractional synthesis rate (MyoFSR), determined using L-[ring-2H5]phenylalanine infusion in the postabsorptive and postprandial states. Secondary outcomes were number of Frailty Criteria met, physical function, muscle strength, body composition (DXA), and myofiber size.

Results: Basal MyoFSR increased by 66%, which occurred in conjunction with an increase in type 1 and 2a myofiber cross sectional area (CSA) (16% and 28%, respectively), and lean body mass (LBM, 2%). The number of Frailty Criteria was reduced by 64%, which occurred in conjunction with significant improvements in physical function and strength.

Discussion: RT with optimal protein intake significantly improved upon the Frailty Phenotype with associated improvements in physical function, strength, and increased basal MyoFSR along with type 1 and 2a myofiber CSA and LBM, with no added benefit of leucine supplementation.

Conclusions: Leucine had no added anabolic benefit to the intervention.

Impact of Visual, Auditory and Dual Sensory Impairment on Functional Status in Older Adults

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Background: The aim of this analysis was to examine the impact of visual impairment, hearing impairment, and the interaction between the two (dual sensory impairment or DSI) on functional status in older adults.

Methods: Secondary analysis of the Manitoba Health and Aging Study, a population-based cohort study of 1751 adults age 65+. Cross-sectional data was collected in 1991-92 (Time 1). Follow-up was performed 5 years later (Time 2). Vision and hearing were self-reported and categorized as excellent, good, fair or poor. The Older Americans Resource and Services scores were recorded for each participant and categorized into the following groups; excellent or good function; mild disability; or moderate or severe disability. Logistic regression models were constructed to assess functional status in participants with visual impairment,

hearing impairment and dual sensory impairment (DSI) at both Time 1 and Time 2. These were adjusted for age, sex, education, number of social supports, and comorbidities.

Results: Dual sensory impairment (DSI) at Time 1 predicted poor functional status at both Time 1 and Time 2. The effect of visual impairment was more pronounced. The unadjusted odds ratios (OR; 95% confidence interval) for poor functional status at Time 2 for hearing impairment was 1.57 (1.06-2.34), for visual impairment was 2.11 (1.40-3.19), and for DSI was 3.30 (2.02-5.39). At time 2, the adjusted ORs for poor functional status with hearing impairment was 1.15 (1.09-1.15), for visual impairment was 1.16 (1.04-2.49) and for DSI was 2.50 (1.27-4.23).

Discussion: Limitations of the study include older data, and self-reports of impairment rather than direct measurement.

Conclusions: Participants with poor functional status were more likely to have dual sensory impairment with the effect mostly due to visual impairment.

The Recommended Intakes of Fatty Acids to Prevent Frailty and Mortality in Adult

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Background: Fatty acids (FAs) are important in our metabolic process. This study aimed to explore the relationship of FAs with frailty and with mortality across the frailty levels, and to find the recommended intakes of FAs for frailty and mortality prevention.

Methods: This observational study includes 8,614 participants aged ≥20 years from the 2003-2006 cohorts of the National Health and Nutrition Examination Survey (NHANES). We constructed a 36-item frailty index (FI) excluding items related to nutritional status and examined 29-dietary FAs. All-cause mortality data were identified until 2011. The recommended intakes of FAs were further tested in the 1999-2002 and 2007-2010 cohorts.

Results: Lower frailty was associated with higher omega-3 FAs and octadecatrienoic acid intakes in all frailty levels. Moderate/severe frailty (FI>0.3) was associated with higher saturated FAs (SFAs), hexadecanoic acid and octadecanoic acid intakes and lower docosapentaenoic acid intake. Mortality risks were increased in individuals having FI 0.1-0.2 with higher SFAs, medium-chain FAs, octanoic acid, dodecanoic acid, tetradecanoic acid or hexadecenoic acid intakes or lower polyunsaturated FAs, omega-3 FAs, octadecadienoic acid or octadecatrienoic acid intakes. To prevent moderate/severe frailty, the daily recommended intakes were ≤11.5% of SFAs, ≤20.1 g of hexadecanoic acid and >1.58 g of omega-3 FAs.

Discussion: The relationship between FAs and frailty seems most marked when damage is well established (FI>0.3). FAs are predictive of mortality only when the degree of deficit accumulation is present, but still low (FI 0.1-0.2).

Conclusions: We found an association between seven FA variables and having an FI>0.3, and an association between twelve FA variables and mortality in individuals with FI 0.1-0.2. We also identified the daily recommended intakes of three FAs for the prevention of frailty.

The Availability of Recreation Therapy Across Horizon Health Network and the Perceived Benefits for Seniors

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Background: Recreation therapy uses goal-oriented interventions to benefit the well-being of patients. Seniors in particular may benefit due to an increased likelihood of longer hospital stays, less social support, and limitations to participation. Few studies have looked at the perceptions of recreation therapy within interdisciplinary teams in the health care of seniors.

Methods: An online survey was designed and distributed to geriatricians, recreation therapists, and other allied health professionals across Horizon Health Network. The survey examined the perceptions of recreation therapy, benefits for seniors, and areas for improvement. Descriptive statistics were used and qualitative data was analyzed for common themes.

Results: 83 surveys were returned (15% response rate). 100% of respondents agreed that recreation therapy is important for seniors and improves quality of life. Recreation therapy was perceived to benefit seniors with cognitive impairment, improve mental well-being, and provide access to socialization. Goal-oriented interventions individualized to a patient's abilities and interests were identified as being most beneficial, as well as keeping seniors physically, mentally, and socially engaged. However, availability and access to recreation therapy were identified as barriers to receiving adequate services.

Discussion: The results of this survey were strongly supportive of recreation therapy for seniors, with health-care professionals across all disciplines recognizing its various benefits. Improved availability and awareness of recreation therapy would allow seniors to fully benefit from this therapeutic service as part of interdisciplinary care.

Conclusions: Health-care professionals recognize the benefits of recreation therapy for seniors as well as its limited availability. Improved availability and provision of recreation therapy services would be invaluable to the health and wellness of seniors.

Family Physicians' Perspectives on Advanced Care Planning in Community-Dwelling Elderly: A Qualitative Study

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Background: Few studies explore the family physician's role in advance care planning (ACP) for non-institutionalized elders. The purpose of this study is to investigate FPs'

perspective on who, what, when, where, why and how they initiate ACP discussions with community-dwelling elders.

Methods: Semi-structured interviews with a convenience sample of thirteen FPs practicing in Vancouver, Canada.

Results: While all participants felt that FPs were responsible for initiating ACP with elderly patients, there were two distinct approaches as to when they will initiate ACP: proactive, where the physician initiated discussions prior to a health trigger, and reactive, where ACP was initiated after an inciting event. Physicians often talked about the necessity of creating time dedicated to these discussions and introduced ACP with the following techniques: (1) normalizing the topic, (2) speaking in general terms, and/or (3) exploring the patient's understanding of their prognosis. Physicians expressed conflicting perceptions about the impact of ACP on the physician, on patients' current and future care and on the patient-physician relationship. FPs who solely practiced in the clinic setting were often unaware of the direct impact of ACP on patients' end-of-life care. Lastly, we noticed that numerous ACP resources existed, but may be unknown or inaccessible to physicians. There was a distinct lack of effective non-English resources.

Discussion: Participants had difficulty determining the optimal timing to initiate ACP in community-dwelling elders, and often had different thresholds depending on individual characteristics. Among these, willingness to initiate early discussions were influenced by the perceived impact of ACP.

Conclusions: FPs had varying and often conflicting perspectives on the optimal timing and impact of ACP in community-dwelling elders. More research investigating the effect of ACP on the primary care elderly population is needed.

The Impact of Cardiac Rehabilitation on Frailty: Do the Frailest Benefit the Most?

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Background: To determine if cardiac rehabilitation reduces frailty levels from admission to program completion.

Methods: Participants (n=4004) were patients with cardiovascular disease who had been referred for cardiac rehabilitation. They engaged in a supervised 12-week group-based exercise and education-based program twice a week. Frailty was measured with a 25-item frailty index (scores range from 0 to 1; a higher score indicates higher frailty levels). Frailty severity was assessed in 0.1 increments: <0.2, 0.2-0.3, 0.3-0.4. 0.4-0.5, and >0.5. The minimally important difference in frailty at program completion was examined, and defined as a reduction in frailty index scores by ≥0.03.

Results: Of the 2632/4004 patients who completed cardiac rehabilitation (66%), frailty levels were calculated in 2311 patients (mean age: 62.3±10.5; 24.7% female). Frailty scores of the <0.2, 0.2-0.3, 0.3-0.4, 0.4-0.5, and >0.50 groups were seen in 18%, 28%, 30%, 17%, and 7% of patients, respectively. Frailty scores were significantly reduced from baseline (0.32±0.12) to completion (0.25±0.13; $p<0.0001$); 67% of participants improved their frailty scores by at least the minimally important difference. At rehabilitation completion, the number of frailty index deficits were significantly ($p<0.05$) reduced by 0.63, 1.34, 2.07, 2.60, and 2.84 deficits in the <0.2, 0.2-0.3, 0.3-0.4, 0.4-0.5, and >0.5 frailty groups, respectively. The minimal important difference in frailty scores was achieved by 48%, 65%, 72%, 76%, and 79% of patients in the five frailty groups, respectively.

Discussion: A significant number of patients in cardiac rehabilitation are frail. Studying the impact of changing frailty levels in relation to adverse health outcomes is warranted.

Conclusions: Cardiac rehabilitation completion was significantly associated with lower frailty levels (by ~1.8 fewer deficits). Patients with more severe frailty levels may derive the most benefit from cardiac rehabilitation programs.

A Comparative Study of Hip Geometry in Older Patients with Acetabular Versus Hip Fractures

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Background: Acetabular fractures following a fall from a standing height or less are increasing in older adults. The role of osteoporosis in these acetabular fractures is unclear, but as they are, compared to hip fractures, more common in men, other factors are likely involved. We explored if differences in hip geometry may influence which type of fragility fracture occurs.

Methods: The database of two acute care hospitals in London, Ontario from 2013 to 2015 was reviewed for acetabular and hip fracture patients aged 75 years and older. Thirty patients with acetabular fracture were age and gender matched with 30 hip fracture patients. Digital X-rays were used to measure hip geometry in all patients using a method similar to previous studies.

Results: Patients (35 women, 25 men) had a mean age of 86 years (range 75 to 98). Compared to those with hip fracture, patients with acetabular fracture had narrower neck shaft angle (126.7° vs. 129.6°, $p = 0.029$) and larger femoral shaft width (36.4 mm vs. 34.7 mm, $p = 0.049$). Hip axis length, femoral neck length, and femoral neck width measurements were similar between groups.

Discussion: We found that hip geometry differs between patients with acetabular fracture and hip fracture. The narrower neck shaft angle, which indicates that the femoral neck is approaching a right angle, may increase the propensity to sustain an acetabular fracture. It is unclear why the wider femoral shaft matters, unless it suggests increased femoral bone strength, which could explain the higher incidence in men.

Conclusions: Future studies incorporating bone mineral density are needed to improve our understanding of factors associated with acetabular fractures.

Comparing N100 Latencies Between Mild Cognitive Impairment (MCI) and Cognitively Normal (CN) Subjects Using Event-Related Potentials (ERP) of the NeuroCatch™ Platform

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Background: ERPs are a non-invasive, low-cost, method to record electrophysiological activity of the brain in vivo through an Electroencephalogram (EEG). ERPs could provide insight into the link between cellular pathology and cognitive function, and have been shown to differ in MCI and CN older adults. Our study explores longitudinal ERP changes in MCI using the investigational medical device, the NeuroCatch™ Platform (NCP), and assesses its capacity to predict conversion to dementia. NCP captures brain wave changes following the passive listening to tones and word pairs.

Methods: We are conducting an observational-longitudinal study with n=30 MCI patients diagnosed at a specialty memory clinic and n=30 CN subjects. NCP and Montreal Cognitive Assessment (MoCA) testing sessions will be done at baseline, 6, 12, 24, and 36-months.

Results: We present baseline data for 10 participants with MCI (mean age = 74.5 years, 4 females) and 4 CN participants (mean age = 65.5 years, 4 females). The average MoCA score for the MCI group was 22.8/30 and 27.5/30 for CN participants. The average N100 ERP latencies for the MCI and CN groups were 105.3 ms and 102.4 ms, respectively.

Discussion: The preliminary results suggest that, at baseline, MCI participants had a higher average N100 latency than CN participants, suggesting an electrophysiological effect of the brain pathology. Once the full, longitudinal dataset is collected, we plan to determine if NCP can identify which participants with MCI are more likely to convert to dementia.

Conclusions: ERPs can help distinguish between MCI and CN patients at baseline, and may be able to help monitor transitions to dementia.

Frailty in the Context of Rehabilitation Interventions for Adults: A Scoping Review

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Background: Frail adults can benefit from rehabilitation interventions, but few are offered these services. The reasons for this exclusion are not well understood, and it is not clear who is considered "frail". We conducted a scoping review to describe: a) the characteristics of frail adults included in rehabilitation interventions; (b) rehabilitation interventions for frail adults; and c) commonly reported outcome measures used in rehabilitation interventions.

Methods: A number of health sciences and rehabilitation databases were searched for studies that were written in English-language, peer-reviewed, and reported the outcomes of rehabilitation trial for frail adults 18 years and older. Screening consisted of: (1) a title and abstract review; and (2) full-text review, with each study reviewed by at least two reviewers. Data on participant and intervention characteristics was charted and synthesized descriptively.

Results: 63 papers were charted and synthesized in this review. Studies included participants aged 65 years and older, and who had: a recent hospital discharge, significant weight loss, or frequent falls, while those with moderate or severe cognitive impairments were excluded. Most interventions focused on physical strength and endurance, using treadmills, walking poles, and dumbbells. Many interventions were delivered by health professionals, with some delivered by trained instructors and demonstrated moderate success for persons with frailty.

Discussion: There is variability in the characteristics of "frail" participants and the interventions to support this population. Some exclusions, such as for age or certain diagnoses, may limit the potential for reaching a wider population of patients who can benefit from such approaches.

Conclusions: This study offers insight into current rehabilitation interventions for frail adults including populations targeted and areas for future research.

Creation of an Administrative Triage Tool for an Outpatient Geriatrics Clinic

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Background: There are many reasons why a patient would be referred to a geriatric clinic; however, some geriatric syndromes or characteristics are considered high risk or require earlier assessment to avoid morbidity. Our objective was to create a triage tool to be used by clinic administration or triage teams to identify these higher risk patients using expert consensus.

Methods: We invited 190 geriatricians in Canada to participate in a modified Delphi process to develop the tool. We conducted a literature review and identified potential items to include in a triage tool. Participants were asked to add additional items based on their clinical experience. Through two rounds of a modified Delphi process, participants were asked to rate each item on a Likert scale from 1 (low) to 9 (high) value for inclusion in the tool. A webinar was held to discuss results and comments generated. A median rating of greater than 7 was considered threshold for inclusion.

Results: Thirty-one geriatricians consented to participate. A total of 57 individual items were identified for discussion. In round one of rating, 3 items were kept (rating > 7), 13 characteristics were removed (rating < 5), 40 characteristics were re-rated in the second round (ratings 5-7), and one characteristic was flagged for further discussion. Of the 40 characteristics that were re-rated, 3 were kept in the tool (rating > 7). Overall, 6 individual characteristics were identified for the tool. During a web meeting, a final survey was required to finalize wording and reconsider two additional characteristics.

Conclusions: A modified Delphi process was used to create an administrative triage tool for geriatric outpatient clinics using expert consensus.

Does Physician Retirement Affect Patients? A Systematic Review

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Background: Physicians retire every year, impacting many patients. It is unclear if this interruption in continuity of care leaves patients at risk for adverse events or presents an opportunity for an incoming physician to optimize care.

Methods: We systematically searched the MEDLINE, EMBASE, Cochrane and PsycINFO databases, from inception to May 4, 2018, for any published account of a patient outcome associated with a physician retiring. We categorized articles as anecdotes, qualitative studies or quantitative studies. We extracted details on patient outcomes (e.g., patient satisfaction, treatment plan adherence, clinical, and resource utilization) and classified each outcome as favorable, neutral or unfavorable. We assessed the quality of studies using the validated Meta Quality Appraisal Tool (MetaQAT) and summarized the results using narrative synthesis given heterogeneity in study design and quality.

Results: We retrieved 2,099 unique articles, of which twelve anecdotes, two qualitative studies, and three quantitative studies met inclusion criteria. Most patient outcomes described were unfavorable, including feelings of loss and abandonment, difficulties with new providers and access to care, and adverse clinical outcomes with increased utilization of high cost services. The quality of qualitative studies was high, but that of quantitative studies varied.

Discussion: Current evidence from qualitative studies suggests physician retirement affects patients unfavorably and that patients are vulnerable during this transition of care. We found no high-quality quantitative research to corroborate these findings at a population level.

Conclusions: Our results, and the patterns we noted in patient outcomes following physician retirement from different specialties and locations, can help guide further research in the field.

Collaboration in Dementia Care Between Primary Care Physicians and Specialist Physicians: Does it Exist? A Scoping Review

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Background: To address the increasing need for dementia care in the community and the critical shortage of geriatric specialists, there is growing recognition of the importance of multidisciplinary approaches and effective collaboration between primary care and specialist care. The purpose of this scoping review is to identify existing collaborative efforts in multidisciplinary models involving primary care physicians and specialist physicians.

Methods: PubMed and Scopus databases were searched after January 2000 for studies involving family physicians and specialists in dementia care. Studies were included for review if a collaborative care model or multidisciplinary approach was assessed and they were published in English.

Results: Of the 51 studies assessed for eligibility, 16 were retained for review. Of these, 8 studies involved primary care-led teams and 8 involved specialist-led teams. Five studies described family physician and specialist interactions where specialists played a consulting role and assumed supervisory roles such as chart auditing, corroborating diagnoses and treatment and ensuring adherence to guidelines. None of the studies described or evaluated the extent or nature of collaboration, coordination, or integration among primary care physicians and specialists.

Discussion: Although reviewed studies described primary care and specialist interactions for dementia care, these relationships do not appear to reflect true collaboration and integration of these physician roles in the provision of dementia care and little is known about the nature of their collaborative processes.

Conclusions: Collaborative relationships between primary care and specialist physicians have the potential to improve the quality of dementia care. More research is needed in this area, with particular attention to the known characteristics of meaningful collaboration.

Measuring Quality of Life for Persons Living with Dementia in Primary Care Collaborative Memory Clinics: Is It Feasible?

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Background: Primary Care Collaborative Memory Clinics (PCCMC) are established in 107 Ontario primary care settings. This feasibility study examined which health-related quality of life tool(s) are most practical to administer in the PCCMC. The introduction of quality of life measures are important for evaluation of economic impacts, which can guide policy decisions about future spread and scale of PCCMCs.

Methods: Health-care professionals (HCPs) from two PCCMCs were trained to administer three standardized tools to persons living with dementia and their caregivers: EuroQol (EQ-5D-5L), Quality of Life in Alzheimer's Disease scale (QoL-AD), and Short Form Health Survey (SF-36v1). HCPs tracked how long each tool took patients and caregivers to complete and whether assistance was required. HCPs also participated in two focus groups, which were recorded, transcribed verbatim and analyzed thematically.

Results: HCPs (n=5) in social work, occupational therapy, and nursing administered each of these tools to 18 patient-

caregiver dyads. Patients' average MoCA score was 16/30; dementia diagnoses included Mixed (33%), Alzheimer's (33%), and Vascular (6%). Using a 5-point rating scale (1=very challenging to complete; 5=very easy to complete), HCPs ranked the EQ-5D-5L (mean=3.9, SD=1.1) and QoL-AD (mean=3.8, SD=1.2) as feasible, unlike the SF-36v1 (mean=2.1, SD=0.8).

Discussion: HCPs found it most feasible to administer these tools while patients waited to meet with the PCCMC physician. HCPs liked the EQ-5D-5L because it was short and focused on the patient's perceived health that day. HCPs found the QoL-AD helped them to get to know patients better, but some portions overlapped with routine assessments administered in PCCMCs.

Conclusions: Results suggest it may be feasible for PCCMCs to integrate EQ-5D-5L and QoL-AD tools into routine care processes. These measures can facilitate future economic evaluation studies.

Patient and Health-care Professional Perspectives on "C5-75": A Primary Care Program to Identify and Support Older Adults Living with Frailty

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Background: The "C5-75" program (Centre for Family Medicine Case-finding for Complex Chronic Conditions in persons 75+) is a unique model of frailty identification and management in primary care. As part of a fulsome evaluation of the program's impacts we examined stakeholder perspectives on the administration of this care model.

Methods: Surveys and in-depth interviews were conducted with health-care practitioners (HCP) and patients at an urban Family Health Team. HCP and patients rated their satisfaction with the screening process and provided their perceptions of this care model (benefits, challenges, suggestions for improvements).

Results: Sixty-one surveys were completed by patients (n=33), registered nurses/registered practical nurses (n=16), and physicians (n=12). Mean ratings reflected that patients were 'extremely' satisfied (4.6 ± .50/5) with the screening process and that HCP were 'very' satisfied with the process (76.2 ± .22.7/100). 88% of patients rated the overall program as "very good" or "excellent." Thirty-five interviews were completed (patients, n=27; registered practical nurses, n=4; physicians, n=4). Patients described the screening as quick and easy; they valued the program as it offered reassurance and they appreciated the repeated nature of screening so as to identify health changes overtime. HCP described it as comprehensive, a valuable way to proactively identify frailty/health issues, however, due to challenges fitting it into regular practice suggested alternative opportunities for screening (e.g., flu clinics, separate appointments). Additional training and infrastructure supports were suggested to facilitate implementation.

Discussion: The C5-75 program was well received. Development of infrastructure supports including improvements to the referral system, increased training and promotion, will support program growth and spread.

Conclusions: The C5-75 program provides patient-centred care through proactive management of complex chronic conditions that are common in older adults.

The Prevalence of Frailty and Sarcopenia in Older Adults Screened for Elective Joint Replacement

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Background: Our primary objectives are to determine 1) the prevalence of self-reported frailty and sarcopenia in older adults with osteoarthritis who are screened for joint replacement, and 2) the association between self-reported frailty and sarcopenia.

Methods: Patients over 60 years old screened for joint replacement between September 2017 and August 2018 at one of the five regional Hamilton Niagara Haldimand Brant Local Health Integration Networks (LHIN) Musculoskeletal Central Intake Assessment Centres (MSK CIAC) were included. Patients were screened for sarcopenia using the SARC-F questionnaire and for frailty using the Fried Frailty Score. Osteoarthritis severity was measured using the Oxford Hip/Knee Scores.

Results: 4,845 patients over 60 years old were screened for joint replacement, of which 3,672 patients had all appropriate documentation. The average age was 70.5 (± 7.3) years and 71.9 (± 7.7) years in the knee and hip groups, respectively. 1,429/3,672 (38.9%) were men. 1,196/3,672 (32.6%) and 2,476/3,672 (67.4%) were screened for hip and knee replacement, respectively. The average Oxford Score was 37.4 (± 9.6) and 39.1 (± 9.9) for the knee and hip, indicating severe osteoarthritis. The prevalence of frailty was 1,958/2,476 (79.1%) and 1,035/1,196 (86.5%) in the knee and hip groups, respectively. The prevalence of sarcopenia was 1,635/2,476 (66.0%) and 866/1,196 (72.4%) in the knee and hip group, respectively. In the knee group, 1,444/2,476 (58.3%) were both frail and sarcopenic. In the hip group, 811/1,196 (67.8%) were both frail and sarcopenic.

Discussion: Self-reported frailty and sarcopenia are highly prevalent in older adults screened for joint replacement.

Conclusions: This is the first Canadian study evaluating the prevalence of self-reported frailty and sarcopenia in older adults screened for joint replacement. Interventions that target frailty and sarcopenia may improve patient outcomes following joint replacement surgery.

A New Behavioural Assessment and Intervention Response Inventory: LuBAIR (in Persons with Dementia)

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Background: Twelve newly formed behavioural categories have been established to classify behaviours in middle to late dementia. These categories were used to develop a new behavioral assessment inventory, titled LuBAIR (Luthra's Behavioral Assessment and Intervention Response). It was hypothesized that LuBAIR would be less labour intensive, more comprehensive, and offer improved categorization of behaviours into clinically meaningful categories in dementia care.

Methods: Seven Long-Term Care Facilities in Ontario, Canada, were selected for the study. 120 residents with a diagnosis of dementia were recruited; sixty participants exhibiting Behavioral and Psychological Symptoms in Dementias (BPSDs) in the study group, and sixty not displaying BPSDs in the control group. Pittsburg Agitation Scale was used to screen for presence of BPSDs. Two registered nurses (RN) completed the LuBAIR inventory, BEHAVE-AD, and Cohen-Mansfield Agitation Inventory (CMAI) for each participant in the study group. This was done to establish inter-rater, construct, and criteria validity. Fourteen days later, the same RNs completed the LuBAIR inventory again for each participant for intra-rater reliability. A Clinical Utility Survey (CUS) was developed to evaluate the nurses' viewpoints on the usefulness of LuBAIR on three variables: less labor intensive, more comprehensive, and better categorization of behaviors in clinically meaningful categories.

Results: Intra-rater reliability was established for 8 of 12 behavioral categories. Inter-rater reliability was established for 10 of 12 behavioral categories. LuBAIR inventory had comparable construct and criteria validity. CUS findings showed 23% of nurses found LuBAIR to be less labor intensive, 77% found it more comprehensive, and 98% agreed LuBAIR helps with understanding behaviors in a clinically meaningful way.

Discussion: LuBAIR has acceptable inter- and intra-rater reliability, and construct and criteria validity. It is more comprehensive and is better able to categorize behaviors in clinically meaningful categories.

Conclusions: This allows for care providers to improve best practices through a better understanding of the "meaning" behind behaviours.

Frailty and Associated Factors of Old People in Vulnerable Context: A Longitudinal Study in Primary Health Care

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Background: The frailty representing a public health problem. Late attention to this condition may imply in the loss of functionality in the elderly. The study aimed to analyze the prevalence of frailty and your relationship with health conditions and sociodemographic factors of elderlies in a follow-up of four years.

Methods: Prospective observational cohort study, with quantitative method. Were evaluated elderlies primary care service users residents in a region with high social vulnerability in a municipality in the State of São Paulo, Brazil.

Results: Two hundred sixty three participants were assessed at baseline, with a similar proportion of men and women (46%, 54%) and average age 70.4 ± 7.7 years. After four years, 40 participants died (65% male, 35% women). The paired Wilcoxon test as to the level of frailty, second Edmonton Frail Scale (EFS) in the first moment of the study (2014) compared to second moment (2018), it was found that 62.7% of participants in time 2 have increased your level of frailty compared to time 1 (*p* value: 0, 008). The multivariate regression analysis showed that low education (OR = 1.008; 95% CI: 0.90 -1.12), lower income (OR = 1.000; IC 95%: 1.00 -1.00), to present dependency for basic activities (OR = 0.366; 95% CI: 0.02 -5.11) and falls (OR = 1.032; IC 95%: -1.09 0.97) were risk factors for frailty.

Discussion: The differences in the prevalence rates of frail older people can be justified by the context of social vulnerability, in which the participants reside, whereas the frailty can be influenced by conditions of poverty and, consequently, affect the physical health.

Conclusions: To research the frailty and associated factors can generate evidence to come improve planning in health care services and long-term care plans.

Blood Pressure Measurement and the Prevalence of Postprandial Hypotension

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Background: Postprandial hypotension (PPH) is a serious condition that has been shown to be an independent risk factor for falls, fractures and death. The prevalence of this problem in falling older adults has shown a wide variability in the literature; the present study seeks to examine how the frequency with which blood pressure is measured impacts the prevalence and severity of PPH.

Methods: 95 meal tests were performed on older adults recruited sequentially from a geriatric medicine falls clinic (mean age 77.5±0.7 years, 61±5 percent female). All subjects were fasting prior to each 90 minute standardized meal test. A Finometer (Finapres Medical Systems BV) was used to monitor blood pressure. Beat-by-beat systolic (SBP) measures were averaged for 0.5, 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45 and 90 minutes respectively during the meal test.

Results: Using the original diagnostic method of checking mean blood pressure every 10 minutes resulted in a PPH prevalence of 42.1±5.1 percent in our population, with an overall range from 81.1±4.0 to 11.6±3.3 percent depending on the frequency of calculating SBP. The maximal observed postprandial decrease in SBP also showed a significant difference with blood pressure measurement frequency ($p<0.001$).

Discussion: The frequency of checking mean blood pressure has a large impact on the prevalence of PPH detected in a population of falling community-dwelling older adults. The time window for checking blood pressure also had a large influence on the number of PPH events detected, as well as the magnitude of the detected decrease in SBP.

Conclusions: The frequency with which blood pressure is measured has a profound effect on the measured prevalence and severity of PPH.

Do Older Adults with Overactive Bladder Demonstrate Impairment in Executive Function Compared to Their Peers without OAB?

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Background: There is evidence to suggest that overactive bladder (OAB) is, at least in part, a "brain disease", and the accumulation of white matter hyperintensities with age is associated with the development of LUTS. This study examined if people with OAB demonstrated difference in cognitive function, in particular executive function, compared to their peers without LUTS.

Methods: Participants were recruited from a tertiary geriatric continence clinic and by advertising in the local press. Participants were included if they were aged ≥65, and were free from neurological disease, and did not have a diagnosis of dementia or cognitive impairment. The "OAB" group had a diagnosis of OAB, a 24-hour micturition frequency of >8, and at least weekly urgency urinary incontinence. The control group were defined by a Bladder Symptom Assessment Questionnaire (BSAQ) of 4 or less. Following informed consent, participants emptied their bladder and then completed the Trail Making B Test and a reaction time test. The times taken were compared.

Results: 56 participants were recruited, 35 with OAB and 21 controls. The majority were female.

	Age	(SD)	Female	TMT	(SD) sec	Reaction Time (SD) ms
OAB n=35	74.4	(5.8)	30	(86%)	103.37	(33.1) 480 (142)
Control n=21	75.4	(5.8)	13	(61%)	34.85	(11.71)
			$p<0.001$			$p=0.722$

There was no difference between the groups in reaction time, however the OAB group had significantly ($p<0.001$) longer time to complete the trail making B test.

Discussion: Older adults with OAB had significantly slower performance on the trail-making B test, a test of executive function, but no impairment in reaction time, when they were not experiencing LUTS.

Conclusions: Older adults with OAB demonstrate impairment in executive function compared to those without OAB. In this cross-sectional study it is not possible to assign a direction of causality for this effect.

Characteristics and Outcomes of Older Patients Presenting to Medical Assessment Unit (MAU): A Retrospective Analysis

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Background: This study aimed to assess characteristics and outcomes of older patients referred; pre-morbid baseline, polypharmacy and MDT referrals

Methods: Retrospective analysis of elderly patients (age ≥65) seen at Loughlinstown MAU between 01/02/18 and 28/02/18. Data was obtained from clerking proforma. Age, sex, Clinical Frailty Score (CFS), 4AT, Dementia diagnosis, number of medications, length of stay, Multidisciplinary Team (MDT) referrals and discharge destination were recorded.

Results: 187 new patients were recorded, 41.7% Male (78) and 58.3% female (109). Mean and median age was 78 (65-98). 55.6% (104/187) were admitted to acute ward with median length of stay of 9 days (1-94). 0.53% (10) came from nursing home. 10.2% (19) had dementia diagnosis. 14.5% (27) had a possible delirium and/or cognitive impairment (4AT ≥4), of which 9 were admitted $p=0.1541$. Average CFS was 4 (vulnerable) in 72/187 patients. Polypharmacy (>5) were observed in 63.6% (119) patients, of which 71 were admitted $p=0.1689$. 52.9% (55/104) referred to physiotherapist, 47.1% (49/104) referred to social worker, 30.8% (32/104) referred to Speech Therapist. As for discharge destination, 72.1% (75/104) went home, 15.4% (16/104) N/Home, 9.6% (10/104) convalescence, 0.29% (3/104) died. Patients with dementia were likely to be admitted (15, 14.4%) compared to patients without dementia (89, 85.6%) $p = 0.049$. 76.9% (80) patients were referred to MDT. They were likely to be referred to MDT if they were not discharged home directly $p<0.0001$. Patients with advancing age were highly correlated with increasing CFS $p<0.0001$ 95% CI 73.44 to 77.01 and prolonged hospitalisation $p<0.0001$ 95% CI 66.11 to 71.49.

Discussion: An MDT approach were led to effective discharge planning. Early identification of patients with frailty is important to improve outcomes.

Conclusions: Older patients presenting to the AMU with dementia had high admission rates. Patients with advancing age and increasing CFS were associated with prolonged hospitalisation.

Developing a Centralized Intake System for Specialized Geriatric Services: Care Provider Perspectives

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Background: In Ontario, the Hamilton Niagara Haldimand Brant Local Health Integration Network has been interested in developing a centralized referral and access system for Specialized Geriatric Services (SGS) to improve service wait times and enhance patient experience and access to services. To guide system development, this study aimed to obtain care provider perspectives on the current state and clarity of access processes.

Methods: Fifty interviews were conducted with working group leaders (n=8), specialists (n=7), primary care/specialist referrers (n=5) and frontline staff (n=30) across all

geriatric services in the region. Questions were asked related to issues associated with referral processes, preliminary triage and routing, clinical screening and workup, and service provision. Results were shared at a key stakeholder meeting consisting of 34 individuals representing various geriatric services during which potential solutions to identified issues were presented and prioritized using an electronic voting system.

Results: 17 key themes associated with the current access state were identified including unclear service categories, lack of knowledge about available services, variability of services available across the region, need for comprehensive patient history at intake, lack of understanding of SGS capacity, and limited awareness of referral status. 44 change ideas were generated; top ranked solutions garnering endorsement by >86% meeting participants included: eliminate service boundaries for ambulatory-based services, standardize referral forms for community SGS, create an online and accessible service inventory and common service categories, and response template for incomplete referrals.

Discussion: Identified issues related to current access to SGS and potential solutions can inform the development of an efficient and coordinated centralized intake system across the region.

Conclusions: A centralized intake system has the potential to improve patient care, timeliness and access to SGS across the region.

Comprehensive Evaluation of Physical Activity and Potential Function Benefits for Older Adults

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Background: Physical activity (PA) recommendations for aging adults exclude possible influences of light intensity or sedentary activities on physical function (PF). The objective of this study was to explore PF benefits of a comprehensive evaluation of PA on PF outcomes in aging adults.

Methods: Data collected from cycle 1 of the Canadian Longitudinal Study on Aging (CLSA n=25,072) and the 2005-2006 cycle of the National Health and Nutrition Examination Survey (NHANES n=932) including adults ages 45-85. PA was collected via the Physical Activity Scale for the Elderly (CLSA) and accelerometer (NHANES). Three PA indexes were created to study PA comprehensively: 1) Total Activities (Total Index), 2) Moderate-to-Vigorous Activity/Resistance Training (RT Index), 3) Sedentary/ Activity Time (SED Index). PF was derived from objective (CLSA) and self-reported (NHANES) measures. Logistic regression analysis was used for statistical analysis.

Results: In both datasets, the Total 1.12 (95% CI: 1.05-1.33) and SED indexes 0.67 (95% CI: 0.55-0.82) were significantly associated with PF after adjusting for potential confounders (<.05) while the RT Index was only significantly associated in the NHANES study (1.21 (95% CI: 1.03-1.42)).

Discussion: Total Index and SED Index seem to have the greatest positive impact on the likelihood of higher physical function, indicting that what is done in a 24-hour day and sedentary time may be important in terms of physical function outcomes for older adults.

Conclusions: This study suggests that other activities and combination of activities not currently included in typical PA guidelines may be associated with PF outcomes for aging adults.

The Pictorial Fit-Frail Scale: Feasibility and Reliability in Outpatient Settings

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Background: The Pictorial Fit-Frail Scale (PFFS) is an image-based tool designed as a simple and practical approach to frailty assessment compared to other frailty measures. The aim of this study was to investigate the feasibility and reliability of the scale when used by patients, caregivers, and health-care providers (HCPs) in geriatric outpatient clinics.

Methods: Data were collected on 150 patients aged 50+ across three outpatient clinics: geriatric day hospital, memory clinic, and outpatient geriatric clinic. Patients were asked to complete the scale themselves, and, where available, caregivers and HCPs completed the scale based on the patients' health. In the geriatric day hospital, the PFFS was completed on admission and administered again within 7-14 days. Time (minutes:seconds) and level of assistance needed to complete the scale were recorded (feasibility). Intracorrelation Coefficients (ICCs) were used to assess test-retest and inter-rater reliability.

Results: Scale completion time (mean±SD) was 4:30±1:54 for patients (n=116), 3:13±1:34 for caregivers (n=80), 1:28±0:57 for nurses (n=139), and 1:32±1:40 for physicians (n=62). Most patients who completed the scale were able to do so unassisted (64%). Mean PFFS scores were 11.1±5.3 for patients (n=132), 13.2±6.3 for caregivers (n=84), 10.7±4.5 for nurses (patients assessed=146), 11.1±5.6 for physicians (patients assessed=79); caregiver scores were significantly higher than patient (p<.01), nurse (p<.001), and physician (p<.01) scores. Test-retest reliability was good for patients (ICC=0.78, 95%CI=0.67-0.86) and nurses (ICC=0.88 [0.80-0.93]). Inter-rater reliability between HCPs was good (ICC= 0.75 [0.63-0.83]).

Discussion: Further research is needed to investigate the impact of cognitive impairment on the feasibility and reliability of the tool, as well as its validity and responsiveness.

Conclusions: The PFFS is a feasible and reliable tool for use with patients, caregivers, and HCPs in outpatient settings.

The Responsiveness of Goal Attainment Scaling in Relation to Goal Number in a Multidisciplinary, Community-based Intervention in Frail Older Adults

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Background: Goal Attainment Scaling (GAS) is an individualized outcome measure that allows patients/clinicians, to set and track personalized goals over the course of an intervention. GAS guidelines recommend tracking at least three goals, although it's not uncommon for subjects to set only one goal. Whether responsiveness of GAS holds when based on one goal is unclear. We compared responsiveness of one- and multiple-goal GAS in a community-based randomized, controlled trial.

Methods: Secondary analyses were conducted on data from the Mobile Geriatric Assessment Team (MGAT) study, a three-month trial examining the effect of CGA-based recommendations on achieving goals in 265 community-dwelling frail older adults. GAS was assessed at baseline and three-month follow-up. Most goals related to outcomes of care, with a small number focusing on prevention or the completion of a particular process. As the latter could be considered easier to achieve, analysis focused firstly on outcome goals, before including prevention and process goals for a total-goal analysis. One-goal GAS was calculated by randomly selecting a goal for each participant using a custom excel macro. Independent t-tests and standardized response means (SRMs) were used to assess responsiveness.

Results: Multiple- and one-goal outcome GAS detected significantly higher goal attainment in the intervention group (Multiple: mean difference=8.0, $p<.001$, SRM=1.29; One: mean difference=5.7, $p<.001$, SRM=0.85). Multiple- and one-goal total GAS also detected significantly higher goal attainment in the intervention group (Multiple: mean difference=7.9, $p<.001$, SRM=1.52; One: mean difference=4.2, $p<.001$, SRM=0.75).

Discussion: SRMs for one-goal GAS were of a lesser magnitude than multiple-goal GAS, however all can be considered large according to Cohen's criteria.

Conclusions: These data suggest that both multiple- and one-goal GAS can detect meaningful treatment effects in response to a community-based intervention in frail older adults.

Dementia 2.0: An Exploratory Analysis of Twitter and Health Forum Data

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Background: Social media platforms (i.e., Twitter and online health forums) are increasingly used as a novel data source for understanding many clinical conditions, including dementia. We explore user-generated dementia-related content on these platforms, and compare their utility for researchers conducting patient-oriented dementia research, and clinicians and policymakers hoping to improve understanding of dementia-related needs.

Methods: We collected 78, 265 Twitter posts through Twitter's application program interface over 55 hours, and 15, 538 posts from an online forum (Alzheimer's Association UK) from its inception until April 2018. All posts contained the keywords 'dementia', 'Alzheimer' or 'Alzheimer's'. We performed content analysis on 10% of Twitter posts and 5% of forum posts to generate the top ten most common themes from each platform. We summarized the unique features of each platform, including types of users, data quality, and data collection needs.

Results: Twitter posts sampled were most frequently posts using 'dementia' as a derogatory term (4.8%; n=376), followed by posts raising awareness for dementia (3.9%; n=302). Preliminary results show online health forum posts were most frequently personal experiences of both caregivers and people with dementia, caregiving strategies, and requests for information and support.

Discussion: Social media serve as useful sources of user generated in situ content on public perceptions, experiences, and understandings of dementia. Further, Twitter and health forums provide different data quality (e.g., signal to noise ratio, richness) and vary in user demographics.

Conclusions: Health forums are valuable for gaining insight into the perspectives of people with dementia and their caregivers, whereas Twitter data largely reflects societal perceptions of dementia. Dementia-related research, policy setting and clinical practice can be improved by harnessing these novel data sources.

Comparison of Treatment Tolerability and Effectiveness in Pulmonary NTM Patients Younger and Older Than 65 Years of Age

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Background: Older adults are at increased risk of pulmonary nontuberculous mycobacterial pulmonary disease (NTM-PD). The lengthy multi-drug treatment frequently causes adverse effects and is often not curative. Data are lacking regarding treatment tolerability and effectiveness by age.

Methods: In a retrospective study, we assessed differences in treatment tolerability and effectiveness, stratified by age, for NTM-PD. Clinical, radiographic, microbiologic, and treatment records were reviewed. Note was made whether and why treatment was modified or discontinued prematurely. Improvement in symptoms, culture conversion and radiology after one year of treatment was used to assess treatment effectiveness.

Results: Records of 542 antibiotic-treated NTM-PD patients were reviewed, comprising 364 "older" patients (>65 years old (67.2%, mean (SD) age 78 (8) years)) and 178 "younger" patients (<65 years old (32.8%, mean (SD) age 53 (11) years). Comorbidities were more common in older patients, including cardiac (23.1% vs. 10.7%, $p=0.006$), hypothyroidism (18.7% vs. 6.2%, $p=0.0002$), osteoarthritis (18.7% vs. 7.0%, $p=0.005$) and COPD (21.4% vs. 10.1%, $p=0.001$). Older patients were using more non-NTM medications (mean (SD) 5(4) vs. 3(3), $p=0.001$). Initial clinical symptoms were similar between groups. Older patients had more total positive sputum cultures (13 (16) vs. 10 (12), $p=0.03$)), and tended to less frequently have cavitation on lung CT scans (39.9% vs. 47.6%, $p=0.085$). Treatment was stopped prematurely in 24% of older vs. 16% of younger patients ($p=0.033$) primarily because of adverse

effects (90% vs. 72%, p=0.013). Frequencies of symptomatic improvement (56.8% vs. 52.8%, p=0.42), culture conversion (23.8% vs. 23.5%, p=0.94) and radiologic improvement (37.2% vs. 42.0%, p=0.42) were similar in older vs. younger patients, respectively.

Discussion: N/A

Conclusions: Although older patients with NTM-PD more often stopped treatment due to adverse effects, treatment effectiveness was similar to younger patients.

Detecting Apathy in Individuals with Parkinson's Disease: A Systematic Review

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Background: To examine diagnostic accuracy of apathy-screening tools compared with a gold standard (clinician diagnosis) among adult outpatients with Parkinson's disease (PD).

Methods: A systematic review was conducted. Six research databases were searched to May 23rd, 2018. Diagnostic accuracy measures, including sensitivity and specificity were gathered. Prevalence of apathy was also collected. Pooled prevalence of apathy was calculated using Mantel-Haenszel-weighted DerSimonian and Laird Models.

Results: 1,007 full-text articles were reviewed with seven full-text articles included. The gold standard was considered a clinician diagnosis as apathy is not defined in the DSM/ICD. Eighteen apathy-screening tools were identified, six of which were validated. Diagnostic accuracy measures were reported for the Lille Apathy Rating Scale (LARS) both informant- and observer-rated, Unified Parkinson's Disease Rating Scale (UPDRS), Apathy Scale (AS), Apathy Evaluation Scale (AES), Non-Motor Symptoms Questionnaire (NMS-Q), and Dimensional Apathy Scale (DAS). The AES had the best reported sensitivity and specificity values, both 90%. The AS had the highest reported specificity at 100%, with 66% sensitivity. Pooled prevalence of apathy was 29.1% (95% CI 21.5%–36.6%). There was significant heterogeneity associated with this value (I2 = 79.6%; p = < 0.01).

Discussion: While 18 screening tools exist to screen for apathy in PD, only six have been validated against clinician diagnosis. The AES had the highest reported sensitivity and specificity and is a brief, easy to use tool. The AS was designed specifically for use in PD populations and has the highest reported specificity.

Conclusions: Clinicians should be aware of available tools, and choose the one that best fits their practice. Future research should focus on the development of an accepted gold standard, to further understand accuracy measures of all available apathy screening tools.

The Impact of Identifying and Managing Frailty on Post-discharge Care Transitions

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Background: While Acute Care of the Elderly (ACE) units are the standard of care across Canada, to date there has been no specialized geriatric care for inpatients in Newfoundland and Labrador (NL). Frailty is common amongst hospitalized older adults, and frail individuals often experience frequent care transitions as a result of complex medical and social needs.

Methods: In 2017, an ACE Strategy was introduced at St. Clare's Mercy Hospital in St. John's, NL in an attempt to prevent unnecessary transitions in care. Existing resources were reallocated to allow for provision of enhanced geriatric care, including a comprehensive Geriatric Assessment (CGA) for frail elderly inpatients in a modified elder-friendly environment on one Internal Medicine Unit. The patients on two other Internal Medicine Units received usual care. Rates of re-presentation to the Emergency Department and re-admission to acute care were compared between the intervention and control groups.

Results: Frail elderly patients who were managed with the ACE approach had a 50% lower risk of readmission to acute care and 28% lower risk of presenting to the Emergency Department (ED) in the first 180 days following discharge from acute care.

Discussion: This study substantiates previous data in our local context and provides a reallocation of resources approach, which may be useful in systems with similar budget constraints.

Conclusions: We conclude that comprehensive geriatric care in a naïve patient population lowers the risk of readmission to hospital and ED visits for frail seniors.

Virtual Interactive Patients as an Innovative Tool to Address Geriatric Medicine Needs in Preclerkship and Clerkship Curricula

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Background: The Canadian Geriatrics Society (2009) has provided core geriatric competencies for graduating medical students. At the University of Toronto, the delivery of geriatric content is dispersed throughout many courses and clinical rotations. In prior work, several competencies were identified where coverage was minimal/absent in clerkship. To date, a comprehensive review of the preclerkship curriculum, and current clerkship iterations, has not been performed. Virtual interactive cases (VICS) are online clinical reasoning exercises that simulate patient encounters and provide immediate feedback. We hypothesized that their use could facilitate self-directed learning while addressing competency gaps.

Methods: We assessed 72 weeks of preclerkship and 14 clinical clerkship rotations for educational activities related to geriatrics. These were then reviewed for coverage of CGS competencies with regards to stated objectives, course content, and duration. We administered a 51-item survey to

third-year medical students addressing their training in CGS competencies, the impact of clinical experiences, and self-identified areas of insufficient teaching.

Results: We identified 52 geriatric educational activities totalling 61 hours of lecture, self-study or clinical skills. 6 virtual cases were designed targeting competencies with 3 or fewer dedicated activities: delirium, functional assessments, falls, polypharmacy, adverse events in hospitalization, and incontinence. Pending cases include caregiver stress, discharge planning, and chemical restraints. Initial survey analysis found that although medical students rate most competencies as 'somewhat' or 'thoroughly' covered, the vast majority of respondents answered 'Yes' when asked if more teaching would be beneficial in every category.
Final Results: are forthcoming.

Discussion: Additional teaching tools on CGS geriatric competencies are necessary and desired by students.

Conclusions: Our research has identified numerous opportunities to fortify the geriatric medicine curriculum. To fulfill these needs, virtual interactive cases are currently being developed.

Distribution of Serotypes Causing Invasive Pneumococcal Disease (IPD) in Older Canadian Adults, According to the Coverage by the Current and Next Generation Pneumococcal Conjugate Vaccines

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Background: In Canada, the National Advisory Committee on Immunization (NACI) recommends (grade A recommendation) the 13-valent pneumococcal conjugate vaccine (PCV13) for immunocompetent adults ≥65 yrs of age, on an individual basis, for the prevention of vaccine-type pneumonia and IPD. In addition, pediatric PCV13 program has been introduced in 2010/2011. Two next generation conjugate vaccines, PCV15 and PCV20, are currently under development. The objective of this study is to assess the distribution of IPD in Canadian older adults according to serotype coverage by the current and next generation pneumococcal conjugate vaccines.

Methods: The National Microbiology Laboratory (NML) has been undertaking a laboratory-based national surveillance of IPD since 2010. We calculated the proportion of vaccine type disease by using the NML's annual reports. Since NML did not consistently distinguish between serotype 15B and 15C isolates, 15B/C counts were included as proxy for 15B-type disease.

Results: The proportion of PCV13-type IPD in older adults has declined from 50% in 2010 to 43%, 38% and 33% in 2011, 2012 and 2013, respectively, likely as a result of herd protection from the pediatric PCV13 program. Since 2014 the decline has leveled off, with 25% of cases in 2016 still being of PCV13-type. PCV15- and PCV20-type disease accounted for 38% and 54% of IPD in 2016, respectively.

Discussion: There remains a substantial proportion of IPD in older adults potentially preventable by PCV13, as the indirect protection from immunizing children shows plateau in recent years.

Conclusions: Compared to PCV13, new generation PCV formulations could provide progressively larger coverage of *Streptococcus pneumoniae*, with PCV20 potentially addressing considerable portion of the disease burden in Canadian adults ≥65 years of age.

Changes in Gait Speed and Mortality: Where the Past Meets the Present

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Background: Low gait speed is associated with adverse outcomes, but most studies have used a baseline single measure and have not considered past values. We investigated whether past values provide prognostic information beyond current gait speed and how to best model past and current values for prediction.

Methods: In a cohort of 4289 participants aged 65 years and older from the National Health and Aging Trends Study, gait speed was measured at baseline and year 2 (Y2). Three-year follow-up for mortality started in Y2. We estimated hazard ratios comparing models with: (1) Y2 gait speed, (2) change in gait speed from Y1 to Y2, (3) Y2 + change in gait speed, (4) trajectories of gait speed from Y1 to Y2 [9 categories].

Results: Mean gait speed at Y2 was 0.77 m/s (0.26) and 482 (11.2%) of participants died. A 0.1 m/s higher gait speed at Y2 was associated with decreased mortality (HR, 0.76 [0.73, 0.79]). Gait speed improvement from Y1 to Y2 decreased mortality (HR, 0.92 [0.89, 096] per 0.1 m/s increase). Model 3, including both Y2 gait speed and change, indicated that improvement in gait speed was associated with decreased mortality (HR, 0.79 [0.75, 0.84]), independently of Y2 gait speed. Mortality was lowest in participants in the fastest tertile in Y1-2, and highest in those in the lowest tertile in Y1-2.

Discussion: Past gait speed is predictive of mortality, independent of current gait speed. Although gait speed improvement is protective, individuals maintaining higher gait speed had the lowest risk of mortality, suggesting gait speed recovery does not completely negate mortality risks.

Conclusions: Past values and changes in gait speed provide prognostic information beyond a single measure of gait speed and are useful for risk prediction in older adults.

Exploring the Longitudinal Patterns, Polypharmacy and Health Care Use in the Context of Multimorbidity Among Older Adult Primary Health Care Patients in Canada

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Background: The accumulation of multiple chronic diseases (multimorbidity) and multiple prescribed medications (polypharmacy) over time may influence the extent to which an individual maintains health and well-being in later life.

This research will describe the patterns (sequence and timing) of multimorbidity and polypharmacy that accumulate over time among older adults in Canada.

Methods: Data are derived from the Canadian Primary Care Sentinel Surveillance Network (CPCSSN) electronic medical record (EMR) database. Multimorbidity will be identified with 20 categories, cut-off points of ≥2 and ≥3 chronic conditions and the International Classification of Disease (ICD) classification system. Polypharmacy will be identified using the cut-off points of ≥5 and ≥10 medication classes and the Anatomical Therapeutic Chemical (ATC) classification system. Analyses will be conducted using Java and Stata 14.2 software.

Results: The prevalence of chronic diseases (multimorbidity) and prescribed medications (polypharmacy) for older adult patients will be presented. The most frequent patterns (combinations and permutations) of multimorbidity and polypharmacy will also be presented, stratified by sex and age category. Additional factors, such as the presence of frailty, disability or increased health service use, will be examined if possible. As well, the methodological challenges to identifying the presence and sequence of multimorbidity and polypharmacy in national, longitudinal data will be discussed.

Discussion: These findings can be used strategically to inform health care delivery for older adults and to contribute to the understanding of multimorbidity and polypharmacy in the international literature. In fact, reducing the burden of prescribed medications and the harms of polypharmacy are key tasks within the context of multimorbidity.

Conclusions: This research will present the profiles of multimorbidity and polypharmacy for older primary health care patients using a national, longitudinal database in Canada.

The Ethics of Physician-Assisted Suicide and Major Neurocognitive Disorders

F. Pageau. Laval.

Background: In Quebec, the newly elected government is considering the extension of physician-assisted suicide(PAS) to a patient who lacks decisional capacity due to a major neurocognitive disorder (MND). Our ethical research exposes the reasons why it is unethical.

Methods: We conducted a standard philosophical review of the ethical, legal, and medical literature. We examined the philosophical weaknesses of euthanasia supporters and criticized their arguments.

Results: We found that dignity must be considered as intrinsic and never as extrinsic. Throughout history, extrinsic dignity has often been misused to kill vulnerable people (for example in Nazis' Germany). Ableism (discrimination of people based on functional capacity) is imbedded into a vision that promotes PAS based on extrinsic dignity, and should not be a criteria for PAS. Additionally, we found that autonomy, as an ethical principle, cannot justify PAS. An incomplete vision of John Stuart Mill's autonomy is often used to justify euthanasia. Though, we found that a more comprehensive analyze of his theories would never support PAS.

Discussion: The feeling of lost dignity is driven by major ontological, social, and ethical errors. The social and personal wills to euthanize a patient with dementia are based on the same mistakes. These are ableism, denial of human dependency, the rejection of fragility, lack of a empathetic care, and an inaccurate vision of autonomy. We found that dignity therapy may reduce the feeling of lost extrinsic dignity. Likewise, the importance of a loving care for fragile patient with MND may diminish this impression.

Conclusions: From an ethical perspective, and by considering the true definition of dignity, a complete vision of autonomy, the dignity therapy and a holistic vision of care, we realized that PAS for patient with MND should never be allowed.

Knowledge Translation: Supporting the Implementation Fracture Prevention Recommendations in Long-Term Care

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Background: There is much research demonstrating large gaps in the application of clinical guidelines in long-term care (LTC). Aligned with the Canadian Institute of Health Research Knowledge Translation (KT) model, we describe the process used by the Ontario Osteoporosis Strategy to develop KT activities and tools to support fracture prevention guideline implementation.

Methods: KT activities were guided by the Knowledge to Action Cycle, informed by a program of research, using various methodologies (interviews, focus group discussions), aimed at identifying barriers and facilitators to guideline implementation. We adapted this knowledge to local context to implement and evaluate multi-faceted KT strategies. Fracture rates over time were examined using administrative data from the Institute for Clinical Evaluative Sciences.

Results: Identified barriers have included limited knowledge of osteoporosis, fracture risk and prevention, inconsistent prescribing of calcium and vitamin D, lack of protocols and organizational processes to support guideline use. Facilitating factors included leadership support, multidisciplinary team engagement and use of quality improvement strategies. Various interventions, including resident and family council engagement, education, audit and feedback and team-based action planning, were developed to support guideline implementation. Evaluation studies have demonstrated improved treatment for osteoporosis. Over 40 clinical support tools, easily accessible on-line, have been developed including a video series on falls and fracture prevention awareness-raising tools for residents and family councils, and the Fracture Risk Scale, a validated tool for assessing risk in LTC. Provincially, hip fracture rates have decreased from 2.3% to 1.9% over 9 years.

Discussion: Multifaceted approaches to knowledge translation (KT) can improve the uptake of clinical recommendations.

Conclusions: This KT approach may help to support quality improvement efforts and close the gap between recommendations of clinical guidelines and application to clinical practice in LTC.

Health-care Workforce Training in Supporting Family Caregivers of Seniors-in-Care

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Background: Family caregivers of seniors are integral to the Canadian health-care system. As primary caregivers, they provide ongoing care to seniors, which can pose significant physical, emotional, and financial burden. Despite the critical role family caregivers play in the health of seniors, health-care providers receive little education on family caregiving. We will describe the key findings of a symposium on Health-care Workforce Training in Supporting Family Caregivers of Seniors-in-Care.

Methods: We conducted a pre-meeting survey and analyzed the findings from the one-day symposium. The symposium was held in Edmonton on February 22, 2018 to create and foster a cross-sectoral dialogue (1) establishing the key areas of education needed for health-care providers to support family caregivers of seniors; (2) engaging family caregivers in the exploration and development of education and training; and (3) identifying opportunities, approaches, and training tools for all care settings.

Results: Forty stakeholders across Alberta attended the symposium, consisting of family caregivers, academics, clinicians, and administrators. Five working groups discussed the current status, needs, and strategies on (1) navigating the health-care system and access to resources; (2) communication between health-care providers and family caregivers; (3) organizational support for health-care provider training; (4) culture change in the health-care system; and (5) assessment of family caregiver needs. At the end of the symposium, the working groups laid plans for developing the following: briefing notes, educational materials for trainees, interactive training modules for staff, information campaign, and use of caregiver assessment tools in care settings.

Discussion: Health-care providers are often the primary contacts of caregivers. Training can enhance the providers' capacity to support caregivers.

Conclusions: The symposium highlighted the need and the initiatives to educate health-care professionals about family caregiving.

Fostering Resilience in Family Caregivers of Seniors in Care

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Background: Family caregivers provide ongoing care, for older adults in need of support due to physical, cognitive, or mental conditions. The Covenant Network for Excellence in Seniors' Health and Wellness, pursuant to its mandate, conducted a symposium, entitled Fostering Resilience in Family Caregivers of Seniors in Care (Caregiver Symposium), to identify gaps, opportunities, and ways that will help family caregivers feel supported and valued in their caregiving role.

Methods: This was a qualitative analysis on the proceedings of the Caregiver Symposium (August 30, 2017; Edmonton) attended by 112 stakeholders, including family caregivers. Discussions were done through six Conversation Circles on: (1) Orientation and education of health-care providers on caregiver needs; (2) Culture change needed within our systems of care; (3) Supports needed to engage, empower and foster the resilience of family caregivers; (4) Tools and processes available to help identify caregiver burden; (5) Palliative care and end-of-life supports; (6) System change.

Results: Five themes emerged from the conversations circles: (1) Develop distinct education and training programs for health-care providers about the needs of family caregivers and the best ways to support them; (2) Focus on creating opportunities that help health-care providers better communicate with family caregivers; (3) Provide consistent and timely supports to help family caregivers navigate the health system; (4) Support health-care providers to help them reframe the way they see and interface with seniors and family caregivers; (5) Explore and develop comprehensive policies to ease family caregiver burden.

Discussion: The conversations point to the lack of support for family caregivers and identify the gaps and opportunities to provide support.

Conclusions: The conference catalyzed discussions and plans to support family caregivers of seniors in care.

The Feasibility of Implementing the Edmonton Frail Scale (EFS) in Home Care—A Qualitative Analysis

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Background: Frailty is recognized as one of the emerging geriatrics syndromes which is not inevitable when early identified. Hence, comes the need for a scale that integrates different measurable aspects to frailty. The Feasibility of adopting a certain frailty scale has been a general requirement to achieve the desired purpose at the community-level. The Edmonton Frail Scale (EFS) is an evidence-based multidimensional measure of frailty developed and validated in a geriatric medicine referral population. This study aims to better understand the feasibility of implementing the EFS and the EFS Toolkit among systems case managers and other front-line users supporting a targeted sample of older adults through Enhancing Care in the Community program (ECC) program.

Methods: The current study is a qualitative research study using thematic data analysis. In the current Proof of Concept phase, we have interviewed three system case managers

(Operators), as representatives of ECC, the interviews were audio-recorded and transcribed.

Results: Operators described a significant exposure to geriatric clients in their work environment with an essential need for the use of an applicable frailty scale. EFS correlated to a high extent with other geriatric evaluation modules. The reliability of each single measure of the scale was very high with the need to referring to collateral input in few situations. No major concerns were identified in regard to applicability of EFS in the community.

Discussion: There has been a consensus on the practicality of implementing EFS in the ECC program. A general recommendation by the operators was to use EFS in home care setting, and to be integrated into the Alberta Health Services' electronic records.

Conclusions: EFS is a valid feasible frailty assessment tool that can be conveniently implemented in the community.

A Primary Care Network-Based Clinical Pathway for Decision-Making Capacity Assessment

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Background: With an increasingly ageing population, the incidence of dementia is expected to increase, as will the number of persons who may require decision-making capacity assessments (DMCAs). The purpose of this study was to develop a DMCA Clinical Pathway for implementation and use by interprofessional health-care teams in primary care networks (PCNs) with the goal of integrating DMCA processes and assessments into the "Medical Home".

Methods: This qualitative study was used to develop a DMCA Clinical Pathway for use in PCNs by adapting the clinical pathway previously developed and utilized in the acute care setting. Focus groups were conducted with key stakeholders, including family physicians and primary care allied health professionals (AHPs) to obtain their feedback on the applicability of the adapted DMCA Clinical Pathway in the primary care context.

Results: Three focus groups (total n=10) were conducted. Inconsistencies and a lack of standardization regarding DMCA processes and approach within PCNs were identified by participants. Upon review of the proposed DMCA Clinical Pathway, participants identified a number of strengths including the attractiveness and simplicity of the visual algorithm. They also offered suggestions for further revision including adjusting the language to be more primary care-centric. With further education and training, participants felt that the proposed PCN DMCA Clinical Pathway would be a value-added approach to improving teamwork around DMCAs within PCNs.

Discussion: A DMCA clinical pathway within primary care could improve continuity of care and provide a more accessible and timely service.

Conclusions: A DMCA Clinical Pathway for use in PCN "Medical Homes" has the potential to streamline DMCA processes, improve clarity, consistency, and standardization of DMCAs, as well as facilitate determination of next steps that support least intrusive and least restrictive patient outcomes.

The Care-of-the-Elderly Health Guide

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Background: The Care-of-the-Elderly Health Guide (2002) is a clinical record with cross-references to care recommendations for the elderly. In 2003, the Guide was endorsed by the Health-Care of the Elderly Committee of the College of Family Physicians of Canada. The Guide has since been used as a checklist and a monitoring tool for care to older persons. We will update the Guide with current published evidence-based recommendations.

Methods: This study used mixed methods in two phases. In Phase 1, the investigators, through consensus, created an initial list of topics and chose corresponding published recommendations relevant to family practice. This initial list was then reviewed by family physicians in two focus groups. The investigators then revised the list based on the feedback. In Phase 2, the list of topics and recommendations will be reviewed by a panel of Care of the Elderly physicians and geriatricians through a modified Delphi technique.

Results: We have completed Phase 1. The initial list included 43 topics and selected recommendations. We, then, conducted two focus groups: one among family physicians affiliated with Primary Care Networks in Edmonton and area (n=8) and another among family physicians affiliated with the Medicentres Family Health Care Clinics (n=4). The list topics and recommendations were reviewed, with overarching themes of user-friendliness, relevance to clinical practice, and quality of evidence. The participants, in general, agreed that having such a Guide be relevant in clinical practice.

Discussion: The revised list contains 48 topics and corresponding recommendations deemed relevant to the care of the elderly.

Conclusions: The concept of a Health Guide for the Care of the Elderly was deemed to be a useful tool in the clinic. We will proceed with Phase 2.

People of Dementia

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Background: Stigma is one of the most significant barriers to living life with dignity for people with dementia and their caregivers. We created the People of Dementia website to engage the public in a greater appreciation of those affected by dementia, raising awareness and reducing stigma.

Methods: This was a mixed methods study involving the creation of a website (www.peopleofdementia.com), featuring human-interest stories (interviews) of persons with dementia and their caregivers and an online survey on the impact of the website. We collected website usage statistics and proportions of answers to survey questions.

Results: The website, released in May 2017, featured 7 individuals with dementia, highlighting who they were before the disease and how things have changed. The common thread was the enduring "person" behind the exterior that was obscured by dementia. Caregivers highlighted the challenges of caring for a family member with dementia. By allowing the audience to form a connection with who the individual was prior to the disease, and understanding the consequent changes to both the individual and their support network, readers would have a greater appreciation of those affected by dementia. In the online survey, out of 57 respondents, 39 (68%) indicated having a family member with dementia or mild cognitive impairment. 34 (60%) indicated that, after visiting the website, they had a better understanding of the changes that occur in dementia. Regarding the website usage, from May to October 2017, there were 2463 new users, with an average session duration of 2:05 minutes.

Discussion: Storytelling is a powerful way to engage an audience in the life of people with dementia and their caregivers.

Conclusions: The People of Dementia website promoted greater appreciation of those affected by dementia.

Transitions in Care from Acute Care to Home

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Background: Much research has been done on how to improve the transition home from hospital by identifying patients at high risk for readmission and coordinating discharge. We aimed to facilitate a smoother discharge of high risk patients admitted to medicine units at the Grey Nuns Community Hospital (Edmonton).

Methods: Phase 1 utilized expert consensus to design a risk assessment tool, a telephone call script, and a comprehensive evaluation framework. Phase 2 included risk assessment of the patients and follow-up telephone calls 48 hours after the patients' discharge. Through these phone calls, the Research Coordinator provided support in medication management, equipment access, homecare referrals, and physician appointments.

Results: 27% of patients discharged home (n=1621) were classified as high-risk from LACE scores. 79% of patients/caregivers were contacted within 3 days of discharge of which 99% found the call helpful. 93% of patients had a good understanding of their discharge instructions. 18% were new referrals to homecare. 83% had picked up their prescriptions and 51% their equipment. 78% of patients had an appointment booked with their PCP. Among patients with high LACE scores, those who received the intervention, as compared to those who had not, had lower lengths of stay (12.7 days vs. 16.6 days), lower 7-day ED revisits (10.6% vs. 10.8%), lower 30-day ED revisits (30.5% vs. 33.3%), higher 7-day inpatient readmissions (7.6% vs. 5.2%), and higher 30-day inpatient readmissions (22.7% vs. 20.8%).

Discussion: Phase 1 helped inform the risk assessment tool and telephone call/supports needed to facilitate smooth discharge home for high risk patients. Phase 2 has identified where coordinated discharge planning within the acute care setting is being done well for high risk patients.

Conclusions: Support across the continuum is required for seamless transition planning.

Deprescribing Benzodiazepines in Hospitalized Seniors Using a Patient-Education Intervention

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Background: Benzodiazepines are considered 'potentially inappropriate medications' for seniors due to their side effects with both short- and long-term use. Despite this, benzodiazepine prescriptions are common in this population, and, once initiated, are often extremely difficult to stop, likely due to physical and psychological dependence. We aimed to deprescribe or reduce the dosage of benzodiazepines among newly hospitalized seniors using a combination of medication review, patient education material, and patient counselling.

Methods: This was a quality improvement study on patients aged 65 years or older, taking one more benzodiazepines, and who were newly admitted to 2 medical units at the Glenrose Rehabilitation Hospital, Edmonton. The patients received a structured medication review, provision of written educational material (the EMPOWER brochure 2014) and at least one brief supportive counselling session by the clinical pharmacist or physician. Outcome measures included the number of people consenting to deprescribing and had benzodiazepines deprescribed. Process measures included the number of eligible participants who received the intervention. Balancing measures included the incidence of complications, new benzodiazepine prescriptions, and intervention costs.

Results: All 12 eligible patients consented to benzodiazepine deprescribing. Eleven of them initiated benzodiazepine deprescribing. Six of the 11 (55%) patients had their benzodiazepines discontinued, with the 5 remaining patients achieving greater than 50% dosage reduction. Seven patients (58%) experienced side effects during the deprescribing process, with over half (n=4) experiencing worsening anxiety symptoms. Five of the 12 (42%) patients required benzodiazepine substitute medications.

Discussion: A combination of medication review, patient education, and brief counselling can empower patients, support appropriate benzodiazepine usage, and is well-tolerated and acceptable. Clinicians, however, need to anticipate the management of anxiety, a common side effect.

Conclusions: Deprescribing benzodiazepines among seniors is feasible among inpatients.

Becoming Consciously Competent— Experiences of a Competency by Design Pilot in Calgary

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Background: In July 2019, Geriatric Medicine Subspecialty Training Programs will commence training using a Competency by Design (CBD) framework. The Geriatric Medicine Program in Calgary implemented a pilot of CBD during the 2018-2019 academic year, in order to prepare program and trainees for this shift.

Methods: Three Transition to Discipline (TTD), 1 Foundation (F) and 3 Core (C) residents were assessed using EPAs documented on the one45 platform between July 2018 and January 2019. The Competency Committee used the data to make recommendations regarding progress and promotion. Anonymous data was reviewed to determine the number of EPA observations completed, and the distribution of observations by resident, staff and EPA.

Results: 213 observations were obtained by 7 residents. These included 30 TTD, 98 Foundation, 68 Core EPAs and 17 Form 4s. EPA F3 was the most frequently completed (48). EPAs C5, C8 and C9 were the least frequently completed (1). 28% of staff completed 62% of the EPAs

Discussion: Robust numbers of EPAs were completed suggesting reciprocal engagement. We identified a number of faculty "super-users", which raises concern of evaluation fatigue for those staff, whilst limiting the number of opinions to residents. Evaluation fatigue has not been identified from the perspective of the residents. In anticipation of July 1, the program has identified specific EPAs which will require opportunistic behaviours on behalf of the residents, ongoing faculty and resident education, and clearer identification of high yield EPAs in stage-specific rotation goals and objectives. The Competency Committee established its decision-making strategies.

Conclusions: The pilot resulted in valuable developmental information to promote a smooth launch of CBD in July 2019.

Thyroid Stimulating Hormone Levels and Geriatric Syndromes: A Nested in Cohort Case-Control Secondary Analysis of the Mexican Health and Aging Study

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Background: How TSH-levels relate to geriatric syndromes is still a matter of controversy. The aim of this work was to determine the incidence of geriatric syndromes in community dwelling older adults with subclinical hypothyroidism.

Methods: MHAS is a prospective study conducted in Mexico, consisting of four waves, (2001, 2003, 2012 and 2015), that sequentially included and described a large and representative sample of Mexican adults 50 years and older. We considered the surveys conducted in 2012 and 2015, from which a subsample of 2089 subjects with TSH test results derives. Form this last subsample, we included 1628 individuals, whose TSH leves were in the subclinical range (4,5-10 ng/ml).

Results: In the model adjusted by age, sex, educational level, marital status, years of education, and smoking, the multivariate analysis showed that when comparing data obtained from 2012 wave, with 2015 wave results, there was a significant greater incidence of some GS such as falls (OR 1.79 IC 1.16-2.77 $p = 0.0116$), fatigue (OR 2.17 IC 1.40-3.38 $p = 0.0348$) and depression (OR 1.70 CI 1.06-2.71 $p = 0.0246$ among the subclinical hypothyroidism group.

Discussion: This study showed a greater incidence of GS in subjects 50 years and older with sub-clinical hypothyroidism, when compared to those with normal thyroid function. These findings lead to generate proposals for the formulation of new studies.

Conclusions: TSH-levels could have an impact in some geriatric syndromes, and merit its evaluation in geriatric patients.

Person-Centered Language for Responsive Behaviours: A Product of a Senior Friendly Community of Practice (Preliminary Results)

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Background: The Toronto Academic Health Science Network Senior Friendly Community of Practice is focused on promoting excellence and innovation in education, research and care. A shared concern was the use of terms like "aggressive" and "inappropriate" when encountering a patient presenting with responsive behaviours. Recognizing that language such as this contributes to a culture of labelling, the Community of Practice created a document to assist care providers with person centered communication strategies.
Methods: Using the Senior Friendly Hospital Framework developed by the Regional Geriatric Program of Toronto, the Community of Practice held a retreat to select areas for collaborative action. From this, a working group of subject matter experts was created to focus on language and responsive behaviours. The Person Centred Language for Responsive Behaviours document and educational modules were developed and shared.

Results: Eleven hospitals have begun implementation activities and the integration of person centered language into care processes. Evaluation include process indicators and outcome metrics such as chart audits of inappropriate descriptors of responsive behaviours.

Discussion: The document is applicable across a broad spectrum of settings and clients with a variety of conditions that produce neurological or developmental vulnerability. It can be used to encourage appropriate language in discussions; integrate person-centered language in educational and orientation modalities and influence policy development,

and hiring processes. It may also be used in academic institutions when educating health-care professionals.

Conclusions: The creation and impact of the document is a demonstration of the successful integration of networking relationships and commitment to knowledge sharing and innovation within a community of practice. Foundational to the success of this leading practice is the engagement of senior leadership to embrace an organizational culture that embeds the principals of person centered care.

Azathioprine Induced Delirium

A. Saha, S. Thiyagalingam, J. Wachtel, D. Ramasamy. Saint Barnabas Medical Centre.

Background: Azathioprine (AZA) is a commonly used immunosuppressive medication. Reported side effects include nausea, bone marrow suppression, pancreatitis and liver injury. However, hepatotoxicity is uncommon, with a reported incidence of 1.4% annually. It can range from mild asymptomatic elevation in aminotransferase levels to cholestatic hepatitis with jaundice. Delirium in elderly patients, especially medication-related, is often under-recognized, resulting in increased morbidity and mortality. We present a case of an elderly woman with AZA induced hepatotoxicity and delirium, where prompt recognition and drug discontinuation resulted in gradual, but complete recovery.

Methods: -

Results: Case report. A 71 year old woman with a history of idiopathic pulmonary fibrosis and chronic SIADH presented with a 2 month history of progressive weakness and confusion. AZA therapy had been initiated 3 months prior. Lab studies done a week prior had demonstrated transaminitis and hyperbilirubinemia leading to drug discontinuation. On physical exam she was alert, oriented to place and person but not to time, and upon memory recall she remembered only 1 out of 3 objects. Her lab tests were significant for serum sodium 124 meq/L (baseline 127-130 meq/L), total bilirubin 10.8 mg/dl, direct bilirubin 8 mg/dl, ALT 372 U/L, AST 172 U/L, ALP 328 U/L, GGT 3470 U/L, ammonia 62 umol/L, lipase 82 U/L, procalcitonin 0.76 ng/mL. Delirium workup including thyroid function tests, hepatitis workup, urinalysis, chest X-ray, CT head, was otherwise unremarkable. CT abdomen demonstrated peripancreatic fat stranding; MRCP was unremarkable. Since ammonia level was elevated, she was treated empirically with lactulose and rifaximin for presumed hepatic encephalopathy (HE) due to severe liver injury. During the initial hospital course she had worsening confusion and drowsiness and dosage of lactulose was gradually optimized. Her mentation improved after a week, but continued to wax and wane. However, INR was normal and ammonia level did not correlate with improvement in mental status, arguing against the possibility of HE. Liver tests continued to improve gradually. On day 9, the family wished for outpatient follow-up; given the concern for weakness and deconditioning she was referred to subacute rehabilitation.

Discussion: Delirium from Azathioprine use is an infrequent occurrence and not well documented in the literature. Azathioprine has a dose dependent side effect profile. When elderly patients present with delirium, clinicians should consider azathioprine in the differential diagnosis once alternate etiologies have been ruled out. Drug discontinuation often results in improvement in mental status changes and gradual resolution of lab abnormalities. Further studies are needed to understand the relationship between dose and duration of AZA therapy and risk of delirium and its reversibility. Early recognition of medication induced delirium will help prevent associated complications including falls, need for admission and consequent deconditioning.

Conclusions: -

An Analysis of Pain in Older Adults Admitted to a Trauma Service

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Background: Geriatric medicine and trauma team co-management models of care for older trauma victims reveal a high frequency of collaboration regarding pain control. Data regarding pain control in older adults admitted to trauma are lacking.

Methods: A retrospective chart review was conducted to analyze pain control and characterize analgesia provision to older adults admitted to a trauma service. 105 consecutive patients admitted to the trauma service at Sunnybrook Health Sciences Centre between October 2016 and March 2017 were included. Patients using opioid analgesia prior to admission were excluded. Differences in abstracted results were resolved by consensus.

Results: The average age of the sample was 80 with a frailty score 4 and an injury severity score of 18.5 at the time of admission. Mean daily pain numerical rating scale scores (0 – 10, 10 most severe pain) were as follows: 8.4 (pre-hospital), 3.13 (admission), 2.71 (day 5), 5.20 (day 10), 2.39 (discharge). Mean daily opioid use, in morphine equivalents were 31.95 mg (admission), 75.08 mg (day 5), 61.42 mg (day 10), 50.97 (discharge). The mean daily pain scale scores did not differ between patients seen by geriatric medicine (64%) or not, p=0.573. 84% of patients did not receive acetaminophen on the day of admission but 85% were subsequently prescribed acetaminophen. 92% received opioids. NSAIDs were used in 22% of patients. Ketamine, pregabalin and gabapentin were used in 40%, 14%, and 14% of patients, respectively.

Discussion: Older adults admitted to trauma had well controlled, mild pain with a steady decline in mean daily pain scale scores over time. Opioids were the most prevalent analgesia used.

Conclusions: A minority of older adults were treated with a multimodal approach. The most effective analgesia regimen for older trauma victims requires further study.

In Acutely Hospitalized Older Individuals, Standard Laboratory Tests Measured on Admission Identify Those with Short- and Long-term Adverse Outcomes

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Background: Many older individuals have complex social and health care needs which are further complicated by acute illness. Frailty indices created out of standard laboratory values (FI-Lab) is one emerging topic. We sought to investigate the relationship between an FI-Lab constructed during acute illness using routine admission laboratory tests with adverse outcomes following initial hospitalisation.

Methods: A prospective cohort study including all individuals admitted to the acute medical service under a consultant geriatrician at University College Hospital in whom it was possible to create an FI-Lab. Outcomes were linked from hospital records. FI-Lab was created using a standard procedure.

Results: A total of 1303 individuals were included. The average age was 84.6 years and most were at least 'moderately frail'. The FI-Lab was very weakly associated with the Clinical Frailty Scale (CFS) (r^2=0.14). The CFS, FI-Lab, and delirium were associated with an increased length of stay (p=<0.05) and being discharged to a higher level of care. The CFS, FI-Lab and age were associated with increased mortality (HR 1.36, 1.03, and 1.03 respectively) and readmission to hospital (HR 1.34, 1.02, and 1.02, respectively). The presence of dementia was associated only associated with a decreased readmission rate (HR 0.80).

Discussion: Whereas traditional frailty tools are not valid assessments for frailty when someone is unwell, the FI-Lab, has been shown to be a measurement for frailty in the presence and absence of acute illness. The FI-Lab could be measured serially over the course of hospitalisation for dynamic prognostication including treatment failure/response and frailty status upon resolution of acute illness.

Conclusions: The FI-Lab appears to be a predictor of adverse outcomes following acute illness. The FI-Lab can be created using laboratory values routinely collected on acutely hospitalised individuals.

Telehealth and the Rural Dementia Population: A Systematic Review

H. Sekhon, O. Beauchet. McGill University.

Background: Telehealth has been highlighted as a potential to bridge the current health care needs in rural areas. These needs are most prevalent in the elderly, specifically, those that are affected by dementia, as they are unable to receive the medical and specialist services they require to successfully age in the community. The primary objective of this systematic review is to examine the impact of telehealth on health outcomes in elderly individuals with dementia.

Methods: A systematic review was completed using Ovid Medline and Web of Science. 52 articles were identified in the searches using MESH terms. 32 other resources were also identified through snowballing technique. After removing duplicates and applying the inclusion criteria (elderly participants, telehealth an outcome/intervention, sample population included dementia participants, rural population, article accessible, and empirical data) 6 studies were included.

Results: The studies had diverse populations. A variety of cognitive tests were used, with mixed results regarding the differences in patient performance based on whether they assessed in-person versus telehealth consultations. Overall both patients and physicians reported convenience, satisfaction, comfort. Physicians also reported they would use telehealth again and notably rural physicians were satisfied with the recommendations specialists made (for the patients via telehealth).

Discussion: Current literature has emphasized the great need for increased rural health-care accessibility but this systematic review has found two major themes have emerged: (1) the testing conditions and (2) the accessibility of telehealth yield inconclusive results as to whether telehealth can improve the management of dementia in rural geriatric individuals.

Conclusions: Telehealth is considered a potential means through which the current health-care gap for elderly rural individuals with dementia; however, much work is required before telehealth can be considered truly suitable for this large undertaking.

Development of a Standalone Electronic Frailty Index Based on the Comprehensive Geriatric Assessment (eFI-CGA)

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Background: Frailty is characterized by loss of biological reserves across multiple organ systems and is associated with increased risk of adverse outcomes. The Comprehensive Geriatric Assessment (CGA) is widely used in geriatric medicine for patient assessment. A frailty index (FI-CGA) has been validated from the CGA items. However, the FI-CGA calculation is traditionally paper-based and can be time-consuming. Therefore, we developed an electronic CGA form and an electronic FI-CGA automation. This paper discusses the design, building, testing, and optimization of the eFI-CGA.

Methods: Programming languages including C-Sharp were used to code the eFI-CGA. The implementation runs on the WinForms platform on Microsoft Windows system. The automation follows the established deficit-accumulation based frailty index that takes into account variables across multiple domains (e.g., diagnosis, medical conditions, cognition, balance, dependency of daily activities).

Results: The stand-alone eCGA was successfully developed for use on personal computers. The user interface reproduced the one-page paper CGA design, achieving excellent familiarity by the clinicians. Testing the eFI-CGA implementation suggested 100% accuracy for FI calculation up to four decimals, using a systematically-designed simulation dataset (n=32) that controls multiple possibilities

of logic or syntax errors in the automation algorithm and coding. The initial product was optimized in respect of user interface, eFI automation, user-feedback, and usage guide. Additionally, the user input and coded data, as well as areas requiring clinical actions, are recorded automatically in text files for each patient under evaluation.

Discussion: The stand-alone implementation allows use of the computer-based eFI-CGA tool at points of care, not only by geriatricians, but by primary care providers for potentially earlier assessment and management of frailty in older adults.

Conclusions: Further research will validate this eFI-CGA as a widely used clinical tool in geriatric care.

Sex Differences in Motor and Cognitive Trajectories before Dementia

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Background: Motor and cognitive decline assessed using serial measures of gait speed and MoCA changes have been associated with a higher risk for incident dementia than cognitive decline or motor decline alone. This highlights that dual decliners (concurrent motor and cognitive decline) may represent a different phenotype for dementia risk. However, how sex affects these interactions and dementia risk is unknown. We aim to examine the role of sex in cognitive and motor trajectories before dementia.

Methods: Data from the Gait and Brain Study, a longitudinal prospective cohort study with 10 years of follow-up, comprised of community-dwelling participants aged 65 and older free of dementia at baseline were followed every 6 months.

Results: Males with purely cognitive decline progressed more to dementia (males:35.3% versus femelas:13.6%), while females with purely motor decline progressed more to dementia (females: 31.8% versus males: 23.5%). Females with dual decline also had a greater percentage of progressing to dementia compared to males (40.9% versus 17.6%). Similarly, hazard ratios were higher for motor and dual decliners in females (motor: HR:2.46, 95%CI: 0.63–9.56, p=0.193; cognitive: HR:1.21, 95%CI: 0.24–5.98, p=0.818.; dual: HR: 3.83, 95%CI: 1.03–14.22, p=0.045), and for cognitive decliners in males (motor: HR:1.63, 95%CI: 0.39–6.80, p=0.504; cognitive: 3.45, 95%CI: 0.96–12.37, p=0.057; dual: HR:1.13, 95%CI: 0.25–5.11, p=0.874).

Discussion: Progression to dementia using motor, cognitive and dual declines differed amongst the sexes. Cognitive decline may be a stronger predictor of progression to dementia in males, and gait speed and dual decline may be a stronger predictor in females

Conclusions: Sex affects motor and cognitive trajectories decline and may help increase accuracy of dementia risk prediction. Future studies are needed to understand mechanisms underlying our findings.

Integration of Geriatrics Content into the Foundations Curriculum—Student Perspectives

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Background: The University of Toronto, Faculty of Medicine launched an integrated Foundations Curriculum for pre-clerkship medical students in 2016 with curriculum renewal. Geriatric care education is integrated longitudinally throughout the curriculum in addition to a dedicated one week Geriatrics block. There are a total of 120 detailed geriatric learning objectives and 83 of them for the integrated geriatric care content. In order to determine the extent of geriatric care education integration into the curriculum we performed a prospective evaluation of the geriatrics content integrated into the Foundations curriculum.

Methods: During the 2017-2018 academic years, one first year and one second year medical student prospectively evaluated geriatric care education coverage during each week of their training. We assessed the percentage of pre-specified learning objectives actually integrated into the curriculum, extent of coverage and learning modality. Geriatric care learning objectives were categorized as (1) comprehensively covered, (2) partially covered, or (3) not covered/omitted. The learning modalities used to teach the content include case-based learning (CBL), lectures, and self-learning modules (SLM).

Results: 78.7% of the pre specified integrated geriatric care learning objectives were comprehensively or partially covered in the curriculum. The majority was covered in CBLs and SLMs, and a minority was covered in lecture. Specific content areas with inadequate integration of objectives included hearing loss, biological changes with aging, diabetes, and kidney function. Some specialty areas (e.g. psychiatry) did not include any specific geriatrics objectives.

Discussion: There has been a fairly successful integration of most of the geriatric care learning objectives in the undergraduate medical curriculum.

Conclusions: We identified some specific content areas which have yet to be integrated into the curriculum and additional efforts will be required to include them.

Validation of the Frailty Index Based on the Comprehensive Geriatric Assessment (eFI-CGA) on the Electronic Medical Records System (EMR)

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Background: The frailty index (FI) uses a deficit accumulation-based approach to measure frailty levels. An FI-CGA can be calculated using items from the well-established Comprehensive Geriatric Assessment (CGA). Electronic health tools offer a more time-efficient and cost-effective way for CGA-based FI evaluations. Therefore, we conduct the research to 1) establish the electronic frailty assessment tool (eFI-CGA) in the EMR system and 2) test the reliability and validity of the automated eFI-CGA. This paper updates on the study progress.

Methods: The electronic version of the CGA (eCGA) was implemented in multiple EMR platforms. Data collection started in Fraser Health from which pre-populated fields were retrieved from existing health-care data. The eCGA items were processed automatically where an eFI-CGA score was generated. Geriatricians and primary care providers within Fraser Health Authority and Nova Scotia Health Authority are trained to use the eFI-CGA. Psychometric properties of the eFI-CGA measurement that are under testing included intra- and inter-rater reliability and internal, construct, and short to media term predictive validity.

Results: The eCGA interface incorporated user-friendly approaches of data input for effective EMR data pre-population and new data collection. The eCGA items were stored and converted to automate the eFI-CGA calculation. Tests were conducted to ensure accuracy and robustness in respect to the eFI-CGA input, data processing, and automation algorithm and calculation with missing case handling. Feedback from clinicians was used to refine the eFI-CGA implementation and assessment.

Discussion: The successful establishment of the eFI-CGA on the EMRs has enabled its access across multiple health-care settings, allowing more integrated health care for older adults.

Conclusions: Validation of the eFI-CGA tool is key for promoting its widespread application in early frailty detection and management of older adults.

Self-rated Health and the Risk of Mortality in the Manitoba Follow-up Study

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Background: Self-rated health (SRH) predicts death in several population-based studies, but there are few studies over extremely long time horizons, or conducted in populations of very old men. The purpose is: 1. To determine how SRH evolves over a twenty year time frame in a population of ageing men; and 2. To determine if SRH predicts death consistently in men aged 75, 80, 85 and 90.

Methods: We conducted an analysis of the Manitoba Follow-up Study, a prospective cohort study of 3983 men who were found fit for aircrew training during the Second World War. Since 1948, regular annual medical data have been collected. Thirty men have been lost to follow-up for vital statistics. Beginning in 1996, the questionnaire included a measure of SRH, which was measured on a five point Likert Scale. SRH was elicited regularly since then. We considered the categories: Excellent, good, and fair/poor/bad. We examined changes in these categories from the age of 75 to the end of the follow-up period in 2018. We then constructed proportional hazards models with time to death as the endpoint.

Results: SRH declined with age, with fewer men rating their health as very good or excellent. Nevertheless, the gradient in risk of death persisted across all age groups. The hazard ratios for mortality those with SRH of fair/poor/bad compared to excellent was 1.91 [(95%CI 1.02, 3.57)] at age 75; 3.24 (2.54, 4.12) at age 80, 2.85 (2.15, 3.80) at age 85, and 3.68 (2.27, 5.96) at age 90. However, the discrimination between very good and excellent was not seen in those aged 90+.

Discussion: There are some limitations to our analyses: there were no women in the sample, and most of the participants lived in Canada, and had shared life experiences.

Conclusions: In general populations of older men, SRH declines over time. However, SRH predicts death over a long time frame, and persists even into very late life. The usefulness of SRH in other populations, particularly clinical populations, merits further research.

Do Not Resuscitate: What Does It Mean?

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Background: Do-Not-Resuscitate (DNR) patients in the acute setting experience significantly poorer outcomes compared to non-DNR patients. So, is it ethically right to provide aggressive medical care for the DNR population despite high mortality? This study was conducted to investigate the outcomes of patients with DNR status on admission.

Methods: Single center, retrospective cohort analysis of 538 patients with DNR orders on hospital admission from January 1, 2017 to June 30, 2017 at Saint Barnabas Medical Center. Demographics, comorbidities as well as outcomes such as palliative care use, critical care interventions, length of stay, cost and mortality were extracted from the electronic medical record.

Results: A total of 12572 patients were admitted, of which 538 were DNR (4.28%). All-cause mortality was 2.05% (258/12572) versus 24.5% (93/538) in the DNR cohort. Overall, hospital length of stay (LOS) was 7.5d, with alive patients having significantly longer LOS than those that died (6d vs. 5d respectively); total cost of hospitalization was higher in patients who died but results were not statistical significant ($13,606 in dead vs. $12,839 in alive). Mortality was significantly higher in those requiring ICU admission, (54/89, 60.1%), OR 7.34, renal replacement therapy (8/15, 53.3%), OR 3.68, mechanical ventilation (37/45, 82.2%), OR 19.38, non-invasive mechanical ventilation (40/99, 40.4%), OR 2.56, and vasopressors (27/35, 77.1%), OR 12.79.

Discussion: Our analysis reveals that only a minor fraction of patients have DNR orders on admission, and these patients were 12 times more likely to die during hospitalization, especially if they required aggressive interventions.

Conclusions: Early goals-of-care discussions are prudent necessitating a significant cultural change so that appropriate resources can be allocated to alleviate pain and suffering while providing comfort care at the end of life.

The Pearly Bird Gets the Worm: A Qualitative and Quantitative Analysis of the Geriatric Update: Clinical Pearls Conference

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Background: Growing geriatric medicine competency among primary care providers so that they are better equipped to care for older adults continues to be important. One such program that targets this need is the University of Calgary (UofC) Cumming School of Medicine's (SOM) Annual Geriatric Update: Clinical Pearls course (referred to as the Geriatric Update for short) for rural and urban primary care physicians.

Methods: For the evaluation of the Geriatric Update conference, we will be using a mixed methods design. We will use descriptive quantitative data analysis from conference evaluation data from 2012 through 2018. This will provide a foundation upon which to explore detailed feedback obtained via qualitative analysis. Qualitative analysis will be performed though semi-structured interviews with family physicians who attended the 2018 Geriatric Update.

Results: Qualitative and quantitative analyses are in progress, with anticipated completion in March 2019.

Discussion: In Canada, there are limited geriatric specialty resources. Data shows there are important learning needs, both perceived and unperceived, for Canadian family physicians. Despite this, there are few published studies evaluating Geriatric Continuing Medical Education (CME) models to guide future program development.

Conclusions: We hope that our evaluation will provide valuable feedback on how to better meet the learning needs of family physicians.

Description of the Population of Older Adults with Dementia in Nova Scotia 2005–2018

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Background: Older people with multimorbidity are often excluded from clinical and drug trials, which limits the scope of research which has included people with dementia. As such, older adults with dementia take many medications without high quality evidence supporting their use in this population. We aimed to study polypharmacy among older Nova Scotians with dementia using administrative databases.

Methods: Cohort entry was from the date that Nova Scotia Senior's Pharmacare beneficiaries (NSSPB) had at least one occurrence of any one of the ICD 9/10 codes that identify dementia from the MSI or DAD databases. Cohort exit was at the time of death. Codes were examined from March 1, 2005 – March 31, 2018 to collect the greatest number of cases possible. Medication use was abstracted, along with sociodemographic characteristics including age, sex and geographic location. Baseline patient characteristics and sex-based analysis were explored using descriptive statistics and t-tests.

Results: In the period from March 1, 2005 to March 31, 2018, a total of 39,370 adults were identified as having a dementia diagnosis. We identified 23,283 females and 13,945 males who met the definition of a dementia diagnosis. Of these, 23,130 died during the same period.

Discussion: The cohort of individuals living with dementia thus approaches 16,240 or 1.7% of the whole population of Nova Scotians and 8.8% of population aged over 65 years. Women were older than men at diagnosis (mean age 82.9 vs. 80.3 years; $p<0.0001$) and comprised 63% of the cohort identified.

Conclusions: In the cohort of NSSPB who have received a diagnosis of dementia 63% are women. Women also received a diagnosis of dementia at an older age than men.

Geriatric Pharmacology Infographics: Efficient Knowledge Translation of Medication Optimization for Clinicians Caring for Older Adults

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Background: Adverse drug events (ADEs) are a leading cause of hospitalization and mortality for older adults and the majority are due to errors in prescribing or monitoring. Currently accessible drug information resources may not be geriatric-focused, and may be overwhelmingly expansive for time-pressed clinicians. We sought to develop concise geriatric drug information materials (GDIM) to convey prescribing information efficiently and effectively.

Methods: We conducted an internet-based quality improvement questionnaire among a purposive sample of physicians and nurse practitioners to understand and prioritize information necessary for safe prescribing. A secondary outcome included the desired time required to research geriatric drug information questions in practice. Using this information, we created evidence-based GDIMs for four medications associated with hospitalizations for ADEs among Canadians aged >64 years, and cannabis. GDIM content was reviewed by 5 investigators specializing in geriatric psychiatry, pharmacy or clinical pharmacology, and by 1 external content expert. To enhance learning, we converted GDIM to information designs employing principles of eye-tracking, visual hierarchy and iconography to facilitate ease and speed of comprehension. Visual elements assisted in determining medication risks and benefits. Through an iterative process, prototypes were developed and modified based on clinician feedback.

Results: The survey of prescribers in primary care, geriatric psychiatry, clinical pharmacology and geriatric medicine (n=7) determined desired times for researching geriatric drug information was <2 minutes. Identified features included indication, benefit and risk, dosing for older adults, interactions, monitoring parameters, and adverse effects, particularly cognitive impairment and falls.

Discussion: We developed infographics for digoxin, risperidone, warfarin, dimenhydrinate, and cannabis.

Conclusions: Information design has the potential to efficiently deliver complex drug knowledge. Future work

includes a randomized controlled trial to evaluate the efficacy of these GDIM and knowledge transfer.

Defining Minimally Important Difference for the Frailty Index in a Longitudinal Clinical Cohort of Hospitalized Older Patients

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Background: The minimally important difference (MID) of the frailty index (FI) can guide patient treatment but has yet to be explored. This study aims to establish MID for the FI by associating changes in FI scores to changes in the Clinical Frailty Scale (CFS).

Methods: Since 2009, the CIRN Serious Outcomes Surveillance (SOS) Network has collected longitudinal health data from patients admitted with acute respiratory illness to 10-45 hospitals across Canada each influenza season. We analyzed frailty data (CFS, FI) from 6,063 patients (Mage=79.6 ± 8.4 years; 52.8% female) at pre-admission, admission, and 30 days post-discharge. We constructed a 39-item deficit accumulation FI, and identified the mean FI change associated with a one-level increase in CFS scores from baseline to admission and one-level decrease in CFS scores from admission to post-discharge. We also examined the value of FI change with the highest sensitivity and specificity (Youden Index (J)) in predicting one-level CFS change.

Results: Overall, 96.7% of participants had a higher CFS score at admission compared to pre-admission; 70% improved their CFS level from admission to discharge. The mean FI change among patients who changed their CFS score by one level was 0.06±0.06. An FI change of 0.03 best predicted both one-level CFS increases (J=0.27; sensitivity=67%; specificity=61%) and decreases (J=0.40; sensitivity=71%, specificity=69%). For those whose CFS scores increased from pre-admission to admission, 70.4% increased FI by ≥0.03. For those whose CFS scores improved from admission to post-discharge, 72% decreased FI by ≥0.03.

Discussion: In a 39-item FI, the gain/loss of ~1 deficit (0.03 FI change) best predicted significant change in CFS.

Conclusions: An MID of 0.03 is a promising benchmark for improving clinical assessment of the efficacy of frailty interventions.

A Cognitive Vital Sign for Daily Delirium Screening on an Acute Care of the Elderly Unit: How Feasible is It?

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Background: Although several delirium screening tools have been developed, it is not clear which is most feasible for daily use by frontline staff. Our aim was to examine the feasibility of implementation of a short, simple screening method for daily use on an Acute Care of the Elderly Unit.

Methods: The tool is based on RADAR (Recognising Acute Delirium As part of your Routine) and MOTYB (Months of the Year Backwards). We trained nursing staff in its use, piloted it, and implemented it on the unit for daily use during vital signs. We monitored refusal rates, assessment duration, and staff adherence. In addition, participants, caregivers, and nursing staff were surveyed on their perceptions of the tool.

Results: Of 125 participants, median age was 84 years (IQR 9.5), 56.0% were women, and 509 of a possible 553 assessments were conducted. Eighty-five (68.0%) had all assessments completed correctly. A further 31 patients had at least one assessment missed, 18 of whom had screened positive on a prior assessment. Hence, one-hundred and three (82.4%) participants had appropriate screening during admission. The median screening duration was 70 seconds (IQR 44.5). The majority of patients (n=45/59), caregivers (n=47/51) and nursing staff (n=21/24) rated the screening favourably.

Discussion: Despite training, adaptations based on staff feedback and regular reinforcement, this short, simple screening test was challenging to implement daily. It was well-received by patients and caregivers.

Conclusions: Implementation of delirium screening is possible using a short, simple test and is rated favourably by staff and service-users. Our next steps include interviews with staff to identify methods to improve adherence rates.

Self-rated Health and Mortality after Non-cardiac Surgery

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Background: Self-rated health (SRH) is consistently predictive of mortality in observational population studies. SRH has been found to be more predictive of mortality than cardiovascular disease risk factors and disease severity alone. Determinants of SRH include chronic illness, sex, urban living, health status, and level of function. It is unclear whether SRH is predictive of mortality in the clinical setting, such as adults undergoing surgery. Our study uses secondary analysis of the VISION study of patients undergoing non-cardiac surgery to determine if SRH predicts all-cause mortality or clinical complications.

Methods: The VISION study was a large international prospective cohort study of 40,000 patients aged ≥45 years who underwent non-cardiac surgery and were followed for one year. We report on the subset of 1412 patients who underwent non-cardiac surgery at The Health Sciences Centre in Winnipeg from March 2010 to March 2013. Age, sex, education, comorbidities, type of surgery, and measures of self-rated health (baseline, age-anchored, and time-anchored) were recorded. Multivariable logistic regression models were used to determine the relationship between self-rated health, post-operative mortality and clinical complications.

Results: The majority of the 1412 patients had a high baseline SRH. There was a trend towards lower SRH predicting

higher mortality. Patients with lower SRH also had greater clinical complications 30 days post-op.

Discussion: Our results suggest a trend towards lower SRH predicting mortality; however, our study was underpowered to see any significant effect of SRH on one-year mortality. Our secondary analyses suggest that SRH should be considered in devising pre-operative risk prediction scores.

Conclusions: Future clinical studies should incorporate measures of SRH in their design to evaluate the relationship of SRH on major surgical complications.

Mapping Items in the Construction of the Frailty Index Using Comprehensive Geriatric Assessment and InterRAI Datasets

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Background: Frailty, measured using the frailty index (FI), is the accumulation of multiple age-associated health deficits. The FI is calculated from various health-care database items, such as items from the Comprehensive Geriatric Assessment (CGA) and interRAI. CGA is a clinical tool to assess older adults' global health states, identify risk for adverse health outcomes, and establish individualized care plans. The interRAI is an international collaborative that evaluates clinically recognizable features to improve quality of life in vulnerable persons. Here, we investigate the properties of the FI-CGA and FI-interRAI and compare their items.

Methods: The Fraser Health electronic interRAI database consists of home and community care (RAI-HC) and residential care (RAI-RC) data. Participants aged 65+ years who entered into RAI-RC and RAI-HC between 2013 and 2015 were included in the analysis (n=7000+). Their baseline and yearly assessments (in 2016, 2017, 2018) were used for the analysis. Each interRAI item was examined for the possibility of mapping to a CGA item. Multiple versions of the FI were calculated and their basic features compared (e.g. distribution, age associations, risk-outcome ratios).

Results: Using a subset of the sample, 35 RAI-HC and 40 RAI-RC items are mapped to a CGA item. Multiple versions of the FI calculated from the RAI-RC dataset demonstrated consistent and comparable characteristics. Higher FI scores were associated with greater hospital and emergency department visits.

Discussion: Multiple interRAI items mapped to CGA items demonstrated equivalent FI assessment items. Different versions of the FI calculated using the RAI-HC and RAI-RC datasets showed comparable characteristics. Ongoing analyses with larger sample size will validate these findings.

Conclusions: With a valid FI, health-care providers across settings will be able to make more meaningful and comprehensive decisions for their patients.