McGill University
Division of Geriatric Medicine

9th Annual McGill Geriatric Medicine Research Day Conference

Research in the Information Era

Holiday Inn Midtown-Montréal, April 16, 2004

Vendredi le 16 avril, 2004

Soyez le bienvenu à la Journée de Recherche de la Division de Gériatrie de l'Université McGill. Nous avons assemble 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.

Friday, April 16th, 2004

Welcome to the McGill University Division of Geriatric Medicine Research Day. In this program you will find a general agenda for the conferences 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 come away with an instructive experience.

Nous tenons à remercier les contributions faites par les organisations suivantes.
We would like to thank the following companies for their generous support:

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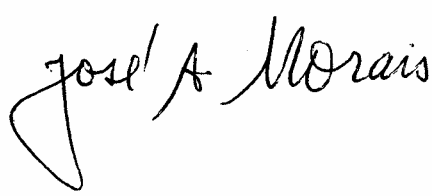
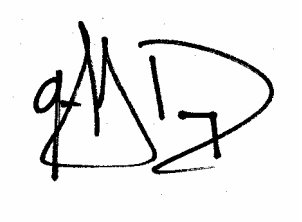


José A. Morais, MD



Gustavo Duque, MD, PhD

Acknowledgements

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McGill Division of Geriatric Medicine ◆ Division de Gériatrie de McGill
9th Annual Research Day Conference 2004 ◆ 9è Journée de Recherche 2004

"Research in the Information Era" ◆ "La recherche dans l'heure de l'information"
Holiday Inn Montréal-Midtown
Montréal, Québec, Canada

Research Day Program ◆ Programme de la journée de recherche

08:00 - 08:30	Continental Breakfast / Petit déjeuner continental
8:30 - 08:35	Welcome / Accueil Dr. Howard Bergman
08:35 - 9:05	"Beauty and the Beast: Medical Education and Technology" Laura R. Winer, Ph.D. Senior Educational Technologist / Première technologiste éducationnelle Office of the Deputy Provost and CIO / Bureau du vice-principal exécutif et chef des services d'information McGill University / Université McGill
9:05 - 9:35	"How Informatics Can Shape Science" Robyn Tamblyn, R.N. Ph.D. Associate Professor / Professeure associée Departments of Medicine and Epidemiology and Biostatistics / Divisions de médecine, et épidémiologie et biostatistiques McGill University / Université McGill
9:35 - 9:45	Discussion Period / Table ronde
9:45 - 10:30	Poster session • coffee & tea / Présentation des affiches • café et thé (Ambassadeur A)
10:30 - 12:30	Paper session / Session de présentations orales (Senateur)
12:30 - 13:30	Lunch / Déjeuner
13:30 - 15:30	Paper session / Session de présentations orales (Senateur)
15:30- 15:45	Jury Deliberation • Coffee and refreshments / Discussions • café et thé
15:45 - 16:00	Award Presentations / Prix

Detailed Research Presentations Schedule ◆ Programme détaillé des présentations

Poster Session / Session de présentation des affiches
9:45 – 10:30
Abstracts / Résumés P1 – P11

Oral Presentations AM Session / Session des présentations orales AM
Abstracts / Résumés O1 – O8

10:30 – 10:45
O1–Comparison of Three Measures of Relational Continuity of Care Between Seniors and Their Primary Care Providers: Based on Administrative Data
Raluca Ionescu-Ittu

10:45 – 11:00
O2–Physicians Utilization of the Integrated Drug Profiler for the Elderly of Lower Socioeconomic Status with Poor Continuity of Care
Yuko Kawasumi

11:00 – 11:15
O3–Evaluation of Medical Students' Integration of Scientific Knowledge and Clinical Skills in Geriatric Medicine
Ayanna Roberts

11:15 – 11:30
O4–The Prion Protein Suppresses BAX Activation In Human Primary Neurons
Xavier Roucou

11:30 – 11:45
O5–Telomerase and Chemotherapeutic Resistance
Ryan J. Ward

11:45 – 12:00
O6–Up-Regulation of Erythropoietin Receptor Expression In AD and MCI Astroglia
Michael I. Assaraf

12:00 – 12:15
O7–Proving the Classification of Falls: An Operative Approach to the Unexplained Falls
Manuel Montero-Odasso

12:15 – 12:30
O8–Développement de mesures d'évaluation ses déficiences du contrôle postural et de l'équilibre chez les aînés
Myriam Jbabdi

Oral Presentations PM Session / Session des présentations orales PM
Abstracts / Résumés O9 – O16

13:30 – 13:45
O9–Définition et facteurs influençant l'implantation des plans de services individualisés
Dominique Somme

13:45 – 14:00
O10–Problèmes reliés à la pharmacothérapie comme cause d'hospitalisation chez la personne âgée fragile.
Isabelle Payot

14:00 – 14:15
O11–Study of Neutophils Functions in Healthy Elderly Subjects
Anis Larbi

14:15 – 14:30
O12–Adipocytes vs. Osteoblasts, the Bone as a War Zone: the Elucidation of a New Pathophysiology for Senile Osteoporosis
Michael Macoritto

14:30 – 14:45
O13–Participation Six Months After A "Mild" Stroke
Annie Rochette

14:45 – 15:00
O14–Pitfalls in the Use of Multiple Imputation to Handle Missing Data in Geriatric Research: The Case of a Physician Questionnaire on Drug Treatments for Alzheimer's Disease
Mark Oremus

15:00 – 15:15
O15–How do Emergency Department Visits for Frail Elderly Affect Family Members' Health Status?
Maida J. Sewitch, PhD

15:15 – 15:30
O16–Potential Therapeutic Effect of Repetitive Transcranial Magnetic Stimulation on Anomia In Alzheimer's Disease: a Pilot Study
Anh Duong

Poster Session / Session de présentation des affiches 9:45 – 10:30

P1

HO-1 OVER-EXPRESSION PROMOTES OXIDATIVE MITOCHONDRIAL DAMAGE IN RAT ASTROGLIA

Wei Song, Haixiang Su, Sisi Song, Hemant K. Paudel, and Hyman M. Schipper
Lady Davis Institute, SMBD Jewish General Hospital and Dept. of Neurology and Neurosurgery, McGill University, Montreal, Canada

Background: Up-regulation of heme oxygenase-1 (HO-1) in the rodent CNS may confer neuroprotection or, conversely, exacerbate neural injury contingent upon experimental conditions.
Methods: Assays for 8-epiPGF2alpha (ELISA), protein carbonyls (ELISA) and 8-OHdG (HPLC-EC) were used to quantify oxidative damage to lipids, proteins and nucleic acids, respectively, in mitochondrial fractions and whole-cell compartments derived from cultured rat astroglia, rat C6 glioma cells and human M17 neuroblastoma cells engineered to over-express human (h)HO-1 by transient or stable transfection.
Results: 1) In primary rat astrocytes, hHO-1 over-expression (X 3 days) resulted in significant oxidative damage to mitochondrial lipids, proteins and nucleic acids, partial growth arrest and increased cell death. These effects were attenuated by incubation with 5 uM tin mesoporphyrin, a competitive HO inhibitor. 2) In C6 and M17 cells, hHO-1 transfection suppressed indices of mitochondrial oxidation and stimulated cell proliferation.
Conclusions: HO-1 up-regulation is mitochondriotoxic in primary rat astroglia and cytoprotective in the C6 and M17 cell lines. The data further support our contention that glial HO-1 expression contributes to oxidative mitochondrial injury in aging and degenerating neural tissues, and may shed light on the disparate behaviour of HO-1 in various models of brain injury and disease.

Supported by Valorisation-Recherche Quebec

P2

MEMORY ENHANCEMENT FOR EMOTIONAL STIMULI IS PRESERVED IN OLDER INDIVIDUALS WITH DEPRESSIVE SYMPTOMS AND IS PERSISTENT OVER TIME

Schramek, T.E[1]., Maheu, F.S[1]., Pim, H.D[1]., Lemay, M[1], Wan, N, Weeks[2], N., & Lupien, S. J[1].
1. Department of Psychiatry, Douglas Hospital Research Center, McGill University 2. Department of Psychology, Ponoma College

Emotional arousal is associated with enhanced memory performance. There are also consistent findings of memory deficits in normal aging and in depression. The goal of the present study therefore, was to assess emotional memory in older individuals with or without depressive symptoms. Additionally, we wished to measure cortisol levels, as hypercortisolemia is often associated with depression. Thus, 32 participants (50-80) provided salivary cortisol (5 samples) for the analysis of the diurnal cycle of cortisol and were read a short story containing neutral and emotional information. Free recall was assessed immediately after encoding, 30 min later, and 9 months later. The results revealed that individuals with depressive symptomology had significantly higher levels of cortisol at study entry but showed similar recall for neutral and emotional information relative to participants without depressive symptoms. Nine months later, however, individuals with depressive symptoms recalled significantly more emotional material relative to those without depressive symptoms. No differences were found with respect to neutral information. These results demonstrate that the memory enhancing effects of emotional arousal hold true in older individuals with depressive symptoms and persist over time.

P3

HUMAN COLLAGENASE-3 TRANSGENIC MOUSE MODEL FOR OSTEOARTHRITIS

M. Kumari, A.R. Poole and J.S. Mort
Joint Diseases Laboratory, Shriners Hospital for Children, McGill University

Introduction: Osteoarthritis (OA) is characterized by the degradation of the articular cartilage. Normally, articular cartilage metabolism represents a strict balance between the production of extracellular matrix and its degradation by catabolic enzymes. Matrix metalloproteinases (MMPs) play an important role in both normal remodeling and the pathological degradation of cartilage. Recent studies show that the expression of collagenase-3 (MMP-13) which cleaves type II collagen and other matrix molecules is up regulated in human osteoarthritis.
Aim of the study: We are investigating the role of collagenase-3 in OA by utilizing transgenic mice in which a constitutively active human collagenase-3 gene was introduced under a type II collagen promoter subject to transcriptional regulation by doxycycline.
Methods and Results: Controlled expression of the transgene is initiated at weaning by removal of doxycycline. We will investigate the degree of cartilage damage by MMP-13 by inducing the gene in a controlled manner for specific time periods. Articular cartilage samples from the left knee joints and rib cartilage are being collected for gene expression analysis by RT-PCR, right knee joints and lumbar vertebra are used for histology and immunohistolocalization. Human MMP-13 transgene insertion was confirmed by genotyping. Detectable expression of the human MMP-13 was revealed at one week in rib cartilage and after 4 weeks in articular cartilage by RT-PCR. Loss of proteoglycan was

observed in transgenic mice by Safranin O staining at 8 weeks. Faxitron and micro CT scan revealed the joint space narrowing and bone density loss in subchondral bone at 14 weeks. We will also investigate the value of serum immunoassay for collagenase – generated cleavage fragments of type II collagen which may prove a useful marker for the joint disease. The mice will also be treated with MMP-13 inhibitors to investigate their ability to control degradation.
Relevance: This study will help characterize the causative role of MMP-13 in the cartilage degradation and demonstrate the use of serum biomarker assays to detect joint articular cartilage matrix damage. Effective control of joint destruction by inhibitors would indicate the feasibility of such compounds for therapy in osteoarthritis.

P4

GAIT VELOCITY IN NON DISABLED ELDERLY: A SINGLE MEASURE THAT CAN PREDICT ADVERSE EVENTS

Montero-Odasso M; Schapira M; Varela M; Camera L and Kaplan R.
Divisions of Geriatric Medicine, Hospital Italiano de Buenos Aires, Argentina & McGill University.

Introduction: There is growing evidence that Gait Velocity (GV) could predict poor outcomes other than falls and fractures.
Aim: To asses whether a single measure as GV, in non disabled elderly, could be associated to further adverse events.
Methods: Since 2000 a cohort of 102 community subjects >75 years and older were assessed by a Geriatric Team and followed for adverse outcomes. Measurements included MMSE, Yesavage, ADLs, Timed up & Go, POMA, and GV. The time taken to walk the middle 8 meters of 10 meters was measured as GV. According to their GV, three different groups were distinguished: G1 > 0.9m/s, G2=0.9 to 0.7m/s and G3< 0.6m/s.
Results: At baseline (January to May 2000) the groups were comparable in number of subjects (G1:34, G2:42 and G3:25), age, gender, mental status, ADLs and co-morbidity. Mean age was 79.6±4. G3 had significantly more adverse events than G1 and G2 after 24 months of follow up. A higher number of adverse events was found between G1 and G3: hospitalization (HOSP) (OR11.19 CI2.7-46.37p<0.005); Need of caregiver (CARE) (OR15.87 CI1.79-140p<0.005) and new falls(FALL) (OR13 CI3.54-50.16p<0.0005). Previous falls was the only baseline variable associated to a poor outcome (CARE) (OR3.76 CI1.16-12.21p<0.04).
Conclusions: After two years of follow up slower GV is statistically associated to hospitalization, requirement of caregiver and falls. No significant association between GV and the others outcomes (nursing home placement, fracture and death) was found. GV assessment in ambulatory setting can detect elderly at risk for adverse events. This data support the idea that Gait Velocity could be tested as a new vital sign in elderly.

P5

PROCESSUS D'ADAPTATION À L'AMPUTATION D'UN MEMBRE INFÉRIEUR : MÉTHODOLOGIE

Mélanie Couture, M.A., Johanne Desrosiers, PhD., Chantal Caron, PhD.
Institut universitaire de gériatrie de Sherbrooke. Centre de recherche sur le vieillissement.

Problématique : Au Canada, l'amputation d'un membre inférieur est surtout associée aux problèmes vasculaires. L'amputation affecte toutes les sphères de la vie et non seulement la mobilité des personnes. L'ajustement à l'amputation résulte de plusieurs processus d'adaptation à travers le temps pour faire face aux différentes situations stressantes secondaires à l'amputation. Certaines personnes ne peuvent gérer adéquatement les situations stressantes engendrées par l'amputation et développent des problèmes d'ajustement psychosocial et fonctionnel.
Objectif : Cette étude vise à explorer le processus d'adaptation à l'amputation d'un membre inférieur et l'ajustement à l'amputation.
Méthodologie : Trente-sept participants provenant du Centre Hospitalier Universitaire de Sherbrooke (CHUS) seront évalués à trois occasions : au cours de la période d'hospitalisation (T1), au congé de la réadaptation fonctionnelle intensive (T2) et lors du retour dans le milieu de vie (T3). Le processus d'adaptation ainsi que l'ajustement à l'amputation en termes d'affect (dépression), d'image corporelle, de soutien social, de loisirs, d'indépendance fonctionnelle et d'utilisation de la prothèse seront évaluées par des questionnaires administrés sous forme assistée. Des entrevues semi-dirigées auprès d'un sous-échantillon (n=10) permettront de recueillir des informations complémentaires concernant le processus d'adaptation. L'utilisation simultanée d'un devis quantitatif et qualitatif permettra une compréhension plus en profondeur du processus d'adaptation à l'amputation d'un membre inférieur.
Retombées anticipées : Cette étude vise une meilleure compréhension du processus d'adaptation à l'amputation d'un membre inférieur pour permettre, à long terme, le développement d'interventions favorisant un meilleur ajustement.

Étudiante boursière du Réseau provincial de recherche en adaptation-réadaptation (REPAR) du Fonds de la recherche en santé du Québec (FRSQ)

P6

ADAPTATION TO HUMANS OF A MOUSE MODEL OF AGE-RELATED SPATIAL MEMORY DECLINE.

Nicole Etchamendy, Veronique Bohbot
Douglas Hospital Research Center, McGill University, Verdun, Quebec, H4H1R3.

The principal aim of our project is to adapt to humans a behavioural task showing, in aged mice, a selective deficit in spatial learning which can be alleviated by administration of retinoic acid (derivatives of vitamin A). More precisely, using a two-stage paradigm in a radial maze, we showed that aged mice normally acquired discriminations among three rewarded and three non rewarded arms when they were presented one at a time. Conversely, they failed in test phase when they were asked to choose between two familiar adjacent arms. In these probe trials, mice have to mobilize a precise spatial representation of the maze in order to extract the relevant uncommon cues despite the high degree of spatial overlap (common elements) between the two adjacent arms. This spatial learning deficit observed in our aged mice might result from an alteration in the organisational function of the hippocampus. This was further supported by another experiment showing a similar selective memory deficit in hippocampal-lesionned mice. Using this behavioural paradigm, we investigated the hypothesis that a retinoid hyposignalling play a role in cognitive aging. The retinoids regulate gene expression via their nuclear receptors. They have been implicated in hippocampal synaptic plasticity and might play a role in associated cognitive function. Our data showed that not only administration of retinoic acid to aged mice normalise their brain level of retinoid signalling but also alleviate their memory deficit displayed in the radial maze paradigm. These beneficial effects can be abolished by the coadministration of retinoic acid receptors antagonist. Our objectives consist now to validate in humans this mouse model of age-relative cognitive decline. This will be carried out using recently developed and validated computer software enabling virtual navigation in a radial maze similar to that used with rodents. A neuroimaging study have yet shown differential cerebral activation depending on the strategy (spatial vs non spatial) the subject used to resolve a task in this virtual radial maze. This virtual maze would allow us to dissociate in aged human subjects (as previously shown in aged mice) different forms of memory expression, only by changing the arms presentation (one by one, by pair).

P7

ENTRE L'ANALYSE QUALITATIVE DE DONNÉES NON-VERBALES ET LA RELATION PERSONNE-ENVIRONNEMENT: UN DÉFI À RELEVER

Marianne Lorrain, Jacqueline Rousseau, Bernadette Ska, Nathalie Farley, Alain St-Arnaud.
Université de Montréal, École de réadaptation.

Introduction : La problématique présentée est issue d'une étude visant l'exploration du fonctionnement d'une personne âgée présentant des incapacités cognitives. Il s'agit précisément d'analyser son interaction avec l'environnement non-humain, dans le contexte domiciliaire. La source principale de données est constituée de comportements observables, soit une personne exécutant une activité. Cependant, la littérature est très pauvre concernant l'analyse qualitative de ce type de données visuelles. Le but de cette présentation est d'exposer une nouvelle méthode d'analyse élaborée afin d'isoler et d'organiser des données visuelles.
Méthodes : Il s'agit d'une étude de cas, impliquant une personne présentant des incapacités cognitives. L'observation filmée de l'activité «prendre un repas» a été réalisée à domicile afin d'observer son interaction avec son environnement non-humain, selon le Modèle de compétence. L'analyse des données, à partir de la bande vidéo, implique trois observateurs, soit un neuropsychologue et deux ergothérapeutes. Les données codées ont été traitées avec le logiciel Q.R.S. NUD.IST.
Résultats et discussion : La méthode élaborée implique un outil de transcription (schéma 3D) et une démarche de codage y est associée. L'utilisation du schéma 3D ajoute de la rigueur à la transcription de ces données observables tout en représentant visuellement les caractéristiques importantes de l'activité (séquence temporelle, des actions simultanées et des changements de tâches). Le codage des données transcrites dans le schéma 3D implique deux unités de sens : les opérations et les séquences. Le résultat de cette démarche mène à un ensemble organisé de données transcrites, correspondant à la description des comportements non-verbaux du participant.
Conclusion : Cette méthode permet de répondre aux objectifs de l'étude en décrivant les éléments impliqués dans la relation personne-environnement et en approfondissant la compréhension du phénomène. De plus, elle constitue une option novatrice pour l'analyse qualitative des données non-verbales tout en étant applicable à d'autres contextes de recherche.

P8

EVALUATION OF DIURNAL CORTISOL SUBGROUPS IN A GROUP OF ELDERLY INDIVIDUALS WITH DEPRESSIVE AND/OR MEMORY COMPLAINTS.

Fiocco, A.J., Wan, N., Weekes, N., Pim, Heather, Lupien, S.
McGill University, Graduate Studies in Neuroscience.

The diurnal cycle of cortisol secretion has been found to vary between individuals, with some exhibiting a normal decline throughout the day and others displaying a flat cycle. Recent studies have shown that while interindividual differences exist, intraindividual stability may be used to group individuals into three classes of diurnal patterns: inconsistent cycle, typical cycle, and flat cycle. Previous studies in both young and elderly groups have found that a majority of the human population fall within the typical cycle subgroup, followed by the inconsistent and then the flat cycle subgroup. Further, it has been suggested that such cyclic groupings may be used to interpret health status. The goal of the present investigation was to evaluate the reliability of the reported diurnal patterns in a group of healthy elderly individuals with depressive and/or memory complaints. Diurnal cycle subgroups were identified over a three day period in a sample of elderly individuals using methods previously reported. Although the three diurnal subgroups were identified, group representation differed from that previously reported. Given that depression and complaints of memory decline are integral characteristics of pathological cognitive aging, the present findings may have clinical implications for the elderly population.

P9

THE ASSOCIATION BETWEEN PHYSICIAN SPECIALTY AND THE PRESCRIBING OF CHOLINESTERASE INHIBITORS FOR ALZHEIMER'S DISEASE

Mark Oremus, Christina Wolfson, Howard Bergman, Alain C. Vandal.
McGill University, Epidemiology and Biostatistics.

Background: To examine whether physician specialty is associated with the prescribing of cholinesterase inhibitors for Alzheimer's disease.
Methods: A self-administered postal questionnaire was mailed to 803 Quebec physicians, including all of the province's geriatricians (n=49), neurologists (n=215), and psychogeriatricians (n=53). The questionnaire was also mailed to 191 general practitioners who took courses on caring for older persons, as well as to a randomly selected sample of 295 general practitioners who did not take such courses. A regression model, formed using a binomial distribution and a Bernoulli variance function, was employed to examine the relation between physician specialty and the proportion of Alzheimer's disease patients who were prescribed cholinesterase inhibitors in physicians' practices. The impact of potential effect modifiers and confounders was assessed using bivariate analyses and stepwise regression.
Results: Compared to general practitioners, other specialist physicians were more likely to prescribe cholinesterase inhibitors to Alzheimer's disease patients. Adjusted odds ratios were 1.90 (95% confidence interval: 1.06, 3.41) for psychogeriatricians, 2.24 (1.12, 4.49) for geriatricians, and 2.31 (1.41, 3.81) for neurologists. Odds ratios were adjusted for the percentage of patients in physicians' practices who had mild Alzheimer's disease or adverse effects from the cholinesterase inhibitor rivastigmine. Other variables, including the total number of Alzheimer's disease patients in physicians' practices and the level of physicians' knowledge regarding cholinesterase inhibitors, did not modify the relation between specialty and prescribing.
Conclusions: Physician specialty was positively associated with the prescribing of cholinesterase inhibitors for Alzheimer's disease. The association was maintained after adjusting for several covariates.

P10

TRANSPORTATION AND MOBILITY CHARACTERISTICS OF A COMMUNITY-DWELLING COHORT OF SENIORS 75 YEARS AND OVER: A CROSS-SECTIONAL ANALYSIS

Josette Dupuis, Deborah Weiss, Christina Wolfson
Centre for Clinical Epidemiology and Community Studies, Jewish General Hospital, Department of Epidemiology and Biostatistics, McGill University

Background: The ability to participate fully in everyday life, to leave one's home, and to maintain access to family, friends, health services, and social activities are considered vital components in maintaining the well-being and quality of life of seniors. As such, seniors who are able to maintain their mobility are also able to maintain greater independence and control over their lives.
Purpose: This study investigates the issue of transportation dependence in seniors, which was defined as follows; those receiving help with transportation for reasons related to their health, as well as those traveling alone, but for whom this task presents some difficulty were defined as "dependent". Those traveling alone and without difficulty, and those receiving help, but for reasons unrelated to their health status, were classified as "independent". Methods: This study was conducted using data collected as part of a study investigating the prevalence and consequences of self-reported unmet needs for community-based services in seniors aged 75 years and older. Analyses were carried out in order to determine the prevalence and correlates of transportation dependence, and to investigate the distribution amongst various modes of transport employed by the study

participants.
Results: The prevalence of transportation dependence was found to be 22.8% (95% CI: 20.0, 25.6) with 33.2% (29.4, 37.0) of females and 9.9% (6.3, 13.5) of males being categorized as dependent for transport. Of those subjects categorised as dependent, 88% were women. Factors found to be associated with dependence include poor self-rated health, limited mobility and a decreased sense of control over one's life, in both men and women. Older age, lower income and poor vision were found to be associated in women only.
Conclusion: These results indicate that transportation dependence is an important issue facing seniors, women in particular. In order to maintain the autonomy of community-dwelling seniors, accessible, affordable transportation must be assured.

P11
METHODOLOGY FOR A SYSTEMATIC REVIEW ON FRAILTY IN ELDERLY PEOPLE
Sathya Karunananthan, Christina Wolfson, Howard Bergman, François Béland, David Hogan.

Frailty is an emerging, controversial and enigmatic concept. Researchers, policy makers and health care providers have recognised the impact that frailty has on the affected individuals, their families, particularly those involved in caregiving, and society.
In the past two decades, there has been a substantial growth in the body of literature on frailty. However, there is still no consensus on the definition and criteria used to describe frailty, and little knowledge on the quality of evidence related to the concept. The objective of the Canadian Initiative on Frailty and Aging is to carry out a systematic review of the recent literature on frailty. The review will examine the quality of evidence on the following key questions related to frailty: Models, definitions and criteria; biological basis; social basis; prevalence; natural history and risk factors; impact; identification; prevention and management; environment and technology; health services; health and social policies.
This presentation will describe the methodology that was developed for the systematic review of frailty in relation to each of the 11 questions identified. The issues discussed will include the search strategies, article selection process, quality assessment, and synthesis of the findings. Preliminary results of the process will also be presented.

P12
SEASONAL CHANGES IN 25 HYDROXYVITAMIN D AND PARATHYROID HORMONE IN AN ELDERLY POPULATION FROM QUEBEC.
Vecino C , Gratton M, Kremer R, Duque G.
Calcium Research Laboratory, Royal Victoria Hospital, and Divisions of Geriatric Medicine, McGill University, Montreal and Hospital of Getafe, Madrid, Spain.

Objectives: To study seasonal changes in 25 hydroxyvitamin D (25(OH)D3) and its correlation with parathyroid hormone (PTH) levels.

Design: Cross-sectional study in an ambulatory elderly population in the province of Quebec.
Setting: Metabolic and Calcium research centre, Royal Victoria Hospital, Montreal, Quebec.
Participants: Two hundred and fifty-six healthy community men and women aged 65 to 94 (mean age±standard deviation=72.8±5.6).
Measurements: Serum levels of 25 hydroxyvitamin D and PTH obtained between 1994 and 1999 from two hundred and fifty-six elderly patients using commercial radioimmunoassay kits to measure calciotrophic hormones. We examined data in different seasons of the year and observed the behavior of these data through time. A cut-off level of 25 nmol/l for 25(OH)D3 was established to define vitamin D deficit. A curve of vitamin D levels vs. PTH levels was also obtained.
Results: There is a predominance of females comprising 75% of the population. Among them, 57% showed levels of vitamin D lower than 25 nmol/lt as compared to 66% of the male population ($p<0.20$). A seasonal variance in the levels of vitamin D was observed with the lower levels happening in early spring with a recovery at the end of the summer. These low levels of vitamin D corresponded with an inverse pattern in the levels of PTH.
Conclusion: This study confirms previous reports on vitamin D deficiency and seasonal variability in elderly population in the Northern hemisphere. In addition, a compensatory change in PTH levels was found.

Oral Presentation AM Session / Session de présentations orales AM 10:30 – 12:30

O1

COMPARISON OF THREE MEASURES OF RELATIONAL CONTINUITY OF CARE BETWEEN SENIORS AND THEIR PRIMARY CARE PROVIDERS: BASED ON ADMINISTRATIVE DATA.

Raluca Ionescu-Ittu, Jane McCusker, Nandini Dendukuri
McGill University, Department of Biostatistics and Epidemiology

For a long time continuity of care has been accepted a priori as a core value of primary care. As changes in the health systems of developed countries may increase discontinuity of care, e.g. development of group practices, we need to find evidence that continuity in primary care is indeed beneficial. This is not an easy task, as there is a lot of confusion about continuity of care definition and measurement[1]. The results that will be presented are part of a larger research (in progress) that aims to describe the impact of relational continuity (an ongoing patient-provider relationship) with a primary physician during the year before an index visit to the emergency department (ED) on return visits to ED. The research is based on a retrospective cohort assembled from Quebec administrative databases for years 2000-2001 (RAMQ for MD claims and prescriptions, and Med-Écho for hospital discharge data). Our study population is seniors 65+ years old, a population that requires many financial, material and human resources. Relational continuity will be measured by several continuity indexes from the scientific literature: Usual provider continuity2 (UPC), Modified Modified Continuity Index3 (MMCI) and Sequencing of care4 (SECON). Descriptive data will be presented on continuity of care measures and frequency of ED return visits. Benefits and disadvantages in the use of the three continuity of care measures with administrative data will be presented as well.

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O2

PHYSICIANS UTILIZATION OF THE INTEGRATED DRUG PROFILER FOR THE ELDERLY OF LOWER SOCIOECONOMIC STATUS WITH POOR CONTINUITY OF CARE

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Even though Canada has a publicly funded health care system, there is greater morbidity among elderly patients of lower socioeconomic status (SES). One of the crucial factors contributing to the excess morbidity in this group is a poorer continuity of care (COC). In this group, primary care physicians face a key challenge in accessing information for effective patient management. Computerized solutions in health care may address this matter to improve the quality of health care in elderly. The integrated electronic drug profiler was developed to provide a graphic representation of the list of current and past dispensed prescriptions (color-coded by prescribing physician), dates of ER visits and hospitalizations by retrieving information from community pharmacies and the medical and drug services claims databases. We tested the hypothesis that 30 primary care physicians would be more likely to use the drug profiler for elderly patients (65 years of age or older) (n=3,013) of lower SES with poorer COC in comparison to those with higher SES. From March to November 2003, system usage rate was calculated per 100 medical visits, using the system log-file and the medical services claims database. Patients' SES was measured using area-based average household income. COC was defined as the mean proportion of visits that were made to, or referred by, the study physician by all the consenting patients in 2002. The total number of times that the drug profiler was accessed for elderly patients was 1,554 with a total of 9,914 eligible medical visits (15.7/100 visits). The usage rate was higher for lower SES patients than for those of higher SES (19.1 vs. 13.1). Furthermore, a greater degree of system usage was associated with a poorer COC, and this pattern was modified by patients' SES. The usage rate for lower SES patients with poorer COC was 32.2; whereas it was 16.9 for patients of higher SES with poorer COC. For the future, the impact of the drug profiler on the morbidity in elderly patients of different SES relating to COC will be evaluated.

O3

EVALUATION OF MEDICAL STUDENTS' INTEGRATION OF SCIENTIFIC KNOWLEDGE AND CLINICAL SKILLS IN GERIATRIC MEDICINE

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BACKGROUND: A rising number of mandatory clerkships in Geriatric Medicine are being implemented in medical schools throughout North America. The most common design of these clerkships includes clinical experience with out- and in-patients in order for the students to develop the knowledge, skills and attitudes required to treat elderly patients in their future practices. The application of the scientific knowledge and clinical skills learned during a given rotation to future patients encountered during other clerkship rotations has not been assessed.
AIM: To assess the medical students' ability to integrate the clinical skills and scientific knowledge learned during the Geriatric Medicine rotation into their patient encounters in other clerkship rotations.
METHODOLOGY: A survey was sent to McGill University medical students at the end of their third year. All the surveyed students had already completed their clerkship in Geriatric Medicine as well as the entire series of mandatory clerkships at the time of the survey. The survey polled the frequency with which they applied the clinical skills and knowledge learned during their rotation in Geriatric Medicine.
RESULTS: We received 55 responses out of 122 students (43%). The three most frequently used skills (rated always or often) included the Care Plan Design with an Interdisciplinary Team (69% ± 16), Medication Review with Recommendations (63 % ± 17) and both the Mini-Mental Status Exam (43% ± 15) and Nutritional Status Assessment (43% ± 14). In contrast, skills such as Timed Up and Go (6 % ± 22) and the Geriatric Depression Scale (6% ±17) were rated as performed "always or often" with much lower frequency. The Alternative Housing Decision and the Pressure Ulcer Risk Assessment scored highly in the "Sometimes" category with 50% (± 17) and 50% (± 18) respectively.
SUMMARY: Students regularly integrate most of the clinical skills and knowledge learned in the Geriatric Medicine clerkship into their practice in other clerkships; however, skills requiring a slightly higher level of complexity in their performance (Timed Up and Go or Pressure Ulcer Risk Assessment) are mostly abandoned by the students in their daily practice. Although more accurate methods should be used when assessing students' integration, this study provides the basis for the consideration of the content and skills that should be taught to our medical students in Geriatric Medicine.

O4

THE PRION PROTEIN SUPPRESSES BAX ACTIVATION IN HUMAN PRIMARY NEURONS

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While the infectious nature of the prion protein (PrP) has been intensively investigated, its function has yet to be entirely resolved. However, because PrP is highly expressed in the brain and its expression increase during aging, it is likely to have a beneficial cellular function under normal conditions. We have shown that PrP is neuroprotective since it prevents Bax-mediated cell death in human neurons in primary cultures (Bounhar et al., 2001 J Biol Chem. 276:39145-9; Roucou et al., 2003 J Biol Chem. 278:40877-81). Bax is a major pro-apoptotic protein that is expressed as an inactive cytosolic protein in normal conditions. In order to kill cells, Bax must be activated by a conformational change. It then triggers the release of mitochondrial apoptogenic factors, leading to cell death. The goal of the present study was to determine if PrP inhibits Bax-mediated cell death upstream or downstream of Bax activation. By using immunofluorescence microscopy on human primary neurons, we show that PrP inhibits the conformational change of Bax and prevent the release of mitochondrial apoptogenic factors. In these experiments, the anti-apoptotic activity of PrP is similar to that of the major anti-apoptotic protein Bcl-2. Our results show that PrP is a potent inhibitor of Bax-mediated apoptosis in human neurons. As Bcl-2 expression declines during aging, PrP expression increases and is likely to protect neurons against Bax-mediated insults. Also, it has been proposed that targeting PrP expression might stop the progression of prion diseases because depletion of PrP in mice prevents scrapie infection disease (Mallucci et al., 2003 Science 302:871-4). Our results suggest that such a therapeutic approach may not be ideal in humans, since the absence of PrP may sensitize neurons to Bax-mediated cell death.

O5

TELOMERASE AND CHEMOTHERAPEUTIC RESISTANCE

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Cancer is predominantly a disease of the elderly, the majority of all cases occurring in patients older than 60 years of age. In many cases, especially during repeated rounds of chemotherapy, the development of drug resistance and systemic toxicity are major obstacles in the effective treatment of many cancers. Therefore, anti-cancer therapies that reverse drug resistance and increase therapeutic tolerability may greatly improve treatment. Telomerase is the reverse-transcriptase enzyme involved in maintaining telomeres. Most normal cells do not maintain their telomeres while a high percentage of all cancer cells tested (80% to 90%) exhibit telomerase activity making telomerase an attractive target for anti-cancer therapeutics. Recent observations support the hypothesis that telomerase protects against anti-cancer treatments. Therefore, we are studying the role of telomerase in chemotherapeutic resistance; hypothesizing that telomerase inhibition will re-sensitize cells to drug treatment. We are characterizing basal telomere length, telomerase activity, and telomerase response to drug treatment in drug-sensitive and drug-resistant human leukemia, breast and lung cancer cell lines. We are treating both sensitive and resistant cells with the pharmacological telomerase inhibitor BIBR1532 (Boehringer Ingelheim, Germany) to determine if telomerase inhibition can re-sensitize drug resistant cells to treatment. Results from these experiments may support the clinical use of telomerase inhibitors for the treatment of drug-sensitive and drug-resistant malignancies.

O6

UP-REGULATION OF ERYTHROPOIETIN RECEPTOR EXPRESSION IN AD AND MCI ASTROGLIA

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Background: Alzheimer Disease is a common progressive neurodegenerative disorder that results in impairment of memory, thinking and behavior (dementia). There exists ample evidence implicating oxidative stress and mitochondrial insufficiency in this condition. Erythropoietin (EPO) is a glycoprotein secreted by the kidney in response to hypoxia that stimulates erythrocyte production through interaction with EPO-receptors (EPO-R). Both EPO and EPO-R have been localized to brain capillaries, neurons and astroglia. EPO has been shown to confer important cytoprotective effects in various models of brain injury and disease.

Objective: To delineate the patterns and extent of EPO-R expression in the brains of patients with sporadic AD, Mild Cognitive Impairment (MCI) and normal elderly controls (NEC).

Methods: Post-mortem tissues containing hippocampus and temporal cortex were procured from the NIH-funded Religious Orders Study. GFAP-positive astrocytes coexpressing EPO-R were characterized by immunofluorescence confocal microscopy and quantified using dual label immunohistochemistry.

Results: Temporal cortex: Percentages of GFAP-positive astrocytes coexpressing EPO-R were significantly increased in AD and MCI vs. NEC ($p<0.05$) in layers II and III, increased in MCI, but not in AD, vs. NEC in layers IV, V and VI, and unrelated to diagnosis ($p>0.05$) in layer I and the subcortical white matter. Hippocampus: Percentages of GFAP-positive astrocytes coexpressing EPO-R were significantly increased in AD and MCI vs. NEC ($p<0.05$) in the stratum oriens and pyramidal layer, increased in MCI, but not in AD, vs. NEC in the granular layer and dentate gyrus, and unrelated to diagnosis ($p>0.05$) in both the stratum radiatum and molecular layer.

Conclusions: 1. Up-regulation of astrocyte EPO-R in certain cortical and hippocampal regions is an early event in the pathogenesis of sporadic AD. 2. Based on in vitro and whole animal studies, glial EPO-R induction may confer protection against oxidative stress in the brains of patients with MCI and AD. 3. Clinical neuroprotection trials using EPO or its derivatives in MCI/AD may be warranted.

O7

PROVING THE CLASSIFICATION OF FALLS: AN OPERATIVE APPROACH TO THE UNEXPLAINED FALLS

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BACKGROUND The overlap between the multiplicity of associated symptoms and the environmental factors not only challenges the current classification of falls, which is based on either intrinsic or extrinsic factors, but also lead the general practitioner(GP)to classify many of the episodes as unexplained falls(UF). AIMS To identify the relationship between gait disorders(GD)and the presence or absence of cardiovascular causes(CV) of falls. To recognize the role of GD assessment in the

diagnostic classification of falls. We hypothesized that GD would be mostly associated to a non-CV cause in UF.
METHODS Patients with UF were referred to our Falls Clinic by their GP. Health and cognitive status, medications and ADLs were recorded. Cardiovascular diseases, hypotensive syndromes, neurological, gait and balance problems were screened. GD was defined as a gait velocity ≤ 0.8m/s and/or Tinetti Gait Score>9. When necessary, ECG Holter, tilt test and Head CT scan were performed. Finally, an ethiological diagnosis of the fall was assigned.
RESULTS 41 patients, mean age 79±4(range 70-95), were referred between 2000 and 2002 with the diagnosis of UF. 85% of them were normal in their ADL. None was demented. A CV disorder(orthostatic or postprandial hypotension, vasovagal and carotid sinus hypersensitivity)was identified in 14% of patients(6/41)as the main cause of their UF. 34/35 patients with GD had a non CV cause of UF(sensitivity 97.1%CI 95%85-99; specificity 83% CI95%36-99); whereas in 5/6 patients without GD, CV was diagnosed as fall cause. On other hand, sensibility and specificity of intrinsic/extrinsic classification for predicting a non CV origin was 71%(CI95%54-85)and 16.7%(CI95%0.4-64) respectively.
DISCUSSION In patients diagnosed with UF, the presence of GD seems to be a good indicator of non-CV cause of falls. Since GD are the consequence of intrinsic and extrinsic factors, this approach could be more useful when assessing fallers patients than the traditional classification of intrinsic versus extrinsic factors.

O8
DÉVELOPPEMENT DE MESURES D'ÉVALUATION DES DÉFICIENCES DU CONTRÔLE POSTURAL ET DE L'ÉQUILIBRE CHEZ LES AÎNÉS
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La présence de déficiences du contrôle postural et de l'équilibre est un des facteurs de risques de chutes chez les aînés. L'objectif de cette étude est de contribuer au développement et à la validation d'une nouvelle approche d'évaluation des déficiences posturographiques. Cette approche est basée sur l'analyse de la trajectoire du centre de pression sur une plate-forme de force lors de différentes tâches de mise en charge de la masse corporelle aux limites de stabilité. Après avoir préalablement établi les limites de stabilité posturale antéro-postérieures et médio-latérales du sujet, des cibles correspondant à ces limites sont affichées sur un écran de visualisation. Les tâches expérimentales consistent à contrôler, avec l'assistance de rétroactions visuelles, le déplacement du centre de pression vers ces cibles et de le maintenir dans ces dernières. Des paramètres posturographiques (PPo) et des paramètres de performance (PPe) sont extraits de chacun des essais. Les résultats portent sur la stabilité intrasession de cette approche de mesure. 24 sujets âgés, avec et sans troubles de l'équilibre ont effectué 4 tâches expérimentales composées chacune de 8 essais. L'analyse de la stabilité des PPo et PPe suggèrent la présence d'une phase d'apprentissage des tâches lors des 3 premiers essais. Les coefficients de corrélation intraclasses calculés sur les 5 derniers essais pour l'ensemble des paramètres extraits varient entre 0,65 et 0,94. Les analyses se poursuivent.

Oral Presentation PM Session / Session de présentations orales PM
13:30 – 15:30

O9
DÉFINITION ET FACTEURS INFLUENÇANT L'IMPLANTATION DES PLANS DE SERVICES INDIVIDUALISÉS
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Objectifs : 1) déterminer ce que doit contenir le plan de services individualisé (PSI), 2) mesurer l'écart entre ce contenu théorique et le contenu des PSI existant, 3)identifier les facteurs expliquant de cet écart.
Méthodes : Une proposition de contenu du PSI a été établi par suite d'une recension des écrits et de consultations d'experts. Ce contenu a été soumis au jugement de gestionnaires de cas par un processus Delphi, avec résolution des situations non consensuelles après deux tour par réunion d'experts. De cette démarche sont issus des critères objectifs pour l'analyse du contenu des PSI. Par la suite, les gestionnaires de cas doivent être interrogés pour identifier les facteurs influençant le contenu actuel du PSI.
Résultats : 31 énoncés ont été soumis au jugement de 14 gestionnaires de cas : 7 énoncés ont fait l'objet d'un consensus dès le premier tour, 7 autres ont fait l'objet d'un consensus après le deuxième tour. Les 17 autres énoncés ont fait l'objet d'un examen en réunion d'experts. Les éléments qui suivent sont issus de cette démarche : Le PSI doit faire référence à une évaluation standardisée. Tous les problèmes, situations de handicap ou instabilité de ressources identifiés lors de cette évaluation doivent être retrouvés dans le PSI. Le médecin de famille doit toujours y être mentionné. La fréquence de délivrance doit y être notée. On doit prévoir la date de réévaluation du PSI. Des objectifs rédigés de façon précise sont nécessaires pour effectuer le monitorage du PSI. Les destinataires du PSI sont le client ou son représentant, le médecin de famille et toute autre personne concernée par le PSI après accord explicite du

client.
Conclusion : Ces critère objectifs serviront à décrire le contenu actuel du PSI. Les gestionnaires de cas seront également rencontré en entretien individuel. A l'issu de notre travail nous serons à même de produire des recommandations sur le contenu attendu des PSI et surtout sur les facteurs sur lesquels cibler une action pour favoriser l'implantation des PSI.

Ce travail a pu être réalisé grâce au soutien financier du groupe PRISMA, de la FCRSS, du Ministère des Affaires Étrangères français (Bourse Lavoisier) et de l'Assistance-Publique Hôpitaux de Paris.

O10
PROBLÈMES RELIÉS À LA PHARMACOTHÉRAPIE COMME CAUSE D'HOSPITALISATION CHEZ LA PERSONNE ÂGÉE FRAGILE.
Isabelle Payot, MD, Johanne Monette, MD, MSc, François Béland, PhD, Howard Bergman, MD, Claudine Laurier Pharm, PhD, Louise Mallet, PharmD, Jean-Pierre Le Cruguel, BSc.
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Introduction: De nombreuses études portant sur l'impact des problèmes reliés à la pharmacothérapie (PRP) ont démontré l'ampleur du phénomène avec ses conséquences sur la santé et les coûts engendrés. Les effets secondaires médicamenteux se situent entre les 4e et 6e causes les plus fréquentes de décès aux Etats-Unis (1). Peu d'études ont évalué le lien de causalité entre la présence de PRP et les hospitalisations chez une population de personnes âgées fragiles.
Objectifs: 1) Déterminer la prévalence des hospitalisations reliées à des PRP dans une population gériatrique fragile. 2) Identifier l'imputabilité de certains médicaments impliqués dans les PRP. 3) Déterminer si les PRP étaient évitables. 4) Identifier les facteurs prédisant la présence d'une d'hospitalisation reliée à un PRP.
Méthode: Dans le cadre du projet SIPA, les dossiers médicaux des sujets hospitalisés entre 1er décembre 1999 et le 31 mai 2000 ont été révisés par des experts en pharmacothérapie gériatrique. Certaines données recueillies des questionnaires complétés dans le cadre du projet SIPA ont été retenues incluant : les variables démographiques et socio-économiques, les maladies chroniques, les AVQ, les AVD, la présence d'une atteinte cognitive, de troubles dépressifs ou d'une atteinte sensorielle, la présence d'une d'aide à la prise de médicaments et la présence d'un médecin de famille ou d'un spécialiste. Les données sur les services pharmaceutiques et médicaux proviennent de la RAMQ et des questionnaires SIPA.
Résultats: Parmi les 158 hospitalisations évaluées, 63 (39.9%) sont reliées un PRP. De ces 63 hospitalisations, 49,3% des PRP ont été jugés comme évitables. Les médicaments cardiovasculaires, les antiagrégants/anticoagulants, les antidépresseurs, les diurétiques et les benzodiazépines sont le plus fréquemment impliqués. Dans un modèle de régression logistique multivarié, la présence d'un cancer (p=0.01) et le nombre de médicaments (p=0.02) sont les seules variables associées au risque d'avoir une hospitalisation reliée à un PRP.
Conclusion: Le taux d'hospitalisation en relation avec PRP identifié dans cette étude est particulièrement élevé chez cette population fragile. Il est urgent d'établir des stratégies de prévention puisque la moitié de ces hospitalisations apparaît évitable.

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O11
STUDY OF NEUTOPHILS FUNCTIONS IN HEALTHY ELDERLY SUBJECTS
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Introduction: Polymorphonuclear neutrophils (PMN) are short lived cells (18h) that can extent their life when GM-CSF is provided in the medium. The GM-CSFR signalling involved the MAPK, PI3K as well as the JAK/STAT pathway. PMN are the first cells attracted to the site of aggression. Upon arrival, PMN quickly initiate microbial functions including production of antimicrobial products and proinflammatory cytokines, thereafter the acquired immune system is activated. Human aging has been associated with a decline in the acquired immune system functions especially T lymphocytes, however there is little data concerning the functions of cells involved in innate immunity. In this way, we were interested in neutrophils ability to respond efficiently to stimulations (LPS) as well as their survival capacities (GM-CSF).
Methods and Results: We separated PMN from healthy young and elderly donors. First, we analyzed by flow cytometry surface markers expression and found that Fas and Fas-L were overexpressed in PMN from elderly donors. This was associated with a higher susceptibility to apoptosis for PMN from elderly donors as shown by Annexin-V labelling. Moreover, GM-CSF which is known to delay apoptosis is shown here to downregulate the expression of Fas after 18h of stimulation (from 93 % to 41%). However, we found that GM-CSF has no effects on Fas downregulation on PMN from elderly donors. These results are in accordance with apoptosis studies. We next analyzed whether defects in intracellular signalling could explain the defects in response to GM-CSF. We found that ERK1/2 were

phosphorylated to a lower extend whereas p38 activation was delayed in time. Concerning the JAK/STAT pathway, we found here that JAK2 phosphorylation is affected in PMN from elderly donors explaining in parts the alterations in PMN response to GM-CSF.
Conclusion: We show in this study defects in intracellular signalling, in survival and changes in surface marker expression all leading to a decline in PMN functions with aging. These changes in PMN functions may have critical consequences in their antimicrobial activity as well as in the local inflammatory state where immune cells of the acquired system will take over.

O12

ADIPOCYTES VS. OSTEOBLASTS, THE BONE AS A WAR ZONE: THE ELUCIDATION OF A NEW PATHOPHYSIOLOGY FOR SENILE OSTEOPOROSIS.

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BACKGROUND: The increasing bone marrow adipogenesis in aging bone is a consequence of the dysdifferentiation of mesenchymal adipocyte-like default cells which release large amounts of fatty acids that could affect osteoblast proliferation, action and survival. Although previous studies using mature adipocytes in co-cultures with osteoblasts have shown that secreted fatty acids affect osteoblast proliferation without affecting survival, no studies have looked at pre-differentiated adipocytes which are the predominant cells in the aging bone marrow.
AIM: To determine the influence of differentiating adipocytes on the proliferation and activity of human osteoblasts in vitro.
METHODOLOGY: Human primary osteoblasts (Cambrex, Pittsburgh, PA) were co-cultured with adipogenic differentiating mesenchymal stem cells (MSC) for three weeks being separated by a porous membrane (0.4 μm). Osteoblasts were seeded either in the upper or the lower side of the membrane. Osteoblasts cultured under same conditions but without the presence of MSC were used as control. After three time intervals (first, second and third week) cell proliferation and viability were assessed using MTS-Formazan and trypan blue staining respectively. In addition, alkaline phosphatase and mineralization staining were used as markers of osteoblastic activity.
RESULTS: Although at all time intervals, all parameters were significantly lower, a more significant effect was found on proliferation (-32±4%, $p<0.005$) and viability (-70%± 4%,$p<0.01$) of human osteoblasts at one week as compared with control. In addition, the proportion of alkaline phosphatase and mineralization expressing cells was significantly lower in co-cultured osteoblasts than in control (42%±4 vs. 86%± 3,$p<0.01$).
CONCLUSION: We found that both pre- and adipocytes not only inhibited osteoblast proliferation but also affected their survival and activity. The regulation of the presence of pre-adipocytes in bone marrow might constitute a new approach for the treatment and prevention

O13

PARTICIPATION SIX MONTHS AFTER A "MILD" STROKE

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INTRODUCTION: Strokes affect mainly elderly individuals, often with devastating consequences. However, individuals who have had a "mild" stroke are often discharged home without any referrals to rehabilitation services. How do these individuals accomplish their daily activities and social roles (participation) compared to their pre-stroke level? Do these "mild" strokes really have no sequelae?
OBJECTIVE: To determine the recovery of participation in individuals who had a "mild" stroke.
METHODS: This study took a longitudinal multimethod approach, i.e. quantitative and qualitative (phenomenological orientation). Individuals admitted for a first stroke were recruited upon admission to an acute care hospital. Stroke severity was determined using the Canadian Neurological Scale (CNS) at admission. To be eligible, subjects had to have a score of 9 or more out of a maximum of 11.5 on the CNS. The LIFE-H 3.0 was used to measure participation. Data were collected in the acute phase (T1), three months (T2) and six months post-stroke (T3). Pre-stroke participation level was determined retrospectively at T1. Eleven in-depth interviews (n=5) were also qualitatively analyzed to explore how participation was perceived to be affected post-stroke.
RESULTS: Participants (n=21) were 50 to 86 years old (mean = 69.1). In the acute phase, a decrease in participation was observed in all but three (nutrition, responsibilities and interpersonal relationships) of the 11 categories of the LIFE-H compared to pre-stroke levels. Improvements were minimal. At T3, statistically and clinically significant differences remained for the following categories: fitness, housing, mobility and recreation as well as for the daily activity subscore, the social role subscore and the global score. Participants in the qualitative component also mentioned substantial differences in participation compared to their pre-stroke level, particularly in regard to social roles.
CONCLUSION: Even a mild stroke can have significant consequences on the accomplishment of daily activities and social roles. However, a question remains: Could rehabilitation services help those individuals get back to their pre-stroke level?

O14

PITFALLS IN THE USE OF MULTIPLE IMPUTATION TO HANDLE MISSING DATA IN GERIATRIC RESEARCH: THE CASE OF A PHYSICIAN QUESTIONNAIRE ON DRUG TREATMENTS FOR ALZHEIMER'S DISEASE

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Introduction: Multiple imputation is the gold standard for handling missing data. However, researchers should be aware of certain pitfalls. These pitfalls are discussed in the context of a questionnaire on drug treatments for Alzheimer's disease.
Methods: The questionnaire was mailed to 803 Quebec physicians. The purpose was to investigate the association between physicians' efficacy requirements for prescribing a hypothetical new Alzheimer's disease medication and the current prescribing of cholinesterase inhibitors. S-Plus software was used to conduct multiple imputation. SAS software was used to build two regression models. The first model included respondents for whom there were no missing data. The second model drew upon the imputed data and included all respondents.
Results: There were missing data for at least one respondent on 84% (46/55) of the questions. Crude and adjusted associations between efficacy requirements and current prescribing did not differ across the models. However, the models did differ in terms of the covariates that were independently associated with current prescribing.
Conclusions: Two pitfalls are evident in the use of multiple imputation. First, the imputation routines of SAS and S-plus are not flexible enough to adequately handle every missing data problem. Novice users should be careful when using commercial missing data software. Second, researchers must decide a priori whether to fit regression models to imputed data or to develop models first and impute later. The order is important because different strategies may lead to different results. These pitfalls are not readily apparent unless researchers have significant past experience conducting multiple imputation.

O15

HOW DO EMERGENCY DEPARTMENT VISITS FOR FRAIL ELDERLY AFFECT FAMILY MEMBERS' HEALTH STATUS?

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Background. Emergency department (ED) visits in the elderly are associated with subsequent functional decline in activities of daily living, but whether deterioration in patients' physical functioning affects family caregivers' health status is unknown.
Objective. To describe changes in caregivers' health status and identify predictors of deterioration in caregivers' health status following an ED visit.
Methods. A prospective cohort study was conducted on family caregivers of elderly patients treated and expected to be discharged from four hospital emergency departments. Patients' disability was assessed with the Older Americans Resources and Services (none, mild, moderate, severe). Caregivers' health status was assessed with the SF-36 mental and physical component summary scores. Analyses examined caregiver and patient characteristics that were associated with change in caregiver mental and physical health.
Results: A total of 115 caregivers (mean age=61.6 years (sd=15.0), 32 M and 83 F) were followed, including 51 (45.1%) spousal, 38 (33.6%) adult child, and 24 (20.9%) other caregivers. At follow-up, 32 (27.8%) patients declined in physical functioning, 52 (45.3%) stayed the same, and 31 (27.0%) improved. There was deterioration in caregivers' general health (p=0054), bodily pain (p=.03), and the physical component summary score (p=.01), and marginally significant worsening in caregivers' social functioning (p=.07). Multivariate linear regression identified adult child and spousal caregivers as independent predictors of poorer caregivers' physical component summary scores, after controlling for changes in patients' disability and depresssion; there were no predictors of caregivers' mental health component summary scores.
Conclusion: Deterioration in caregivers' physical functioning was associated with the relationship of the caregiver to the patient, but not with patients' functional decline.

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POTENTIAL THERAPEUTIC EFFECT OF REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION ON ANOMIA IN ALZHEIMER'S DISEASE: A PILOT STUDY.

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Background: Anomia is a common word-finding problem in Alzheimer's disease (AD) that results largely from progressive deterioration of semantic memory. Lesion and functional imaging studies suggest that a network comprising the left inferior-posterior temporal lobe region is crucially important to semantic processing, and that this region is often hypofunctional in AD. Repetitive Transcranial Magnetic Stimulation (rTMS) is a new technique that can directly stimulate neural tissue and that has already shown beneficial effects in depression.
Objective: This exploratory pilot study tested the

hypothesis that increasing the function of this hypoactive region in AD patients using rTMS could reduce their anomia as evidenced by an increase in the accuracy of picture naming.

Methods: Six subjects with mild to moderate dementia received rTMS (10Hz, 85% of motor thresholds) in trains of 200 and 400 ms. Stimulations were applied at three sites, left posterior temporal (LPT), and two regions not normally implicated in semantic processing, right posterior temporal (RPT) and left parietal (LPar), for a total of 6 conditions. rTMS and sham-rTMS (only the clicks were presented) were each delivered on half of the trials 500 ms prior to picture onset. Trials were randomized within each condition and the order of the conditions was counter-balanced across subjects. Accuracy of picture naming on rTMS and sham-rTMS trials was compared.

Results: Stimulations were well tolerated by all subjects. Four of the six subjects demonstrated moderate improvements of 10% with LPT stimulations. With RPT stimulations, 3 subjects improved by 20% while five subjects improved by 30% with Lpar stimulations. The 200 ms dose produced more improvement than the 400 ms dose except at the LPar site in which the opposite pattern was observed.

Conclusions: This pilot study is the first demonstration of a modest potential therapeutic benefit from rTMS in AD. We utilized knowledge of functional localization of language processes to target rTMS as a potential treatment for anomia in AD. This study is ongoing to determine the optimal stimulation parameters, target sites, duration of improvement, and patients most likely to benefit. The potential of rTMS to influence behavior will be discussed within the context of functional connectivity.