ABSTRACTS

# Canadian Consortium on Neurodegeneration in Aging (CCNA) Partners Forum and Science Days 2022: Abstracts from the Poster Sessions October 11–14, 2022

## TRAINEE POSTER SESSION

## Theme 1 Category (Prevention)

### Investigating the Impact of CPAP on Cognition in a Retrospective Cohort of Cognitively Impaired Patients

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***Plain Language Summary:*** Our study investigated the impact of CPAP on cognition in cognitively impaired sleep apnea patients while controlling for daytime sleepiness. Patients using CPAP had increased cognitive scores at follow-up relative to patients who were non users. These findings indicate that CPAP may stabilize cognitive dysfunction in a manner outside of simply reducing daytime sleepiness.

***Study Objectives:*** To characterize the impact of CPAP use on cognition in a clinical cohort with obstructive sleep apnea (OSA) and cognitive impairment due to neurodegenerative or vascular etiologies after controlling for baseline sleepiness.

***Methods:*** We retrospectively analyzed 158 patients with cognitive impairment and an OSA diagnosis confirmed with in-laboratory polysomnography or home sleep apnea testing (mean age 69.9 ± 10.7; 69% male); who had used CPAP for 2-12 months. Baseline and follow-up Epworth Sleepiness Score (ESS), Montreal Cognitive Assessment (MoCA), and Mini-Mental Status Examination (MMSE) were obtained from clinical and research visits conducted before and after CPAP initiation. Good CPAP adherence was defined as CPAP use x≥4 hr/night, 7 days/week at follow-up. Associations between good CPAP adherence and follow-up cognitive scores were analyzed using multivariable linear mixed-effects models.

***Results:*** After adjusting for age, sex, body mass index, baseline ESS, duration of CPAP therapy, relevant comorbidities and the random effect of research study cohort, good CPAP adherence (compared to poor CPAP adherence) was associated with a 2.8-point (1.77 – 3.79) increase in follow-up MoCA scores ($p=7.06\times10\text{-}8$) and a 1.2-point (0.11 – 2.22) increase in follow-up MMSE scores (p=0.031).

***Conclusions:*** In patients with OSA and cognitive impairment due to a neurodegenerative or vascular etiology, cognitive dysfunction may be stabilized with good adherence to CPAP therapy. The findings of this study will aid in motivating patients to use CPAP and support future randomized controlled trials in this area.

### The Moderating Role of Healthy Lifestyle Behaviours in the Relationship Between Depression and Cognitive Decline Among Older Adults: The NuAge Study

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***Plain Language Summary:*** Depression may negatively impact cognition in late life. Engaging in healthy lifestyle behaviours such as exercise and healthy eating may reduce the harmful effect of depression on the brain. In a 4-year study of 1129 older men and women, more depression was associated with faster cognitive decline. Depression did not negatively impact cognition in those engaging in healthy lifestyle behaviours.

***Abstract:*** Although depression has been identified as a risk factor for age-related cognitive decline, engaging in a brain-healthy lifestyle may modify the depression-cognition relationship. Using data from the Quebec Longitudinal Study on Nutrition and Successful Aging (NuAge), the objective of this study was to examine if a healthy lifestyle index (composite index of Mediterranean diet intake, physical activity, and social engagement) moderates the relationship between depressive symptoms and global cognitive change over 4 years in 1129 older adults (M age = 74±4, 52% female) who were cognitively intact at baseline. Depressive symptoms and healthy lifestyle behaviours were measured using standardized questionnaires at baseline, and global cognition was assessed using the Modified Mini-Mental State Exam at baseline and annually for 3 years. Mediterranean diet scores were calculated using estimated food intake from a semi-structured Food Frequency Questionnaire. Controlling for age, sex, and education, linear mixed effects models showed a marginally significant Depression × Healthy Lifestyle Index × Time interaction (B=-0.03, SE=0.02, p=0.09). Simple slopes revealed that greater depressive symptoms were associated with faster rates of cognitive decline over time at low (B=-0.10, SE=0.04, p=0.03) and moderate (B=-0.08, SE=0.03, p=0.02) levels of a healthy lifestyle, but not at high levels of a healthy lifestyle (p>0.05). Stratification by sex did not suggest sex-specific effects. These findings provide preliminary evidence that a healthy lifestyle may buffer the detrimental effects of depression on cognitive function in later life.

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## Engaging Older Adults in the Process of Aging Research: An Evaluation of the Experience and Efficacy of the Brain Health Support Program Citizens Advisory Group *(Excluded from competition)*

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***Plain Language Summary:*** This study examined the experience of the Brain Health Support Program Citizen Advisory Group (CAG), a group of 9 older adult volunteers. The CAG and scientists agreed that the CAG met its goals and helped the development of the program. More communication between the CAG and scientists would have improved the CAG's experience. Involving older adults in aging research is beneficial and important.

***Abstract:*** Collaborative research with end users is an effective way to generate meaningful applications and support greater impact on practice, policy, and knowledge exchange. To address these needs, a Citizen Advisory Group (CAG) of 9 older adults was formed to advise scientists on the development of the CCNA Brain Health Support Program (BHSP), a web-based platform designed to increase dementia prevention literacy and awareness. The current study evaluated if the CAG met its objectives and determined how inclusion of the CAG aligned with collaborative research approaches. An anonymous online survey was created with one CAG member and was administered to the other 8 CAG members (ages 64-80, 67% women) and CCNA scientist/trainee authors of the BHSP chapters (n=30 respondents). Most CAG members (91-100%) and chapter authors (70-97%) agreed that the CAG met its primary objectives and added unique value to the BHSP. Both groups viewed the CAG's involvement as well-aligned (75%+ consensus) with engaged scholarship, co-production, integrated knowledge translation, and participatory research practices. CAG members reported high satisfaction with personal goal attainment (mean rating = 86.3±10.5 out of 100), which included learning and making a meaningful impact. More direct engagement and communication between the CAG and authors were identified as areas for improvement. Findings suggest that collaborating with older adults in aging research confers personal and scientific benefits for older adults and researchers. Transcripts from a virtual focus group will be analyzed to gain a more in-depth understanding of CAG member experiences.

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## Greater Increases in Cerebral Blood Flow Velocity and Oxygenation During Over-Ground-Walking are Associated With Improved Neuronal Function in Adults With Mild Cognitive Impairment *(Winner of the Postdoctoral fellow trainee Theme 1 category competition)*

Laura K. Fitzgibbon-Collins[1], Shashankdhwaj Parihar[1], Geoff B. Coombs[1], Leena Shoemaker[1], Richard L. Hughson[2], J. Kevin Shoemaker[1], Michael Borrie[1], Jaspreet Bhangu[1].
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***Plain Language Summary:*** During walking, the heart must pump blood to the legs and AGAINST gravity to reach the brain. We found that adults with mild dementia, who could increase brain blood flow and brain oxygenation when walking, also had better overall brain function. Better brain function was recorded as having greater balance, walking faster, and having stronger thinking abilities on brain functioning tests.

***Abstract:*** During walking the cardiovascular system must pump blood against gravity to reach the brain. Inadequate cerebral blood flow (CBF) and oxygenation (tSO2) during walking may negatively impact neuronal function, as demonstrated by poorer postural stability, slower gait speed, and less cognitive abilities.

***Aim:*** Determine if greater increases in CBF and tSO2 during walking are associated with neuronal function in adults with mild cognitive impairment (MCI).

***Methods:*** 10 of 50 participants with MCI (5F, 73±6yrs) completed a sitting to walking task, lying to standing task, and Montreal cognitive assessment. Transcranial Doppler ultrasound provided peak systolic and end diastolic blood velocities (PSV, EDV) from which resistive index (RI=PSV-EDV/PSV) was determined. Near-infrared spectroscopy determined tSO2. Gait speed was measured as GS=distance traveled/90sec. Anterior-posterior total path length (TPL) was derived by 3min of center of pressure sway. Delta CBF and tSO2 values were calculated between sitting and 90sec of walking. Spearman's rank correlations were performed with significance set to $p<0.05$.

***Results:*** Participants with greater increases of EDV and tSO2 during walking had greater postural stability (TPL; $p=.038$, $r=.661$), and faster gait speeds ($p=.054$, $r=.624$), respectively. Cognitive performance was associated with lower RI while walking ($p=.04$, $r=-.731$). Improved cerebrovascular function during walking was associated with greater stability, mobility, and cognition.

***Implications:*** Preliminary results identify a relation between greater increases in CBF and tSO2 during walking, and better preservation of neuronal function.

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### The Gestalt of Cognition: Are Cognitive Networks Reorganized in Subjective Cognitive Decline?

***(Winner of the Master's trainee Theme 1 category competition)***

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***Plain Language Summary:*** Some older adults report difficulties with cognitive abilities (e.g., memory, language, etc.) before clinical testing detects any changes. Despite their utility, it is possible that our clinical tools are missing the forest for the trees. This project maps cognitive test scores in COMPASS-ND onto networks, uncovering the bigger picture of how cognition evolves over the risk states of dementia.

***Abstract:*** Individuals with subjective cognitive decline (SCD) are at increased risk for decline into dementia. However, research is still needed to identify what subtle cognitive aspects of SCD might differentiate it from healthy aging. Network analysis has been used to model interrelationships between cognitive domains in healthy and clinically impaired older adults. These networks can capture a more holistic view of performance within and across cognitive domains, providing insight into cognitive status above and beyond what is captured in simple univariate analyses. Studies of individuals with Alzheimer's disease (AD) and amnestic mild cognitive impairment (aMCI) have revealed distinct networks compared to cognitively normal (CN) older adults. However, this technique has yet to be used to determine whether networks in SCD show evidence of reorganization compared to CN individuals. This project will examine cognitive networks of a sample with SCD (n = 206) and compare it with networks of CN (n = 121), MCI (n = 214), and AD (n = 76) participants. Each group network will be comprised of performance on various cognitive tests derived from the COMPASS-ND and CIMA-Q neuropsychological batteries. Centrality indices (node strength, closeness, betweenness) will be calculated to identify influential variables in each network. Group networks will be compared via the Network Comparison Test. We expect that SCD cognitive networks will represent an initial departure from distinct cognitive domains seen in CN network, resembling the increasing inter-domain associations seen in MCI and AD networks.

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### Expression of Programmed Cell Death Protein 1 (PD-1) and its Ligand PD-L1 on Hematogenous Macrophages, Microglia and Astrocytes is Elevated in Cerebral Cortex in a Mouse Model of Alzheimer's Disease

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***Plain Language Summary:*** Immune dysregulation in the brain is a common feature of Alzheimer's disease (AD). Thus, it is important to identify the roles of different types of immune cells involved in AD progression. Immune cells that infiltrate the brain from the blood may negatively impact resident brain immune cells, by suppressing their ability to clear cellular debris and pathological aggregates of misfolded proteins.

***Abstract:*** It is critical to address the role of the innate immune system in Alzheimer's disease (AD) as it becomes engaged in responding to the developing Abeta 1-42-induced neurotoxicity. The influx of monocyte-derived macrophages (hMφ) in AD may confer an immunosuppressive effect on microglia and microglial-derived macrophages (mM φ) resulting in inhibition of their phagocytic activity and Abeta 1-42 clearance. The immunological dysfunction observed in the AD brain may result from mMφ and hMφ entering an exhausted state. Exhausted macrophages express cell-surface molecules called immune checkpoint proteins, including Program Cell Death- 1 (PD-1). In the current study, we investigated the differences in immunoreactive area of PD-1 and its ligand, PD-L1, between different cells involved in the neuroinflammatory response in

AD pathology, including astrocytes, microglia and mMφ, hMφ and monocytes, in males and females between the ages of 3–7 months. We crossed lys-EGFP-ki transgenic mice that express enhanced green fluorescent protein (EGFP) in hMφ, but not in mMφ, to differentiate between the two cell types, with 5XFAD mice and the offspring rapidly developed AD pathology. Significant increases in PD-1 and PD-L1 immunoreactive area were observed on mMφ, hMφ and astrocytes compared to monocytes in the cortex in males and females at various timepoints. Sex differences and differences between timepoints were identified. We also examined PD-1 and PD-L1 expression by these cell types in relation to proximity to Abeta plaques. The interplay of these cells may be a critical component regulating neuroinflammation in the brains of AD mice.

## Nitrative Stress-Induced JNK Activation Decreases Axonal Transport of ProNGF in Aged Basal Forebrain Cholinergic Neurons *(Winner of the Doctoral, MD/PhD trainee Theme 1 category competition)*

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***Plain Language Summary:*** Some brain cells require transport of a protein called proNGF to survive. This transport decreases with age, which causes memory loss. We found that harmful nitrogen molecules, which are increased in aging, decrease proNGF transport. Age-induced proNGF transport deficits also increased death signals and reduced survival signals. This study identifies factors that cause brain cell death in aging.

***Abstract:*** Basal forebrain cholinergic neurons (BFCNs) lose function with age, which is associated with cognitive decline. Loss of BFCN function is related to age-induced loss of the TrkA receptor and reduced proNGF axonal transport. Nitrative stress increases during aging and activates JNK, but whether this causes proNGF transport deficits in aged BFCNs is unknown. We asked if and how nitrative stress impairs proNGF transport, and if proNGF transport deficits are specific to either of its receptors, TrkA and p75NTR. Rat BFCNs were cultured in microfluidic chambers. Axonal transport of quantum dot labelled proNGF was analysed via fluorescence microscopy with or without SIN-1, a nitrative stress donor, CC401, a JNK inhibitor, or L-NAME, a nitrative stress inhibitor. Signaling factor activity and nitrative stress were quantified via immunostaining and DAF-FM stain, respectively. Receptor specific effects were studied with proNGF mutants that selectively bind to either TrkA (proNGF-TrkA) or p75NTR (proNGF-p75NTR). In vitro aging increased nitrative stress and transport of proNGF-p75NTR but decreased transport of proNGF-TrkA. ProNGF-p75NTR increased pro-apoptotic signaling via JNK and decreased pro-survival signaling via ERK, pointing to the functional significance of the transport changes. Age-induced proNGF transport deficits were rescued by L-NAME and CC401, and SIN-1-induced deficits were rescued by CC401. These results indicate that nitrative stress impairs proNGF transport by activating JNK. This study elucidates the mechanisms contributing to age-induced neurodegeneration and cognitive decline.

## NMDAR-STIM-Panx1 Signalling: a Key to the Puzzle of Amyloid-β Oligomer Mediated Synaptotoxicity

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***Plain Language Summary:*** Pannexin1 channels are known to contribute towards neurodegeneration in ischemia, however their contribution in Alzheimer's disease is understudied. The goal of our project is to understand the mechanism through which pannexin1 drives amyloid-beta mediated toxicity. We have developed a novel therapeutic peptide that prevents pathological activity of pannexin1 and protects neuronal functions.

***Introduction:*** Soluble amyloid-β oligomers (AβOs) are known to initiate toxic cascades that disrupt the function of excitatory synapses. Here, we show that pannexin-1 (Panx1) channels, that are activated downstream of NMDA receptors (NMDARs), are implicated in AβO-mediated toxicity. Recently, we showed that NMDAR-initiated Panx1 activation is regulated by physical interaction between N-term of Panx1 and endoplasmic reticulum resident stromal interacting molecules (STIMs). In AβO treated neurons, we now show that disrupting Panx1-STIM interaction using an interfering peptide of our own design had a protective effect on synapse function.

***Methods:*** Electrophysiology experiments were conducted to study Panx1 activity in hippocampal neurons cultured from wildtype (WT) or Panx1 knockout (KO) mice.

***Results:*** NMDAR-initiated STIM-dependent Panx1 current was increased, and excitatory synapse function was decreased in WT neurons treated with AβOs. However, Panx1 KO neurons were protected from the toxic effects of AβOs. Given that Panx1 activation is regulated by STIM, we generated a cell permeable peptide that interferes with Panx1-STIM interaction (Tat-Panx1). Neurons treated with Tat-Panx1 peptide but not with Tat alone (negative control peptide) showed inhibition of NMDAR-initiated Panx1 currents. Importantly, neurons treated with Tat-Panx1 were protected from the toxic effects of AβOs. Thus, preventing Panx1 activation in AβO treated neurons is neuroprotective.

***Conclusion:*** We show that inhibiting Panx1-STIM interaction using our Tat-Panx1 peptide is a candidate therapeutic strategy to prevent synaptotoxicity mediated by AβOs.

## White Matter Lesion is Strongly Associated with Markers of Cerebral Amyloid Angiopathy and Neurodegeneration in Autosomal Dominant Alzheimer's Disease

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***Plain Language Summary:*** Abnormal tissue identified on brain Magnetic Resonance Imaging (MRI) is thought to be the result of vascular risk factors such as hypertension. Our findings show that abnormalities are present in midlife individuals with genetic forms of Alzheimer's disease. These findings were unrelated to vascular risk factors. Moreover, the size of abnormal tissue is also related to Alzheimer's disease markers.

***Background:*** White matter lesion (WML) visible on MRI is a common finding in Alzheimer's disease (AD) and is often attributed to small vessel ischemic changes secondary to increased systemic vascular risk. Increased WM injury has been associated with the progression of Autosomal Dominant AD (ADAD), though ADAD carriers are relatively young and may not have elevated vascular risk factors. We hypothesized that WM injury in ADAD may reflect worsening of cerebral amyloid angiopathy (CAA) and neurodegeneration.

***Method:*** MRI data from ADAD carriers (n=223) were used (Dominantly Inherited Alzheimer Network observational study). We extracted WML volume from T1-weighted images. Cortical microbleed (CMB) burden was assessed visually on susceptibility-weighted/T2*-weighted gradient echo images by experienced radiologists at the Mayo Clinic. Linear regression models compared WML volume at baseline in people with and without CMB. Linear mixed effect models assessed the relationships between longitudinal WML and both CMBs and gray matter (GM) volume correcting for age and estimated years to symptom onset.

***Result:*** Baseline WML volume was greater in ADAD carriers with CMBs compared to those without ($t=2.9$, $p=0.003$). The longitudinal increase in WML amongst ADAD carriers with CMBs was estimated to be 214 $mm^3$/year greater than that amongst carriers without CMBs ($t=4.1$, $p<0.001$). Decreasing GM volume was also strongly associated with increasing longitudinal WML volume ($t=-6.2$, $p<0.001$).

***Conclusion:*** WML in ADAD may not solely be due to small vessel ischemic changes, but rather may be a result of worsening CAA and more rapid neurodegeneration.

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## The Circadian Variations of Body Temperature Regulate Tau Phosphorylation and Secretion

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***Plain Language Summary:*** In Alzheimer's disease (AD), tau protein becomes toxic and spreads inside the brain. We found that tau could be more toxic during sleep when body temperature is lower. Inversely, we showed that higher temperature exposure protects against AD. As AD patients are prone to sleep disturbances and thermoregulation deficits, we provide new outcomes on how tau pathology could spread inside brain.

***Abstract:*** Aggregates of hyperphosphorylated tau protein are a hallmark of tauopathies such as Alzheimer's disease (AD). Growing evidences suggest that tau spreading occurs via cell-to-cell transfer involving secretion and internalization of hyperphosphorylated tau. Previously, we demonstrated that tau phosphorylation increases after cold exposure whereas higher temperature reduces tau pathology. We thus aimed to determine whether tau phosphorylation and secretion are regulated by circadian rhythms, inherently linked to the sleep-wake cycle and body temperature variations. First, we analysed tau phosphorylation by Western blot in the brains of awake and sleeping B6 mice, while recording their temperature. Second, we exposed neuronal cells to different temperatures (from 35°C to 39°C) to assess both intracellular and secreted tau in the cell medium by ELISA and dot blot. We found that tau phosphorylation undergoes sleep-driven circadian variations, as it is hyperphosphorylated during sleep when body temperature is lower. Similar changes in tau phosphorylation were reproduced in cells exposed to temperatures recorded during the sleep–wake cycle. In addition, we observed that tau secretion is temperature-dependant, as higher temperature exposure increased total tau level in the extracellular medium. However, at higher temperatures, tau-secreted species are less phosphorylated. Finally, our results demonstrated that tau cleavage at D421 by caspase-3 regulates its secretion, since tau secretion was decreased in cells treated with a selective caspase-3 inhibitor (zDEVD-FMK). Taken together, these data suggest that tau phosphorylation and secretion follow a circadian rhythm driven mostly by body temperature and sleep. Since AD patients are prone to sleep disturbances and thermoregulation deficits, our study provides new outcomes on how tau pathology could spread and affect different brain regions.

## THEME 2 Category (Treatment)

### Machine Learning Analyses Identify Multi-Morbidity Features that Discriminate Four Cohorts in the Alzheimer's Disease Spectrum: a COMPASS-ND Study *(Winner of the Postdoctoral fellow trainee Theme 2 category competition)*

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***Plain Language Summary:*** We tested multiple health factors to find those that differentiate adults with no memory concerns from those with subjective impairment, mild cognitive impairment, and Alzheimer's dementia. The differentiating factors included impaired smell and vision, difficulties with memory and daily activities, blood-based biomarkers. Varying patterns lead to suggestions for personalized health research.

***Background:*** Multimorbidity is a dynamic characteristic of aging, frailty, impairment and dementia. Important morbidity features may vary across cohorts in the Alzheimer's disease (AD) spectrum. We applied machine-learning technology to identify leading morbidity biomarkers of three AD spectrum cohorts. With the cognitively unimpaired (CU) cohort as benchmark, we tested and compared a large cluster of morbidity predictors in subjective cognitive impairment (SCI), mild cognitive impairment (MCI), and AD.

***Methods:*** The four cohorts (overall N=255) were from the cross-sectional COMPASS-ND dataset. We used random forest analyses (Python 3.7) to simultaneously test the relative predictive importance of 84 morbidity biomarkers in discriminating CU from SCI, MCI, and AD. Deep interpretation (direction, magnitude) of prediction effects was performed with Tree Shapley Additive Explanation Value analyses.

***Results:*** We observed strong concurrent biomarker prediction results, with varying clusters across cohorts. Examples of leading morbidities follow. For SCI (AUC=0.89), they included quality of life ([QoL] memory), lymphocytes, and neutrophils. For MCI (AUC=0.88), they included QoL (memory, leisure), male sex, lymphocytes, and eyesight. For AD (AUC=0.98), they included QoL (memory), olfaction, male sex, activities of daily living, and visual contrast.

***Discussion:*** Across the AD spectrum, convergent and divergent biomarkers discriminated CU from clinical cohorts. Results advance precision understanding of differential clusters of morbidity accumulation and related mechanisms.

### A Profile of Mild Behavioral Impairment in Vascular Cognitive Impairment and Comparison with Alzheimer's Disease

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***Plain Language Summary:*** Behavioral symptoms are common in dementia and their patterns may indicate underlying mechanisms. We found that decreased drive and motivation (or apathy) present earlier in vascular causes of dementia than in Alzheimer's disease (AD). Emotional dysregulation appears early in both diseases, but remains unchanged with disease progression in vascular causes and increases in AD.

***Background:*** Behavioral symptoms of dementia likely emerge from underlying pathological differences. We examined those symptoms clustered into five domains as per mild behavioral impairment (MBI) criteria in mild vascular cognitive impairment (mVCI) and mild cognitive impairment (MCI), compared to cognitively unimpaired (CU) elderly.

***Methods:*** Participants with mVCI and MCI, and CU elderly from the COMPASS-ND database were included. To examine symptom persistence, mixed dementia (MD) and Alzheimer's disease (AD) were also included. MBI domain scores (decrease drive/motivation [DD], emotional dysregulation [ED], impulse dyscontrol [ID], social inappropriateness [SI], psychosis [PS]) were derived from the neuropsychiatric inventory-questionnaire. Groups were compared with chi-square test, and multinomial logistic regressions adjusted for age, sex, and education.

***Results:*** Among 307 participants (mean age 73.5 [SD=6.8]; 51% male), all MBI domains were more frequent in mVCI (n=17) and MCI (n=148) compared to CU (n=59) except PS. Prevalence of DD but not other domains was higher in mVCI than in MCI (35.3% vs. 14.9%; $\chi2=6.7$, $p=0.009$). In contrast, all domains were more prevalent in AD (n=57) than CU but SI and PS were not in MD (n=26). The prevalence of domains did not differ between mVCI and MD whereas DD (47.4% vs. 14.9%, $\chi2=23.6$, $p=0.0005$) and ED (61.4% vs. 39.2%, $\chi2=8.2$, $p=0.01$) were more frequent in AD than in MCI.

***Conclusion:*** Behavioral symptoms particularly DD and ED may emerge earlier in vascular cognitive impairment than in

AD, indicating that vascular changes may contribute to greater behavioral symptom burden.

## Do Polygenic Risk Scores Representing Alzheimer's Disease Global Risk or Specific Mechanisms Predict Non-Demented Memory Aging Trajectories Differentially in Females and Males?

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***Plain Language Summary:*** We examined if specific combinations of Alzheimer's risk genes predict memory decline in older adults with no known cognitive impairment. We studied 614 adults (53-95 years) in a Canadian longitudinal study. All participants were genotyped and performed repeated memory tests. A global genetic risk score and three scores related to Alzheimer's genetic risk predicted memory selectively for women.

***Objective:*** Polygenic risk scores (PRSs) are single measures representing aggregated disease risk associated with GWAS-identified genes. In aging and Alzheimer's disease (ADRD), PRSs are used for personalized risk stratification. We compare alternative ADRD PRSs as predictors of asymptomatic memory aging trajectories.

***Method:*** A 42-year distribution of memory trajectories (53-95) was populated by cognitively normal adults (n=614; Mage=70.3). A 48-SNP pool of brain aging and AD genes was used to develop two sets of PRSs: (1) a data-driven global PRS computed with PRSice2 algorithm and (2) six ADRD mechanism-related PRSs (nervous function, APP metabolism, tau metabolism, immune/inflammation, lipid metabolism, basic cellular processes; 4-9 SNPs each). Latent growth modeling (Mplus 8.0) tested PRS predictions of level (intercept) and change (slope) in memory trajectories. We analyzed both full sample and sex-disaggregated data.

***Results:*** The global PRS predicted memory decline for full sample (b=-.009, p=.001) but selectively for females (b=-.012, p=.001). Three mechanism-related PRSs predicted memory decline for full sample and selectively for females: APP metabolism (b=-.007, p=.01; females: b=-.011, p=.01), immune/inflammation (b=-.008, p=.01; females: b=-.011, p=.007), and lipid metabolism (b=-.007, p=.001; females: b=-.010, p=.01). Higher PRS risk predicted steeper decline.

***Conclusions:*** Multiple PRS models revealed no genetic prediction of single-timepoint memory performance. However, for both data-driven global PRS and three mechanism-related PRSs, elevated risk in females predicted steeper memory decline.

## A Voxel-Based Morphometric Study of Apathy Across Neurodegenerative Disorders *(Winner of the Doctoral, MD/PhD trainee Theme 2 category competition)*

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***Plain Language Summary:*** Apathy or loss of initiative develops in many patients with dementia. We investigated whether apathy across Alzheimer's disease, Parkinson's disease, and mixed dementia shows common brain changes compared to cognitively normal elderly. Results showed that dementia patients with apathy had tissue loss in brain areas responsible for emotion and goal-directed behavior.

***Introduction:*** Apathy develops in most patients with neurodegenerative disorders and is associated with grey matter (GM) atrophy in frontal and subcortical regions. Few studies have assessed the relationship between apathy and GM atrophy across multiple disorders.

***Objective:*** To determine common neural correlates of apathy across neurodegenerative disorders by assessing the association between apathy and GM atrophy in patients with Alzheimer's Disease (AD), Parkinson's Disease (PD), and mixed dementia (MD).

***Methods:*** Subjects with a diagnosis of AD, PD, MD or cognitively unimpaired (CU) in the COMPASS-ND dataset were included. Apathy was considered present as indicated on the Neuropsychiatric Inventory questionnaire (quantified as y/n). GM volume was compared between subjects with and without apathy using FSL-VBM, controlling for age, sex, cognition (MoCA), and depressive symptoms.

***Results:*** 182 patients (53 CU, 53 AD, 55 PD, 21 MD) aged 50-90 years were included (60 with apathy, 122 without apathy). Participant characteristics did not differ between groups, except there were more women among CU than disease groups. Patients with apathy than without apathy across groups had

more GM atrophy in the orbitofrontal cortex (t=4.55), posterior insula (t=4.49), and caudate nucleus (t=3.85) regions (all t-values significant at p<0.05, TFCE-corrected).

***Conclusion:*** Results indicate that apathy is associated with specific brain regions across disorders, suggesting a common neural basis for its presentation. Sub-group analyses comparing atrophic regions between disease groups can further define these common neurological circuits.

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## Interventions Used to Address Falls-Related Psychological Concerns Among People with Dementia and MCI: a Scoping Review

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***Plain Language Summary:*** People with dementia are at a higher risk of falls due to poor balance and concerns about falling. Exercise can improve people with dementia's balance, but less is known about using exercise to reduce their concerns about falling. A literature review was conducted to understand exercise programs used to help people with dementia who have concerns about falling to advise future program design.

***Abstract:*** Falls risk is doubled among people with dementia versus healthy older adults. Poor balance and falls-related psychological concerns (e.g., fear of falling) contribute to falls risk of people with dementia. Exercise can be used to improve physical falls risk factors but understanding of the types of exercise interventions used to address psychological falls risk factors among people with dementia is lacking. This scoping review aims to understand the types of exercise interventions used to address falls-related psychological concerns among people with dementia and MCI. Search combinations (n=968) were run across six electronic databases. Articles were: (i) available in English full text; (ii) featuring original research; (iii) targeting people with dementia or MCI by the exercise interventions; and (iv) outcomes included falls-related psychological concerns. Thirteen articles have been identified for inclusion, with full-text screening and data extraction still underway. Seven studies (53.8%) showed significant reductions in falls-related psychological concerns following the exercise interventions. All but one of the successful interventions used a variation of the Falls Efficacy Scale as their outcome measure. Four of the seven studies with significant results prescribed balance exercises as part of the intervention, and three of the studies prescribed walking. This scoping review helps to understand the type of exercise interventions used to address falls-related psychological concerns among people with dementia and MCI, which could inform design of rehabilitation-based exercise programs designed for this population.

## High-Level Cognition and Imaging Biomarkers in a Mouse Model of Dementia due to Leukoencephalopathy with CSF1R Haploinsufficiency

Daniel Guimarães[1], Aja Hogan-Cann[1,2], Kate Onuska[1,2], Chris Fodor[1], Matthew Cowan[1], Vania Prado[1,3,4], Jane Rylett[1,3], Lisa Saksida[1,3], Taylor Schmitz[3], Elizabeth Finger[5], Robert Bartha[1,6], Timothy Bussey[1,3], Marco Prado[1,3,4].
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***Plain Language Summary:*** Adult-onset leukoencephalopathy with axonal spheroids and pigmented glia (ALSP) causes early-onset dementia and has no cure. Identifying good animal models is an important step to test new therapeutical approaches. We developed a pipeline for imaging and high-level cognition to test new therapeutics for ALSP in mice.

***Abstract:*** Adult-onset leukoencephalopathy with axonal spheroids and pigmented glia (ALSP) is a rare condition of unknown prevalence, frequently misdiagnosed, and which has no cure. It is characterized by white matter degeneration, psychiatric, and early cognitive symptoms. ALSP is an autosomal dominant disease commonly caused by mutations in the colony-stimulating factor-1 receptor gene (CSF1R), which is mainly expressed in microglia. Given the small number of patients, a murine model and robust phenotyping pipeline are needed to define therapeutic targets. Using heterozygous knockout mice for CSF1R, we investigated high-level cognition with touchscreen technology, employed diffusion magnetic resonance imaging, positron emission tomography with a TPSO ligand for neuroinflammation, and biochemical methods to characterize parenchyma alterations. Using a comprehensive design to probe different cognitive skills, we observed sex-specific phenotypes. While male mice showed impulsivity and difficulty to extinguish learned behavior, females showed visuospatial learning and behavioral flexibility impairments. Also, behavior impairments were detected earlier in females (7-10 months) than in males (14-19 months). In males, cognitive changes were accompanied by neurodegeneration of the posterior parietal cortex, whereas in females, a neuroinflammatory trend was detected. Sex-specific patterns were also detected in the mRNA expression levels of key molecules for ALSP. This work shows the potential of a multimodal imaging and multifactor cognitive testing pipeline for testing disease-modifying therapies that could be translated for treating ALSP.

## Wearable Sensors Technology for Detecting and Monitoring 'Wandering' Behaviors in Persons Living with Dementia: Preliminary Results from an Ongoing Systematic Review

Elena Guseva[1,2], Andrea Iaboni[3,4], Nathan Herrmann[5,6], Krista Lanctot[5], Dallas Seitz[7], Amer M. Burhan[4,8] Sanjeev Kumar[9], Marie-Andrée Bruneau[10], Andrew Lim[5], Genevieve Gore[11], Zahinoor Ismail[12], Machelle Wilchesky[1,2,13,14].

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***Plain Language Summary:*** Wandering in people with dementia can lead to injury and death. We reviewed 9 studies investigating wearable devices to monitor wandering in people with dementia. Lack of understanding of the nature of wandering prevents us from drawing positive conclusions about whether these devices can distinguish wandering from other behaviors.

***Abstract:*** Wandering is a dementia-related behavior associated with multiple neuropsychiatric symptoms (NPS) including agitation, sleep/nighttime behavior disorders, and aberrant motor behavior. Lack of consensus on the definition of wandering reflects poor understanding of its etiology. A limited body of evidence has investigated the validity of using wearable sensor technology (WST) to quantify wandering. We conducted a diagnostic test assessment systematic review from inception until December 2020 (subsequently updated to June 2022) evaluating the use of WST to detect and monitor NPS (https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=219917). A systematic literature search produced 12,928 articles. A final corpus of 84 studies was included, among which 9 investigated wandering. Reference standards used predominantly relied on staff observations (78%) and not validated tools. Devices included IC tags (4), accelerometers (2), pedometers (1), and accelerometers / pedometers in combination (2). Out of 9, only 4 studies reported correlations between WST and reference standard data. Correlations ranged from 0.62-0.98. A random effects model indicated that the pooled correlation across studies was 0.83 (0.63-0.92), but heterogeneity was high (I2=79%). Clinical and methodological heterogeneity of the studies precludes us from drawing definite conclusions about the diagnostic test accuracy of WST for wandering. The lack of a clear definition, and use of clinical assessment tools important for characterizing, quantifying, and differentiating wandering from similar behaviors are major limitations research available to date.

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## Identifying Predictors of Efficacy of a Leisure-Based Cognitive Intervention (ENGAGE)
### *(Winner of the Doctoral, MD/PhD trainee Theme 2 category competition)*

Kim Lasnier-Le Quang[1,2], Aline Moussard[2], Ana Inés Ansaldo[1,2], Patricia Belchior[2,5], Louis Bherer[1,2], Véronique Bohbot[5,6], Marie-Andrée Bruneau[1,2], Brigitte Gilbert[2], Regina Jokel[3,4], Kelly Murphy[3,4], Natasha Rajah[5,6], Elizabeth Rochon[3,8], Jason Steffener[7], Angela Troyer[3,4], Nicole Anderson[3,4] Sylvie Belleville[1,2].

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***Plain Language Summary:*** The ENGAGE program is a cognitive intervention that combines the use of memory strategies and the practice of a stimulating hobby to keep our brain active and healthy. However, we know that not everyone benefits equally from such interventions. This project will inform us on who might benefit more from the program, based on differences in demographic, cognitive and psychological factors.

***Abstract:*** Cognitive interventions are a growing field of interest to prevent and attenuate cognitive decline. However, a great deal of variation is seen in the degree to which these interventions affect cognition. Several demographic, cognitive and even psychological factors have been proposed to explain these differences in effect. This project aims to identify the role of different individual factors, or predictors, in the efficacy of the ENGAGE program, a leisure-based cognitive intervention developed by CCNA Team 10 members (Belleville, Anderson et al., 2018). Participants are 93 older adults aged 60 to 85 years old from the COMPASS-ND and CIMA-Q cohorts, who meet criteria for subjective cognitive decline or mild cognitive impairment. The primary outcome to assess efficacy is the change in a composite delayed memory score. Included predictors of efficacy are age, sex, cognitive reserve, baseline memory function, baseline executive function and depressive symptoms. Stepwise multiple regression analyses are used to determine which predictor variables impact memory change following the ENGAGE intervention. Our study has important clinical implications, as it will indicate who might benefit more from the intervention and can guide clinicians in their recommendations. This will contribute to the personalization of interventions, to offer programs that are realistic and adapted to the target population.

## White Matter Hyperintensities in Predementia Frontotemporal Dementia Mutation Carriers Approaching Clinical Conversion *(Winner of the Postdoctoral fellow trainee Theme 2 category competition)*

Hyunwoo Lee[1], Atri Chatterjee[1], Ian R. Mackenzie[2] , Erin Gibson[3], Mirza Faisal Beg[3], Karteek Popuri[3], Dana Wittenberg[1], Carmela Tartaglia[4], Kejal Kantarci[5], Katherine P. Rankin[6], Howard J. Rosen[6], Bradley F. Boeve[7], Adam L. Boxer[6], Ging-Yuek Robin Hsiung[1].

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***Plain Language Summary:*** We followed a group of individuals who carry genetic mutations that make them susceptible to developing frontotemporal dementia (FTD) in the future. Using MRI brain scans, we tracked potential injuries in the white matter of the brain in these participants. We found that the rate of injury accumulation accelerates as the participants approached the onset of noticeable FTD related symptoms.

***Introduction:*** FLAIR-MRI white-matter hyperintensities (WMH) are frequently observed in symptomatic FTD patients.

***Hypothesis:*** the accumulation of WMH begins in the predementia stages in FTD mutation carriers and accelerates as they approach clinical conversion.

***Methodology:*** We compared the predementia progression rates of WMH total volume between mutation carriers ("carriers-converters": pooled GRN+, C9orf72+, and MAPT+) who experienced symptomatic conversion versus asymptomatic mutation carriers ("carriers-nonconverters") and noncarriers ("noncarriers-nonconverters"). Conversion was defined as reaching the CDR-plus-NACC-FTLD global score 1, during 2-5 years of follow-up. Predementia rates were estimated using the study visits where the converters and nonconverters had CDR-plus-NACC-FTLD global scores of 0 and 0.5. We used a mixed model to determine group effects.

***Results:*** A total of 595 participants were analyzed (N=20 carriers-converters; N=206 carriers-nonconverters; N=369 noncarriers-nonconverters). Baseline volumes were similar among the groups. Longitudinally, carriers-converters had higher rates of WMH volume accumulation than both Carriers-nonconverters (p=0.003) and Noncarriers-nonconverters (p=0.0005).

***Conclusion:*** Predementia mutation carriers may undergo differentially accelerated rates of increase in WMH progression as they approach clinical conversion. Studies are warranted to assess the temporal relationship between the rapid WMH progression and the timing of conversion. Furthermore, studies are warranted to determine the anatomical, neuropsychiatric, and neuropsychological correlates of the rapid WMH progression.

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## Progression of Cognitive Changes in Pre-dementia GRN and C9orf72 Mutation Carriers *(Excluded from competition)*

Hyunwoo Lee[1], Atri Chatterjee[1], Ian R. Mackenzie[2], Veronica Hirsch-Reinshagen[2], Dana Wittenberg[1], Rosa Rademakers[3], Ging-Yuek Robin Hsiung[1].

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***Plain Language Summary:*** We followed a group of individuals who carry genetic mutations that make them susceptible to developing frontotemporal dementia (FTD) in the future. Specifically, we studied whether mutation carriers can have compromised abilities to think and memorize. We found that those with mutations in the C9orf72 gene may have trouble paying attention, even before they start to have noticeable FTD symptoms.

***Introduction:*** FTD is marked by neuropsychological deficits that may begin during the presymptomatic stages of the disease. We hypothesized that carriers of mutations in progranulin (GRN+) and chromosome 9 open reading frame 72 (C9orf72+) progress differently in terms of specific neuropsychological domains compared to noncarriers prior to onset of dementia.

***Methods:*** GRN+, C9orf72+, and noncarrier family controls were recruited through the UBC Familial FTD Study. Only participants in normal or clinically symptomatic not demented stages were included. Neuropsychological test batteries included attention, language, visuospatial, working memory, verbal memory, and non-verbal memory domains. We used linear mixed models to determine the group interaction effects, adjusting for age, sex, and education.

***Results:*** N=80 participants were analyzed (N=21 C9orf72+; N=10 GRN+; N=49 Noncarriers). C9orf72+ had a marginally lower baseline score in the attention domain compared to noncarriers (p=0.05). GRN+ were similar to noncarriers at baseline. Longitudinally, C9orf72+ declined more rapidly compared to controls (p=0.01) in the attention domain. The average rate of change in GRN+ was similar to non-carriers. For other domains, carriers and noncarriers performed similarly in terms of baseline scores, as well as longitudinal changes in scores. Although not significant, C9orf72+ showed a trend of greater longitudinal decline in visuospatial and working memory domains (p=0.1).

***Conclusion:*** Decline in attention may herald the onset of dementia in C9orf72+. Future work warrants better understanding of the potential anatomical correlates of the decline.

## THEME 3 Category (Quality of Life)

### Alert Systems for Missing Older Adults Living with Dementia

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***Plain Language Summary:*** Alert systems such as BC Silver Alert and Scotland's Purple Alert support first responders in locating missing persons. I will engage people with dementia, care partners, Alzheimer Societies, and first responders to examine implementation of alert systems in Canada and Scotland and review policy documents. The findings will be used to inform policies and implementation of alert systems in Canada.

***Abstract:*** The rise in the number of missing older adults in Canada has caused an increased push for a Silver Alert. Silver Alert is a system that uses media outlets or social media to alert citizens about missing persons with dementia, thereby reducing their risk of exposure to harm. Alert systems such as the United States' Silver Alert and Scotland's Purple Alert support first responders in locating missing persons with dementia. In response to a 2019 national petition, the Government of Canada delegated the responsibility for Silver Alerts to provinces and territories. Alberta and Manitoba have amended their Missing Persons Acts to include older adults but have no Silver Alert programs. British Columbia (BC) has a community-run silver alert program, yet no provincial legislation. The purpose of this study is to examine the process of policy development and implementation of alert systems in Canada and Scotland using a qualitative research approach. A multiple case study will be conducted by reviewing policy documents to identify factors (context, content, actors, and process) that influenced the implementation of BC Silver Alert and Purple Alert. Interviews (face-to-face or online) will be conducted with stakeholders of BC Silver Alert and Purple Alert, including people living with dementia, care partners, Alzheimer Societies, first responders, and policy makers to explore their perspectives on implementation of alert systems and validate the case studies findings. Study findings will be used to inform policies and implementation of alert systems in Canada to optimize the safety and well-being of older adults living with dementia.

### Aging+Hearing: An Online Training Program to Reduce Ageism and Hearing Loss Stigma

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***Plain Language Summary:*** Hearing health is key to brain health and daily functioning. Many older adults develop hearing loss but delay seeking hearing rehabilitation because of stigma (negative attitudes towards aging and hearing loss). We are designing and evaluating an online training program to reduce stigma as a barrier to help-seeking and promote active listening goals and positive attitudes as part healthy aging.

***Abstract:*** Hearing loss is highly prevalent in older adults (OAs) and is a risk factor for dementia. However, people often delay help-seeking for hearing loss by over a decade, one barrier being stigma. Our earlier studies showed that negative views of aging (NVoA) were associated with self-perceived hearing and memory abilities, which were associated with hearing and memory performance. To reduce stigma and promote positive views of aging, we developed the Aging+Hearing training (A+H) program (based on the Aging-PLUS program). Pilot results showed promising effects. The current study investigates the associations between general NVoA (self-ageism), hearing-related stigma, self-perceptions of hearing, hearing ability, readiness for help-seeking and participation in listening activities. In phase 1 (baseline), 500 participants complete a battery of self-report measures and online behavioral measures of hearing and cognitive abilities. Half are assigned to the A+H training group and the other half to a control group. Listening activity goal achievement of the A+H group will be monitored as part of A+H training. Both groups complete a battery of outcome measures at phase 2 (48 hours post A+H) and at phase 3 (10 weeks post A+H). The study will help determine the effectiveness of the A+H program in reducing general NVoA and hearing-related stigma, increasing readiness for help-seeking, and improving attainment of goals for participating in listening activities. If successful, by overcoming stigma as a barrier and accelerating help-seeking, it may, in turn, be possible to delay cognitive declines and enhance social functioning.

### Research Protocol of the Transilab Laval-ROSA: a Living Lab on Transitions for People Living with Major Neurocognitive Disorders *(Winner of the Postdoctoral fellow trainee Theme 3 category competition)*

Isabelle Dufour[1], Geneviève Arsenault-Lapierre[2], Maxime Guillette[3], Nathalie Dame[3], Marie-Ève Poitras[4], Marie-Thérèse Lussier[5], Annie Fortier[6], Julie Brunet[6], Micheline Laverdure[7], Ginette Brousseau[7], Howard Bergman[2], Yves Couturier[3], Amélie Quesnel-Vallée[1,8], Isabelle Vedel[2].

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***Plain Language Summary:*** Transilab Laval-ROSA is a Living Lab that aims to support Laval's regional health organization in improving care transitions of persons with dementia and care partners. We will co-develop and co-evaluate innovations that target care transitions using various quantitative and qualitative methods. We will ensure these innovations are sustainable and shared with other Quebec regional organizations.

***Objectives:*** The Transilab Laval-ROSA aims to support a regional health organization in consolidating the Quebec Alzheimer Plan (QAP) by improving care transitions between primary care clinics and home care services and ultimately improving the care of people living with dementia and their care partners. We aim to: 1) co-develop a dashboard for monitoring transitions; 2) co-develop targeted interventions on transitions (training of clinicians; referral process for persons with dementia to community services; communication surrounding the disclosure of the diagnosis; and designation of a care navigator); 3) co-evaluate the effects and implementation conditions of these interventions in a continuous learning cycle; 4) co-evaluate the effects and implementation of the entire Transilab; to ultimately 5) support the sustainability of the Transilab, and; 6) transfer these learnings to other regions.

***Study Methods:*** Multi-methods Living lab approach with the Centre intégré de santé et service sociaux de Laval (Quebec). Stakeholders involved are clinicians, managers, persons with dementia, and care partners. Multiples data sources will be used: They will be collected from health administrative databases, surveys, semi-structured interviews, focus groups, and observations.

***Results*** and ***Implications:*** We hypothesize that the Transilab Laval-ROSA will positively impact the care, support, and quality of life of persons with dementia and care partners. Its strategies will allow improved care trajectories (i.e., receiving the right services, at the right time, in the right place, from the right staff).

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### Identifying a Knowledge-to-Practice Gap in Accommodation Strategies for Sensory Impairment During the Administration of Cognitive Tests *(Winner of the Master's trainee Theme 3 category competition)*

Shirley Dumassais[1,2] & Walter Wittich[1-3].

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***Plain Language Summary:*** This research explored the reported strategies that researchers and clinicians have used during the administration of cognitive tests to individuals living with sensory impairment. A gap between evidence-based and practical strategies has been identified. The next step in this research is to conduct knowledge transfer activities to improve the feasibility of cognitive test administration.

***Introduction:*** There is a greater risk of clinical misjudgment when cognitive tests are administered to individuals living with sensory impairment. This is due to the audio-visual nature of most cognitive tests, making them inaccessible to this vulnerable population.

***Objective*** and ***Methodology:*** This research explored the strategies that researchers and clinicians have implemented during the administration of cognitive tests to individuals living with sensory impairment. Based on a scoping review, we compiled a list of accommodative strategies that have been used in the research context. Subsequently, Canadian occupational therapists (OTs) were surveyed about their cognitive screening procedures with their sensory impaired clients.

***Results:*** Administration strategies in research were mostly centered on the test administrators. The majority of researchers opted for the inclusion of trained experts to conduct, or assist during, cognitive evaluation. In contrast, accommodations implemented in clinical practice were focused on the clients, such as encouraging them to wear their visual and/or hearing aids, and screening their sensory function through self-report rather than a performance-based test. Notably, OTs' self-rated ability to deliver services to this clientele was remarkably low.

***Implications:*** Equipping test administrators with evidence-based strategies is necessary to augment their service delivery to this population. The next step in this research is to conduct knowledge transfer activities with OTs with the goal of improving the feasibility of cognitive test administration and reduce the risk of clinical misjudgment.

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## Towards a Better Understanding of Conducting Remote Research from Participants' Perspectives: a Pilot Study *(Excluded from competition)*

Shirley Dumassais[1,2], Gabrielle Aubin[1,2,3], Karl Grewal[4], Megan O'Connell[4], Natalie Phillips[5], & Walter Wittich[1,2,6].
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***Plain Language Summary:*** This research study explored the phenomenological experience of remote research from the perspectives of the participants through semi-structured interviews. Various barriers and facilitators were identified. This qualitative insight on the feasibility of conducting remote research will contribute to establishing guidelines for researchers to provide a positive experience to their participants.

***Introduction:*** The COVID-19 pandemic has changed the scientific approach of conducting research through the use of remote technology, such as the telephone. While researchers aim to maintain scientific rigor, the experience of data collection and the quality of data collected are also linked to the participants having a positive experience. It is therefore imperative to explore the phenomenological experience of remote research from the perspectives of the participants.

***Objective & Methodology:*** The aim of this project was to better understand the perception of six older adults (without sensory impairment, MeanAge= 69.33, SD= 12.20, Range= 67-76) on the facilitators and barriers of conducting research over the phone. They remotely completed a COVID-19 and a telephone use questionnaire, as well as the Montreal Cognitive Assessment in its blind version (MoCA-Blind). Then, they took part in semi-structured debriefing interviews which were transcribed verbatim and independently analyzed by two research assistants.

***Results:*** Participants perceived their emotional state (i.e., high vs. low motivation) as both a facilitator and a barrier. They perceived remote research as more efficient for their own time management, but identified its formal format as a barrier. Finally, they judged the shorter MoCA-Blind as a facilitator, even though the telephone administration sometimes resulted in technological difficulties (e.g., audibility).

***Implication:*** This qualitative insight on the feasibility of conducting remote research will contribute to establishing guidelines for researchers to provide a positive experience to their participants.

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## Medication Use in Community-Dwelling Older Adults with Dementia in Ontario: Applying Machine Learning Techniques to Better Describe Prescribing Patterns over Time

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***Plain Language Summary:*** Medications are prescribed to older adults living with dementia in the community to manage concurrent diseases or dementia symptoms, and can lead to inappropriate prescribing. Network analysis, a data science method, will be used to understand prescribing before, at, and after dementia diagnosis, to inform strategies for the timely detection and prevention of potentially inappropriate prescribing.

***Background:*** Prescribing for community-dwelling older adults living with dementia is complex. Multiple medications may be used to manage symptoms associated with dementia as well as co-existing chronic conditions, and can lead to problematic polypharmacy. Network analysis, a data science method, can be leveraged to provide a comprehensive description of changes in medication use over time in this population.

***Methods:*** A cohort of community-dwelling older adults (aged 67+ years) in Ontario newly diagnosed with dementia (between April 2014 and January 2019) was created from health administrative data held at ICES. Medication networks were created at one year prior to, at, and for up to 5 years following dementia diagnosis.

***Preliminary Results:*** Of 136,292 individuals identified as diagnosed with dementia, the mean age was 82.2 years and 59% were female. The most common medication subclasses at diagnosis and at 5 years following diagnosis were statins, proton pump inhibitors, beta-blockers, calcium blockers, and ace inhibitors.

***Discussion:*** Preliminary results suggest medications for cardiovascular disease are common in this population. There were few changes in the most common medication subclasses used over time. Further results will be produced to inform strategies to ensure timely detection and prevention of potentially inappropriate prescribing. The Engagement of People with Lived Experience of Dementia (EPLED), a Canadian Consortium on Neurodegeneration in Aging (CCNA) advisory group including those with lived experience of dementia and their care partners, will be consulted to refine the analysis and provide context.

## COVID-19 Impact on Health Service Use Among Community-Dwelling Older Adults Living with Dementia in Quebec: a Retrospective Study Stratified by Social Determinants of Health

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***Plain Language Summary:*** Elderly living with dementia use health services differently from younger adults. We stratify the patient characteristic in primary care by sex, neighbourhood, language spoken, ethnicity, level of education and socio-economic status, matching with the type of care received, comparing pre and post COVID pandemic data. Our goal is to better inform equitable policies and practices for dementia care.

***Objectives:*** COVDI-19 has changed health care delivery modality, and it has profound impact on dementia care. We seek to describe the characteristics of patients who used primary care services and stratify by sex, neighbourhood characteristics, language spoken, race/ethnicity, level of education and socioeconomic status. Our hypothesis is that patients with comorbidities, severe dementia, lower education, lower socioeconomic status are more likely to use emergency medical services.

***Designs:*** Population-based retrospective cohort study. Participants: N=22,000 Exposure: time and pandemic.

***Methods:*** We will compare health service utilizations two years before COVID-19 pandemic in persons living with dementia with the first two years of COVID 19 pandemic in terms of ER visits, GP visits, specialist visits. The data will be drawn from the Canadian Census 2016 and matched with Quebec health administrative data. We seek to describe the characteristics of patients who used primary care services and correlate with neighbourhood characteristics, language spoken, race/ethnicity, level of education, socioeconomic status including income and housing.

***Conclusion:*** Dementia care health delivery in Quebec has changed with the current global COVDI 19 pandemic. Our study will help understand the pandemic impact on health seeking behaviours of patients living with dementia in Quebec to better inform equitable policies and practices.

***Keywords:*** social determinants of health, health services, dementia, primary health care.

## Caregiver-Care Recipient Cohabitation and Associated Caregiver Coping in a Memory Clinic Sample

Rory Gowda-Sookochoff, Karl S. Grewal, Andrew Kirk, Debra Morgan, and Megan E. O'Connell. University of Saskatchewan.

***Plain Language Summary:*** We looked at if caregiver coping changed based on living arrangement (with care partner or not) through open-ended questions. We found caregivers coped via their self-concept, relationships, professional support, and actions. Caregivers living together used actions the most. Those living apart emphasized the other coping methods. Both groups noted that more supports are needed to help them cope.

***Abstract:*** Coping with the responsibilities of caregiving for persons with dementia varies by context, and living arrangement (i.e., living together or apart) is an important contextual factor. We analyzed responses from caregivers who attended a tertiary memory clinic to understand if coping methods and potential gaps in coping-related resources varied by caregiver/recipient living arrangement. Caregivers (N = 49) answered two coping questions; living arrangement was inferred based on relationship (i.e., spouses cohabitated, other relationships lived apart). Coping questions were thematically analyzed holistically, then parsed by living arrangement. Qualitative findings suggested that caregivers' coping relies on their self-concept (e.g., being a positive and high-energy person), a loving relationship with the care recipient, deliberate actions (e.g., routine), and tangible (e.g., homecare) and intangible (e.g., socioemotional) supports. Caregivers described inadequate supports for daily tasks (e.g., meals) and in systems (e.g., gaps in homecare). Caregivers stated that receiving a diagnosis and increasing their knowledge of dementia would be helpful. When living status was considered, distinct patterns emerged. Living-together caregivers coped by using deliberate actions such as taking breaks and consistent self-care (e.g., a daily 30-minute bath, exercise). Conversely, living-apart caregivers described coping by relying on their self-concept, relationship with their person with dementia, and structural supports. Living-apart caregivers also emphasized that greater caregiving assistance is needed to support their ability to cope.

## Hearing Loss is Associated with Widespread Alterations in Functional Connectivity in Adults with Mild Cognitive Impairment

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***Plain Language Summary:*** Hearing loss and mild cognitive impairment (MCI) are both associated with increased dementia risk. We characterized the relationships between hearing loss and brain connectivity in adults with MCI. Hearing loss was associated with widespread alterations in brain connectivity, suggesting that altered brain connectivity may be a mechanism for the increased dementia risk associated with hearing loss.

***Abstract:*** Hearing-loss (HL) is prevalent in adults with mild cognitive impairment (MCI). Both MCI and HL are associated with altered brain connectivity. These alterations have been associated with cognitive impairment in both groups and progression to Alzheimer's disease in individuals with MCI. This suggests that altered brain connectivity is a potential mechanism for the cognitive decline and increased dementia risk in these two populations. Based on this, we characterized the relationship between two measures of hearing and brain connectivity in adults with MCI. Based on a pure-tone screening protocol participants were classified as having either normal hearing (NH, n=60, %female= 40%, age=74.5, education=15.19) or HL (n=35, %female=48%, age=70.07, education=16.5). Groups were matched on gender and did not differ in age/education/MoCA scores. Speech reception-thresholds were used as a measure of supra-threshold hearing. Analyses tested whether default-mode network and Heschl's gyrus connectivity differed as a function each hearing measure. In all analyses, age, education, reading acuity, and contrast sensitivity were included as covariates. Compared to participants with NH, those with HL had decreased connectivity between the default-mode network and the caudate and thalamus, increased connectivity within Heschl's gyrus, and decreased connectivity between Heschl's gyrus and regions in the frontal lobe. This suggests that the increased risk for cognitive decline and dementia in individuals with HL may be due to a loss of functional connectivity between and within brain regions responsible for sensory and higher order processing.

## The Potential of Technology for Caregiving: Insights from Caregivers of Persons Living with Dementia

Karl S. Grewal[1], Rory Gowda-Sookochoff[1], Shelley Peacock[1], Allison Cammer[1], Lachlan McWilliams[1], Raymond Spiteri[1], Kristen Haase[2], Tess Harrrison[1], Lorraine Holtslander[1], Rhoda MacRae[3], Joanne Michael[4], Megan E. O'Connell[1].

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***Plain Language Summary:*** We looked at whether technology could help support people with dementia and their caregivers using a survey. We found caregivers used technology for daily tasks and some caregiving, describing their experience as good, bad, or neutral. Caregivers liked technology's convenience but said cost, lack of knowledge, and privacy were issues. Some caregivers thought technology and caregiving may not mix.

***Abstract:*** It is critical to examine ways to support persons with dementia and their caregivers to help minimize the disease's impact on individuals, families, and society. One emerging avenue for support is technology (e.g., smartphones/smart homes). We conducted a telephone-delivered cross-sectional survey to understand the potential role for this support from the perspective of those caregiving for persons with dementia. Random digit dialing was used to sample and survey 67 self-identified caregivers of persons with dementia across Saskatchewan. Participants were asked about their attitudes towards technology, barriers and facilitators for general technology use, technology use with caregiving, and demographic information. Eight open-ended questions were thematically analyzed; two closed ended questions about comfort with and helpfulness of technology were descriptively analyzed with SPSS. Descriptive results suggested caregivers were relatively comfortable with technology, though they were more neutral in how helpful they perceived technology to be for their caregiving. Qualitative findings suggested caregivers used technology for functional purposes, some caregiving activities, and remote household monitoring. Caregivers described experiences with technology that were positive, neutral, and negative. Overwhelmingly, caregivers appreciated technology's convenience while also communicating barriers such as cost, lack of knowledge, and privacy concerns. Some caregivers were concerned that technology would not be feasibly adopted for caregiving in dementia, or that doing so would have negative impacts on the person with dementia.

## What Makes an Effective Social Support Intervention? A Systematic Review of Interventions Targeted towards Individuals

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***Plain Language Summary:*** Social support aids the emotional functioning of informal care partners of persons with lived experience of dementia. The average support network can be improved but few interventions exist. We looked at interventions from other populations and found components that help improve social support and emotional functioning. These findings aided the design of an upcoming intervention for care partners.

***Background/Objectives:*** Social support's beneficial effect on feelings of burden, depression, and anxiety is documented within informal care partners of persons with lived experience

of dementia, but problems within the average care partner's social support network exist (e.g., miscommunication, unidentified resources). Interventions are scarce, especially for rural individuals. The objective of the current review was to evaluate social support interventions potentially adaptable to rural populations.

***Methods/Overview:*** 5 databases were searched. Criteria included studies that (1) target individuals, (2) target informal social support, and (3) include social support/wellbeing outcomes. Methodological quality was evaluated using bias and level of evidence frameworks. Narrative summary was employed due to heterogeneity of study characteristics.

***Results:*** 19 studies were included. Methodological quality appeared to be satisfactory. Narrative analysis resulted in grouping by main intervention component. Psychoeducational components (n=8) appeared to improve levels of social support, depression, and anxiety. Therapeutic components (n=5) appeared to maintain levels of social support. Network perspective components (n=6) appeared to improve levels of social support, emotional functioning, and network size. A dose-dependent relationship emerged across categories, with more sessions appearing to increase effectiveness.

***Implications:*** These findings have informed the design of a unique intervention for rural care partners. Importantly, the findings are universal; any researcher may use these results for their population of interest.

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## Experiences of Driving Cessation in Persons with Dementia: Cultivating Acceptance During the Transition

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*[1]University of Toronto; [2]Baycrest Health Sciences; [3]Sunnybrook Health Sciences Center.*

***Plain Language Summary:*** Dementia and driving cessation impact one's identity and emotional wellbeing. In this study, current and former drivers with dementia described their experiences and meaning of driving cessation. Participants feared isolation and loss of independence, but also felt relief and acceptance. Understanding the experiences of the person with dementia will help facilitate coping with driving cessation.

***Background:*** Dementia is associated with many transitions, such as driving cessation, which significantly impact one's identity and emotional wellbeing. Despite recognition that persons with dementia (PWD) experience difficulties with driving cessation, few studies have examined the experiences of PWD, particularly PWD living in rural settings who may be more disadvantaged. Our objective was to explore the meanings that PWD ascribe to driving cessation.

***Method:*** In-depth, semi-structured interviews were conducted with 3 current drivers with dementia (CDWD) and 2 former drivers with dementia (FDWD). Two participants lived in rural settings. Participants described their experiences with driving cessation or the prospect of driving cessation. Data was examined using interpretive phenomenological analysis, which captures the meaning of people's experiences.

***Results:*** Although participants associated driving cessation with a loss of independence, spontaneity, and a sense of security, they showed a high level of self-awareness and acceptance. They emphasized driving cessation as their choice based on self-knowledge, altruism and highlighted positive aspects such as relief from the responsibilities of driving. Other coping strategies included being receptive to supports, using gratitude, and living in the present moment. Participants living in rural settings valued the community supports and the proximity of stores.

***Conclusion:*** Understanding factors that cultivate acceptance and help PWD cope with driving cessation can inform the development of interventions and strategies that support PWD and ease the emotional impact.

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## Cognitive Reserve in Memory in Mild Cognitive Impairment: Differences in Sex and Education *(Winner of the Undergraduate trainee Theme 3 category competition)*

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***Plain Language Summary:*** Cognitive reserve theory (CR) states that life experiences, like education, compensate for neurodegeneration by preserving cognitive function. Women outperform men on verbal memory tests in early life, which may build CR. We tested the nature of the sex differences in CR and found no sex differences in tests of memory that would indicate CR, while once more education did show evidence of CR.

***Abstract:*** Mild cognitive impairment (MCI) is characterized by measurable cognitive decline and progressive neurodegeneration (ND). The ability to compensate for cognitive decline varies and can depend on individual differences in life experience. Cognitive reserve theory suggests that life experiences contribute to neuroplasticity to compensate for ND. Women generally outperform men on verbal memory tests, which may contribute to cognitive reserve. It is unclear if women have a greater capacity for cognitive reserve, or if there are sex differences in cognitive reserve that mirror other lifelong sex differences in cognition. Using COMPASS-ND data, we analyzed scores on memory tests as a function of a hippocampal volume measure (HpVR), comparing males and females with MCI (Females: n=46, age M=71 years; Males: n=58, age M=72 years) on tests of verbal, associative, and visuospatial memory. Given a typical female advantage in verbal and associative memory and male advantage in visuospatial memory, we hypothesized that these sex differences would be found in individuals with less ND (as defined by HpVR) compared to those with more ND. We found neither sex differences in memory scores, nor interactions of sex and HpVR. Combining women and men we then compared participants with high education (n=44, M=19.3 years) and low education (n=46, M=12.2 years) and found a main effect of group and an education group by HpVR interaction, which was evidence of cognitive reserve. Future analyses will include ApoE status and a larger range of risk states and diagnostic groups of dementia.

## The Associations Between Older Adults' Essentialist Beliefs About Aging and Self-perceived and Performance Measures of Sensory and Cognitive Abilities

Niroshica Mohanathas[1,2], April Pereira[3], Eric Cui[1,4], Maria Iankilevitch[5], Jordana Schiralli[1], Margaret Kathleen Pichora-Fuller[1], Alison Chasteen[1].
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***Plain Language Summary:*** We investigated if viewing aging as a malleable process predicted older adults' perceptions about and performance on tests of hearing and memory. We found that the more older adults viewed aging as a malleable process, the more positive they were about their hearing and memory abilities, and this positive view predicted better hearing but not memory performance.

***Abstract:*** Hearing loss is associated with cognitive declines and changes in sensory (e.g., hearing) and cognitive (e.g., memory) abilities in later life have critical implications for everyday functioning, such as communication and driving. Despite the importance of sensory-cognitive associations, past research has focused largely on how older people's views of aging influence their self-reported cognitive abilities and performance, neglecting the role that sensory abilities may play. The current study examined if malleable views about aging predict self-perceived abilities and in turn performance on hearing and memory measures. 261 older adults completed 3 questionnaires (Essentialist Beliefs about Aging; Speech, Spatial and Qualities of Hearing; Metamemory in Adulthood), 2 hearing performance measures (pure-tone average of audiometry; Canadian Digit Triplets Test) and 4 memory measures (Montreal Cognitive Assessment (delayed recall); Auditory Free Recall; Visual Free Recall; Logical Memory). Using structural equation modeling, we found that the more malleable older adults' views of aging were, the more positive they were about their hearing and memory abilities, which in turn predicted hearing performance but not memory performance. These findings help clarify how older people's views about the aging process relate to their self-perceived abilities and performance in different domains. As such, this study can inform interventions aiming to promote positive views of aging to improve daily sensory and cognitive functioning in older adults.

## An Integrated Approach to Understand Factors that Influence Uptake of Physical Activity for Cognitive Health

Kishoree Sangarapillai[1], Eric Cui[2], April Pereira[1], Laura Middleton[1], Kathleen Pichora-Fuller[2], Alison Chasteen[2].
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***Plain Language Summary:*** Many factors are crucial for brain health, including hearing, social engagement, and physical activities, and importantly, these are modifiable and may influence one another. For example, people with worse hearing are less likely to engage in social or physical activities. In our study, we are exploring the connections between these types of factors amongst older adults.

***Abstract:*** Hearing loss, social isolation, and physical inactivity are a few of the identified modifiable risk factors for cognitive decline among older adults. Although physical activity can be beneficial for cognitive health, interactions among barriers, including the aforementioned factors, may make it difficult to reap those benefits. The current study will explore the interactions between sensory (e.g., hearing, vision), biological (e.g., sex), and social-psychological factors (e.g., gender, negative views of aging) on physical activity among older adults at three different stages of cognitive function (normal, mild cognitive impairment, or mild dementia). To do this, individuals will be recruited from various sources such as the Centre for Community, Clinical and Applied Research Excellence (CCCARE), Waterloo Research in Aging Participant pool (WRAP), Rotman Research Institute at Baycrest, and Canadian Centre for Activity and Aging (CCAA). Participants will complete a survey (including questions about the above factors) followed by an online cognitive and hearing screening. The results of the present study will add to CCNA's mission to improve the lives of older adults across the cognitive impairment spectrum.

## Caregiver Experience of Driving Cessation in Dementia: Results from the Alzheimer Society of Saskatchewan Driving and Dementia Project Caregiver Survey

Dena Sommer[1], Patti Kelm[2], Elaine Stasiulis[3], Mark J Rapoport[1,4], Gary Naglie[1,3,5], the CCNA Driving and Dementia Team Co-Investigators, and the CCNA Study Group.
*[1]University of Toronto; [2]Alzheimer Society of Saskatchewan; [3]Baycrest Health Sciences Rotman Research Institute; [4]Sunnybrook Health Sciences Centre; [5]Institute of Health Policy, Management and Evaluation.*

***Plain Language Summary:*** The Alzheimer Society of Saskatchewan conducted an online survey on driving cessation for caregivers of people living with dementia. Our analysis of the results showed that caregivers' expectations do not match the reality of those who have experienced the driving cessation process. Gaps in planning ahead, decision making, and access to supports highlight important areas for intervention.

The decision to stop driving and the driving cessation transition is challenging, not only for people living with dementia (PWD), but also for their caregivers.

***Objectives:*** To develop effective supports for caregivers through the process of driving cessation, their needs and experiences must be understood.

***Methods:*** The Alzheimer Society of Saskatchewan (ASOS) distributed online surveys to 1258 members of a client database via email, as well as an online call via the ASOS Facebook page. Questions addressed the experiences, perceptions, and needs of caregivers supporting a PWD throughout the driving cessation process. Data was analyzed using descriptive statistics.

***Results:*** A total of 251 responses were collected. The majority of respondents had not made any plans for driving cessation. Most caregivers of active drivers expected that regulators and physicians would decide on the timing of driving cessation. However, caregivers of former drivers reported less frequent involvement of regulators and physicians in their experience. Caregivers of former drivers felt that something positive had come out of driving cessation more often than was anticipated by those caring for people still driving.

***Discussion:*** Despite consensus that driving cessation planning should occur early, this was not reflected in the experience of most participants. Driving cessation remains a difficult challenge for caregivers of people with dementia. Differences in expectations about the driving cessation process compared to the actual experience highlight important areas for education and intervention.

## INVESTIGATORS AND RESEARCH STAFF POSTER SESSION

## THEME 1 Category (Prevention)

### Burst Testing with MyCogHealth in the CTU Pilot: Participant Compliance and Satisfaction

Paul Brewster, Shahnaz Winer, Scott Hofer, Canadian Thumbs Up Study Group. Institute on Aging & Lifelong Health, University of Victoria.

***Plain Language Summary:*** As part of the CTU Pilot, participants completed mobile phone-based cognitive testing using the MyCogHealth app. We examined their completion rate and satisfaction with MyCogHealth and found both to be excellent. These results support the use of mobile assessment apps with older adults in dementia prevention and cognitive aging research.

***Question Addressed:*** Mobile technology has the potential to improve scalability and measurement precision in dementia prevention and cognitive aging research. Here we investigate participant compliance and satisfaction with a self-administered mobile app-based cognitive assessment protocol in the CTU Pilot.

***Study Methods:*** The CTU Pilot included three intensive measurement "burst" studies of cognition, completed in three-month intervals using the MyCogHealth mobile cognitive assessment app. The app was pre-installed on study phones that were provided to participants for the duration of the study. During each burst, participants completed two brief assessments daily across seven consecutive days. Each assessment included three brief cognitive tests, as well as several questions assessing state factors at the time of testing. Compliance with the intensive measurement schedule was captured based on number of sessions completed by each participant. User satisfaction was captured from the MyCogHealth User Experience survey administered during the final assessment period.

***Results:*** 90% of participants (18 out of 20) completed all three assessment bursts and participant compliance exceeded 85% in the CTU Pilot. Participant feedback indicated high satisfaction with the usability and convenience of the app. This work shows that older adults at high risk of dementia are capable of participating in longitudinal self-administered mobile phone-based studies of cognition.

***Implications:*** This assessment approach greatly expands accessibility by obviating in-person data collection.

### The Canadian ADNI Brain Donation and Neuropathology Network (CABIN)

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***Plain Language Summary:*** Autopsy brain examination and brain banking are important tools for understanding the basis of neurodegenerative diseases. We invite COMPASS-ND participants to donate their brain at the time of death in order to study the tissue and bank samples for future research. To date, we have amassed brain tissue from 11 participants and created infrastructure to support future brain banking initiatives.

***Objective:*** Neuropathological evaluation and banking of postmortem brain tissue are fundamental research tools for understanding the basis of neurodegenerative diseases. In addition to providing crucial validation of clinical diagnoses, the Canadian ADNI Brain Donation and Neuropathology Network (CABIN) aims to establish opportunities to investigate clinical, neuroimaging and biomarker correlations with neuropathological findings, and to amass a repository of biospecimens for future research. Moreover, CABIN has created Canada-wide infrastructure and protocols instrumental in supporting brain donation in Canada for decades to come.

***Methods:*** CABIN invites participants from the Comprehensive Assessment of Neurodegeneration and Dementia (COMPASS-ND) Study to have their postmortem brain tissue examined and banked. The diagnostic evaluation is done by a neuropathologist with expertise in neurodegenerative disease at one of five core study sites across Canada. Standardized neuropathological assessments support the research aims of COMPASS-ND by providing accurate diagnoses, neuropathological data and optimal biospecimens for future research. Samples are stored at the Douglas-Bell Canada Brain Bank in Montreal.

***Findings:*** To date, 11 autopsies have been performed according to COMPASS-ND Neuropathology Protocol. An additional 199 participants have consented to donating their brain at the time of death.

***Conclusion:*** The brain tissue banked and infrastructure established by CABIN will be indispensable for the ability to study, and ultimately understand and develop interventions for neurogenerative diseases plaguing the world.

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## The Brain Health Support Program of the Canadian Thumbs Up Prevention Initiative: Developing a Novel Approach to National Recruitment and Program Implementation

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***Plain Language Summary:*** The CAN-THUMBS UP: Brain Health Support Program (CTU: BHSP) is conducted as a fully remote study. From this experience, the study team discovered opportunities and technologies to remove barriers to participation, increase study awareness, decrease time and cost while maintaining study integrity. Based on early experiences, there are encouraging signs for transitioning studies to a remote setting.

***Background:*** The Brain Health Support Program (BHSP) of the Canadian Thumbs Up prevention initiative is centered on an online interactive educational platform that has been designed and created for its users to increase dementia literacy, self-efficacy and to address their modifiable lifestyle risk factors. BHSP is being conducted across Canada using a fully remote approach that provides a novel opportunity for recruitment and implementation.

***Design*** and ***Methods:*** This is a longitudinal observational cohort study of participants who are cognitively normal or have mild cognitive impairment. Participation in the online educational platform occurs over 12 months within a modular environment and tailored to personalized risk factor profiles. A novel approach to recruitment and implementation is being rolled out, with regional hubs across Canada, and with participants able to join the study from all areas of Canada. This opens participation to both urban and rural settings with the intention of reducing barriers to access.

***Preliminary Results:*** Feedback from the pilot study and from the initial experience of the BHSP main study indicate that this initiative is being extremely well received. Recruitment rates have far exceeded projections with 94 consented, and over 500 people registering interest since its launch in April 2022.

***Discussion:*** The fully online BHSP is informing a novel approach to recruitment and study implementation with significant potential within the Canadian context to encourage inclusivity and remove barriers while making participation significantly less burdensome. Early results are very encouraging.

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## Stratification by Nutrition Risk at Baseline Impacts Covariates Associated With 3-Year Change in SCREEN-8 Score in the Canadian Longitudinal Study on Aging

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***Plain Language Summary:*** Current nutrition risk is important to understand what affects changes in risk over time and to help improve nutrition. For seniors not at risk, lack of dental care, poor oral health, living alone, and kidney or mental health conditions can increase risk. For seniors currently at nutrition risk, gastrointestinal conditions, and frailty further increase risk, but improved oral health reduces risk.

***Abstract:*** Older adults at nutrition risk are susceptible to poor health outcomes. Using SCREEN-8, we identified 3-year change in nutrition risk and factors associated with a change in SCREEN-8 score among 5,031 older adults (x≥65 years) in the Canadian Longitudinal Study on Aging. Descriptive statistics and multivariable linear regression were performed; regression was stratified by baseline nutrition risk status (at risk vs. not at risk). A decrease in SCREEN-8 score indicates an increase in nutrition risk. Most participants remained not at nutrition risk (53.6%), or at risk (18.3%), while 28.0% experienced a change in risk status (10.7% improved, 17.3% declined). Among those not at nutrition risk at baseline, females (p=.017), smokers (p=.020), psychological or kidney diagnoses (p=.017, p=.023), psychological/social or dental service use (p=.005, p=.009), any change in marital status (p=.015), living alone at follow-up (p=.006), and oral health problems (p=.002) were associated with a decrease in SCREEN-8 score. For those at nutrition risk at baseline, declined chair rise performance and self-rated hearing (p=.004, p=.032), gastrointestinal diagnoses (p=.008), and impaired activities of daily living (p=.039) were associated with a decrease in SCREEN-8 score. Resolved oral health problems at follow-up (p=.031), hospital use only at baseline (p=.031), and a decrease in household income (p=.002) were associated with an increase in SCREEN-8 score. Multifaceted strategies that consider where older adults are in their nutrition risk trajectory are needed to prevent the development or worsening of nutrition risk and its consequences.

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### Nutrition Risk and Health Variables Associated with Cognition in the Canadian Longitudinal Study on Aging: a Sex-Stratified Analysis

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***Plain Language Summary:*** This study showed that nutrition risk is associated with poorer cognition in adults aged x≥55; however, nutrition risk was less important when studying the association in females and males separately. For females, being single and depressive symptoms negatively impacted cognition. For males, hypertension, diabetes, poor hearing, high/low body mass index, and smoking negatively impacted cognition.

***Abstract:*** Body mass index is a known risk factor for cognitive change with age; however, it is unknown if nutrition risk, an upstream variable that reflects determinants of malnutrition (e.g., weight change, appetite, etc.) is relevant. The aim of this study was to determine whether nutrition risk, measured by SCREEN-8, was associated with baseline cognition among older adults aged x≥55 in the Canadian Longitudinal Study on Aging. Adjusted multivariable linear regression analyses were conducted within the entire sample and then stratified by sex to assess for sex-specific associations. Cognition was determined by a 6-item composite score (2 memory, 4 executive function tests) adjusted for age, sex and education. Analyses showed that greater nutrition risk was associated with lower cognition for the entire sample (n=11,378; p=.021), but the effect of nutrition risk was no longer significant in sex-stratified models. For females (n=6,202), being single (p=.021) and/or experiencing greater depressive symptoms (p<.001) were associated with lower cognitive performance. For males (n=5,176), hypertension (p=.017), diabetes (p=.041), fair/poor self-rated hearing (p=.013), smoking (p=.016), being underweight (p=.001), overweight (p=.003) or obese (p=.030) and/or higher self-reported physical activity (p=.014) were associated with poorer cognitive performance. Although nutrition risk appears to be relevant overall, monitoring for under and overweight, especially in males is important. Multi-faceted approaches that include monitoring body weight and nutrition risk in primary care may be relevant to reduce cognitive decline in older adulthood.

## THEME 2 Category (Treatment)

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### Efficacy of a Cognitive and Leisure-Based Training Program for Older Adults at Risk of Dementia: Preliminary Results of the ENGAGE Trial

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***Plain Language Summary:*** Memory training programs have the potential to improve brain function and delay dementia, including due to Alzheimer's disease. The ENGAGE program trains memory and other brain functions by engaging older adults in stimulating cognitive and leisure activities. This program is accessible to anyone regardless of background, and aims to empower individuals and societies in the fight against dementia.

***Abstract:*** Cognitive interventions are recognized as efficient strategies to promote cognitive health and decrease dementia risk in older adults. However, existing cognitive training programs are not always engaging, especially for individuals with lower levels of education, even though low education is a risk factor for dementia. CCNA Team 10 created ENGAGE, a 4-month multifaceted program specifically designed for individuals with a higher risk of dementia. The program combines strategic memory and attention training with stimulating leisure activities, such as learning music, learning a second language, or playing videogames. We tested the efficacy of ENGAGE in a randomized controlled preference trial. One hundred and twenty-eight participants with subjective cognitive decline or mild cognitive impairment were enrolled in two sites, CRIUGM (Montreal) and Baycrest (Toronto). They were randomized to either the ENGAGE intervention or an active control intervention. Here we present the data on a composite score of delayed episodic memory and on the Memory tool box, which measures the participants' ability to apply memory strategies in real-life situations. The comparison of pre-training to post-training indicated that both groups improved comparably on the delayed episodic memory composite. However, the ENGAGE intervention group demonstrated a larger pre-post-training gain in the ability to select effective memory strategies based on real-life demands. These results highlight that strategic memory training in the context of engaging leisure is effective in improving older adults' functional memory skills.

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## Identifying Key Multi-modal Predictors of Incipient Dementia in Parkinson's Disease: Machine Learning Analyses and Tree SHAP Interpretation

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***Plain Language Summary:*** We used new machine learning analyses to discover 10 leading risk factors that predict dementia in persons with Parkinson's Disease (PD). These factors included relatively older age, less independence, more brain shrinkage, riskier aging biomarkers, worse mobility, and poorer cognition. Early detection of PD-related dementia risk can enhance personalized research and treatment protocols.

***Objective:*** We applied machine learning technologies for early detection of dementia risk factors in a 3-year longitudinal study of Parkinson's disease (PD) patients with no dementia (PDND). Specifically, we tested a battery of baseline dementia risk factors to discriminate two baseline groups (a) those who remained non-demented (PDND) and (b) those with incipient dementia (PDID).

***Method:*** Baseline participants were 48 non-demented PD patients (M age=71.5; 44% female), 14 of whom subsequently converted to dementia. We used Python 3.7 for Random Forest (RF) classifier models supplemented by Tree Shapley Additive exPlanation (SHAP) for deep interpretation. First, we tested k-fold cross-validation in RF with 38 risk factors to discriminate unobserved PDID from PDND. Second, we integrated SHAP applications to inform predictor selection and interpretation of effects (direction, magnitude).

***Results:*** The RF model discriminating baseline PDID from PDND was excellent (AUC=.84, F1=.71). With SHAP we identified and interpreted 10 leading predictors accounting for 65% of the model: (a) slower gait, (b) poorer Trail A performance, (c) elevated up-regulated metabolomics panel, (d) poorer Trail B performance, (e) older age, (f) slower reaction time, (g) fewer daily activities, (h) larger third ventricle volume, (i) more steps, and (j) lower creatinine levels.

***Discussion:*** Despite a small sample and a challenging 3-year future dementia prediction goal, a powerful RF classifier model, integrated with SHAP applications, produced valuable insights into the leading predictors of future dementia in initially non-demented persons with PD.

# THEME 3 Category (Quality of Life)

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## Giving Back Data to Regional Healthcare Boards Across Quebec to Support a Learning Health System for Major Neurocognitive Disorders: Methodology and Impact

Geneviève Arsenault-Lapierre[1], Maxime Guillette[2], Victoria Massamba[3], Louis Rochette[3], Alexandra Lemay-Compagnat[2], Yves Couturier[2], Éric Maubert[4], Caroline Morin[4], Christine Fournier[4], Julie Denis[4], Caroline Boudreau[4], Isabelle Vedel[1].

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***Plain Language Summary:*** We present the creation of 24 regional portraits on dementia care practices to Quebec's regional health organizations, responsible for the Quebec Alzheimer Plan implementation. Discussions during presentations will benefit the dissemination of innovative practices and the integration of regularly updated portraits into regional dashboards.

***Context:*** Providing context-specific information and fostering reflective practices through discussions with local actors is essential to support a learning health system. The aim of this poster is to describe the development and presentation of regional portraits of dementia care practices to the 24 regional health organizations, responsible for the implementation of the Quebec Alzheimer's Plan (QAP) in their territory since 2016, and to present preliminary results.

***Methods:*** Using a participatory approach, a) we selected and measured 9 indicators (prevalence, physician/emergency visits, and hospitalizations) in 2019 and b) we thematically analyzed the last 3 years of ongoing QAP evaluation reports and regional meetings. Key messages for each health organization were formulated. Portraits were presented to and discussed with each organization. During discussions, notes were taken using a structured guide and analyzed.

***Results:*** 24 portraits were presented. Discussions revolved around regional innovations in dementia care and areas of improvement across the province. Resources, training, benefits, barriers and facilitators, pandemic effects, and regional particularities were observed along with ideas on how to improve the portraits.

***Conclusion:*** The discussions around these portraits support a learning health system for the care of persons with dementia. It stimulates the emergence of regional innovations in line with the QAP. By ensuring its regional appropriation, it perpetuates sustainably transformed practices. We hope to regularly update the portraits and integrate them into dashboards of regional committees.

## Understanding Twitter Discourse During Alzheimer's Awareness Month in Canada

Juanita-Dawne Bacsu[1], Megan E. O'Connell[2], Allison Cammer[2], Soheila Ahmadi[2], Mehrnoosh Azizi[2], Karl S. Grewal[2], Shoshana Green[2], Corinne Berger[2], Rory Gowda-Sookochoff[2], Sheida Knight[2], Raymond J. Spiteri[2].
*[1]Thompson Rivers University; [2]University of Saskatchewan.*

***Plain Language Summary:*** Our study examined Twitter content during Canada's Alzheimer's Awareness Month in January. Four themes were identified: dementia education and advocacy; fundraising and promotion; experiences of dementia; and opportunities for future action. Increased knowledge, partnerships, and research are essential to enhancing dementia awareness during Alzheimer's Awareness Month and beyond.

***Abstract:*** Twitter has become a primary platform for public health campaigns, ranging from mental health awareness week to diabetes awareness month. However, there is a paucity of knowledge about how Twitter is being used during health campaigns, especially for Alzheimer's Awareness Month. The purpose of our study was to examine dementia discourse on Twitter during Canada's Alzheimer's Awareness Month in January. Tweets were collected from Twitter using the Twint application in Python from January 1 to January 31, 2022. Filters were used to exclude irrelevant tweets (5,820), and the remaining 1,289 tweets were exported to Excel. Inductive thematic analysis was used to analyze the data. Four main themes were identified: dementia education and advocacy; fundraising and promotion; experiences of dementia; and opportunities for future actions such as collaborative partnerships and targeted tweets to correct stigmatizing language and dementia stereotypes. Further research is needed to develop, implement, and evaluate dementia awareness strategies on various social media platforms such as Twitter. Increased knowledge, partnerships, and research are essential to enhancing dementia awareness during Alzheimer's Awareness Month and beyond.

## Understanding the Evolving COVID-19 Impact on People with Dementia from the Perspective of Family and Friends

Juanita-Dawne Bacsu[1], Megan E. O'Connell[2], Allison Cammer[2], Soheila Ahmadi[2], Corinne Berger[2], Mehrnoosh Azizi[2], Rory Gowda-Sookochoff[2], Karl S. Grewal[2], Shoshana Green[2], Sheida Knight[2], Raymond J. Spiteri[2].
*[1]Thompson Rivers University; [2]University of Saskatchewan.*

***Plain Language Summary:*** Using Twitter, our study examined the COVID-19 impact on people with dementia from the perspective of family and friends. We identified several challenges such as inadequate support services, limited finances, cognitive decline, and death. Stories of COVID-19 survival and hope for the future were also evident. Government leadership is needed to support people with dementia during the pandemic.

***Abstract:*** The COVID-19 pandemic is creating new challenges for people living with dementia and their family care partners. Given the rapidly evolving COVID-19 context, policymakers and practitioners require timely, evidence-informed research to address these issues. The purpose of our study was to examine the COVID-19 impact on people with dementia from the perspective of their family members and friends. Using the Twint application in Python, we collected 6,243 relevant tweets on Twitter from September 8, 2020 to December 8, 2021. The tweets were divided among eleven coders and analyzed using a six-step thematic analysis process. Based on our analysis, three primary themes emerged: frustration and structural inequities (e.g., denied dignity, inadequate supports, and financial strain); despair due to loss (e.g., isolation, decline, and death); and COVID-19 resiliency, stories of survival, and hope for the future. Government leadership is needed to support people with dementia and their family care partners in the pandemic. Tackling COVID-19 challenges requires revisiting pandemic policies to ensure equitable access to health and support services, recognizing the essential role of family care partners, and providing financial assistance to support people with dementia during the pandemic.

## EPLED Update: What Have We Done and What Have We Learned (So Far)?

Jennifer Bethell[1,2], Katherine S McGilton[1,2], Ellen Snowball[2], and Engagement of People with Lived Experience of Dementia (EPLED) Advisory Group.
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***Plain Language Summary:*** Engagement of People with Lived Experience of Dementia (EPLED) is a Canadian Consortium on Neurodegeneration in Aging (CCNA) program that enables those with lived experience of dementia be involved in research. The EPLED Advisory Group is composed of people from across Canada with lived experience of dementia. We will present a summary of the EPLED and EPLED Advisory Group activities.

***Background:*** Engagement of People with Lived Experience of Dementia (EPLED) is a Canadian Consortium on Neurodegeneration in Aging (CCNA) program that enables those with lived experience of dementia—persons with dementia and their care partners—to be meaningfully and actively involved in CCNA research processes. The EPLED Advisory Group is composed of people with lived experience of dementia.

***Method:*** The EPLED researchers, Advisory Group and program staff worked to develop an approach to evaluate EPLED activities. Evaluation will include capturing quantitative data on Advisory Group activities as well as Advisory Group and CCNA perspectives on the engagement activity. Existing resources were used to identify key domains and Advisory Group members were invited to share their perspectives on the most relevant questions. Ultimately, a modified version of the Patient Engagement in Research Scale (PEIRS-22) was selected to capture Advisory Group perspectives. EPLED also developed a short questionnaire for CCNA researchers and staff to evaluate their experience working with Advisory Group members. Both questionnaires were transferred to Google Forms for online data collection. We will present data from the EPLED program evaluation.

***Result:*** We will describe the nature of the Advisory Group's work as well as the perceptions from members and CCNA researchers and staff.

***Conclusion:*** Our evaluation plan will be used to improve the EPLED program and plan future activities. Our results may also help other patient partners, researchers and research organisations to develop and implement their own activities.

## Impact of the COVID-19 Pandemic on Healthcare Service Use by Community-Dwelling Persons Living with Dementia: a Cohort Study of Four Canadian Provinces

Deniz Cetin-Sahin[1], Laura C. Maclagan[2], Nadia Sourial[3], Claire Godard-Sebillotte[1], Susan Bronskill[2,4], Jacqueline Quail[5], Andrea Gruneir[6], Dallas Seitz[7], Debra Morgan[8], Isabelle Vedel[1], and the COVID ROSA Team.
*[1]McGill University; [2]ICES Central; [3]Université de Montréal; [4]University of Toronto; [5]Saskatchewan Health Quality Council; [6]University of Alberta; [7]University of Calgary; [8]University of Saskatchewan.*

***Plain Language Summary:*** We studied the impact of the pandemic on persons with dementia in Ontario using administrative databases. We compared 2020 (pandemic) to 2019 (non-pandemic). During the pandemic, while acute care use was lower, family physician visits and mortality were higher. When combined with data from Quebec, Saskatchewan, and Alberta, the results will provide evidence to support appropriate services.

***Aim:*** To measure the impact of the pandemic on health service use of persons living with dementia (PLWD) in four Canadian provinces.

***Methods:*** Using administrative databases, we identified retrospective cohorts of PLWD living in the community on March 1, 2020 (pandemic) and March 3, 2019 (non-pandemic). We measured rates of emergency department (ED) visits, hospital admissions (HA), family physician visits, and mortality in three pandemic periods: First wave (Mar-May); interim period (June-Aug); and second wave (Sept-Dec). We estimated rate ratios [RR (95%CI)] with a Generalized Estimating Equation negative binomial model comparing the periods in 2020 to the corresponding periods during 2019.

***Results:*** The demographics of the Ontario pandemic (n=89,284) and non-pandemic (n=86,959) cohorts were similar. All-cause ED visits were lower in three periods of the pandemic. HAs were lower during the first wave [0.78 (0.75, 0.81)] and the interim period [0.92 (0.89, 0.95)]. Family physician visits were higher in the interim period [1.05 (1.03, 1.07)] and second wave [1.13 (1.11, 1.15)]. Mortality was higher in the first wave [1.14 (1.07, 1.20)] and the second wave [1.14 (1.08, 1.20)].

***Conclusion:*** Lower ED visits and HAs as opposed to higher family physician visits during the pandemic may reflect the shift to virtual visits. Higher mortality during the first two pandemic waves may be explained in part by outbreaks in retirement homes. After comparing with data from Quebec, Saskatchewan, and Alberta, the results will help develop evidence-based recommendations for practice and policy via deliberative dialogues with key stakeholders.

## Environmental Scan of Services and Supports for Older Adults in Rural Memory Clinic Communities and Surrounding Areas

Valerie Elliot, Debra Morgan, Julie Kosteniuk, Melanie Bayly, Chelsie Cameron, Megan E. O'Connell. University of Saskatchewan, Canadian Centre for Health & Safety in Agriculture.

***Plain Language Summary:*** An environmental scan is being conducted over 3 years to identify and describe services and supports and any gaps in services/supports in areas where RaDAR (Rural Dementia Action Research) rural memory clinics have been developed. Ultimately, service lists/maps will be created and changes tracked over time. Data collection/analysis for the first time-point is complete and results are presented.

***Aims:*** In collaboration with primary health care teams in southeast Saskatchewan, rural memory clinics (RMCs) evolved in four geographical areas. This scan focuses on services and supports available to RMC patients/families. Our goal is to identify and describe existing programs and gaps, create inventories/maps, and track changes over time.

***Methods:*** The scan will occur at two time-points over 3 years using a multi-method qualitative design including focus groups with health care providers/managers, a secondary source review, and a systematic internet search. The first time-point is complete, data were analyzed using content analysis, and results are presented. Recruitment is underway to interview people living with dementia (PLWD) and family carers residing near RMCs.

***Results:*** Services identified (n=43) were categorized into 7 service types and mapped by location. Most were Social/Leisure Activities (n=14), then General Support/Referrals (n=13), Transportation (n=7), Information/Education (n=4), Respite (n=2), Home/Personal Care (n=2), and Safety (n=1). Most involved no fees, referral by self/other, and a range of provider education/training. Twenty services across 4 types were offered remotely. In-person dementia-specific services were lacking.

***Conclusions:*** Findings show a range of available services. This is a key step to creating service inventories/maps and tracking changes. Moving forward, the PLWD/carer perspective will deepen our understanding of their experiences with services/gaps. Findings may inform future service delivery, interventions, and improve local program participation.

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## Health Service Use Before and After Diagnosis Among Rural and Remote Memory Clinic Patients

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*[1]University of Saskatchewan, Saskatoon; [2]Saskatchewan Health Quality Council, Saskatoon; [3]Saskatchewan Medical Association, Saskatoon, Canada.*

***Plain Language Summary:*** We looked at rates of health service use of rural/remote people, five years before and after diagnosis in a specialist memory clinic. Five years before diagnosis, health service use gradually increased. After diagnosis, family physician visits and all-type drug prescriptions continued to increase. Timely dementia assessment and quality care are essential regardless of geographic location.

***Objectives:*** The study aim was to examine annual rates of health service use five years before until five years after diagnosis in the specialist Rural and Remote Memory Clinic (RRMC) designed for patients living more than 100 km outside the two major Saskatchewan cities.

***Methods:*** This retrospective cohort study used linked clinical and administrative health data of patients receiving a RRMC diagnosis (2004-2016). Annual health service use for the 5-yr periods before and after diagnosis were examined, with data available for 416 patients pre-index. Average age was 71 years (SD, 11) and the majority were female (56.3-57.5%). Most patients were diagnosed with Alzheimer's disease (AD) or non-AD dementia (58.3-59.3%).

***Results:*** The mean number of family physician (FP) visits increased from 11.7 to 14.9 across pre-index and specialist visits increased from 8.9 to 13.2 between 5-yr pre- and 1-yr post-index. Post-index, FP visits continued to increase however specialist visits decreased. The proportion of patients hospitalized at least once increased from 28.4% to 37.3% across pre-index before decreasing post-index. The mean number of all-type drug prescriptions per patient increased steadily from 29.9 at 5-yr pre-index to 67.2 by post-index end. During the post-index, 188 patients (44.9%) moved to permanent long-term care and 121 died (27.8%).

***Implications:*** Five years before diagnosis in a specialist memory clinic, health service use gradually increased. After diagnosis, FP visits and all-type drug prescriptions continued to increase. Timely dementia assessment and quality care are essential regardless of geographic location.

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## Perceptions and Outcomes of an Embedded Alzheimer Society First Link Coordinator in Rural Primary Healthcare Memory Clinics

Debra Morgan, Melanie Bayly, Julie Kosteniuk. University of Saskatchewan, Canadian Centre for Health & Safety in Agriculture.

***Plain Language Summary:*** We examined Alzheimer Society of Saskatchewan First Link Coordinator roles in rural primary care memory clinics. Coordinators reported unique roles providing information, emotional care, and direction to services. In-person interaction at clinics established relationships that facilitated future contacts. Clinic clients were contacted sooner, had longer first contacts, and more in-person contacts.

***Aims:*** The Alzheimer Society of Saskatchewan (ASOS) First Link (FL) Program connects persons living with dementia and families with information and supports after diagnosis. ***Aims:*** (1) examine perceptions of FL Coordinators embedded in rural primary healthcare memory clinics about their role and its benefits, (2) evaluate timeliness, number of Coordinator-client contacts and topics discussed, and contact duration and method.

***Methods:*** (1) Semi-structured telephone interviews with three FL Coordinators in four interdisciplinary rural memory clinics. (2) Analysis of ASOS data comparing memory clinic, self, and direct referrals from primary care professionals in the same area.

***Results:*** (1) Interviews: Coordinators reported a unique role in the clinics, providing information, emotional care, and direction to services. Compared to other referrals, face-to-face contact at memory clinics helps establish relationships, benefitting families (e.g., more comfortable, productive follow-up because FL Coordinator knows their story) and other team members (e.g., FL fills gap in providing support). (2) ASOS data: Between Dec 2017-Dec 2021, 127 clients (predominantly spouses, children) were referred. Compared to other referrals, statistically significant differences included memory clinic clients being contacted sooner after referral, longer duration of first contact, and more in-person contacts. There were no differences in number of completed contacts or topics discussed.

***Conclusions:*** Findings demonstrate the added value of FL Coordinators as memory clinic team members. Further research is needed to explore longer term outcomes for clients.

## Implementing and Evaluating the Driving and Dementia Roadmap (DDR) During the COVID Pandemic

Gary Naglie[1-3], Elaine Stasiulis[1,3], Harvir Sandhu[1,3], Christina E. Galucci[1,3], and Mark J. Rapoport[4,5], and on behalf of the CCNA Driving Cessation Team Co-Investigators and CCNA Study Group.
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***Plain Language Summary:*** During the COVID pandemic we conducted an evaluation of the online educational resource, the Driving and Dementia Roadmap (DDR) in six Alzheimer Society (AS) organizations. Analysis of interviews with AS staff and clients indicated concerns about increased driving risk post-COVID and the need for the DDR due to increased cognitive decline and lack of driving experience among people with dementia.

***Background:*** To address the gap in resources to support people with dementia (PWD) and family carers (FCs) through the process of driving cessation, we developed the Driving and Dementia Roadmap (DDR) - an online educational resource. During the COVID pandemic an implementation evaluation was conducted to explore the DDR's delivery, acceptability, adaptability, preliminary benefits and limitations.

***Methods:*** The DDR was delivered to Alzheimer Society (AS) clients by staff from six organizations in four provinces from December 2020 to September 2021. Semi-structured interviews were conducted with 19 AS staff, eight PWD and 13 FCs. Questions included how COVID impacted the DDR's usage. Data were examined using a thematic analysis approach.

***Results:*** AS staff reported that client concerns about driving cessation and interest in the DDR were less than anticipated due to COVID, which they attributed to other pressing issues such as staying safe from COVID, a lack of access to services and activities and caregiver burnout. FCs and PWD indicated that driving was not a concern because they were driving less in the pandemic. However, AS staff were apprehensive about increased driving risk in the aftermath of COVID due to reports of PWD's profound cognitive decline and lack of driving experience during the pandemic.

***Conclusion:*** The longer-term implications of neglecting driving cessation during the COVID pandemic may be considerable for PWD and FC. The need for resources, such as the DDR, to support PWD and FCs in the decision-making and transition to non-driving will be particularly critical post-COVID.

## Using the Driving and Dementia Roadmap (DDR) to Address the Emotional Impact of Driving Cessation and Dementia

Mark J. Rapoport[1,2] , Elaine Stasiulis[3,4], Harvir Sandhu[3,4], Christina E. Galucci[3,4], and Gary Naglie[3,5], and on behalf of the CCNA Driving Cessation Team Co-Investigators and CCNA Study Group.
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***Plain Language Summary:*** The emotional impact of driving cessation for people with dementia and family carers can be significant. Results from our implementation evaluation of the online educational resource, the Driving and Dementia Roadmap (DDR), indicated that the DDR can lessen the associated fear and distress by bringing knowledge and skills to maintain affected individuals' hope and quality of life post-driving.

***Background:*** The emotional impact of driving cessation for people with dementia (PWD) and their family carers (FCs) that includes grief, fear and distress can be significant. We conducted an implementation evaluation of the Driving and

Dementia Roadmap (DDR), which is a web-based educational resource to support PWD and FCs through the decision-making and transition to non-driving, including managing the oft-neglected emotional implications.

***Methods:*** Semi-structured interviews were conducted with 19 Alzheimer Society (AS) staff who delivered the DDR as well as eight PWD and 13 FCs who used the DDR in six AS settings in four provinces. Participants were asked about their experiences of engaging with the DDR. An inductive thematic analysis of the data was conducted.

***Results:*** The DDR had a direct impact on the emotional aspects of driving cessation for FCs and PWD by providing insight about the PWD's grief and loss. FCs described being able to attend to the emotions the PWD was experiencing that included initiating conversations about driving with compassion, empathy and patience. Indirectly, the DDR also helped PWD and FCs feel that they were not alone, thus "normalizing" driving cessation. Strategies about remaining mobile brought relief and hope that PWDs' quality of life could be maintained post-driving.

***Conclusion:*** By providing resources and tools that not only directly address the emotional impact of driving cessation, but also attend to other aspects of managing the decision-making and transition to non-driving, the DDR has the potential to lessen the associated grief, fear and distress often experienced by PWD.

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## The Experience of Persons Living with Dementia and Care Partners with the Use of Health and Social Care Services in Quebec

Laura Rojas-Rozo[1], Geneviève Arsenault-Lapierre[2], Yves Couturier[3], Alexandra Lemay-Compagnat[3], Marie-Claude Lafleur, the ROSA team, Isabelle Vedel[1].
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***Plain Language Summary:*** We want to understand the challenges persons with dementia (PWD) experienced when using health services during the pandemic and the respect to their human rights. We will interview PWD and care partners living in Quebec. We will focus on their human rights, the changes they perceived in health services, and what changes they recommend to keep for improving the care for persons with dementia.

***Introduction:*** Persons living with dementia (PLWD) have been affected by the COVID-19 pandemic. Little is known about the specific challenges they might have experienced when accessing and using health and social care services (HSCS), specifically in terms of the respect to their human rights. Our objective is to understand PLWDs' and care partners' experiences and expectations with health and social services use during the pandemic, specifically in terms of their human rights.

***Methodology:*** A qualitative descriptive study. We will carry out 20 semi-structured interviews with PLWD (N:10) living in the community, in private residences, and long-term care facilities, and care partners (N:10). We will analyze the data using a hybrid thematic analysis, guided by the World Health Organization Framework ensuring the human-rights based approach for PLWD.

***Preliminary Results:*** We will focus on preliminary results from Quebec, with emphasis on their perceived freedom of choice on their health decisions, discrimination when using HSCS, perceived needs, changes perceived in the services they received, and which one of those changes they expect to be maintained or modified after the pandemic.

***Conclusions:*** The results of the study will identify the potential barriers and facilitators PLWD, and their care partners may have faced during the COVID-19 pandemic, specifically in terms of human rights. Results will be used to develop recommendations for better care for persons living with dementia that supports their rights.