



# McGill

**Division of Geriatric Medicine**  
**Division de Gériatrie**



14th Annual Research Day Conference 2011  
14e Journée de Recherche 2011

**Program / Programme**

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Vendredi le 8 avril 2011

Soyez le bienvenu à la 14<sup>e</sup> Journée de recherche de la division de gériatrie de l'université McGill. Nous avons assemblé pour vous ce cahier sur le déroulement de la journée contenant l'horaire des activités ainsi que les résumés des présentations orales et par affiche. Nous espérons que vous aurez une journée très agréable toute en étant instructive.

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Friday, April 8<sup>th</sup>, 2011

Welcome to the 14<sup>th</sup> Annual McGill Division of Geriatric Medicine Research Day. In this program you will find a general agenda for the conference as well as abstracts relating to the podium and poster presentations. We are pleased that you were able to join us on this occasion and we hope that you walk away with an instructive experience.

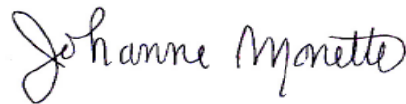
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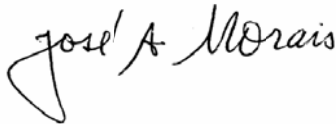
Susan Gold, MD



Lisa Koski, PhD



Johanne Monette, MD



José A. Morais, MD, FRCPC



Isabelle Vedel, MD, PhD



McGill Division of Geriatric Medicine ♦ Division de Gériatrie de McGill

14<sup>th</sup> Annual Research Day Conference 2011 ♦ 14<sup>e</sup> Journée de Recherche 2011

♦  
Nurses' Lounge H4, Royal Victoria Hospital,  
687 Pine Avenue West  
Montréal, Québec, Canada  
♦

Research Day Program ♦ Programme de la Journée de Recherche

8:00 – 08:30	Continental Breakfast – Welcome Petit déjeuner continental - Accueil
<b>8:30 – 9:45</b>	<b>Frailty: Searching for the Relevant Clinical and Research Paradigm</b>  <i>Dr. Howard Bergman, MD</i> The Dr. Joseph Kaufmann Professor of Geriatric Medicine Professor of Medicine, Family Medicine and Oncology McGill University & Jewish General Hospital
9:45 – 10:00	Coffee & tea / Café et thé
10:00 – 11:00	Poster session / Présentation des affiches
11:00 – 12:30	Oral Presentations / Session de présentations orales
12:30 – 13:30	Lunch / Déjeuner
13:30 – 14:45	Oral Presentations / Session de présentations orales
14:45 – 15:00	Jury Deliberation • Coffee and refreshments / Discussions • Café et thé
15:00 – 15:15	Award Presentations / Prix

**Detailed Research Presentations Schedule ♦ Programme détaillé des présentations**

**Poster Session / Session de présentation des affiches**

10:00 – 11:00

Abstracts / Résumés P1 – P9

**Oral Presentations PM Session / Session des présentations orales PM**

13:30 – 14:45

Abstracts / Résumés O7 – O11

**Oral Presentations AM Session / Session des présentations orales AM**

11:00 – 12:30

Abstracts / Résumés O1 – O6

13:30 – 13:45

O7 – Localizing function after stroke with voxel-based lesion symptom mapping

*Claude Steriad*

11:00 – 11:15

O1 – Sarcopenia and obesity contributions to mobility and strength in the healthy elderly participants of the NuAge Study

*Joane Matta*

13:45 – 14:00

O8 – Validation of individual screening test items as indicators of domain -specific cognitive impairment

*Parastoo Moafmashhadi*

11:15 – 11:30

O2 – Development of an evaluation framework for the Acute Geriatric Program at the MUHC

*Dr. Melissa Le*

14:00 – 14:15

O9 – Transition home after a hospitalisation: The lived experience of older adults and their family caregivers

*Erica Lyn*

11:30 – 11:45

O3 – Combining program evaluation with a functional status checklist; a method for monitoring care in Geriatrics

*Lois Finch, PhD*

14:15–14:30

O10–Longitudinal effects of depression and need for cognition on cognitive function in recent retirees

*Larry Baer*

11:45 – 12:00

O4 - Process of care following hip fracture repair: an environmental scan (preliminary results)

*Mohammad Auais*

14:30-14:45

14:30-14:45

O11– Assessment of quality of care given to elderly patients with multiple chronic conditions on medical CTUs: a pilot study C

*Dr. Catherine Talbot-Hamon*

12:00 – 12:15

O5 – Do cognitive inhibitory functions decline with age?

*Kiran Vadaga*

12:15–12:30

O6 – Can the Montreal Cognitive Assessment (MoCA) predict post-operative delirium in the elderly? A pilot study

*Daniel Newman*

**Poster Session / Session de  
présentation des affiches  
10:00 – 11:00**

**P1**

**The Use of Argentinean Tango as a Form of Rehabilitation for Parkinson's Disease.**

Debora Rabinovich, Patricia McKinley, PhD Associate Professor School of Physical and Occupational Therapy, McGill University; Jennifer Fishman. Assistant Professor Bioethical Ethics Unit McGill University  
*Experimental Medicine with Specialization in Bioethics, McGill University*

Parkinson's Disease (PD) is a progressive neurodegenerative disease that impairs movement and balance. The most common symptoms are tremor, bradykinesia and rigidity of the muscles. Typically, recommended rehabilitation therapies are met with a lack of enthusiasm and high drop-out rates from participants. Recently, Argentinean tango has been explored as an innovative intervention to ameliorate symptoms of PD and other health related problems. Tango therapy proved to improve walking, balance, strength and flexibility training (Earhart, 2009; McKinley, 2008). These studies found greater adherence than traditional therapies and reported significant enjoyment by the participants making this a suitable and interesting option. The aim of this study is to understand, through open-ended interviews, how the embodied experience of learning to dance Argentinean tango through a Dance Therapy Program using Argentinean Tango (DTPAT) can ameliorate symptoms of Parkinson's disease. Methods Using the qualitative methodology constructs of phenomenology, constructivism, grounded theory and feminist theories perspectives, six in depth-interviews, participant observation and content analysis were used for this study. Interviews aimed to assess the DTPAT participants': 1) enjoyment of the program; 2) experience of dancing with the tango teacher; and 3) self-reported benefits of participating in the DTPAT. Preliminary results 1) All participants extremely enjoyed the DTPAT and they wished to continue it. 2) Dancing with the teachers was a highlight and they would appreciate more one-on-one

dancing with them. Specifically, they found this experience very significant in a moment of vulnerability. 3) Self-reported benefits included: having a better sense of connectedness and belonging; being able to learn a new activity or to recover an abandoned one; and discovering, through their bodies and the dancing, meaningful ways to cope with daily activities. Conclusions Argentinean tango can be an appropriate rehabilitation strategy for people with Parkinson's disease. It proves to be very appealing for participants who would like to continue in the program. Notwithstanding its validity as a form of exercise, it seems to add significant meaning for participants. Participants found the experience of dancing tango as a very good resource to cope with organization of their ADL and the disease.

**P2**

**Patients with Alzheimer's Disease (AD) Secrete More Cortisol (a stress hormone) than Healthy Elderly Individuals.**

Genevieve Arsenault-Lapierre, Sonia Lupien; Howard Chertkow  
*Integrated Program in Neuroscience, McGill University*

People with Mild Cognitive Impairment (MCI), who also secrete more cortisol than healthy elderly individuals, are at an increased risk for developing AD. However, since not all MCI individuals progress to AD, determining which persons will develop AD becomes an important objective. The specific goal of this study was to evaluate whether cortisol levels measured in MCI contribute to a predictive model of AD. Salivary samples were collected one day in May at cohort entry in 59 MCI recruited at the memory clinic of the Jewish General Hospital. All participants were followed-up annually until 2006 to distinguish MCI progressors (MCIp) from non-progressors (MCInp). A prediction model was built using a backward stepwise logistic regression. The final model comprised age, APOe4 status, hippocampal volume and cortisol [AUC (95% CI) = 0.86 (0.76-0.96)]. Hippocampal volume measurement was the only independent variable that predicted progression to AD ( $p < 0.05$ ). Lower cortisol,

though not an independent factor ( $p=0.08$ ), contributed significantly to the model [AUC without cortisol (95% CI) = 0.77 (0.62-0.91)]. It is therefore possible that cortisol is an indirect measure of an explicative variable not measured in this study.

### P3

#### **The Neuronal Mechanisms Underlying Executive Functions (EF) Are Not Well Understood with Less Known about How EF Are Affected by Normal Aging.**

Stephannie Davies, Erin K. Johns and Natalie A. Phillips

*Psychology, Concordia University*

We used electroencephalogram coherence to examine the neural correlates supporting EF in 22 younger adults (YA) and 30 older adults (OA) while performing computer-based executive tasks. Coherence was calculated between four electrode pairs of interest for both the theta and gamma frequency bands. A neuropsychological battery was also administered testing executive and non-executive abilities wherein several group differences were found. On experimental measures, OA performed similarly to YA, but with slower reaction times. Results also showed larger coherence between frontoparietal electrodes while performing EF tasks versus control conditions with no group differences. Correlations between coherence and behavioural performance were also explored. Results add support for the distributed network theory emphasizing functional neuronal connections in supporting EF. No support for the compensatory mechanism in aging was found.

### P4

#### **The Neural Correlates of Second Language Learning: Cross-Linguistic Transfer Effects.**

Ladan Ghazi Saidi, Ana-Inés Ansaldo

*Faculté de Médecine, Université of Montréal and CRIUGM*

Introduction: Cross-linguistic Transfer effects (CLT) concern the influence that one language exerts over another in the process

of second language (L2) acquisition. Specifically at the lexical level, CLT effects have been described with cognates (formally and semantically similar words), and clangs (formally similar with different meanings). This paper reports the behavioral and neural correlates of CLT, as a function of learning phase and word category in a group of Spanish speakers learning French as L2. Methods: Twelve Spanish native speakers were enrolled in an intensive computerized French lexical-training program, and were tested twice: before consolidation and after consolidation. Accuracy rates and response times as well as event-related fMRI BOLD responses to naming cognates, non cognates and clangs were computed. Results: The results show that at low language levels, naming non-cognates is sustained by the recruitment of visual-semantic processing, in particular the middle occipital lobes, and the fusiform gyri bilaterally (BA17, 18, 19) and Consolidated lexical learning was sustained by the left middle and inferior frontal gyri (BA 44, 45, 46) for all three word categories in L2. These areas had shown significant activation during cognate and clang naming at the shallow learning phase. Conclusions: These results show that phonological similarities across L1 and L2 constitute a CLT facilitatory factor. Thus, cognates and clangs are salient words because of their phonological similarities to the mother tongue. The significant activations of the bilateral pre-central and middle frontal gyri, observed exclusively at the consolidation phase suggest that the motor and speech processing levels become more important when the lexical dimensions are consolidated. Interestingly, a portion of the left-right middle frontal gyrus (BA 10), reported to be involved in recognition of semantic and phonological similarities (Price, 2010), is activated only in naming cognates in the shallow consolidation phase. This suggests that even when the language proficiency is low, phonological similarities between words are a strong CLT factor. References: Price, C. (2010), 'The anatomy of language: a review of 100 fMRI studies published in 2009' 2010 New York Academy of Sciences, vol.1191 pp. 62- 88.

**P5**

**The Time Course of Inhibition in Young and Older Adults Using a Sequential Paradigm.**

Mervin Blair, Kiran Vadaga, Michael Dalili, Karen Li

*Psychology, Concordia University*

The time course of inhibition in young and older adults using a sequential paradigm. The Inhibition Deficit Hypothesis (Hasher, Zacks, & May, 1999) posits that the ability to delete/suppress no longer relevant information declines with age, and as a consequence, negatively impacts on higher order abilities. Despite this claim, research on whether this Deletion-type inhibition is reduced in older adults remains inconsistent. A drawback and possible confound in research thus far may be the predominant assessment of inhibitory functioning at a single time point. However, research on the time course of inhibitory processes is limited and in some cases mixed. In addition, controversy exists as to the validity of measures used to examine inhibitory ability. In the present study, we aimed to examine the time course of Deletion-type inhibition in young and older adults using a sequential paradigm. In the task used, older and younger adults monitored for a learned sequence of targets among runs of randomly ordered stimuli. Given the sequential nature of the task, Deletion-type inhibition was expected to be applied to each target once a response was made in order to move forward in the sequence. As a consequence, a performance cost was expected when prior targets were presented again (i.e. slowed responses). In order to examine the time course of Deletion-type inhibition, we examined reaction times to repeated presentations of prior targets (compared to control items) after varying time intervals (1, 2, 3 s). With intact deletion/suppression of completed targets, responses should be slowed on repeated presentations of prior targets. In an initial analysis of data collected thus far (49 younger adults and 11 older adults), younger adults showed slowed responses to repeated presentations of prior targets in the early phase of the 2-second window. In contrast, older adults showed a trend for slower responses towards the latter phase

of this window. Notably, responses in the early phase of the 2-second window were associated with other indices of Deletion-type inhibition assessed in this study (i.e. reporting no-longer relevant information in a working memory measure). Together, these results indicate a deficit in Deletion-type inhibition in older adults that is most prominent in the early phase of the inhibition time course. More generally, this research underscores the utility of examining inhibitory functioning in older adults at multiple time points.

**P6**

**Social Support, Social Network and Cognitive Functioning in Elderly.**

Drolet, Lauriane; Lussier, Maxime; Castonguay, Nathalie; Lungu, Ovidiu; Bugajska, Aurélie; Bherer, Louis.

*Université du Québec à Montréal (UQAM) et Institut Universitaire de Gériatrie de Montréal (IUGM).*

Summary: Past studies have shown a positive association between the state of general cognitive health and the size of, social support/network in the elderly. However, the link between these social factors and specific cognitive abilities remains largely unexplored. Objective: Here we investigated the link between the social support/network and the performance of healthy older adults in specific cognitive domains such as memory, attention, processing speed and other executive functions. Methods: Twenty-six adults (55-65 years old) completed a neuropsychological assessment comprising of 11 standard cognitive tests (e.g. Stroop, n-back, mental rotation etc.), the Geriatric Depression Scale and the Lubben Social Network Scale. We included only participants with a score greater than 26 at MMSE and no history of neurological disease were. We employed hierarchical regression to assess the relationship between social network/support and various cognitive measures above and beyond the effects of socio-demographic variables (i.e. age, gender etc.) and the level of depression. Results: The size and perception of social network/support was associated with better performance in 5 out



of 11 cognitive tests, when controlling for socio-demographic variables and presence of depression symptoms. In fact, this social variable explained between 78.9% ( $p < 0.001$ ) and 8.7% ( $p < 0.05$ ) of the variability in cognitive performances. The most important associations were found in memory (i.e. Rey test, digit span) and executive functions (i.e. Stroop, Baddeley) tests. Conclusion: Our findings showed that actual size and subjective perception of social network/support is positively related to better performance in specific cognitive domains in older adults. Moreover, these associations were found in healthy individuals and in attention realm. Thus, our data expand the current understanding of the role of social factors in maintaining cognitive functioning late in life, by extending this 'protective' role to some of the executive functions, as well.

**P7**

**Healthy Aging is Associated with Normal Insulin Sensitivity and Protein Anabolic Response to Feeding.**

José A. Morais<sup>1,2</sup>, Stéphanie Chevalier<sup>1,2</sup>, Eric D. B. Goulet<sup>2</sup>, Sergio Burgos<sup>2</sup>, Linda Wykes<sup>3</sup>

<sup>1</sup>McGill Division of Geriatric Medicine,

<sup>2</sup>McGill Nutrition and Food Science Centre,

<sup>3</sup>School of Dietetics and Human Nutrition, McGill University

Since muscle loss with aging does not result from alterations of protein metabolism postabsorptively, we studied the anabolic response to feeding, using a fed steady-state (hyperinsulinemic, hyperglycemic (8mM), hyperaminoacidemic (700  $\mu$ M BCAA) clamp. [<sup>3</sup>H]Glucose and protein ([<sup>2</sup>H<sub>5</sub>]phenylalanine, [<sup>13</sup>C]leucine) kinetics were measured and regulation of mRNA translation and fractional synthesis rate (FSR) were assessed from vastus lateralis muscle biopsies in 8 elderly (E; 73 $\pm$ 3 y; 24 $\pm$ 1 kg/m<sup>2</sup>) and 8 young (Y; 23 $\pm$ 1 y; 21 $\pm$ 1 kg/m<sup>2</sup>) women, matched for lean body (LBM) and muscle mass indices (E vs. Y: 6.9 $\pm$ 0.3 vs. 7.6 $\pm$ 0.2 kg/m<sup>2</sup>, *ns*, by DXA) and physical activity level (PAL; 1.5 $\pm$ 0.1 vs. 1.4 $\pm$ 0.1, *ns*, by accelerometry). During insulin infusion (0.4 mU/kg LBM·min), plasma concentrations reached lower levels

in the E (300 $\pm$ 15 vs. 405 $\pm$ 43 pM,  $p=0.04$ ) and C-peptide was less stimulated by the glucose and amino acids ( $p=0.034$ ). Glucose uptake was stimulated (8.2 $\pm$ 0.4 vs. 8.2 $\pm$ 0.5 mg/kg LBM·min, *ns*) and production suppressed (0.8 $\pm$ 0.2 vs. 1.1 $\pm$ 0.1 mg/kg LBM·min, *ns*) equally. Suppression of whole-body endogenous leucine Ra (protein breakdown) was less in the E (-0.50 $\pm$ 0.08 vs. -0.79 $\pm$ 0.06  $\mu$ mol/kg LBM·min ( $p < 0.02$ ) in response to feeding, leading to lower leucine infusion rates, oxidation and net protein balance. However, these differences disappeared once rates were adjusted for the lower serum insulin in E. Whole body protein synthesis and skeletal muscle FSR increased similarly to 0.080 $\pm$ 0.020 vs. 0.070 $\pm$ 0.008 %/h, *ns*. We conclude that the protein anabolic response to feeding at the whole-body and muscle levels was preserved in this group of healthy elderly women displaying no evidence of insulin resistance (albeit a lesser insulin secretion response) and maintaining a moderate level of physical activity. This is consistent with other factors concurrent with the biological aging process, such as sedentarity, low protein intake and concurrent diseases, being responsible for the sarcopenia of aging.

**P8**

**A Leucine-Enriched Liquid Mixed Meal: Effects on Thermogenesis, Satiety and Incretin Levels in Older Women.**

Emily J. Redmond, Chandra Snarr, Stéphanie Chevalier, José A. Morais  
McGill Nutrition and Food Science Center, McGill University, Montréal

A leucine-enriched liquid mixed meal: effects on thermogenesis, satiety and incretin levels in older women Emily J. Redmond, Chandra Snarr, Stéphanie Chevalier, José A. Morais McGill Nutrition and Food Science Center, McGill University, Montréal, QC H3A 1A1 The amino acid leucine has been shown to stimulate muscle protein anabolism by acting as a signaling molecule for protein synthesis, making it a potential anabolic agent to counteract the loss of muscle mass in aging (ie. sarcopenia). However, its effects on thermic effect of food (TEF), satiety, and incretin release and action are



not clear. Therefore, we performed a randomized, crossover study in older women to compare the effects of a leucine-enriched (LEU; added = 0.07g/kg lean body mass, LBM) vs. a non-leucine-enriched (nLEU) complete liquid mixed meal (Ensure®; 16 kcal and 0.6 g protein/kg LBM) on TEF, satiety, and plasma incretins, branched-chain amino acid (BCAA), insulin and glucose concentrations. Subjects (n = 5; 70 ± 3y) underwent paired meal tests separated by two weeks. During each test, resting energy expenditure (REE) before the meal and TEF (elevation of REE after meal over fasting REE, determined for 20-minute periods/hour for 5 hours) were measured by indirect calorimetry. Satiety was assessed (Visual Analog Scale, VAS) before the meal and at intervals during 5 hours postprandially. Results: VAS scores for hunger decreased from pre-meal to 40-minutes postprandial in both meals (p<0.001) and increased back to pre-meal in LEU and exceeded pre-meal scores in nLEU (p<0.01) by 300-minutes. Hunger and fullness scores were inversely related only in nLEU at 40-minutes (r = -0.967, p<0.01) and in both LEU (r = -0.892, p<0.05) and nLEU (r = -0.965, p<0.05) at 90-minutes postprandial. Net area under the curve response of plasma BCAA was higher in LEU (p<0.001), whereas that of TEF, plasma glucose and serum insulin did not differ between meals. Whether incretin levels differ between meals and how these relate to TEF, satiety, insulin and glucose will be determined. These preliminary results suggest that a leucine supplement of ~2.6g to a meal would not adversely affect appetite or TEF if used as a nutritional intervention to treat or prevent sarcopenia in older women.

**P9**

**Effects of Age and Cognitive Load on Finger Sequencing Performance.**

Yana Korotkevich, Karen Li (PhD), Virginia Penhune (PhD)

*Psychology, Concordia University*

My proposed experiment will extend previous work, which focused on age differences in the revision of well-learned motor responses (Trewartha, Endo, Li, & Penhune, 2009). In that study 3-dimensional

motion analysis was used to parse movements of a finger sequencing task into planning (cognitive) and motor (execution) phases. When the learned finger sequence was changed, young adults showed longer planning times and shorter movement times compared to responses on the learned sequence. Older adults did not demonstrate this compensatory pattern. In the current project a dual-task design will be used to manipulate executive control demands of the participants. Older and younger adults will be trained on a simple sequence of key presses on an electronic piano keyboard. The sequences will be cued by visual stimuli presented on a computer monitor. Motion capture markers will be applied to four fingers of the right hand. A serial 7 subtraction task will be used to manipulate mental workload. Response latency and accuracy will be recorded for cognitive and motor tasks. Additionally, the motion capture system will record spatial coordinates for each finger. Movement trajectories will be decomposed into planning and execution time components. We expect that young adults will produce patterns of kinematic data similar to that of older adults under no-load conditions. Secondly, we expect that additional cognitive load will have a greater adverse effect on older, compared to young adults' performance. Specifically, older adults may show disproportionate increases in both planning and movement time components under dual task conditions.

**Oral Presentations AM Session /  
Session des présentations orales  
AM**

**11:00 – 12:30**

11:00 – 11:15

**O1**

**Sarcopenia and Obesity Contributions to Mobility and Strength in the Healthy Elderly Participants of the NuAge Study.**

J. Matta<sup>1</sup>, I. Dionne<sup>2</sup>, H. Payette<sup>2</sup>, P. Gaudreau<sup>3</sup>, N. Mayo<sup>1</sup>, T. Fulop<sup>2</sup>, D. Tessier<sup>2</sup>, K. Gray Donald<sup>4</sup>, B. Shatenstein<sup>5</sup>, J.A. Morais<sup>1</sup>

1Division of Geriatric Medicine, McGill University, 2CSSS-IUGS, Université de Sherbrooke, 3Centre de Recherche du CHUM, Université de Montréal, 4School of Human Nutrition and Food Sciences, McGill University 5Département de nutrition, Université de Montréal, Québec

Background: Aging is associated with changes in body composition and a decrease in physical capacity, which depends among others factors on strength and balance. However these measures are interrelated. Our objective is to determine the association between measures of physical capacity and body composition among the participants of the Quebec Longitudinal Study, NuAge. Methods: Several measures of muscle strength and physical function were carried out. Body composition was measured by DXA or BIA in 1062, 68- to 83-year-old, non-diabetic men and women with calculation of quintiles of muscle mass index (MMI = kg/m<sup>2</sup>) and %body fat (%BF) to define sarcopenia (S): lowest 2 quintiles for MMI and obesity (O): highest 2 quintiles for %BF, giving rise to four groups: SO (n=169), S (n=255), O (n=258), Normal (N; n=380). Groups were compared by GLM with age, sex, smoking, chronic diseases and physical activity (PASE), as co-factors. A principal component analysis (PCA) was used to create global indices of physical capacity and regression analysis served to relate them to body composition. Results: The PCA generated 2 indices with muscle strength emphasized in index 1 [quadriceps (factor loading (FL) = 0.826), biceps (FL = 0.901), and handgrip (FL = 0.754)] and mobility emphasized in index 2 (timed-up-and-go (FL = -0.872), walking speed (FL = 0.868) and leg balance (FL = 0.539). Strength was mainly affected by being sarcopenic (p<0.0001 S vs O or N) whereas obese subjects scored lower on mobility index (p<0.0001 O vs S or N). Conclusions: This study addresses methodological issues encountered with multiple physical performance measures. Sarcopenia mainly affected strength whereas mobility was greatly affected by obesity.

11:15 – 11:30

**O2  
Development of an Evaluation Framework for the Acute Geriatric Program at the MUHC.**

Le M MD, Finch L PhD, Huang A MD, Mayo N PhD

*McGill University Health Center (MUHC).*

Objective: Program evaluation is a method to assess the effectiveness of clinical programs based on evaluating the extent to which a program meets its objectives. This presentation will review the results of a program evaluation for the acute geriatric units at the McGill University Health Center (MUHC). Methods: Interviews were conducted with geriatric professionals to ascertain program objectives, activities and outcomes. Data collected from a chart audit of 45 randomly selected geriatric inpatient charts, from 2008 to 2009, were used to fill in the resultant program model framework. Results: Six themes emerged from interviews with 17 geriatric professionals and from these a mission statement was drafted, revised, and subsequently endorsed. A logic model was created to identify the inputs, activities, outputs and outcomes of the program and identify areas that need improvement in order for the program to meet its objectives. The key program resource was a 0-person multi-disciplinary health care team with additional consultative input from medical specialists and other health care professionals. Activities consisted of assessments, interventions and referrals to other resources. Assessments of bodily functions, sleep patterns and medication reconciliation were consistently done (100% of patients); risk assessment for falls, DVTs and skin problems were done in 84-98% of patients. A nurse and a geriatrician saw 91-100% of patients, while 51-80% were seen by other team members. Non-routine tests were performed on 31% of the patients. The majority of the interventions were rehabilitation, nutrition and pharmacological (range 49-80%). Of the patients discharged home 14-33% received CLSC, rehabilitation or outpatient clinic services. The only outcomes available to evaluate the program effectiveness were: length of stay (average 58 days), readmission rates (9%), and

proportion of patients out of bed within 48h of admission (89%). Conclusions: The acute geriatrics program is structurally sound with focused activities but lack of a methodology for capturing patient outcomes prohibits conclusions about the effectiveness of the program. A structured problem list would permit data to be available to characterize the population and to track outcomes based on resolution of patient problems. Linking patient problems, to services and outcomes would provide a strong evaluation framework for continuous quality improvement of the Acute Geriatric Program at the MUHC.

11:30 – 11:45

**O3**

**Combining Program Evaluation with a Functional Status Checklist; a Method for Monitoring Care in Geriatrics.**

Finch L PhD, Abramovich T BSc PT, Le M MD, and Mayo N PhD

*Division of Clinical epidemiology, MUHC*

Combining Program Evaluation with a Functional Status Checklist; a Method for Monitoring Care in Geriatrics. Finch L PhD, Abramovich T BSc PT, Le M MD, and Mayo N PhD. Continuing to improve geriatric care delivery involves a number of processes including program evaluation. A recent program evaluation of the MUHC acute geriatric services produced a mission statement and logic model that defined their inputs, activities, outputs and outcomes. A major finding was that useable data for the majority of outcomes was missing from the chart. The implementation of a standardized method to identify the presence and severity of functional limitations, such as the newly developed MUHC Acute Functional Status Profile checklist, could provide the necessary methodology for outlining the functional outcomes for Geriatric services. Objective: To determine the ability of the MUHC Acute Functional Status Profile checklist to identify the functional outcomes of a geriatric program. Methods: Data on functions was extracted from 103 randomly selected charts using the MUHC checklist. Socio-demographic data were also collected. Charts were from patients older than 65 admitted, from September 2008 to September 2009, to the geriatric or medical

inpatient wards (103 of 2329 charts). From the available data within the chart the proportion of functions assessed, the functional deficits and their resolution were established. Results: On average patients were 83 years old (SD: 7.4), female, living at home prior to admission and discharged home again after a median stay of 3 weeks. Although a large proportion of functional data was missing, the top ten functional problems varied from cognitive functions of memory (71%) to activities like toileting (22%). Of 19 functional problems studied, 5 were resolved in at least 20% of patients through provision of increased services or therapeutic interventions. Conclusion: The MUHC Acute Functional Status Profile checklist provided an indication of whether the activities and interventions provided through geriatric services benefited the patient, and offers a possible solution to defining the program outcomes.

11:45 – 12:00

**O4**

**Process of Care Following Hip Fracture Repair: An Environmental Scan (Preliminary Results).**

M Auais MSc, S Morin MD MSc, L Finch PhD, G Berry MD, N Mayo PhD

*School of Physical and Occupational Therapy, McGill University*

Background: Hip fractures are of public health concern for seniors. The goals of this study are to identify current practices and care gaps for elderly patients admitted following an osteoporotic hip fracture, and to describe patients' needs over a one year period of time. Methods: The medical records of 81 randomly selected patients with hip fracture ( $\geq 65$  years) were reviewed to identify gaps and provide insight into the rest of the study. Additionally, 70 community-dwelling participants with osteoporotic hip fracture are being recruited and evaluated on 6 weeks, 3, 6 and 12 months post-discharge from acute care hospital. Results: Based on the chart review after patients-admission to the acute care, there was no evidence that a fall-risk assessment was carried out; weight and height were missing in 65% of charts; walking capacity was not recorded and osteoporosis-medications were rarely

prescribed. To date, 35 patients have participated in the longitudinal study. Preliminary results show that Geriatrics, OT, or Nutrition were only consulted in less than 40% of the cases. About half of patients didn't have adequate investigation of osteoporosis. At 6 weeks post discharge we observed major functional decline in basic activities, as example only 50% of patients could put their shoes or do light home activities without difficulty. Even at 3 months post fracture 88% still had difficulty with stairs. Changing in patients' health priorities and perception of fracture impact has been witnessed over the continuum of recovery. Conclusion: In spite of the plethora of evidence-based guidelines for osteoporosis investigation and treatment following hip fractures, osteoporosis is still underdiagnosed and treated. Gap between pre- and post fracture functional status is remain substantial, even after rehabilitation. Care path for hip fracture patients may be warranted. In addition to that, patients' perspectives of fracture impact and priorities need to be considered when compose care plans.

12:00 – 12:15

**O5**

**Do Cognitive Inhibitory Functions Decline with Age?**

Kiran K. Vadaga, Mervin Blair, Karen Z.H.Li  
*Psychology, Concordia University*

Inhibitory deficit hypothesis (Hasher, Zacks, & May, 1999) posits an age related decline in three cognitive inhibitory functions: 1) Access: filtering out irrelevant information 2) Deletion: suppressing no longer relevant information, and 3) Restraint: inhibiting the production of irrelevant prepotent responses. However, it is unclear if the decline in three inhibitory functions is uniform. In order to answer this question, it is essential to measure these inhibitory functions under similar attentional demands. The purpose of the current experiment was to employ this strategy by using a modified version of the Sequential Flanker Task. In this ongoing experiment, 24 young (age range 18- 35) and 8 old (age range: 60-75) adults first memorized a fixed number of stimuli (animal words) in a set order. When

the stimuli were presented randomly, participants made an appropriate key press (yes or no) response based on the pre-learned sequence. Occasionally, the stimuli were presented in the midst of irrelevant information (i.e. flankers). In the Access function, the flankers were irrelevant items drawn from either the learnt set or outside the set. In the Deletion function, the flankers were previously responded items. In the Restraint trials, the flanker served as a cue to withhold response. Preliminary results indicate that the Access function was reduced for older adults only when the irrelevant information was from outside the set. There was an age related decline in Deletion function. In contrast, the Restraint function showed no age related declines. These results indicate that age related declines in inhibitory functions are not uniform but vary depending on the nature of irrelevant information.

12:15-12:30

**O6**

**Can the Montreal Cognitive Assessment (MoCA) Predict Post-Operative Delirium in the Elderly? A Pilot Study.**

Daniel Newman<sup>1</sup>, Simon Bergman<sup>1</sup>, Beth-Ann Cummings<sup>2</sup>, Megan Delisle<sup>1</sup>, Victor Whitehead<sup>3</sup>, Howard Chertkow<sup>3</sup>.

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Background: Delirium is an acute confusional state and a common postoperative complication among elderly surgical patients. Post-operative delirium can occur in as many as 50% of elderly patients following non-cardiac surgery and should be considered a medical emergency. Unfortunately, delirium is often misdiagnosed as depression or goes unrecognized all-together. Few screening tools exist that can accurately predict which elderly patients will develop post-operative delirium. Purpose: The primary purpose of

this prospective pilot study was to determine whether the Montreal Cognitive Assessment (MoCA), a test for mild cognitive impairment, could predict the incidence of post-operative delirium in elderly surgical patients. The secondary purpose of this experiment was to compare the complications and lengths of stay among patients with and without post-operative delirium. Methods: 35 patients over the age of 70 were pre-operatively assessed for the presence of a mild cognitive impairment using the MoCA. Post-operative delirium was diagnosed by the Confusion Assessment Method (CAM). Results: 29 of 35 patients (83%) had a mild cognitive impairment. Post-operative delirium occurred in 6 of 35 patients (17%). Among the 6 patients who developed post-operative delirium 5 had a mild cognitive impairment. Mild cognitive impairment was not significantly associated with the development of post-operative delirium. Furthermore, there was no significant difference in complications among patients with and without delirium, however, patients who developed delirium had a significantly longer length of stay. Conclusion: The MoCA was unable to predict the incidence of post-operative delirium in the elderly. A larger sample size is required in order to clarify the relationship between mild cognitive impairment and the development of post-operative delirium. Additionally, the high rate of mild cognitive impairment suggests that our patient population is at risk for developing dementia. The ability to pre-operatively identify patients who are at risk for developing delirium would be an invaluable tool that could help direct preventative treatments, aid in patient decision making, and hopefully help to reduce the incidence of post-operative delirium among the elderly.

**Oral Presentations PM Session /  
Session des présentations orales  
PM**

**13:30 – 14:45**

13:30-13:45

**O7**

**Localizing Function after Stroke with  
Voxel-Based Lesion Symptom Mapping.**

Claude Steriade, Maiya Geddes, Kelvin Mok, Lois Finch, Nancy Mayo, Lesley Fellows

*Medicine, McGill University*

Introduction: The location and extent of brain damage after stroke would be expected to determine the pattern of clinical deficits, and the prognosis for recovery. Surprisingly, stroke location has not been emphasized in the stroke outcomes literature. We hypothesize that this is because lesion localization has been carried out at a very coarse grain, often relying on radiology reports rather than brain imaging data. Objectives: We combined clinical MRI and a novel statistical method, voxel-based lesion symptom mapping (VLSM), to determine the relationship between location of brain injury and deficits in motor function, cognition, mood and overall function. Methods: 124 persons with acute stroke were screened for inclusion in a study of mood post-stroke. Of those, 120 consented and were followed for 1 year. Assessments included the Montreal Cognitive Assessment (MoCA), Barthel Index, Geriatric depression scale (GDS), and the Box and Blocks test. Only subjects with brain MRI available (n=43) are included here. The location of acute stroke was manually segmented from T2 FLAIR images and transformed into standardized brain space using an automated, multi-scale, feature-matching algorithm. VLSM was then used to test for relationships between location of damage on a voxel-by-voxel basis and various outcome measures acquired within 10 days of the stroke. Results: Box and blocks performance related to damage in the corticospinal tracts. Visuospatial item scores from the MoCA related to occipitotemporal damage, while language item scores related to left frontoparietal white matter damage. The total MoCA score was also associated with left frontoparietal white matter injury, suggesting that the MoCA is mainly a measure of language dysfunction after acute stroke. There was a weak relationship between GDS score and right hemisphere white matter injury. Overall function as captured by the Barthel Index related to corticospinal tract and basal ganglia injury, and did not correlate with the volume of lesion. Conclusion: These findings

demonstrate the application of modern neuroimaging analyses in quantifying the relationships between brain injury and clinical findings. They provide proof-of-principle for the use of VLSM in studying structure-functional outcome relationships after stroke at a fine anatomical resolution.

13:45-14:00

**O8**

**Validation of Individual Screening Test Items as Indicators of Domain -Specific Cognitive Impairment.**

Parastoo Moafmashhadi a, Lisa Koskib a. *Graduate Program in Neuroscience, Université McGill* b. *Geriatrics Division, Faculty of Medicine, Centre Universitaire de Santé McGill (CUSM)*

**Introduction:** Neuropsychological assessment for suspected cognitive impairment is in increasing demand, yet is expensive and not available to most clinics. Cognitive screening tools such as the Montreal Cognitive Assessment (MoCA) ask questions relating to the cognitive domains of attention, language, memory, visuospatial skills, and executive functions. We hypothesized that responses to individual test items might be used to identify those patients who have cognitive impairment in specific domains. **Objectives:** 1) validating individual screening test items as indicators of impairment in specific cognitive domains; 2) evaluating the clinical utility of individual screening test items to predict neuropsychological performance. **Methodology:** This cross-sectional study conducted using clinical data collected in the Geriatric Cognitive Disorders Clinics of the Montreal General Hospital and the Royal Victoria Hospital. 1) Bivariate Linear Regression was used to test for validation of individual items as predictor of impairment in specific domain. 2) Sensitivity, specificity, accuracy, positive predictive value (PPN) and negative predictive value (NPV) were calculated. **Results:** A principal component analysis with neuropsychological tests yielded four factors, reflecting memory, mental speed, visuospatial ability, and language. We found very low correlation coefficients between these factors and individual MoCA items ( $r = 0.09 - 0.53$ ). Five

recall words was a stronger predictor of memory deficit ( $r = .530$ ), and verbal fluency item ( $r = .42$ ) was shown to predict deficit in mental speed. Serial 7s subtraction ( $r = .324$ ) and watch-ruler abstraction (.341) items contributed to the prediction of visuospatial ability, and language, respectively. All these items demonstrated low PPV and sensitivity ( $< .80$  and  $\leq .43$ ), respectively, [with exception for 5 recall words (1)]. However, NPV for given items were noticeably high  $\geq .84$ . **Conclusions:** The results of this study provide weak support for the sensitivity and domain specificity of individual items from MoCA, and support the need of comprehensive neuropsychological assessment for detection of domain-specific cognitive impairment.

14:00-14:15

**O9**

**Transition Home after a Hospitalisation: The Lived Experience of Older Adults and their Family Caregivers.**

Erica Lyn, MSc (A)<sup>1</sup>, Judy Bianco, MSc (A)<sup>2</sup>, Margaret Purden, PhD<sup>1,3</sup>

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**Purpose:** This qualitative descriptive study sought to explore the experience of older medical patients and their family caregivers from the time of preparation for hospital discharge to the first two weeks of recovery at home. **Methods:** Seven patient-caregivers dyads were interviewed in their home two weeks after discharge. Content analysis was performed on verbatim transcripts to formulate meaning of their experiences. **Results:** The average age of the seven patient participants was 80.7 years ( $sd = 4.5$ ), four of which were female. All but one lived with their family caregiver who was either a spouse (71%) or an adult child (29%). Upon returning home many participant dyads (43%) were utilising the services of the community CLSC and most had the support of other family members (71%). As patients and their caregivers spoke about the challenges of returning home and resuming daily activities three

principle themes emerged that captured the transition trajectory namely, : (1) feeling disillusioned with discharge, (2) recognising 'we're not the same', and (3) working towards 'the new normal'. Experiences around preparation for discharge during hospitalisation were influenced by patients' and caregivers' discharge expectations, the lack of collaboration between the patient and their health care professionals, uncertainty related to the discharge process, and challenges with transportation home. Upon first arriving home both the patients and caregivers found themselves vulnerable and needed to recognise that their situation had changed in order to adjust to the need to receive and to give care, respectively. Working towards 'the new normal' involved acknowledging recovery as a process, adapting routines, environments, and future goals, and the use of community resources. Conclusion: Transitioning home after a hospitalisation is a vulnerable process and requires adaptation for both the older patient and their family caregiver. Those who were able to access follow up care and community services began to approach a 'new normal' state at two weeks post discharge. However, older adults with spouse caregivers and little external support struggled to adapt. Particular attention should be paid to this population during discharge planning and follow up.

14:15-14:30

**O10**

**Longitudinal Effects of Depression and Need for Cognition on Cognitive Function in Recent Retirees.**

L.H.Baer, M. Blair, N. Tabri, D. Bye, K. Z. H. Li, D. Pushkar

*Centre for Research in Human Development, Concordia University*

Centre for Research in Human Development Concordia University, Montreal, Quebec, Canada Depression and reduced activity levels are associated with cognitive decline in old age. As part of the Concordia Longitudinal Retirement Study, cognitive functioning was assessed using the Montreal Cognitive Assessment test (MoCA) at two annual measurement periods, T3 and T4. Level of depression was measured at T2, T3, and T4 and need for cognition was

measured at T2 and T4. A sample size of 337 was used across all time points considered, mean age at T2 = 60.01 years, SD = 4.84. A cross-lagged path model was estimated using structural equation modeling. Depression at T2 directly predicted decreased cognitive functioning at T3 and indirectly predicted decreased cognitive functioning at T4 through cognitive functioning at T3. In contrast, need for cognition at T2 directly predicted increased cognitive functioning at T3 and T4. In conclusion, need for cognition and depression have opposite implications for cognitive functioning. Depression appears to have a negative indirect impact on cognitive function over time whereas need for cognition appears to have a positive direct impact. Thus, post-retirement cognitive function is linked over time with both depression and intrinsic motivation to engage in effortful cognitive activities.

14:30-14:45

**O11**

**Assessment of Quality of Care Given to Elderly Patients with Multiple Chronic Conditions on Medical CTUs: A Pilot Study.**

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Background: Prevalence of chronic conditions is rising in the elderly population. Although we have few data on quality of care (QOC) given to elderly patients with these conditions in acute care settings, we know that it does impact on their post discharge functional status, morbidity and mortality. This study aimed at 1) evaluating the feasibility of using the AVOVE-3 quality indicators (QIs) as a measurement tool of QOC given to elderly patients with multiple chronic conditions on clinical teaching units (CTUs) at the Jewish General Hospital



(JGH) 2) assessing whether there is a significant difference between adherence to geriatric versus medical QIs in this population 3) evaluating the relation between the number of chronic conditions per patient and the QOC received. Methods: A retrospective study using chart review of patients aged 65 and older with at least 3 of the chronic conditions reported in the Charlson Comorbidity Index admitted on JGH's CTUs. Adherence to 23 QIs of the ACOVE-3 project was evaluated. Global quality scores were obtained for each patient as well as detailed scores for quality of general medical care and geriatric care. Results: Among the 100 patients included, overall adherence rate to the QIs was  $74.9\% \pm 12.4\%$ . Adherence to geriatric QIs was significantly lower compared to medical QIs (72.0%, CI 51.0%-93.0% vs 77.0%, CI= 64.3%-89.7%,  $P < 0.01$ ). No significant relation between the proportion of QIs satisfied and the number of chronic conditions per patient was found. Conclusion: ACOVE-3 QIs can be used to evaluate QOC of elders with multiple chronic conditions in our institution. In this study, QIs related to geriatric care were significantly less satisfied than those related to medical care with no significant relation found between QOC scores and the number of chronic conditions per patient. More powerful studies are needed to confirm these observations and to evaluate the determinants of QOC in acute care settings.







