45\textsuperscript{th} Harvey Stancer Research Day

Thursday, June 20, 2019 from 8:00am to 5:00pm
Chestnut Conference Centre, 89 Chestnut Street, Toronto

Psychiatry
UNIVERSITY OF TORONTO
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Dear Faculty and Students:

On behalf of the Harvey Stancer Research Day Planning Committee, I am delighted to welcome you to the Department of Psychiatry at the University of Toronto’s 45th annual Harvey Stancer Research Day!

Our Research Day begins with the 5th annual Mentorship Breakfast where our graduate student, psychiatry resident, and postdoctoral fellow trainees have the opportunity to connect with a group of outstanding faculty members in the Department who have generously given their time for this event.

For the keynote lecture, Dr. Michael Milham joins us to present this year’s Trevor Young Lecture in Psychiatry Research entitled: “Clinically useful brain imaging for neuropsychiatry: Are we getting there?” Dr. Milham is an internationally recognized neuroscience researcher, the Vice President of Research and the founding director of the Center for the Developing Brain at the Child Mind Institute. He is also a practicing child and adolescent psychiatrist. Dr. Milham’s research interests include investigating how functional and structural connectivity in the brain may underlie differing forms of mental illness, and seeking to chart the course of brain development in healthy and affected children.

Following Dr. Milham’s keynote address, we have a fantastic line-up of faculty plenary speakers who will present their papers, which span from health services to neurobiology. The plenary paper submissions we received this year were extraordinarily impressive. The plenary talks represent our Department’s highest impact publications from the past year and the diversity of research excellence and contribution in our Department. Our plenary speakers are: Drs. Daniel Blumberger, Gary Rodin, Colin Hawco, Mark Sinyor, Erin Dickie and Daphne Voineskos. The programme for the afternoon will include lunch and our poster session (featuring 94 posters) as well as our afternoon oral sessions (featuring 57 presentations) showcasing the superb academic achievements of faculty and trainees in our Department across a diverse array of disciplines of psychiatry research. We will end our day with a reception where the winners of the Best Poster Presentation and Graduate Student, Resident, Fellow and Early Career Investigator Awards for best presentation will be announced.

I would like to extend a heartfelt thank you to the Department of Psychiatry for supporting this wonderful event, to my scientific planning committee (Drs. Benjamin Goldstein, Tyler Kaster, Simone Vigod, Nicole Kozloff, Simina Toma, Joshua Rosenblat), to the mentors and mentees for their interest to contribute to the annual mentorship breakfast, the oral session chairs, poster judges and poster session moderators for their help in executing the event this year and in selecting this year’s Harvey Stancer Research Day award winners. I would also like to extend a sincere thank you to Olesya Zaremba for her amazing administrative support and Chris Meledes and all the other administrative staff within the Department of Psychiatry at the University of Toronto. It is a pleasure to plan this event with your support!

Sincerely,
Stephanie Ameis MD, MSc, FRCPC
Harvey Stancer Research Day Chair
O’Brien Scholar, Child and Youth Mental Health Collaborative at CAMH and Sick Kids, Staff Psychiatrist, Child and Youth Psychiatry, Centre for Addiction and Mental Health (CAMH), Assistant Professor, Department of Psychiatry, University of Toronto
Michael P. Milham, MD, PhD, is an internationally recognized neuroscience researcher, the Vice President of Research and the founding director of the Center for the Developing Brain at the Child Mind Institute. He is also a practicing child and adolescent psychiatrist.

Dr. Milham’s research interests include investigating how functional and structural connectivity in the brain may underlie differing forms of mental illness, and seeking to chart the course of brain development in healthy and affected children.

In order to accomplish these goals, Dr. Milham has worked to advance a Big Data research agenda in the neuroimaging community, which focuses on open data sharing as a means of achieving the large-scale samples needed to capture the broader range of presentations in psychiatry. He co-founded the 1000 Functional Connectomes Project and founded its International Neuroimaging Data-Sharing Initiative (INDI). These efforts have helped to bring major consortia to the community, including the ADHD 200, Autism Brain Imaging Data Exchange (ABIDE) and Consortium for Reliability and Reproducibility (CoRR).

Dr. Milham is also the founder and director of the Nathan Kline Institute Rockland Sample initiative, which has worked to map brain development, maturation and aging (ages 6 to 85 years old) in 1000 individuals from the Rockland Community, openly sharing all data generated with other scientists.

Most recently, he has founded the Child Mind Institute Healthy Brain Network – an initiative aiming to create a large-scale (10,000 participants) resource for the scientific community to study child and adolescent mental health.
Manuscript Title
Effectiveness of theta burst versus high-frequency repetitive transcranial magnetic stimulation in patients with depression (THREE-D): a randomised non-inferiority trial

BACKGROUND: Treatment-resistant major depressive disorder is common; repetitive transcranial magnetic stimulation (rTMS) by use of high-frequency (10 Hz) left-side dorsolateral prefrontal cortex stimulation is an evidence-based treatment for this disorder. Intermittent theta burst stimulation (iTBS) is a newer form of rTMS that can be delivered in 3 min, versus 37.5 min for a standard 10 Hz treatment session. We aimed to establish the clinical effectiveness, safety, and tolerability of iTBS compared with standard 10 Hz rTMS in adults with treatment-resistant depression.

METHODS: In this randomised, multicentre, non-inferiority clinical trial, we recruited patients who were referred to specialty neurostimulation centres based at three Canadian university hospitals (Centre for Addiction and Mental Health and Toronto Western Hospital, Toronto, ON, and University of British Columbia Hospital, Vancouver, BC). Participants were aged 18–65 years, were diagnosed with a current treatment-resistant major depressive episode or could not tolerate at least two antidepressants in the current episode, were receiving stable antidepressant medication doses for at least 4 weeks before baseline, and had an HRSD-17 score of at least 18. Participants were randomly allocated (1:1) to treatment groups (10 Hz rTMS or iTBS) by use of a random permuted block method, with stratification by site and number of adequate trials in which the antidepressants were unsuccessful. Treatment was delivered open-label but investigators and outcome assessors were masked to treatment groups. Participants were treated with 10 Hz rTMS or iTBS to the left dorsolateral prefrontal cortex, administered on 5 days a week for 4–6 weeks. The primary outcome measure was change in 17-item Hamilton Rating Scale for Depression (HRSD-17) score, with a non-inferiority margin of 2.25 points. For the primary outcome measure, we did a per-protocol analysis of all participants who were randomly allocated to groups and who attained the primary completion point of 4 weeks. This trial is registered with ClinicalTrials.gov, number NCT01887782.

FINDINGS: Between Sept 3, 2013, and Oct 3, 2016, we randomly allocated 205 participants to receive 10 Hz rTMS and 209 participants to receive iTBS. 192 (94%) participants in the 10 Hz rTMS group and 193 (92%) in the iTBS group were assessed for the primary outcome after 4–6 weeks of treatment. HRSD-17 scores improved from 23.5 (SD 4.4) to 13.4 (7.8) in the 10 Hz rTMS group and from 23.6 (4.3) to 13.4 (7.9) in the iTBS group (adjusted difference 0.103, lower 95% CI −1.16; p=0.0011), which indicated non-inferiority of iTBS. Self-rated intensity of pain associated with treatment was greater in the iTBS group than in the 10 Hz rTMS group (mean score on verbal analogue scale 3.8 [SD 2.0] vs 3.4 [2.0] out of 10; p=0.011). Dropout rates did not differ between groups (10 Hz rTMS: 13 [6%] of 205 participants; iTBS: 16 [8%] of 209 participants); p=0.6004). The most common treatment-related adverse event was headache in both groups (10 Hz rTMS: 131 [64%] of 204; iTBS: 136 [65%] of 208).

INTERPRETATION: In patients with treatment-resistant depression, iTBS was non-inferior to 10 Hz rTMS for the treatment of depression. Both treatments had low numbers of dropouts and similar side-effects, safety, and tolerability profiles. By use of iTBS, the number of patients treated per day with current rTMS devices can be increased several times without compromising clinical effectiveness.
Manuscript Title
Managing Cancer and Living Meaningfully (CALM): A Randomized Controlled Trial of a Psychological Intervention for Patients With Advanced Cancer

Full Abstract
PURPOSE: Individuals with advanced cancer experience substantial distress in response to disease burden and impending mortality. Managing Cancer And Living Meaningfully (CALM) is a novel, brief, manualized psychotherapeutic intervention intended to treat and prevent depression and end-of-life distress in patients with advanced cancer. We conducted a randomized controlled trial to compare CALM with usual care (UC) in this population.

METHODS: Patients with advanced cancer were recruited from outpatient oncology clinics at a comprehensive cancer center into an unblinded randomized controlled trial. Permuted block randomization stratified by Patient Health Questionnaire-9 depression score allocated participants to CALM plus UC or to UC alone. Assessments of depressive symptoms (primary outcome), death-related distress, and other secondary outcomes were conducted at baseline, 3 months (primary end point), and 6 months (trial end point). Analyses were by intention to treat. Analysis of covariance was used to test for outcome differences between groups at follow-up, controlling for baseline. Mixed-model results are reported.

RESULTS: Participants (n = 305) were recruited between February 3, 2012, and March 4, 2016, and randomly assigned to CALM (n = 151) or UC (n = 154). CALM participants reported less-severe depressive symptoms than UC participants at 3 months (D = 1.09; P = .04; Cohen’s d = 0.23; 95% CI, 0.04 to 2.13) and at 6 months (D = 1.29; P = .02; d = 0.29; 95% CI, 0.24 to 2.35). Significant findings for greater end-of-life preparation at 6 months also favored CALM versus UC. No adverse effects were identified.

CONCLUSION: Findings suggest that CALM is an effective intervention that provides a systematic approach to alleviating depressive symptoms in patients with advanced cancer and addresses the predictable challenges these patients face.
OBJECTIVE: Case-control study design and disease heterogeneity may impede biomarker discovery in brain disorders, including serious mental illnesses. To identify biologically and/or behaviorally driven as opposed to diagnostically driven subgroups of individuals, the authors used hierarchical clustering to identify individuals with similar patterns of brain activity during a facial imitate/observe functional MRI task.

METHODS: Participants in the Social Processes Initiative in Neurobiology of the Schizophrenia(s) study (N=179; 109 with a schizophrenia spectrum disorder and 70 healthy control participants) underwent MRI scanning at three sites. Hierarchical clustering was used to identify new data-driven groups of participants; differences on social and neurocognitive tests completed outside the scanner were compared among the new groups.

RESULTS: Three clusters with distinct patterns of neural activity were found. Cluster membership was not related to diagnosis or scan site. The largest cluster consisted of “typical activators,” with activity in the canonical “simulation” circuit. The other clusters represented a “hyperactivating” group and a “deactivating” group. Between-participants Euclidean distances were smaller within clusters than within site or diagnostics groups. The deactivating group had the highest social cognitive and neurocognitive test scores. The hierarchical clustering analysis was repeated on a replication sample (N=108; 32 schizophrenia spectrum disorder, 37 euthymic bipolar disorder, and 39 healthy control participants), which exhibited the same three cluster patterns.

CONCLUSIONS: The study findings demonstrate replicable differing patterns of neural activity among individuals during a socio-emotional task, independent of DSM diagnosis or scan site. The findings may provide objective neuroimaging endpoints (biomarkers) for subgroups of individuals in target engagement research aimed at enhancing cognitive performance independent of diagnostic category.
The association between suicide deaths and putatively harmful and protective factors in media reports

BACKGROUND: Exposure to media reporting on suicide can lead to suicide contagion and, in some circumstances, may also lead to help-seeking behaviour. There is limited evidence for which specific characteristics of media reports mediate these phenomena.

METHODS: This observational study examined associations between putatively harmful and protective elements of media reports about suicide in 13 major publications in the Toronto media market and subsequent suicide deaths in Toronto (2011–2014). We used multivariable logistic regression to determine whether specific article characteristics were associated with increases or decreases in suicide deaths in the 7 days after publication, compared with a control window.

RESULTS: From 2011 to 2014, there were 6367 articles with suicide as the major focus and 947 suicide deaths. Elements most strongly and independently associated with increased suicides were a statement about the inevitability of suicide (odds ratio [OR] 1.97, confidence interval [CI] 1.07–3.62), about asphyxia by a method other than car exhaust (OR 1.72, CI 1.36–2.18), about suicide by jumping from a building (OR 1.70, CI 1.28–2.26) or about suicide pacts (OR 1.63, CI 1.14–2.35), or a headline that included the suicide method (OR 1.41, CI 1.07–1.86). Elements most strongly and independently associated with decreased suicides were unfavourable characteristics (negative judgments about the deceased; OR 1.85, CI 1.20–2.84), or mentions of railway (OR 1.61, CI 1.10–2.36) and cutting or stabbing (OR 1.59, CI 1.19–2.13) deaths, and individual murder-suicide (OR 1.50, CI 1.23–1.84).

INTERPRETATION: This large study identified significant associations between several specific elements of media reports and suicide deaths. It suggests that reporting on suicide can have a meaningful impact on suicide deaths and that journalists and media outlets and organizations should carefully consider the specific content of reports before publication.
Personalized Intrinsic Network Topography Mapping and Functional Connectivity Deficits in Autism Spectrum Disorder

BACKGROUND: Recent advances in techniques using functional magnetic resonance imaging data demonstrate individually specific variation in brain architecture in healthy individuals. To our knowledge, the effects of individually specific variation in complex brain disorders have not been previously reported.

METHODS: We developed a novel approach (Personalized Intrinsic Network Topography, PINT) for localizing individually specific resting-state networks using conventional resting-state functional magnetic resonance imaging scans. Using cross-sectional data from participants with autism spectrum disorder (ASD; n = 393) and typically developing (TD) control participants (n = 496) across 15 sites, we tested: 1) effect of diagnosis and age on the variability of intrinsic network locations and 2) whether prior findings of functional connectivity differences in persons with ASD compared with TD persons remain after PINT application.

RESULTS: We found greater variability in the spatial locations of resting-state networks within individuals with ASD compared with those in TD individuals. For TD persons, variability decreased from childhood into adulthood and increased in late life, following a U-shaped pattern that was not present in those with ASD. Comparison of intrinsic connectivity between groups revealed that the application of PINT decreased the number of hypoconnected regions in ASD.

CONCLUSIONS: Our results provide a new framework for measuring altered brain functioning in neurodevelopmental disorders that may have implications for tracking developmental course, phenotypic heterogeneity, and ultimately treatment response. We underscore the importance of accounting for individual variation in the study of complex brain disorders.
Altered Transcranial Magnetic Stimulation-Electroencephalographic Markers of Inhibition and Excitation in the Dorsolateral Prefrontal Cortex in Major Depressive Disorder

BACKGROUND: The neurophysiology of major depressive disorder (MDD) has become a particular focus of transcranial magnetic stimulation (TMS) investigational studies. TMS combined with electroencephalography (TMS-EEG) affords a window to directly measure evoked activity from the dorsolateral prefrontal cortex (DLPFC), which is of considerable interest in MDD. Our study examined TMS-EEG responses from the DLPFC in persons with MDD compared with those in healthy participants. Specifically, we examined TMS-EEG markers linked to inhibitory and excitatory neurophysiological processes and their balance.

METHODS: In all, 30 participants with MDD and 30 age- and sex-matched healthy participants underwent single-pulse TMS-EEG to assess inhibition and excitation from DLPFC. TMS-EEG waveforms were analyzed through global mean field amplitude.

RESULTS: MDD participants demonstrated abnormalities in TMS-EEG markers in the DLPFC. Inhibitory measures—N45 and N100—were larger in the MDD group than in healthy participants (N45 [t = 24.894, p < .001] and N100 [t = 23.496, p = .001]). In a receiver operating characteristic analysis, N45 amplitude predicted depression illness state with 80% sensitivity, 73.3% specificity, and 76.6% accuracy (area under the curve = 0.829, p < .001). The global mean field amplitude area under the curve, a neurophysiological measure of cortical reactivity, was significantly larger in persons with MDD (t = 23.114, p = .003), as was P60 (t = 23.260, p = .002). In healthy participants, there was a positive correlation between inhibitory N45 and excitatory global mean field amplitude area under the curve (r = .711, p < .001) that was not present in persons with MDD (r = .149, p = .43), demonstrating a potential imbalance between inhibition and excitation in MDD.

CONCLUSIONS: As the TMS-EEG waveform and its components index inhibitory and excitatory activity from the cortex, our results suggest abnormalities in these neurophysiological processes of DLPFC in persons with MDD.
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**Full Abstract**

Objective: Late-life depression (LLD) escalates risk for Alzheimer’s, but the link between these disorders is unclear. Both disorders are independently associated with neuroinflammation. Our objective was to characterize neuroinflammation using free water (FW) in grey (GM) and white matter (WM). We hypothesized diagnostic severity would predict greater age-related atrophy.

Methods: We acquired multishell scans for 276 participants from 4 groups (Healthy controls (HC), n=22; late-life depression (LLD), n=49; mild cognitive impairment (MCI), n=127; LLD+MCI, n=78). Using the NODDI algorithm, we estimated FW properties in GM and WM. Multivariate PLS modeled how FW covaried with age by group.

Results: In GM, 3 significant latent variables (LV’s) explained 92% of the covariance (CoV). The first LV, p < 0.0001, showed a stronger age-free-water coupling in HC (r = 0.94) than the other groups (all r < 0.65). For LV2, p = 0.046, age predicted FW in left caudate in clinical groups, rs > 0.73, (but not HC). LV3, p = 0.028, showed age coupled FW in right caudate differentiated MCI status from HC and LLD. The first WM LV, p < 0.0001, 74% CoV echoed the results of the first GM LV.

Conclusions: We used FW to characterize spatially distinct patterns of age-related atrophy that distinguished HC from clinical groups. Furthermore, bilateral caudate nuclei appear disproportionately vulnerable to MCI and that this characterizes LLD to a lesser degree. These findings have potential ties to frontostriatal circuits governing behavior and depression as well as iron accumulation in subcortical regions.
Purpose: A significant proportion of children with autism spectrum disorder (ASD) will meet criteria for an anxiety disorder during childhood. Restricted and repetitive behavior (RRB) severity in ASD positively correlates with anxiety severity in cross-sectional surveys. The longitudinal relationship between RRB and future anxiety symptoms in children with ASD has not been explored.

Methods: In a longitudinal inception cohort of children with ASD (n=421), RRB severity was quantified on the Autism Diagnostic Interview-Revised and anxiety symptoms were captured on Child Behavior Checklist. Exploratory factor analysis was used to examine the relationships between both constructs at study enrollment (age 2-5 years). Multivariable logistic regression with multiple imputation for missing data was used to examine the association between RRB severity at enrollment and future anxiety symptoms in middle childhood (age 8-11 years), while adjusting for confounders.

Results: Approximately 58% of children with severe RRB had elevated anxiety by age 11, compared to 41% of those with moderate RRB, and 20% of those with mild RRB. Data suggested that anxiety and RRB are generally distinct, although sensory sensitivities overlapped both constructs. Moderate and severe RRB was associated with increased odds of elevated anxiety in the adjusted model [Moderate aOR: 2.5 (1.2 to 5.3); severe aOR: 3.2 (1.4 to 7.5)].

Conclusions: RRB and anxiety are related but distinct constructs in ASD. RRB severity at time of ASD diagnosis is associated with risk for elevated anxiety symptoms in later childhood. These findings can help to inform prevention, early identification, and treatment of anxiety in ASD.
Purpose: Psychiatric disorders are among the leading reasons for postpartum emergency department (ED) visits, yet it is unknown what mental health (MH) care women receive after leaving the ED. This study aimed to describe outpatient MH service use following postpartum MH ED visits.

Methods: This retrospective cohort study used ICES health administrative data to identify all Ontario (Canada) women who had a MH ED visit (International Classification of Diseases, ICD-10-CA codes F06-99, X60-84, Y10-19, Y28) within 1 year postpartum and were discharged from the ED. The primary outcome was ≥1 outpatient MH visit (family physician or psychiatrist) within 30 days of ED discharge (modified health systems indicator). Proportion of women with this outcome were described in relation to the primary diagnosis and presence of deliberate self-harm (DSH) at the index visit.

Results: Of the 8153 women discharged from ED, 3675 (45.1%) had ≥1 outpatient MH visit within 30 days. Outpatient visits occurred for 1140 (41.5%) women with anxiety disorders (n=2744), 1363 (60.1%) women with depression (n=2267), 323 (28.4%) women with substance use disorders (n=1137), 497 (41.1%) women with trauma/stressor disorders (n=1207), 149 (72.7%) women with serious mental illness (includes bipolar and schizophrenia) (n=205), 85 (39.0%) women with other MH diagnoses (n=218), and 145 (33.1%) women with DSH (n=428, not mutually exclusive with other categories).

Conclusions/Implications: Among postpartum women demonstrating a need for MH care by presenting to the ED, under half received timely follow-up care, demonstrating serious gaps. Further research on barriers and facilitators to post-ED MH care is warranted.
Purpose: Processes of psychiatric diagnosis aim to achieve objectivity, reliability, and neurobiological veracity in the codification of mental illness. Yet these same practices are cultural, socio-material achievements with profound effects on individuals. Exploring impacts and implications of diagnostic practices within first episode psychosis is of great significance, given this is a context where diagnostic uncertainty is often the norm and prevention of disability the aim.

Methods: We describe findings from an ethnographic study examining meanings and experiences of psychosis within an early intervention program in Toronto, Canada. Combining participant observation with formal longitudinal interviews of 12 service users, 6 family members, and 5 clinic staff (n=41 interviews), a reflexive, interpretivist analysis of the data was undertaken.

Results: Psychiatric service users were frequently disinterested in diagnostic labels, in contrast to family members and service providers. The process of diagnosis was, at times, felt by service users to devalue their experiential knowledge, enmeshing them in regimes of medical authority. And yet in other instances it brought relief through naming the frightening lived experience of psychosis. Diagnosis was frequently linked to the role of antipsychotic medications, which were conceptualized with both positive and negative attributes.

Conclusions: A deep tension exists within early intervention: as a process of categorization, diagnosis is simultaneously useful and dangerous; it organizes both bodily and minded experiences while presuming that “cure” is inevitable and desirable. In contrast, the lived experience of psychosis is much more equivocal and ambivalent. Attending to such tensions has the potential to inform service users’ engagement in clinical care.
Purpose: Tourette Syndrome (TS) is characterized by tics that are often preceded by uncomfortable sensations or urges that build until the tic is performed. Tics are therefore considered to be involuntary as they can be delayed, but not indefinitely, and are often exacerbated during states of heightened emotion. The purpose of this study was to examine the neural substrates responsible for the development of urges and how they are modulated by emotion in TS patients, which has not been previously investigated.

Methods: Forty patients with TS and 20 healthy controls completed an emotional blink suppression paradigm while undergoing functional magnetic resonance imaging. For the paradigm, participants completed alternating blocks of blink inhibition and free blinking while viewing pictures of angry and neutral facial expressions.

Results: Compared to controls, patients exhibited greater activity in the superior temporal gyrus and midcingulate during the inhibition of urges. Within the patient group, greater tic severity was associated with greater activity in the superior frontal gyrus during the angry inhibition contrast as compared to neutral; greater premonitory urge severity was associated with greater activity in the hippocampus, temporal gyrus and in the subcortex; blink inhibition ability was negatively associated with activity in the thalamus and insula.

Conclusions/Implications: The observed significant regions may represent a network that produces urges more strongly in patients or alternatively, could represent compensatory cortical activity needed to keep urges and tics under control during emotional situations.
Purpose: One objective of the Social Processes Initiative in Neurobiology of the Schizophrenia(s) (SPINS) multi-centre study is to identify the microstructural correlates of social cognitive impairment in people with schizophrenia spectrum disorders (SSD) and healthy controls (HC). This abstract includes diffusion-weighted images (DWI) from n=387 participants, obtained across 3 sites and 6 scanners. We characterize white matter differences between SSD and HC, and begin preliminary steps to account for inter-scanner variance.

Methods: Before study start, SPINS prospectively harmonized DWI acquisition parameters (60 directions, b=1000, 5 b0s) using both agar and human phantoms. Here, we processed DWI data from all participants (235 SSD, 152 HC) whose scans passed our quality control pipelines. We used the ENIGMA-DTI protocol to calculate mean fractional anisotropy (FA) from the white matter skeleton of each participant, and conducted an ANCOVA, covarying for scanner, age, sex, education, and parental education, to compare FA in SSD and HC participants. We conducted a similar ANCOVA model to obtain a preliminary sense of scanner effects.

Results: Compared to HCs, SSD participants demonstrated white matter deficits, across all scanners, [F(5,337)=7.7, p=.006]. Mean FA values were significantly related to scanner, [F(5,338)=176.5, p=2.2x10-16].

Conclusions/Implications: Our findings confirm previous differences demonstrated between SSDs and HCs, but provide caution regarding data combination. Next, we will apply higher dimensional non-linear methods to more fully account for scanner variance. This will allow us to leverage the power of this dataset to identify the circuitry underlying social impairments in SSD.
Purpose: How mental health is defined and subsequently measured in policy and practice, influences intervention, prevention and promotion strategies. Most studies on youth health do not include youth voice. This doctoral dissertation sought to discover how youth define wellness, what youth think they need to achieve and maintain wellness, what barriers they face, and who/what could address these to inform the development of optimal mental health interventions.

Methods: Charmaz’s Constructivist Grounded Theory was used as an inductive method for collecting data. Youth aged 16 to 23 with a functional literacy of English were eligible to participate. Recruitment took place at One Roof Youth Hub and Pathways to Education in Kingston.

Results: Sixteen youths self-identifying as six male, six female and four non-cisgendered, participated in semi-structured interviews. Four focus group discussions by separate male and female cohorts led to the co-creation of two distinct definitions of wellness, and insights for systems change for more effective service responses in mental health, harm reduction, content and delivery of health education. They emphasized a need for more education for parents, more talk therapy, getting to know the youth prior to group therapy, and regular check-ins on how interventions are working.

Conclusion: By sharing knowledge creation with youth, researchers enable them to explore their own subject positions that foster or impede youth wellness. Collective inquiry can lead to shared meaning-making, solidarity, and enhanced resilience of disenfranchised youth. This study gives voice to youths’ suggestions for systems change that could deliver effective mental health and addictions service responses.
Purpose: Clozapine (CLZ), is the most efficacious antipsychotic for treatment refractory schizophrenia. However, it has numerous cardiometabolic adversities. These adversities may be attributable to the 5-HT2C antagonist properties of CLZ’s main metabolite, N-desmethylclozapine (NDMC). In contrast, a benefit of NDMC is likely due to its partial dopamine D2, D3, & muscarinic M1 agonistic activity, supporting decreases in cognitive impairment. This study aimed to investigate the association between metabolic parameters or cognition, and the CLZ:NDMC ratio.

Methods: 28 patients with obesity, schizophrenia/schizoaffective disorder, & receiving ≥350mg of CLZ daily or with CLZ plasma levels >300ng/mL, were studied. Multivariate regressions assessed associations of CLZ:NDMC ratios with body mass index (BMI), homeostatic model assessment of insulin resistance (HOMA-IR), & Brief Assessment of Cognition in Schizophrenia (BACS) scores.

Results: Adjusting for confounders, a statistically significant inverse association was found between HOMA-IR & CLZ:NDMC ratios (B=-1.406 SE B=.630, β=-.415 p.05), BACS composite t-scores (B= 2.151 B SE=4.398, β=0.093 p>.05), or BACS digit sequencing t-scores (B=1.810 B SE= 5.177, β=.071 p>.05), & CLZ:NDMC ratios.

Implications: Findings suggest the CLZ:NDMC ratio may predict insulin resistance and that high rates of glucose dysregulation in patients receiving CLZ may be ascribed to NDMC’s effects on metabolic processes. Failure to show an association between cognition & CLZ:NDMC ratios raises the possibility that illness severity overrides NDMC pro-cognitive effects or that high CLZ levels saturate N-desmethylation. More studies are needed to understand the associations between the CLZ:NDMC ratio, cognition, & metabolic functioning.
Purpose: Perinatal depression (PND) occurs in 15% of pregnant women and new mothers, and negatively impacts women and families. Only 1 in 5 women receives adequate treatment. Barriers include unpredictable infant schedules, competing childcare demands, and travel challenges. Virtual Psychiatric Care for PND (Virtual-PND) addresses barriers by replacing or supplementing in-person care with in-home video-visits.

Methods: Pregnant or postpartum women > age 18 with major depressive disorder, referred to reproductive psychiatric programs at Women’s College Hospital (WCH) and Sinai Health System (SHS) between October 2017 and September 2018, were randomized 1:1 to a control group receiving in-person care or intervention group (usual care with video-visits for follow-up appointments). We determined recruitment feasibility, acceptability of the VPND-model, adherence to the trial protocol, including an online depressive symptom questionnaire 12 weeks post-randomization using the Edinburgh Postnatal Depression Scale (EPDS).

Results: From 87 eligible referrals, 66 were randomized and 51 (77.2%) completed 12-week follow-up (30/35, 85.7% of intervention group, 21/31, 67.7% of controls). Patient and provider experiences of video-visits were favourable and increased convenience was reported. 56% of WCH and 73% of SHS follow-up intervention group visits were virtual. At 12 weeks, EPDS scores in the intervention group dropped 5.2 points versus 4.1 points in controls, mean difference adjusted for baseline score -1.11 (95% CI -3.30 to 1.08).

Conclusion: A trial protocol to evaluate VPND is feasible and acceptable to participants and providers. Preliminary results suggest VPND is as effective as in-person only care, with increased convenience. Results support a future non-inferiority trial.
### Abstract Title
Endocannabinoid Mechanisms in Posttraumatic Stress Disorder: A Pilot Neuroimaging study with the Novel Fatty Acid Amide Hydrolase Probe, [C-11] CURB

### Co-Authors
Richard Bazinet, Don Richardson, Sylvain Houle, Pablo Rusjan, Shawn Rhind, Rachel Tyndale, Matthew N. Hill, Ruth Lanius, Stephen Kish, Isabelle Boileau

### Full Abstract
Purpose: Elevated levels of Fatty Acid Amide Hydrolase—the endocannabinoid system’s main metabolic enzyme—is believed to contribute to the pathophysiology of post-traumatic stress disorder (PTSD). Here we tested the hypothesis that brain FAAH levels are increased in PTSD.

Methods: Healthy subjects (n = 30) and individuals with PTSD (n = 7) participated in a positron emission tomography scan following injection of the FAAH probe [C-11]CURB and blood was collected to measure endocannabinoids 2-arachidonoylglycerol (2-AG) and anandamide (AEA) and related acylethanolamides (oleylethanolamide (OEA) and N-Docosahexaenoyl ethanolamine (DHEA)).

Results: We find no evidence for elevated [C-11]CURB binding (-10%; p = 0.23) or reduced FAAH substrates: AEA (27%; p = 0.3), OEA or DHEA (p > 0.9) in PTSD. Instead, we find 2-AG elevated in PTSD (91%; p = 0.02). Furthermore, we find that recent life stress (Survey of Recent Life Experience) marginally correlated with [C-11]CURB binding (r = -0.704; p = 0.078) and positively with AEA (r = 0.871; p = 0.011), OEA (r = 0.91; p = 0.012), and DHEA (r = 0.852; p = 0.031).

Conclusions: These first in vivo data do not support the preclinical finding of elevated brain FAAH in PTSD. This suggests that the animal model may not translate well into clinical cases. Our findings that recent burden load is related to increased 2-AG and reduced FAAH may reflect an adaptive response to stress in PTSD. Confirmation of these findings in a larger sample will further inform our understanding of the endocannabinoid system in people with PTSD.
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Purpose: Obesity is an important cardiovascular risk factor that is associated with clinical characteristics of bipolar disorder (BD) among adults and youth. Functional magnetic resonance imaging studies reveal that reward networks are implicated in both obesity and BD independently. The current study attempts to further characterize and disentangle obesity and BD, assessed by resting state functional connectivity (rsFC).

Methods: A seed-to-voxel analysis was used to compare rsFC of the ventral striatum, orbitofrontal cortex (OFC), and frontal polar cortex (FPC). A total of 87 adolescents (ages 14-19 years) were classified as normal weight BD (n=35), overweight BD (n=18), and normal weight healthy controls (HC, n=34).

Results: Normal weight and overweight BD patients showed reduced negative rsFC between the left ventral striatum and the posterior cingulate cortex (PCC), a region of the default mode network (DMN) compared to HCs, and increased rsFC between the OFC and the cerebellum. Overweight BD adolescents showed increased rsFC between the OFC and cerebellum compared to normal weight participants (both HC and BD) as well as altered connectivity within the FPC and between the FPC and multiple regions, including the insula.

Conclusion: The current study isolated common and dissociable patterns of rsFC in the reward circuit in adolescent BD and obesity. Reduced negative functional connectivity between the ventral striatum and DMN (PCC) may reflect aberrant engagement of the reward circuit during rest in adolescents with BD. Furthermore, altered connectivity within the FPC and between the FPC and insula may be characteristic of adolescent BD-overweight comorbidity.
Purpose: Neurodevelopmental disorders (NDDs) such as autism spectrum disorder (ASD), obsessive-compulsive disorder (OCD), and attention-deficit/hyperactivity disorder (ADHD) are each highly heterogeneous conditions that feature significant overlap in behaviours, genetic risk factors, cognitive and brain alterations. We used Similarity Network Fusion (SNF), a multi-data integrative clustering tool, to identify novel groups across NDDs featuring more homogeneous brain-behaviour profiles than those associated with categorical DSM diagnoses.

Methods: Measures from T1-weighted (cortical thickness, subcortical volume) and diffusion-weighted (fractional anisotropy) magnetic resonance imaging, and behavioural scores, were obtained for 182 children, aged 6-16 years with ASD (n=91), ADHD (n=52) or OCD (n=39) from the Province of Ontario Neurodevelopmental Disorders (POND) Network. Data integration and spectral clustering were done using SNF. General adaptive functioning measures (not involved in cluster determination) were used to evaluate validity of the identified groups.

Results: Four groups with distinct brain-behaviour profiles that cut across clinical diagnoses were identified. Group formation and top contributing measures driving formation were shown to be stable with resampling. General adaptive functioning (F=21.46, p<0.0001, η2=0.28) was significantly different between groups, as well as were top contributing neurobiological features: right insula thickness (F=47.76, p<0.0001, η2=0.44) and right thalamic volume (F=18.51, p<0.0001, η2=0.24).

Conclusion: Our work provides preliminary indication that multi-modal data-integration methods such as SNF can identify clinical subgroups with homogeneous brain-behaviour profiles that cut across conventional DSM categories. Stability across other samples and testing of clinical validity of these groups is needed to determine whether they may have utility for diagnostic and treatment innovation.
### Kaster, Tyler

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### Full Abstract

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Purpose Recovery Education Centres (REC) offer a new model of providing recovery supports through education. Recovery principles guiding RECs include consumer or peer involvement in program design and delivery and a focus on choice and self-determination.

Methods The Supporting Transitions and Recovery Learning Centre (STAR) in Toronto is the first REC in Canada and is evaluated using a realist-informed mixed-methods quasi-experimental design. We will present findings from qualitative interviews with 20 STAR participants, exploring the role of RECs in the Canadian service delivery context and mechanisms and processes that support recovery. Interview data was collected between January 2018 and July 2018, transcribed, and analyzed using thematic analysis.

Results Participants described a few positive experiences with other local services and highlighted the low barrier access to STAR compared to other services. Participants described positive experiences with the REC, describing STAR as an empowering, client-driven and supportive environment where they directed their own learning and worked on their own timeline, in keeping with recovery principles.

Conclusions / Implications This study offers a unique opportunity for an in-depth examination of Canada’s first REC and can help guide program and policy development across Canada for the benefit of disadvantaged individuals and the communities in which they live. Ongoing longitudinal research will identify health and social outcomes of STAR participants and expose key ingredients of the intervention that support the recovery process.
Purpose: Given the importance of early psychosis intervention (EPI) and the high rates of disengagement from EPI services, we sought to understand patient and family perspectives on EPI engagement.

Methods: Patients aged 16-29 years referred for assessment in a Toronto EPI program and their families are being recruited to complete a web-based survey on facilitators, barriers and ways to improve their engagement, as well as demographics and clinical history. We calculated descriptive statistics and will present the most frequently reported responses.

Results: Fifty-two patients and 18 family members have completed the survey. Patients were a mean age of 21.94 ± 3.27 years, 50% male, 71% non-white, 21% in full-time school or work, 58% lived with family, and 31% reported weekly substance use. Family members were 61% mothers, 94% lived with the identified patient, and 50% identified as non-white. Patient-reported facilitators of engagement related to the therapeutic relationship (in 60%) and similarly, the top family-reported facilitator was a positive impression of the clinician (50%). Patient barriers related to stigma (31%) whereas the top family-reported barrier to treatment was medication side effects (56%). Patients suggested evening and weekend appointments (35%) and both patients (40%) and families (50%) valued appointment reminders, with families also citing text messaging (61%) as a way to improve engagement.

Conclusions/Implications: Patients and families referred to EPI services reported a range of factors as relevant to their engagement. These should guide the development of strategies to retain young people with psychosis in evidence-based treatment.
Objective: Principal components analysis (PCA) was used to examine the underlying relationship between ASD and ADHD symptoms in a combined sample of children with a diagnosis of ASD or ADHD. Component scores were then compared across diagnosis and sex.

Methods: Participants included children (ages 3-20) with a diagnosis of ASD (n=303) or ADHD (n=319) for a total of 622 participants. Parents of these children completed the Social Communication Questionnaire (SCQ), a measure of autism symptoms, and the Strengths and Weaknesses of ADHD and Normal Behaviour (SWAN) questionnaire, a measure of ADHD symptoms. PCA was performed on combined SCQ and SWAN items, followed by a profile analysis comparing normalized component scores between diagnostic groups and sex.

Results: PCA revealed a four-component solution (inattention, hyperactivity/impulsivity, social-communication, RRBI), with no overlap between SCQ and SWAN items in any of the components. There was no difference in inattentive component scores either by diagnostic group or sex. Hyperactive/impulsive scores also did not differ between diagnostic groups, but males in each diagnostic group had higher scores than females. In social-communication and RRBI components, children with ASD had higher scores than children with ADHD and males had higher scores within each diagnostic category compared to females.

Conclusions: Although ASD and ADHD symptoms loaded onto separate components in our sample, our results show that high levels of inattention and hyperactivity/impulsivity are seen in both ASD and ADHD. Girls have lower component scores across social-communication, RRBI, and hyperactivity/impulsivity than boys, suggesting that there may be sex-specific phenotypes related to the two disorders.
### Purpose
There is currently a paucity of evidenced-based strategies that have been shown to increase citations of peer-reviewed articles after they've been published. We conducted a 12-month randomized controlled trial to examine how promotion of article links in an online cross-publisher distribution platform (TrendMD) affect citation counts and predictors of citation counts, Mendeley saves.

### Methods
Three thousand two hundred articles published in 64 peer-reviewed journals across 8 subject areas were block randomized at the subject area level to either the TrendMD arm (n=1600) or the control arm (n=1600) of the study. Herein we report our results at the pre-specified 6-month analysis point. We compare the mean citation counts and Mendeley saves of articles randomized to TrendMD versus control.

### Results
Articles randomized to TrendMD showed a 21% and 55% increase in mean citations and Mendeley saves, respectively, relative to control. The difference in mean citations and Mendeley saves for TrendMD articles versus control was 1.06, 95% CI [0.12, 2.01] and 11.28, 95% CI [7.56, 15], respectively; both were statistically significant (p < 0.01). TrendMD conferred the largest citation advantage to Health and Medical Sciences articles (44% increase). Pageviews driven by TrendMD were an independent predictor to both citations and Mendeley saves.

### Conclusions
This is the first randomized controlled trial to show how an online cross-publisher distribution platform (TrendMD) augments article citations after 6-months. This study addresses an important unmet need of authors, publishers, and funders of scholarly content to effectively disseminate their work.
**Purpose:** Agitation affects 80-90% of patients with Alzheimer’s disease (AD) at some point in their illness and is one of the most burdensome symptoms for patients, families, caregivers, and the health care system. Current treatment mainly relies on antipsychotic medications that are associated with several adverse effects. Aim of this study is to examine the tolerability and efficacy of transcranial direct current stimulation (tDCS) for agitation in AD.

**Methods:** Participants 60 years or older with a clinical diagnosis of Alzheimer’s or mixed dementia who meet International Psychogeriatric Association consensus criteria for agitation are enrolled. tDCS is delivered open label, 5 days a week for 2 weeks for 30 minutes/day using saline soaked sponge electrodes with cathode placed at Fz position and anode at Iz position as per international 10-20 system. Direct current is delivered at an intensity of 2 mA. Clinical assessments including Cohen Mansfield Agitation Inventory (CMAI) and Neuropsychiatric Inventory (NPI) are done before and after the tDCS course.

**Results:** So far this study enrolled 6 participants (females = 3), Mean (SD) age = 81.5 (5.1) year. All participants completed the tDCS course without any serious adverse events. Agitation improved as shown by reduced post intervention CMAI total score Mean (SD) = 42.8 (15.4), compared to baseline, Mean (SD) = 52.5 (15.0) (t = 3.1, df = 5, p = .03). There was a trend towards improvement on NPI delusions, hallucinations and apathy scales.

**Conclusion:** Preliminary findings from this pilot study suggest that tDCS is well tolerated and may be efficacious for agitation in dementia.
Purpose: Persons exhibiting clinical high-risk (CHR) symptoms similar to but less severe than those of schizophrenia have an elevated risk of developing this disorder. We previously found that CHR patients have reductions in the N400 event-related brain potential (ERP) semantic priming effect, indicating deficits in using meaningful stimuli to activate related concepts in semantic memory. We sought evidence that this abnormality is associated with real-world functional impairment in CHR patients, hypothesizing that N400 semantic priming deficits would correlate with lower social and role functioning in this group.

Methods: We recorded continuous EEGs in 36 help-seeking CHR patients and 25 healthy control participants while they viewed 80 strongly related and 80 unrelated prime-target word pairs, and 160 word-nonword pairs, in a fixed randomized order, with stimulus-onset asynchrony (SOA) of 300 ms or 750 ms. Functional status was measured with the Global Functioning: Social and Role Scales.

Results: There was a significant reduction in the N400 priming effect at the 750-ms SOA in CHR patients compared to controls (p=0.049). In the patients, smaller N400 priming effects at the 300-ms (but not the 750-ms) SOA correlated with lower role functioning (Spearman’s r = -0.37, p=0.03).

Conclusions: The results suggest that although CHR patients in general are deficient in maintaining activation of related concepts over longer intervals after meaningful stimuli, a subset of patients with deficits in activating related concepts even at shorter intervals may be the most functionally impaired.
PURPOSE: A common missense variant (Pro129Thr) in the gene encoding fatty acid amide hydrolase (FAAH; rs324420 C385A), the degradative enzyme for the major endocannabinoid anandamide, results in reduced levels of FAAH protein. This polymorphism is associated with elevated risk for addiction and obesity. It has been suggested that enhanced anandamide signaling may be associated with alterations in dopaminergic neurotransmission which have been noted in addictions. Here we tested whether this functional variant of FAAH (C385A) is associated with differences in brain D2/3 receptor availability.

METHODS: Brain binding of the dopamine D3 preferring radioligand [11C]-(+)-PHNO was measured with positron emission tomography (PET) in 79 healthy control subjects genotyped for FAAH (C385A).

RESULTS: We found that the FAAH genetic variant C385A is associated with measurable regional differences in [11C]-(+)-PHNO binding. Those with the FAAH variant (AA / AC; n = 36 of 79), associated with reduced FAAH activity, had significantly greater [11C]-(+)-PHNO binding in the D3-rich limbic striatum (LST), globus pallidus (GP) and ventral pallidum (VP) (9%-14%; p < 0.05) but not in the dorsal striatum, where binding of [11C]-(+)-PHNO is due to D2 receptors.

CONCLUSIONS: We report for the first time that a common genetic polymorphism of FAAH leading to reduced enzymatic activity is associated with greater [11C]-(+)-PHNO binding, predominantly in dopamine D3-rich brain regions. These results suggest a dopaminergic mechanism involving greater D3 dopamine receptors in the risk for addiction and obesity among those with the FAAH C385A variant. Replicating these findings in FAAH knock-in mice may help confirm these results.
Purpose: Despite the significant impact on the 75% of depressed individuals experiencing sleep disturbances, the biological underpinnings are unknown. Studies on sleep disturbance in depressed individuals are limited and focused on a subset of core circadian genes. The purpose of our study is to determine whether variants from a larger list of genes involved in the biology of sleep are associated with sleep disturbances in depressive disorders.

Method: We performed a hypothesis-driven analysis on a subset of CAMH IMPACT patients diagnosed with a depressive disorder to determine whether there was an association between variants in our gene set (N = 27) and sleep disturbances based on questionnaire data. The questions of interest were from the Beck Depression Inventory and UKU Side Effect Rating Scale. DNA was run on the Illumina Omni 2.5 microarray. Binary logistic regression was used to analyze whether variants in our gene set were associated with sleep disturbances measures.

Results: All participants (N = 352) were of European ancestry. The most significant association in our pilot data was for changes in sleep and rs6479609 of NPAS2 (p = 0.0003, uncorrected). There was also an allelic effect, such that the “G” allele appears to be a risk factor (p = 0.00015).

Conclusions/Implications: We were unable to find positive associations between variants of interest and our measures of sleep disturbances, although a nominally significant result was observed for a variant in NPAS2. Overall, our study was suggestive that genetic variants play a role in sleep disturbances in depressed individuals.
Purpose: Individuals with depression are more likely to smoke cigarettes, achieve lower long-term abstinence rates and experience greater negative mood changes during their quit attempt. Integrating a self-help mood management component within standard smoking cessation counselling improves long-term abstinence among smokers with either current or past depression. However, it remains unclear which knowledge translation (KT) strategy is most effective in facilitating this implementation. In this study we compared the effectiveness of an email-based intervention versus a personalized knowledge broker for implementing a mood management intervention into an existing smoking cessation program within primary healthcare settings.

Methods: One hundred and twenty three Ontario Family Health Teams participating in the Smoking Treatment for Ontario Patients program were randomly allocated 1:1 to a KT strategy (either monthly emails or a personalized knowledge broker) to support the implementation of a mood management intervention.

Results: Between February 2018 and January 2019, 7,174 smokers were screened for depression and 2,761 reported current/past depression: 51% of these smokers were offered a brief intervention; 36% were offered a self-help mood-management resource; 80% accepted the resource. Adjusted regression analyses showed that there was no significant between group difference in the likelihood of participants accepting the mood management resource (OR=0.91, 95% CI: 0.59-1.42).

Conclusion: The results of this study suggest that both KT strategies are equally effective in supporting practitioners to implement a mood management component into a smoking cessation program. Future research will seek to understand which option is less costly – this would inform which intervention should be implemented.
Purpose: To evaluate the minimum incidence rate and patterns of presentation of youth (<18 years of age) admitted to the intensive care unit (ICU) for medically serious self-inflicted injury.

Methods: Through the Canadian Paediatric Surveillance Program, over 2,700 paediatricians/subspecialists were surveyed via monthly emails regarding cases of medically serious self-harm, from Jan 2017 - Dec 2018. Participants completed a detailed questionnaire about the case and descriptive statistics were used for analysis.

Results: Ninety-four cases (71 female; mean age 15.2 years) of confirmed (n=87) and suspected/probable (n=7) medically serious self-harm were reported. The majority (87%) of cases were reported by Quebec, Ontario, Alberta and British Columbia. There were 11 deaths by suicide (65% male). Medication ingestion was the most common method of self-harm amongst females (76%) compared with hanging among males (41%). More females than males had made a prior suicide attempt (62% versus 32%) and reported a past psychiatric diagnosis (77% versus 55%) or use of mental health services (69% versus 30%). Family conflict was the most commonly cited precipitating factor for suicide attempt (46% of cases).

Conclusions: These Canadian findings are consistent with broader international epidemiologic data that observes a gender paradox in which females demonstrate a higher rate of suicide attempts and greater mental health care engagement whereas males display increased suicide mortality and decreased involvement with mental health care. Family conflict is a potential target for suicide prevention interventions. Future research focusing on sex-specificity in risk factor identification and effectiveness of primary prevention interventions among youth is warranted.
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<td>Neuropsychiatric symptoms, Personality Characteristics and Memory Performance in Older Adults with Subjective Cognitive Decline without Current or Lifetime Psychiatric History</td>
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<td>Abstract Title</td>
<td>Relationship between subjective memory concerns and memory performance in older adults without dementia.</td>
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<td>Co-Authors</td>
<td>Frankie Chan, Aliya Ali, Susan Vandermorris, PhD, Nicolaas Paul LG Verhoeff, MD, PhD, Nathan Herrmann, MD, Linda Mah, MD MHSc</td>
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| Full Abstract | Purpose: Subjective cognitive decline (SCD) is characterized by memory concern but normal test performance and may represent a preclinical phase of Alzheimer’s disease. Greater neuropsychiatric symptomatology (NPS) and neuroticism are reported in SCD, but whether this is secondary to psychiatric history is unclear. We assessed NPS, personality and memory performance in SCD and cognitively normal (CN) older adults without current or lifetime history of psychiatric illness. We hypothesized greater NPS in older adults with SCD compared to CN.

Methods: Seventy-two participants (49 females, mean age 71 (SD=6.4)) were included and carefully screened to exclude current or lifetime psychiatric history. They completed full neuropsychological assessment and performance was within normal. We used California Verbal Learning Test-Immediate Recall (CVLT-IR) as measure of objective memory. SCD was defined by score on the Memory Functioning Questionnaire (MFQ)-Frequency of Forgetting subscale, which is correlated with amyloid burden on PET imaging. Participants also completed Geriatric Depression Scale (GDS), Health Anxiety Inventory (HAI), Geriatric Anxiety Inventory (GAI) and NEO Five-Factor Inventory-3 (NEO-FFI-3). T-tests were used to assess group differences. The adjusted p-value for significance was p=0.002.

Results: Relative to CN, SCD participants scored higher on GDS (p=0.001), GAI (p=0.046), HAI (p=0.005), NEO-neuroticism (p=0.009), and lower on NEO-extraversion (p=0.026). Only GDS remained significantly higher in SCD after correction for multiple comparisons. Groups did not differ on CVLT-IR.

Conclusions: Older adults with SCD have greater levels of depression not attributable to lifetime history of psychiatric illness. Our findings support a hypothesis of SCD representing subclinical depression.
Purpose: Children with neurodevelopmental disorders (NDDs), such as ADHD, OCD and ASD often exhibit externalizing and internalizing behaviours. Previous work has linked externalizing and internalizing behaviours with variation in cortico-amygdalar circuitry in healthy controls. Here, we examine whether these same behaviours relate to cortico-amygdalar circuitry in children with NDDs.

Methods: T1-weighted images and Child Behavioural Checklist (CBCL)-derived externalizing/internalizing scores were obtained from the Province of Ontario Neurodevelopmental Disorders (POND) network (n = 467, 10.5±4.1 years), including children with ADHD, ASD, OCD and controls. Separate linear regression models were used to determine whether raw CBCL-derived internalizing or externalizing behaviour scores predict vertex-wise cortical thickness, amygdala volume or cortico-amygdalar covariance, controlling for age, sex and intracranial volume. Interaction terms were included to examine whether brain-behaviour relationships differed by NDD diagnosis.

Results: No continuous relationship was found between behavioural measures and any structural metrics across our sample. Brain-behaviour relationships did not differ by NDD diagnosis. Exploration of brain indices indicated an effect of diagnosis on amygdala volume. An omnibus comparison showed a significant effect of diagnosis on left [F(6,369)=36.32, R² = 0.36, p > 0.001] and right [F(6,369)=33.86, R² = 0.34, p > 0.001] amygdala, such that controls featured smaller amygdala volumes compared to each NDD group.

Conclusions: Externalizing and internalizing behaviours did not relate to cortico-amygdalar structure in NDDs in our sample. Larger amygdala volumes found across NDD groups compared to non-NDD controls suggest that amygdalar alterations may be present in NDDs but may not relate to CBCL-derived externalizing/internalizing behavioural scores.
Purpose: Major depressive disorder (MDD) is associated with network disruption. Repetitive transcranial magnetic stimulation (rTMS) is thought to treat depression through stimulation of major network hubs. Here we assessed whether a structural covariance system could differentiate MDD rTMS responders, MDD rTMS nonresponders and non-depressed controls.

Methods: 268 subjects with MDD were selected from a randomized non-inferiority trial to assess high-frequency versus theta-burst rTMS (ClinicalTrials.gov no. NCT01887782). There were 152 MDD responders and 37 non responders. Response was defined as >30% reduction in Hamilton Rating Score in depression at the end of treatment. A series of non-depressed controls (n=71) were also acquired. Each subject had a 3D T1-weighted, 3.0 Tesla MRI acquired at baseline. Cortical thickness (CT) maps were computed from T1 MRI using Freesurfer. Thickness maps were submitted to a singular value decomposition was used to identify systems of CT covariance and compare these patterns amongst groups. Significance testing was performed using permutation and bootstrap analyses. Subject-wise covariance network integrity scores were computed and submitted to a GLM. Network Integrity scores indicated the degree that an individual expressed the group-level covariance network.

Results: A covariance network was found that differentiated controls and MDD non responders from MDD rTMS responders (P<0.001). Covariance network scores were significantly lower (indicating reduced integrity) in MDD responders compared to nonresponders and controls (P<0.001).

Conclusions: These results suggest that a structural covariance signature of depression could be used to predict response to rTMS treatment in depression.
PURPOSE: Adverse childhood experiences (ACEs) predict poorer response to psychotherapy, pharmacotherapy, or their combination. The impact of ACEs on neuromodulation outcomes, in particular Deep Brain Stimulation (DBS) for Treatment-Resistant Depression (TRD), is unknown. We aimed to characterize the prevalence of ACEs in patients receiving subgenual cingulate cortex (SCC) DBS for TRD and investigate whether ACEs affect outcomes.

METHODS: Longitudinal data on TRD patients receiving SCC DBS. 56 patients were stratified according to ACE levels. Primary outcome was remission (Hamilton Depression Rating Scale, HAMD-17 < 7). The ACE Questionnaire was used to quantify categories of ACEs.

RESULTS: Patients had a median of 3 ACEs. 93% reported > 1 ACEs; 62.5% reported >= 3 ACEs. There was no difference in remission rates at 12 or 36 months (chi2 = 1.3, 0.3, p = 0.3, 0.6, respectively) when stratified by high or low ACE score (>= 3 vs. <= 2, respectively). Sub-scale analysis revealed no effects of history of abuse, neglect, or household dysfunction on remission. Regardless of high or low ACE group status (z = -1.05, p = 0.3), average HAMD-17 dropped significantly from baseline to 12 months (z = -10.2, p < 0.001) and remained stable to 48 months (24, 36, 48 vs. 12 months: z = -1.5, -1.0, -0.4, all p > 0.1, respectively).

CONCLUSIONS/IMPLICATIONS: TRD patients receiving SCC DBS report high levels of ACEs. There was no deleterious effect of ACEs on antidepressant outcomes with SCC DBS in the short- and long-term. Presence of high levels of ACEs should not preclude consideration of SCC DBS for TRD.
Oliver, Lindsay

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Purpose: Schizophrenia spectrum disorders (SSDs) often feature social cognitive deficits, linked to functional outcome, though their neural basis remains unclear. Our objective was to determine how functional connectivity of social cognitive networks relates to social cognitive performance across individuals with SSDs and healthy controls. We hypothesized that increased social cognitive network connectivity would be associated with better social cognitive performance.

Methods: Across three sites, 164 people with SSDs and 117 healthy controls completed the Empathic Accuracy task during functional magnetic resonance imaging, and behavioural measures of social cognition. Functional connectivity in mentalizing, mirroring, and empathy networks was examined using graph theoretical analyses on background connectivity data from the Empathic Accuracy task.

Results: Across participants, the strength of positive connections across social cognitive regions was higher in poorer social cognitive performers versus better performers (t = 2.93, p < .01), whereas negative connection strength was greater in better performers (t = -2.27, p < .05). Poorer social cognitive performers also showed greater mentalizing network positive connectivity strength (t = 3.05, p < .01). Lastly, empathy network regions showed greater positive connectivity with the mirroring network in poorer performers (t = 2.81, p < .01), and greater negative connectivity with the mentalizing network in better performers (t = -3.21, p < .001).

Conclusions/Implications: A combination of upregulation and downregulation of activity in social cognitive brain areas during an interpersonal understanding task, rather than widespread increased connectivity, may be associated with better social cognitive performance across people with SSDs and healthy individuals.
Purpose: Twenty to 30% of patients with schizophrenia present with treatment-resistant schizophrenia (TRS). While a subset of patients will present with no initial response to non-clozapine compounds (TRS from the outset), others develop it over time. Long-term outcome of these sub-types must be explored, in relation to clinical and demographic characteristics.

Methods: This investigation uses a clozapine demographic and clinical database collected at the Centre for Addiction and Mental Health (CAMH). A total of 120 clozapine-treated patients followed a standardized treatment algorithm, with the provision of clozapine after two antipsychotic trials and administration of routine clinical scales to measure treatment response. Currently registered clozapine-treated patients were recruited for follow-up interviews to determine long-term outcome (symptom severity, cognition, social and vocational functioning, and subjective well-being).

Results: Among clozapine-treated patients currently registered at CAMH, 91.8% (45/49) were eligible for this interview, and 22 provided informed consent. After 5.3 ± 2.9 years of follow-up, patients’ overall symptomatology and core psychotic symptoms had significantly improved (p = 0.0005 and p = 0.0183, respectively). We found significant associations between: lower symptom severity with less negative symptoms, and improved subjective well-being; and higher social and occupational functioning with less negative symptoms, and improved cognition. Descriptive statistics will be presented to explore all outcome measures, including differences between sub-types.

Conclusions/Implications: Early identification of TRS is critical for optimizing symptomatic improvement in the long-term. To rehabilitate patients into society, treatment must employ a multi-faceted approach with strategies to address all relevant outcome variables.
**Purpose:** Specific reading disabilities (RD) is a common neurocognitive disability characterized by difficulties with accurate and/or fluent word recognition, poor spelling, and decoding abilities. It is a complex genetic trait with heritability estimated to be 30-70%. The genetic etiology of RD is poorly understood and few genes have been significantly associated.

**Methods:** To elucidate RD associated genes, we performed GWAS for a measure of word reading on two samples, a family-based sample selected for reading difficulties from Toronto (n=624) and a population-based sample from Philadelphia (Philadelphia Neurodevelopmental Cohort, PNC) (n=4629). We then used polygenic risk scores (PRS) to identify the genetic overlap between RD and other neurodevelopmental disorders.

**Results:** The results from the SNP-based analyses did not identify significant results, however results near significance, indicate overlap for genes previously identified in GWAS for educational attainment and neurodevelopmental disorders, particularly autism spectrum disorder (ASD). Notable among the identified genes were FOXP1 and RBFOX1. FOXP1 is a transcription factor that is associated with speech delay, language and cognitive impairment, and ASD. The RBFOX family of RNA splicing proteins have been implicated in ASD, language and Rolandic epilepsy. PRS identified significant genetic overlap between word reading and educational attainment, intelligence and attention deficit/hyperactivity disorder.

**Conclusions/Implications:** The results from the sample thus far implicate genes previously identified for educational attainment, intelligence and neurodevelopmental disorders. FOXP1 and RBFOX1 form interesting functional candidates because of their implication in transcription/splicing and neurodevelopmental disorders. This work contributes to understanding the genetic etiology of RD.
### Rashidi-Ranjbar, Neda

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**Purpose:** Despite the epidemiologic evidence, the pathophysiology of the link between depression and dementia remains unclear. We focused on whether at-risk groups demonstrate impairments in frontal-executive and corticolimbic networks similar to that of AD, potentially allowing for improvements in diagnostic biomarkers and preventive strategies for AD.

**Methods:** T1-weighted scans and diffusion weighted imaging of 406 participants from five groups: history of major depression (rMDD), rMDD+MCI, MCI, AD, and aging controls were acquired using the same acquisition sequences on a 3T scanner. The MCI group was further divided into amnestic (aMCI) and non-amnestic groups. We used ANOVA (ROI ~ Diagnosis + Age + Sex) to compare structure of gray and white matter in regions comprising the aforementioned networks across the seven groups.

**Results:** The ANCOVA model was significant in regions of both networks: e.g. entorhinal cortex thickness (F(6,364)=17.054, p=2e-16), hippocampal volume (F(6,364)=29.598, p=2e-16), FA of cingulum bundle hippocampus part (F(6,329)=10.060, p=3.32e-10). In post-hoc testing overall significance was driven by only the AD and aMCI groups. No group differences were found in the other five groups.

**Conclusion:** AD and aMCI were associated with deleterious changes in both networks. The results suggest that the risk for developing AD associated with a history of depression (rMDD) may be due to a different mechanism. MCI in participants with a history of depression (rMDD+MCI) seem to have a different trajectory in the development from those without history of depression (MCI).
Purpose: Pharmacogenomic testing has recently become scalable and available to guide the treatment of major depressive disorder (MDD). The objective of the current meta-analysis was to determine if guidance from pharmacogenomic testing results in relatively higher rates of remission and response compared to treatment as usual (i.e. ‘unguided’ trial-and-error method) in adults with MDD.

Methods: Article databases were systematically searched from inception to January 27, 2019 for human studies assessing the clinical utility of pharmacogenomics in the acute treatment of MDD. Herein, we delimit our focus on categorical outcomes (i.e. response/remission). Using a random-effects model, data was pooled to determine the risk ratio (RR) of response and remission, respectively, in the pharmacogenomic-guided treatment group compared to the unguided group.

Results: Six randomized controlled trials (RCTs; variable blinding) and two open-label, controlled cohort studies were included. The pooled RR for treatment response comparing guided versus unguided treatment was 1.37 (95% confidence interval [CI]=1.21 to 1.54; p<0.0001; n=2,066) in favour of guided treatment. The pooled RR for remission was 1.64 (95%CI=1.23 to 2.19; p=0.0007; n=2,002) also in favour of guided treatment. Heterogeneity in study results suggest that different genetic tests may variably impact response and remission rates. The majority of studies had a high risk for bias.

Conclusion: The current analysis provides preliminary support for improved response and remission rates in MDD when treatment is guided by pharmacogenomics. However, due to significant study limitations, future well designed, adequately blinded RCTs are required to accurately determine the clinical utility of pharmacogenomic-guided antidepressant selection.
Purpose: To test whether the findings of a recent study in Denmark, which found exposure to green space to mediate the risk of psychotic disorders, hold true in an urban environment.

Methods: A subset of individuals residing in Toronto that were part of a larger retrospective cohort were followed for a 10-year period from the time of cohort entry in 1999. Cases were identified from administrative data. Neighbourhood level data was obtained from the Ontario Marginalization Index and Urban HEART. Poisson regression models adjusting for age, sex and neighbourhood marginalization were used to calculate incidence rate ratios based on the average amount of green space per neighbourhood. Neighbourhood walk score was utilized as a proxy measure for accessibility within the local environment.

Results: In the cohort (n = 649,020) there was a significantly higher incidence of psychotic disorders in neighbourhoods with the lowest amounts of green space (IRR 1.26, 95% CI 1.16 - 1.38) when compared to neighbourhoods with the greatest amounts of green space. Preliminary results show an interaction with accessibility to the environment.

Conclusions/Implications: Residing in an area with lower amounts of green space may increase the risk of a psychotic disorder, preliminary results suggest how individuals access the environment is also important. These findings suggest that modifications within the built and social environments may be important in future prevention and intervention efforts.
PURPOSE-Brain cholesterol metabolism, neuroinflammation, and oxidative stress (OS) are altered during Alzheimer’s disease (AD), and may impede endocannabinoid signaling, worsening agitation. We assessed which combination of markers (cerebrocholesterol (Cchol), inflammatory cytokines, and OS markers) were associated with response to nabilone, a synthetic cannabinoid.

METHODS-Baseline Cchol, cytokines (tumor necrosis factor(TNF), interleukin(IL)-2,-1β,-6,-8, and -10), and OS markers (lipid hydroperoxides(LPH), 8-isoprostanate(8-iso), 4-hydroxynonenal(4-HNE), and thiobarbituric acid reactive substances(TBARS)), were collected from AD patients enrolled in a clinical trial with nabilone for agitation (NCT02351882). Agitation was assessed using the Cohen Mansfield Agitation Inventory (CMAI). Binary logistic regressions were used to select 6 markers that predicted response based on CMAI improvement with nabilone. These markers were entered into a principal component analysis (PCA). A factor loading score for each PC was computed to determine which PC predicted response to nabilone based on improvement on CMAI total/subscores using binary logistic regressions.

RESULTS-In 38 participants (mean±SD age=87±10, CMAI=68±18, MMSE=6.3±6.3) Cchol, TNF, IL-1β, LPH, 4-HNE, and TBARS predicted response to nabilone. Three PCs were identified (PC1-TNF and IL1-β; PC2-Cchol, 4-HNE and TBARS; PC3-LPH). PC1 predicted response on CMAI verbal non-aggression (odds ratio(OR)= 0.74 [0.56-0.98], p=.04). PC3 predicted response on CMAI physical aggression (OR=1.74, [1.11-2.71], p=.02) and physical non-aggression (OR=0.72 [0.52-0.99], p=.04). PC2 did not predict responders on the CMAI total/subscores.

CONCLUSIONS/IMPLICATIONS-Cytokines predicted improvement on verbal agitation, while LPH predicted improvement on physical agitation. As there are no validated biomarkers of agitation, identifying markers of agitation and response would assist in identifying patients who may benefit from treatment with nabilone.
Purpose: The aim of this review was to identify evidence-based, independent virtual methods of care that could be used in adult patients after discharge from mental health services.

Methods: A systematic review was conducted following PRISMA guidelines in 3 databases: PubMed, Web of Science and Ovid. Inclusion criteria were: technology-based interventions, related to mental health, primarily for adults and with a solid evaluation process. Interventions had to be ‘self-directed’, in that the participants could use the intervention without external guidance. Initial searches identified 371 articles for review.

Results: Fourteen papers were identified that fit the inclusion criteria: 9 RCTs, 4 non-RCT quantitative studies and 1 qualitative study. Technologies that were employed included websites (6), automated text messaging (3), phone applications (2), videos (1), computer software (1) and integrated voice response (1). Studies focused on clinical efficacy usually showed no difference between standard of care and technological interventions. Feasibility and acceptability studies showed mixed results in participants’ acceptance of interventions. Out of 5 studies comparing assisted to self-directed virtual care, only one showed significant improvement with assisted care. Most studies lacked sufficient power to show clinical efficacy.

Conclusions/Implications: There is limited research on efficacy and suitability of independent virtual care options in mental health. Most research has shown that virtual care has at least equal efficacy to current standards of care, suggesting a potential benefit for virtual care that needs further evaluation. Interventions may need to be developed collaboratively with users from the start to encourage acceptability.
**Purpose:** Effort-based decision-making (EBDM) is essential for motivation and goal-directed behaviour. Given the prominent motivational deficits associated with schizophrenia (SZ), there is a great need to better understand the processes guiding EBDM in affected individuals. Thus, the present study sought to model the predictors of EBDM choice behaviour in SZ and healthy control (HC) participants.

**Methods:** In a sample of 51 SZ patients and 51 HCs, EBDM was measured using the Effort Expenditure for Rewards Task (EEfRT). The Apathy Evaluation Scale (AES) and Brief Assessment of Cognition in Schizophrenia (BACS) were also administered to assess for amotivation and cognitive functioning, respectively. Choice behaviour on the EEfRT was modeled using Generalized Estimating Equations (GEE), with predictors including reward magnitude, probability, expected value (EV), diagnostic group, AES, and BACS.

**Results:** GEE models revealed significant interactions between group and reward (b = -.33, p < .001), probability (b = -.01, p = .007), and EV (b = -.58, p = .001). Significant interaction terms were also found for AES and reward (b = -.02, p < .001) and EV (b = -.02, p = .01), as well as for BACS and reward (b = .11, p < .001), probability (b = .01, p < .001), and EV (b = .31, p < .001).

**Conclusions:** The utilization of important reward-based information for guiding effort-based decision-making is impaired in SZ. Regardless of diagnosis, however, amotivation and cognition are directly linked to the inefficient utilization of this information in the context of choice and effort-cost computations.
**Purpose:** Cognitive impairment, particularly working memory (WM), is a core feature of schizophrenia and predict functional outcome. Various studies link WM deficits to alterations in dorsolateral prefrontal cortex (DLPFC) brain activation and recent evidence suggests a relationship between WM and DLPFC microstructure in schizophrenia. Despite this converging evidence, no study has investigated the relationship between brain microstructure and function in schizophrenia.

**Methods:** In the present study, we used baseline MRI data from 45 patients with schizophrenia (n=48 had diffusion-weighted and functional scans, n=3 did not pass QC), enrolled in a rTMS treatment trial. All scans were acquired prior to treatment. BOLD (Blood-Oxygen-Level Dependent) imaging of an N-back WM task was used to estimate task-based brain activation. General linear models were run using SPM contrasting 3-back (high WM) to 1-back (low WM). Grey matter microstructure was examined using multi-shell diffusion-weighted imaging and the neuritic orientation dispersion and density imaging (NODDI) model, which provides indices of neuritic orientation dispersion (ODI) and neuritic density (NDI). Values for NDI, ODI and BOLD contrast for bilateral DLPFC were extracted and associations were explored using Pearson’s linear correlations.

**Results:** Preliminary analysis revealed significant associations between BOLD activation and microstructure. In the right DLPFC, patients with stronger BOLD contrast had higher neuritic density (r=0.30, p=0.043) and lower neuritic orientation dispersion (r=0.31, p=0.037).

**Conclusions/Implications:** These findings provide the first direct evidence for an association between brain microstructure and BOLD activation to a WM task in patients with schizophrenia. Future studies should examine brain microstructure as a possible biomarker of response to WM enhancing treatments.
Does a computerized clinical decision support system improve practitioners’ delivery of an alcohol brief intervention to smokers drinking at risky levels? Results of a pragmatic cluster randomized trial

Purpose: In primary care settings alcohol and smoking are often treated separately despite concurrent treatment potentially leading to better outcomes. This study examined whether a computerized clinical decision support system (CDSS) influenced practitioner delivery of an alcohol brief intervention to smokers drinking at risky levels.

Methods: 221 primary care clinics, implementing an existing smoking cessation program, were blindly allocated to receive CDSS (intervention) versus standard practice (control). Practitioners working in clinics randomized to the intervention arm received computer alerts when a patient reported consuming alcohol above guidelines, and were guided to provide the patient a brief intervention and an educational resource. Clinics randomized to the control arm had access to the same educational resources, but did not receive computer alerts.

Results: In 16 months, 15,222 smokers were screened for alcohol use of which 38% drank above guidelines. Primary Outcome: There was no significant difference in practitioners’ (intervention vs control) likelihood of offering educational resources to appropriate patients [OR=1.19 (0.88–1.64), p=0.261]. Secondary Outcome: A significantly greater proportion of patients in the intervention group accepted the offered educational alcohol resource [OR=1.48 (1.01–2.16), p=0.045]. Tertiary Outcome: There was no association between CDSS and participant having quit smoking and drinking within guidelines, at the 6-month follow-up.

Conclusion: The observed increase in patients accepting the offered resource in the CDSS group suggests that it may change practitioner behavior in other ways that the current study did not measure.
Purpose: In 2011, the Ontario Ministry of Health and Long Term Care published the Early Psychosis Intervention (EPI) Program Standards. Currently there is no systematic process to assess adherence across Ontario’s 45 EPI programs. Fidelity assessments can evaluate current service delivery, and inform program and system level efforts to improve quality of care. This study assessed program fidelity in 9 Ontario EPI programs.

Methods: Fidelity assessments were conducted using the validated First Episode Psychosis Services Fidelity Scale. Thirty-one components of care were rated on a 5 point scale; a rating of 4 indicated satisfactory performance. Trained assessor teams conducted site visits; ratings were made by consensus. Sample total and item mean ratings were calculated, and compared for small (<3 staff) versus medium or large (>3 staff) programs.

Results: Overall fidelity ratings per program ranged from 3.1 to 4.4, and exceeded 4 in five programs. Items assessing structural components of the model (e.g., caseload) and prescribing practices were among the highest rated. Items assessing psychosocial treatments (e.g., supported employment) and access to psychiatry were among the lowest. Common challenges were a lack of systematization in care delivery and poor documentation. Fidelity results tended to be lower for small programs.

Conclusions: This project demonstrated the value of fidelity assessments to identify improvement opportunities at the program and sector level. An important next step will be to further investigate how fidelity results are used by programs in practice. It will also be important to explore sustainable strategies for ongoing fidelity assessments.
Shanmuganandapala, Babitha

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<td>Co-Authors</td>
<td>Nazilla Khanlou, Beryl Pilkington &amp; Hala Tamim; York University</td>
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## Full Abstract

**Purpose:** Canada hosts a large community of Tamils of Sri Lankan origin, but despite their experiences of war and trauma, literature focusing on this community’s youth and their mental health (MH) is scarce. The aim of this ongoing study is to explore and understand the meanings, beliefs, practices, and experiences of health, wellbeing, and MH from the perspective of first and second-generation Tamil youth of Sri Lankan origin, aged 18 to 24, living in the Greater Toronto Area.

**Methods:** This qualitative and community-based study used snowball sampling followed by purposive sampling to recruit through social media and personal referrals. In depth interviews were conducted by a psychiatric registered nurse with 13 participants and analyzed using interpretive description.

**Results:** The sample was predominantly second-generation and consisted of 8 females and 5 males. Thirty nine percent had a parent or grandparent with a diagnosed or suspected mental illness. About 1 in 3 participants had self-harmed or attempted suicide in the past owing to elevated stress/anxiety, interpersonal issues and mental illness symptoms. Gender differences indicate that males may be at higher risk for MH issues, with drug use and anger management being specific concerns. The roles of intergenerational and collective trauma, cultural/gender norms, complex dual identity, resilience, and lack of culturally competent/informed care have been identified as emerging themes.

**Conclusions/Implications:** Based on the findings, an analysis of power, privilege, and trauma supports multiple recommendations including intergenerational approaches to address collective trauma, and the importance of culturally competent and contextually informed service providers.
Purpose: Individuals with schizophrenia appear to have a greater risk of death following stroke, compared to the general population. However, the reasons for this are not well understood. We used data from the province of Ontario, Canada, to compare stroke care and outcomes in people with and without schizophrenia.

Methods: We used the Ontario Stroke Registry to identify patients hospitalized with stroke between April 1, 2002 and March 31, 2013, and identified those with schizophrenia using validated algorithms. We compared processes of acute stroke care delivery in those with and without schizophrenia and used Cox proportional hazards models to examine the association between schizophrenia and mortality, adjusting for demographics, stroke severity, and processes of care.

Results: The study sample included 52,473 people, 612 (1.2%) of whom had schizophrenia. Individuals with compared to without schizophrenia were younger (median age 66 vs. 74 years) and more likely to arrive by ambulance (79.9% vs. 72.2%), but had longer median time to presentation (7.74 vs. 5.78 hours). The use of thrombolysis, stroke unit care, rehabilitation, and antiplatelet therapy was similar in those with and without schizophrenia; however, those with schizophrenia were less likely to undergo carotid imaging and to be treated with antihypertensive, lipid-lowering or anticoagulant medications. One year mortality was greater in those with compared to without schizophrenia (adjusted hazard ratio 1.32, 95% CI 1.14-1.54), even after adjustment for age, sex, and other factors.

Conclusions: Schizophrenia is associated with increased mortality after stroke, despite similar processes of acute stroke care delivery.
**Purpose:** To investigate intrinsically motivated behaviour in schizophrenia we developed a motion capture-based task, the Activity Preference Task (APT), which gauges activity engagement tendencies when individuals are provided an explicit choice between an active versus passive engagement option.

**Methods:** Forty-four outpatients with schizophrenia and 47 healthy controls were administered the APT, wherein participants play a motion-based video game (active) or watch a film (passive) while alone in a room for 15 minutes. Participants could engage in either activity at any time, and could switch between activities as they pleased. Participants also underwent assessments for clinical and cognitive characterization.

**Results:** Schizophrenia patients and healthy controls did not differ significantly in terms of duration of active engagement or tendency to switch between activities, but patients demonstrated significantly reduced intensity of active engagement. Duration and intensity of active engagement were correlated with motivation in the schizophrenia group, and with both motivation and community functioning in the overall sample. Further, exploratory cluster analysis identified a distinct subgroup of schizophrenia patients with reduced engagement intensity and increased apathy compared to other patients and controls.

**Conclusions:** The APT provides a means of quantifying intrinsically motivated activity engagement, complementing exiting means of evaluating patients' activities that are largely reliant on accounts of daily living activities. These findings suggest that schizophrenia patients as a group are similarly inclined towards selecting actively engaging activities as healthy controls when provided an explicit choice. However, patients tend to engage with diminished intensity, which may be indicative of broader motivational deficits.
**Singh, Anneesa**

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**Co-Authors**

**Full Abstract**

Purpose: Approximately 5-15% of children are diagnosed with a Disruptive Behavior Disorder (DBD) that is associated with tremendous impairment in social, academic, and family functioning. Many children with DBD show difficulties with regulating their emotion (i.e., emotion dysregulation), may be quick to react to mild provocation, and show sustained negative emotionality (i.e., anger). There is also evidence of cognitive deficits in inhibitory control, or the ability to stop ongoing thoughts and behaviour, in children with a DBD. The purpose of the current study is to determine whether emotion regulation may partially account for the association between children’s inhibitory control and DBD severity.

Methods: Participants include 103 children aged 6-12 years referred to a specialized outpatient clinic for children with disruptive behaviour. Validated parent measures of emotion regulation (BDEFS Emotion Regulation Scale), conduct problems (Strengths and Difficulties Questionnaire) and a performance-based objective measure of inhibitory control (CANTAB Stop Signal Task) were analyzed using PROCESS in a mediation model.

Results: Preliminary findings show no direct association between inhibitory control and conduct problems. However, a significant indirect association between inhibitory control and conduct problems through emotion regulation was found. Specifically, better developed inhibitory control was associated with better developed emotion regulation, which is in turn was associated with lower conduct problems in children with DBD.

Conclusions/Implications: Cognitive and emotional processes are part of the causal chain associated with conduct problems in children with DBD.
Purpose: Practice data can inform the selection of educational strategies; however, it is not widely used, even when available. This study’s purpose was to determine factors that influence physician engagement with practice data to advance competence and drive practice change.

Methods: A practice-based, pan-Canadian survey was administered to three physician sub-specialties: psychiatrists (Psy), radiation oncologists (RO), and general surgeons (GS). The survey was distributed through national specialty society membership lists. The survey assessed factors that influence the use of data for practice improvement and orientation to lifelong learning, using the Jefferson Scale of Physician Lifelong Learning (JeffSPLL). Linear regression was used to model the relationship between the outcome variable frequency of data use and independent predictors of continuous learning to improving practice.

Results: 305 practicing physicians (Psy=203, RO=53, GS=49) participated in this study. Most respondents used data for practice improvement (n=177, 61.7%; Psy=115, 40.1%; RO=35; 12.2%; GS=27, 9.4%) and had high orientation to lifelong learning (JeffSPLL mean scores: Psy=47.4; RO=43.5; GS=45.1; Max=56). Linear regression analysis identified significant predictors of data use in practice being: frequency of assessing learning needs, helpfulness of data to improve practice, and frequency to develop learning plans. Together, these predictors explained 42.9% of the variance in physicians’ orientation towards to integrating accessible data into practice (r²=0.429, p<0.001).

Conclusions/Implications: This study demonstrates an association between practice data use and perceived data utility, reflection on learning needs and learning plan development. Implications for this work include process development for data-informed action planning for practice improvement for physicians.
**PURPOSE:** Codeine is one of the most commonly dispensed opioids in Canada. This report provides regional prevalence and characteristics of non-medical use of codeine products in Canada.

**METHODS:** The Survey of Non-Medical Use of Prescription Drugs Program is a cross-sectional online survey of the general adult population in Canada. Data for 10,007 respondents were collected during 3rd quarter 2017, and weighted to provide national prevalence estimates.

**RESULTS:** It is estimated that 6.8 million adult Canadians (22.4%; 95% Confidence Interval (CI): 21.5%-23.4%) had non-medically used a codeine product in their lifetime. Proportions of non-medical users by region ranged from 4.5% (CI: 3.7%-5.4%) in Atlantic provinces to 34.7% (CI: 32.8%-36.7%) in Québec. Non-medical codeine users had a median age of 47.3 years (IQR 31.4-59.8) and were 51.9% male (CI: 49.6%-54.2%). A large proportion of non-medical users reported using non-prescription codeine products (66.1%; CI: 63.9%-68.3%), and for many they were the only codeine products endorsed (40.1%; CI: 37.9%-42.4%). Of those non-medical users using for pain, a considerable proportion reported product tampering (e.g., 20.9% chewing; CI:18.9%-23.0%), with only a small proportion injecting (4.2%;CI:2.7%-5.7% prescription products; 1.7%;CI:0.8%-2.6% non-prescription products).

**CONCLUSION:** Non-medical use of codeine products is prevalent in Canada with regional differences noted. A substantial proportion of non-medical use involved low dose codeine non-prescription products, which helps inform the risk profile associated with these products.
Purpose: Treatment-resistant bipolar depression (BD) is common and can be treated with Electroconvulsive Therapy (ECT). Unfortunately, ECT is limited by stigma and cognitive adverse effects. Magnetic Seizure Therapy (MST) is a new neuromodulation treatment that is demonstrating similar antidepressant effects but with much lower cognitive adverse effects. MST has not been evaluated specifically in BD.

Methods: Patients with treatment-resistant BD were treated openly with MST for up to 24 treatments or until remission. Primary outcome measure was the 24-item Hamilton Rating Scale for Depression (HRSD-24), with secondary outcomes including the Scale for Suicidal Ideation (SSI) and reorientation time. Cognitive measures included the MATRICS consensus cognitive battery, the Autobiographical Memory Inventory Short Form (AMI-SF), and the Montreal Cognitive Assessment (MoCA).

Results: Of 31 patients who started MST, 26 completed an adequate trial (³8 treatments), and 20 completed a full course per protocol. In adequate trial completers, depression remission rate was 23.1% and response rate was 38.5% In per protocol completers, remission rate was 30% and response rate was 50%. Adequate trial completers with > 0 suicidal ideation at baseline, complete resolution of suicidality (SSI=0) was observed in 47.4%. There were no significant changes in reorientation times, and MATRICS or MoCA scores. However, there was a significant worsening on the AMI-SF, which measures autobiographical recall consistency.

Conclusions/Implications: In treatment resistant BD, MST produced a robust improvement in depression symptoms and suicidality with minimal effects on cognitive functions. These very promising results warrant further investigation with larger clinical trials comparing MST to ECT.
Purpose: To present clinical outcomes and functional gains following multidisciplinary treatment at Canada’s first Obsessive compulsive disorder (OCD) residential treatment facility at Sunnybrook Health Sciences Centre.

Methods: Treatment-refractory patients (n=36) experiencing severe OCD symptoms completed baseline and discharge questionnaires, including: Yale Brown Obsessive Compulsive Scale (Y-BOCS), Obsessive Compulsive Inventory-Revised (OCI-R), Intolerance of Uncertainty Scale (IUS); Brief Experiential Avoidance Questionnaire (BEAQ); Quality of Life Enjoyment and Satisfaction Questionnaire – Short Form (QLES-SF) and the WHO Disability Assessment Scale (WHODAS). Individuals were interviewed at discharge regarding program experiences.

Results: Paired sample t-tests revealed significant outcomes in all measures from baseline to discharge: Y-BOCS, p < .00; OCI-R, p < .00; IUS, p < .00; BEAQ, p < .00; WHODAS, p < .01. The QLES-SF increased from baseline to discharge, p < .00. Client interviews revealed qualitative themes of: 1) the need for an OCD community; 2) importance of increasing functionality; 3) steps to consolidate discharge planning; and 4) a range of treatment challenges to be identified and circumnavigated.

Conclusions: Overall, these results support the effectiveness and feasibility of intensive treatment of OCD for treatment-refractory patients within our new Canadian program. Specifically, the quantitative results support decreased symptomatology, enhanced quality of life and improved functionality following specialized, intensive OCD treatment in the Canadian context and the qualitative findings highlight client-centred needs and future directions for programmatic development. Findings are discussed in the context of enabling individuals with OCD to move towards values and goals in life.
**Thiyagarajah, Mathura**

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### Full Abstract

**Purpose:** White matter changes are a hallmark of vascular cognitive impairment (VCI) and white matter hyperintensities (WMH), as seen on magnetic resonance imaging, have been associated with cognitive decline. Oxidative stress may lead to early white matter changes; however, the role of antioxidant mechanisms in VCI are unclear. We aim to investigate the association between the endogenous antioxidant glutathione (GSH) in the brain and WMH in mild VCI (mVCI), an early stage of VCI.

**Methods:** Patients with mVCI aged 55 to 85 are recruited from a cardiac rehabilitation program. mVCI is defined based on neuroimaging (possible mVCI = Fazekas score ≤ 1 and probable mVCI = Fazekas score ≥ 2) and cognitive impairment (performance ≥ 1 standard deviation below population norms in executive function and/or verbal memory). Brain GSH will be quantified using proton magnetic resonance spectroscopy. A sample size of 55 participants is needed to assess the relationship between brain GSH levels and WMH using a linear regression.

**Results:** To date, 14 patients are enrolled (mean ± SD; age = 69.8 ± 7.3, 78.6% male, 78.6% Caucasian). Of these, 43% of participants had possible mVCI (n = 6 with Fazekas score 1) and 57% of participants had probable mVCI (n = 7 with Fazekas score 2, n = 1 with Fazekas score 3).

**Conclusions/Implications:** White matter abnormalities of presumed vascular origin were prevalent among cardiac rehabilitation participants with cognitive decline, making them a suitable population for early intervention, in which to study the glutathione system as a novel target.
Purpose: Given the limited effectiveness of treatments for pathological anxiety, there is a pressing need to identify biomarkers that can predict more precise selection of treatments. Anxious states increase the startle response, and exaggerated startle reactivity is a strong indicator of anxiety disorder. We hypothesized that genes associated with startle reactivity will predict anxiety symptom severity and/or treatment response across psychiatric disorders, and in an anxiety disorder subset.

Methods: We investigated patients from the pharmacogenetic IMPACT study that provided salivary DNA samples and had anxiety severity determined by the Generalized Anxiety Disorder 7-item (GAD-7) scale. We selected 19 genes associated with startle reactivity for a hypothesis-driven gene set analysis. Linear regressions were performed to examine the effect of the SNPs on baseline GAD-7 score and the change in GAD-7 score after 8 weeks of pharmacological treatment in general psychiatric patients (N=508), and in the anxiety disorder subsample (N=298).

Results: Across psychiatric patients, rs6323 from MAOA and rs324981 from NPSR1 were nominally associated with baseline GAD-7 score (p(unadjusted)=0.017, 0.023), and rs6779753 from NLGN1 was nominally associated with the change in GAD-7 score after 8 weeks (p(unadjusted)=0.018). Among anxiety patients, nominally significant associations with change in GAD-7 score were found for rs10994336 from ANK3 and rs1049353 from CNR1 (p(unadjusted)=0.019, 0.043).

Conclusions/Implications: A subset of genes related to startle reactivity is associated with anxiety symptomatology and treatment response across psychiatric patients. This study provides support for exploring startle-related genes to identify biomarkers of excessive anxiety and treatment response for patients suffering with anxiety.
**Title:** Predicting a good outcome in Autism Spectrum Disorder

**Introduction:** The Pathways in Autism Spectrum Disorder (ASD) study is designed to identify factors associated with good outcomes in children with ASD. Our objectives are to predict good outcomes in five key domains in middle childhood, measured by proficiency (scoring at or above the score for typically developing children) and growth (improvement of at least 1 standard deviation in score from Time 1 to Time 2), using early child and contextual variables.

**Methods:** Recruitment occurs in autism clinics in 5 Canadian provinces (N=421). Time 1 (T1) is soon after a preschool ASD diagnosis (mean age 3.4 years); Time 2 (T2) is at age 8.7 to 10.8 years. Outcomes are subscales from the Vineland Adaptive Behaviour Scales (VABS-II) and Child Behaviour Checklist (CBCL). We use logistic regression to predict outcomes with T1 scores on measures of intellectual ability (Merrill-Palmer-Revised), language (PLS-4), household income, McMaster Family Assessment Device General Family Functioning subscale, and Ways of Coping.

**Results:** Lower T1 scores are associated with growth. Higher T1 scores are associated with proficiency. General family functioning predicts proficiency in both the externalizing and the socialization domains. The PLS-4 predicts growth in socialization. General family functioning predicts growth in internalizing. Higher household income predicts growth in externalizing.

**Conclusions:** Predictors of good outcomes include child-specific characteristics, such as language ability, and contextual variables, such as family functioning. Our result highlight the heterogeneous nature of ASD as well as the need to better understand family functioning to identify potential targets for intervention.
Purpose: There is no established pharmacological treatment for methamphetamine (MA) addiction. The activation of microglia cells, microgliosis, has been linked to drug-seeking behavior in animals and humans. This suggests that it could be an innovative pharmaceutical target to alleviate cravings. MA exposure was linked to increased microgliosis in preclinical studies, but findings in the brains of human MA users are contradictory. Our aim was to examine microgliosis in living human brains of MA users by measuring binding of the positron emission tomography (PET) radioligand [F-18]FEPPA, to translocator protein 18 kDa (TSPO), a suggested biomarker for microgliosis.

Methods: Eleven MA users (~40 years, 3 females) and 24 healthy controls (~39.5 years, 10 females) were recruited. Saliva samples were collected to genotype for TSPO polymorphism (rs6971) based on high- or mixed-affinity binding. Regional volumes of distribution (VT) of [F-18]FEPPA were obtained for 10 regions of interest (ROIs) established a priori. RM-ANCOVA (ROI X group controlling for genotype) was conducted to measure statistical significance.

Results: We found no main effect of group on [F-18]FEPPA VT (p=0.60). There was a significant interaction (ROI x Group) with a marginal decrease of ~27% (p=0.07) in the hippocampus, suggesting decreased TSPO binding in MA users.

Conclusion: We found no evidence for brain microgliosis in MA users, suggesting a poor translation of pre-clinical findings to human MA users. The trend for lower TSPO binding in hippocampus may suggest decreased microglia function or actual loss of microglial cells in this brain region.
### Purpose
To present findings of our community-based study on the mental health and wellbeing of black mothers of children with developmental disabilities (DDs).

### Methods
A qualitative study was conducted in 2018, utilizing in-depth semi-structured interviews with 7 racialized mothers and 3 service providers.

### Results
Racialized mothers face particular challenges related to (i) access to support, information and resources; (ii) financial difficulties and unemployment; (iii) their role as providers of intensive 24/7 care for their children with complex needs; (iv) limited supports from governments, community, family or friends; and (v) denial, stigma and blame. These challenges emerged in the context of experiences of daily racism and discrimination.

### Conclusions/Implications
The mental health and wellbeing of racialized mothers are negatively impacted by the intersections of gender (being main caregivers of their children with DDs), disability (lifelong care for their children with DDs), and racialization (being black). Challenges of mothering increase when they are racialized caregivers. Institutional racism may have negative impacts on service access and utilization, which may further exacerbate negative mental health outcomes for mothers. Mothers showed key areas of strength (intergenerational awareness) and provided institutional recommendations (diverse service providers, more programming, hotline support, support groups).
Purpose: Arterial spin labelling (ASL) is a non-invasive magnetic resonance imaging (MRI) measure of brain perfusion. Although withdrawal and acute smoking and nicotine administration cause widespread perfusion changes, the long-term consequences of smoking cessation on brain circuitry remain unclear. We investigated the impact of smoking abstinence, resumption, and cessation treatment on brain perfusion.

Methods: Smokers enrolled (n=17) in a 12-week nicotine replacement therapy smoking cessation treatment study underwent resting state ASL MRI imaging at baseline following 12-hour abstinence, smoking satiety, and end-of-treatment (n=13). Mean perfusion was extracted from 5 bilateral regions of interest (ROIs): orbitofrontal cortex, anterior cingulate cortex, nucleus accumbens, thalamus, and hippocampus. Paired t tests assessed within subject perfusion changes between abstinence and satiety.

Results: Perfusion significantly increased in the left anterior cingulate and bilateral orbitofrontal cortex from abstinence to satiety (p<0.005). Trending increases (p<0.05) in perfusion were observed in the right accumbens, left hippocampus, and left thalamus. No mean perfusion differences were detected from baseline to end-of-treatment in any ROIs.

Conclusions/Implications: Short-term abstinence and satiety alter brain perfusion to regions implicated in reward valuation and anticipation, highlighting the significance of motivational circuitry during the early stages of a quit attempt. At the current sample size, there is no evidence of robust ASL perfusion changes in response to 12-week smoking cessation therapy. Complementary imaging techniques and greater sample sizes are required to evaluate the possible long-term consequences of smoking cessation on neural circuitry.
PURPOSE: Microglial, a cellular marker of brain inflammation has been implicated in the pathogenesis of psychiatric conditions and in animal models of PTSD. Here, we tested the hypothesis that the translocator protein (TSPO) radiotracer [18-F]FEPPA, an index of microglial activation, is elevated in PTSD relative to healthy controls.

METHODS: [18-F]FEPPA distribution volume (V–T) was measured with positron emission tomography (PET) and arterial sampling in patients with occupational PTSD (n = 8) and healthy controls (n = 26). Saliva samples were collected for genotyping individuals into high- or mixed-affinity binders based on TSPO polymorphism (rs6971). [18-F]FEPPA VT were obtained for 10 brain regions of interest (ROIs). RM-ANCOVA (ROI X group controlling for genotype) was employed to evaluate statistical significance.

RESULTS: We found that PTSD (mean age 36y, 60% males) was associated with a wide-spread, though non-significant, increase (17-37%) in [18-F]FEPPA VT across 10 brain regions compared to healthy controls (mean age 30y, 42% males) (F(1, 31) = 2.283; p = 0.1), which may depend on between-group differences in the cingulate cortex (p = 0.08) and midbrain (p = 0.07) (Group * region interaction (F(9, 279) = 2.565; p = 0.008)).

CONCLUSION: Our findings suggesting a trend for up-regulation of TSPO in the brain of PTSD might suggest microglia activation. In line with reports in major depressive disorder, the current study provides incentive for microglia targeted-therapies (anti-inflammatory drugs) in PTSD.
**Purpose:** This is the first study to systematically explore the effects of magnetic seizure therapy (MST) on suicidal ideation (SI) in patients with major depressive disorder (MDD). Considering the milder cognitive side effect profile of MST compared to electroconvulsive therapy (ECT), a highly effective treatment for SI, exploration into the treatment effects of MST on SI is warranted.

**Methods:** This open-label study included patients with MDD (N=86) that were treated with MST over the prefrontal cortex. The primary outcome for this analysis was remission from SI as measured by an endpoint score of zero on the Beck Scale for Suicidal Ideation (SSI). Treatments used 100% stimulator output, at low (25 Hz), medium (50/60 Hz) or high frequency (100 Hz). Cognitive measures were completed throughout the study. Binary logistic regression was used to determine the strength of association between treatment frequency received and remission from SI, in which multiple clinical and demographic factors were accounted for.

**Results:** Remission from SI was clinically significant for patients receiving low frequency MST (55.2%) and moderate frequency MST (54.5%). Moderate frequency MST was significantly associated with remission from SI compared to high frequency MST (OR = 18.3, 95% CI = 1.2-272.7, p = .04).

**Conclusion:** MST appears to be a safe and effective treatment for SI in MDD at moderate and low treatment frequencies. Future studies should compare this treatment option for SI in a randomized fashion against traditional ECT both in MDD and across other DSM diagnostic categories.
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Purpose: As we face the growing aging population, it is imperative for health professionals to gain proficiency in working with elderly patients who suffer from co-occurring physical and mental illness. A key challenge lies in developing and supporting continued empathy towards this stigmatized population. Simulation can provide standardized experiential learning opportunities to address this critical gap. The objective of the study is to explore the effectiveness of narrative writing and an immersive simulation experience for fostering empathy towards geriatric patients with advanced mental illness. The goal of the study is to foster empathy towards this stigmatized aging population.

Methods: The simulation design involves participants first taking on the perspective of a geriatric patient with chronic mental illness through a narrative writing exercise and then physically inhabiting this role by wearing an aging simulation suit to perform a medication management task. Participants then engage in a facilitated debriefing session and reflection about their experience through an additional narrative writing exercise. Interviews conducted 3 months post-intervention will explore the impact of the simulation experience on their clinical practice.

Results: Data collection began in October 2018 and is currently ongoing with an initial target population of psychiatry residents. The data collection is scheduled to be complete by March, 2018. The study evaluation is underway and uses a mixed qualitative and quantitative analysis approach to explore both process and outcome dimensions related to empathy building.

Conclusions/Implications: We anticipate that this experiential learning opportunity will result in increased empathy for geriatric patients and will encourage meaningful discussion regarding the physical and communication challenges faced by this vulnerable population in the healthcare system.
Purpose: Individuals at clinical high-risk (CHR) for schizophrenia experience subthreshold symptoms of this disorder and are at elevated risk for developing it. Among CHR patients and the general population, cannabis use has been associated with increased risk of developing psychosis. Psychosis and psychosis-like symptoms in schizophrenia patients, healthy individuals and regular cannabis users have been linked to deficits in processing relationships between meaningful (semantic) stimuli. To seek neurophysiological evidence that semantic processing deficits mediate the relationship between cannabis use and psychosis-like symptoms in the CHR state, we used the N400 event-related brain potential (ERP) as a measure of semantic processing. We hypothesized that there will be a smaller difference in N400 amplitudes between related and unrelated stimuli in response to prime stimuli in cannabis-using CHRs compared to non-cannabis-using CHRs.

Methods: We recorded ERPs in 12 CHR patients with history of present/past cannabis dependence disorder (CHR/C+), 11 CHR patients with no history of cannabis use (CHR/C-) and 13 healthy control participants with no history of cannabis use (HCPs). Participants viewed prime words followed by targets (words related or unrelated to prime, or nonwords) at either 300- or 750-ms stimulus-onset asynchrony (SOA).

Results: Across SOAs, we saw a trend toward N400 semantic priming effects being smaller for both CHR/C+ and CHR/C- compared to controls (p = 0.078).

Conclusion: The results suggest that cannabis use does not modulate semantic priming deficits in CHR patients. Future studies of CHR patients should compare those with current cannabis dependence with non-users to better detect potential differences.
Purpose: The endocannabinoid system (ECS) is a lipid signalling network which modulates stress responses and neurotransmitter activity. Preclinical studies have shown that up-regulated activity of fatty acid amide hydrolase (FAAH), a major ECS catabolic enzyme, may be associated with anxiety-spectrum disorders. However, there are no clinical in-vivo studies investigating ECS status in social anxiety disorder (SAD). The aim of our study is to determine whether whole brain FAAH activity is elevated in SAD subjects compared to healthy controls using positron emission tomography (PET) imaging with the FAAH radioligand, [C-11]CURB.

Methods: Twenty subjects with SAD (18-40 years) will be scanned with the PET radioligand, [C-11]CURB. An irreversible two-tissue compartment model with plasma input function will be used to estimate λk3, an index of FAAH activity. λk3 will be investigated in 10 regions of interest using a repeated-measures ANCOVA, controlling for genetic variability known to affect [C-11]CURB binding (FAAH rs324420). Relationships between [C-11]CURB binding and clinical measures will be analyzed using linear regressions.

Results: [C-11]CURB data from 54 healthy controls (n=54, 28.7 years, 28 females) have been collected. Data collection in SAD subjects is underway. We expect to report preliminary findings comparing [C-11]CURB binding in healthy controls with a small sample of well-characterized subjects with SAD. Overall, we expect a main effect of group on [C-11]CURB binding.

Conclusion: This is the first in-vivo human study investigating FAAH in SAD. Results will provide insight on the ECS as a potential biological mechanism in SAD and could support on-going trials targeting FAAH.
Purpose: Suicide is the second leading cause of death amongst adolescents in Canada. A systematic review by Bennett et al (2015) found that few public health interventions altered the rates of death by suicide in the this population, however, Emergency Department (ED) transition programs showed promise in decreasing the rate of suicide-related deaths. The goal of this study is to further assess such ED interventions by referring to the primary studies.

Methods: A systematic review of RCTs examining ED interventions for youth suicide prevention was conducted following the PRISMA protocol. Databases examined included Medline, Embase, PsycINFO, CENTRAL, and CINHAL. Search terms captured ED interventions for suicide-related behaviours, study populations of those ages 25 and under, and articles with RCT study design. Conference abstracts, clinical registries, and manual search of reference lists was also conducted. Final RCTs were assessed for quality of evidence using GRADE. Articles were screened and assessed by two reviewers, and discrepancies were resolved via consensus.

Results: This search yielded 2,007 unique publications, of which 1,958 were excluded on title and abstract screening. A further 47 were excluded after full text review, leaving 11 RCTs for final analysis. Of those, 5 provide statistically significant results, and the overall quality of evidence was assessed to be very low as per GRADE.

Conclusions: There exists a small body of RCTs examining ED-based suicide prevention interventions in youth, with the majority being of very low quality. The review highlights a need for further high quality clinical trials in this area.
**PURPOSE:** Recent interest has emerged in repurposing trazodone, a common off-label medication prescribed for insomnia and behavioural and psychological symptoms of dementia, as a treatment for Alzheimer’s disease. Although the number of off-label indications of trazodone has increased, its safety profile has yet to be clarified. Because risk of corrected QT (QTc) prolongation is frequently a concern with psychotropic medications, the objective of the present study was to assess the relationship between trazodone and QTc interval in a geriatric setting.

**METHODS:** We reviewed electronic health records at Baycrest Health Sciences, over a 7-year period, and identified 81 patients (mean age = 79.82 (SD10.1) years, 41 females) prescribed trazodone and who had an electrocardiogram (ECG) within 90 days of initiation or dosage change. Linear regression analyses were conducted where trazodone dosage (in mg) was the exposure variable and was analyzed as a continuous variable. The primary outcome was QTc intervals reported using an ECG. Secondary outcomes were clinical documentation of torsades de pointes (TdP) and sudden cardiac death (SCD).

**RESULTS:** No association was found between trazodone dosage and QTc prolongation. Male gender was significantly associated with QTc in univariable analyses, but not in multivariable analyses. Two cases of SCD were identified but could not be attributed to trazodone alone.

**CONCLUSIONS/IMPLICATIONS:** The data from this retrospective study do not support increased risk of QTc due to trazodone use in older adults. These findings should aid clinicians in the process of risk-benefit assessments for off-label use of trazodone.
Purpose: Insomnia is a common, but poorly managed, symptom among cancer patients. Cognitive behavioural therapy for insomnia (CBT-I) is an effective intervention, but its availability is limited. Currently, CancerChatCanada (CCC) offers CBT-I in an online support group (OSG) format to help increase access. Approximately 55% of CCC participants are suffering from insomnia symptoms, demonstrating the need for more clinical attention. This study will develop an automated program entitled ‘Artificial Intelligence Sleep Coach (AISC)’ to: 1) identify participant(s) suffering from insomnia symptoms; 2) measure its severity by sentiment analysis; and 3) recommend services based on insomnia severity.

Methods: This study will create AISC prototype based on an existing system created at La Trobe University. The existing CCC chat history data will be cleaned, masked, and annotated for training the AI system. The self-management manual and care pathway designed for different levels of insomnia severity will be finalized. AISC will then be tested with 50 cancer patients experiencing insomnia. Insomnia and quality of life will be assessed with standardized measures and user focus groups will be conducted.

Implications: Outcomes include a new insomnia care pathway for cancer patients, and an automated system for insomnia symptom management and monitoring that triages patients based on insomnia severity. If successful, this will improve access to an evidence-based insomnia intervention, reduce symptom severity, and improve quality of life. This project can potentially transform the delivery of patient-centred care, while enhancing service quality and access, especially for those living with comorbidities and in non-urban settings.
Introduction: Neuropsychiatric symptoms (NPS) increase risk of developing Alzheimer’s disease (AD) and are linked with neuroimaging biomarkers of AD, but the underlying mechanisms for these associations are unknown. We assessed the relationship between cognitive emotion regulation strategies and MTL structure in older adults at high risk for AD, including mild cognitive impairment (MCI) and subjective cognitive decline (SCD), a preclinical AD stage [1]. We predicted that maladaptive emotion regulation strategies would be associated with reduced MTL volume in at-risk older adults.

Methods: Participants were 31 older adults with SCD (n=18) or MCI (n=13). Exclusion criteria were medical or neurological etiologies for memory impairment, and any current or lifetime history of major psychiatric illness. They completed the 15-item Geriatric Depression Scale [2], and the Cognitive Emotion Regulation Questionnaire [3]. A high-resolution T1-weighted 3D MPRAGE MRI scan was acquired using a Siemens 3 Tesla scanner, and were analyzed using FreeSurfer [4].

Results: Amongst emotion regulation strategies, positive refocusing was inversely correlated with mean hippocampal (HC) and amygdala (AMG) volumes (r = - .37, p = .046, r = - .43, p = .019, respectively), and self-blame was inversely correlated with mean HC volume (r = -.42, p = .021).

Conclusions: In older adults at risk for AD, smaller MTL volumes were associated with self-report use of distraction and self-blame, both suboptimal emotion regulation strategies [5]. These findings suggest alterations in emotion regulation are a potential mechanism for the link between NPS and structural neurodegenerative AD changes. Future studies using larger sample sizes and a longitudinal design will clarify the direction and causality of this relationship.
Purpose: Alzheimer’s disease (AD) and psychiatric disorders have been associated with peripheral inflammation; however, few data describe correlations between inflammation and neuropsychiatric symptoms in AD/Mild Cognitive Impairment (MCI), and none report repeated measures over time. We aimed to examine the associations between plasma immune markers and neuropsychiatric symptoms, and the directionality in their relationships, in AD/MCI and in cognitively normal elderly.

Methods: Neuropsychiatric Inventory Questionnaire (NPI-Q) scores and luminex immunofluorescence multiplex assay results were examined from participants of the Alzheimer’s Disease Neuroimaging Database (ADNI) study. Cross lagged panel modelling was used to assess relationships between the two variables (inflammation and NPS) at baseline and 12 months later.

Results: In cognitively normal controls (n=229), higher baseline IL-8 concentrations predicted an increase in NPI-Q total scores at month 12, and in AD/MCI (n=590), baseline IL-8 and baseline NPI-Q scores were correlated. Lower baseline CRP and IL-6 receptor concentrations predicted an increase in month-12 NPI-Q depression subscale scores in AD/MCI, when people with psychiatric comorbidities were excluded.

Conclusions/Implications: Dysregulation in the peripheral inflammatory system may predict neuropsychiatric symptoms in the context of neurodegeneration; however these associations may be complex. Mechanisms underlying inflammatory marker changes may be associated with depression symptomology in dementia.
PURPOSE – Heavy cannabis is prevalent and associated with health conditions including acute and chronic psychiatric illness. N-acylethanolamines (NAE) and endocannabinoids (EC) are lipid signalling molecules with roles in metabolic, inflammatory and mental health conditions and have been linked with drug-taking behaviors. There is limited data on EC and NAE levels in individuals with addictions. The aim of the study was to determine plasma levels of EC and NAE in individuals with cannabis use disorder (CUD) during early abstinence compared to healthy controls.

METHODS – Fifty-four controls and 11 cannabis users (overnight abstinent) provided plasma for measurements by high-performance liquid chromatography-mass spectrometry of ECs and other NAE: anandamide (AEA), 2-Arachidonoylglycerol (2-AG), N-Docosahexaenoylethanolamine (DHEA) and N-oleoylethanolamine (OEA). Clinical scales were administered and cannabis metabolites were measured in blood and urine.

RESULTS – AEA DHEA and OEA were significantly elevated in CUD (25%, p =0.001; 39%, p =0.031; 40%, p =0.016 respectively). Levels of 2-AG although non-significant were also elevated (55%, p = 0.130). DHEA levels were inversely associated with craving, as per Marijuana Craving Questionnaire (r = -0.86; p=0.001).

CONCLUSION / IMPLICATIONS – This is the first study reporting elevated plasma levels of ECs and NAEs in humans with CUD during early abstinence. Our findings may suggest an adaptive response to chronic cannabis exposure which could mask withdrawal symptoms during early abstinence. Studies examining ECs and NAEs during prolonged abstinence are needed.
Purpose: Adolescent mental health is a global public health priority emphasized within the current global development agenda. Understanding the determinants of suicidal behaviour in early adolescents is key to achieving global goals.

Methods: We used publicly available country data from the Global School-based Student Health Survey collected from 2003-2017 for adolescents aged 13-15 years. Risk, and protective factors associated with suicide ideation, and attempts were determined from evidence-based causal pathways.

Results: One hundred and two countries representing 498,942 (51.8% female) adolescents aged 13-15 years were included in the analysis. The prevalence of suicide ideation was significantly higher among girls (18.2 ± 6.9%) versus (boys; 13.9±6.0%) whereas rates did not differ for suicide attempt at around 15%. After adjustment, factors significantly associated with suicide ideation being bullied (β = 0.4, p<0.001) for girls, but serious injury (β =0.5, p<0.001) and being in a physical fight (β =0.2, p<0.01) for boys. Covariates remaining significant after adjustment for suicide attempt included being bullied (β = 0.4, p<0.01) and a serious injury (β = 0.3, p<0.01) for girls whereas for boys, serious injury (β =0.4, p<0.001), being bullied (β =0.4, p<0.001), and having no friends (β =0.2, p<0.001).

Conclusions: Gender-streaming programs that target major risk factors like bullying may provide value, given the diverse risk profiles between boys and girls. Additionally, there is striking variation in suicide-related behaviour by country. Continued use and improvements to the GSHS as well as increased country participation are paramount to understanding future changes in risk factors.
Purpose: Oxidative stress has been implicated in age-related neurodegeneration and dementia and may be particularly important in prodromal states such as mild vascular cognitive impairment (mVCI). Previously, we showed higher oxidative stress in patients with mVCI; however the role of antioxidant defenses in early cognitive decline is unclear. We aim to assess brain concentrations of glutathione (GSH), the primary antioxidant in the brain, in those with mVCI compared to controls.

Methods: Mild VCI patients (1 standard deviation (SD) below population norms in verbal memory or executive function, age 55-85) and age- and sex-matched cognitively-healthy controls are recruited at entry into a cardiac rehabilitation program. All patients receive magnetic resonance imaging (MRI) and 1H magnetic resonance spectroscopy (MRS) to quantify white matter lesion burden and brain levels of GSH.

Results: To date, 5 patients (mVCI n=3, control n=2) (100% male, mean±SD age 69±7 years, education 17.3±2.3 years) have been enrolled and 2/3 mVCI patients have significant white matter lesions (Fazekas score =2). Of 4 MRI-MRS scans, 3 MRS passed quality control and (mean±SD GSH: anterior cingulate cortex 2.12±0.35 I.U. mVCI (n=2) and 1.51 I.U. (n=1) control).

Conclusions/Implications: MRS measurement of brain GSH is feasible. Study findings will clarify the central antioxidant status in mild VCI and potentially identify the GSH antioxidant pathway as a useful therapeutic target to prevent progression to dementia.
Purpose: Antipsychotics (APs) are the cornerstone of treatment for severe mental illnesses, with off-label prescription rapidly increasing in youth. APs are associated with significant metabolic side-effects. Along with the cardiometabolic implications of these adverse-effects, obesity and insulin resistance adversely impact brain structure and cognition. Patients most vulnerable to these metabolic adversities are youth, as both younger age and lack of previous exposure to APs are strong risk factors for AP-induced weight gain. Recent evidence suggests the gut microbiome (GMB) may assist in explaining the high metabolic risk in AP-naïve youth. We hypothesize that: 1) AP-naïve youth will have different GMB diversity and fewer Bacteroidetes than healthy controls (HCs); 2) AP-treatment will change the GMB of AP-naïve patients; 3) changes will correlate with metabolic side-effects; 4) GMB composition and diversity will differ between patients who do and do not develop metabolic abnormalities, and 5) change in the GMB towards a dysmetabolic profile will be associated with worse cognitive outcomes.

Methods: AP-naïve patients (n= 25) and HCs (n=25) will be matched for demographics, body mass index, and socioeconomic status. At baseline, participants will undergo medical, anthropometric, cognitive, psychopathological, and fasting blood assessments, as well as fecal sample collection. These will be repeated at mid and endpoint.

Conclusion: This is the first investigation of GMB and AP-induced metabolic side effects in AP-naïve patients. It has the potential to unravel the GMB’s role in the high metabolic comorbidity observed in AP-naïve patients, thereby leading to novel diagnostic strategies and treatments that harness the GMB.
Using short message service as a means of engagement in early psychosis

Background: Clinical disengagement of youth in early-psychosis clinics continues to be a significant barrier to recovery leading to higher symptom burden, relapse, re-hospitalization, and poorer functional outcomes. A key factor for youth-engagement is flexible access to care, however this is often undermined by limited funding, turning focus toward digital solutions, like short message service (SMS). Study Aims and Objectives: This is a longitudinal, single-blinded, randomized control trial aiming to evaluate automated SMS-surveys as a means to improve clinical engagement. The primary aim is to evaluate the impact on clinic attendance, medication adherence and client/clinician rated engagement and secondarily the effect on clinical, cognitive and functional outcomes. We hypothesize that the active-group will widely show better outcomes than the inactive-group. Finally, as an exploratory aim, feasibility outcomes are examined.

Methods: This study has recruited 60 subjects (30/group) receiving care for psychosis. Subjects were randomized to receive either: active surveys (questions of wellbeing, attendance and medication adherence) or sham (no relevant subject matter). For subjects in the active group, responses trigger clinician follow-up if necessary (ex. subject reports distress). Subjects will receive weekly SMS surveys for 9 months, and complete periodic clinical, functional and engagement assessments.

Results: Recruitment was recently completed for this study and thus, only preliminary feasibility results are available. Subject-feedback is overwhelmingly positive in terms of subject experience, with high overall message return rates. Many participants report that the active surveys are helpful and suggest a variety of personalized questions of wellbeing to further improve subject satisfaction.
Purpose: People with complex mental illness experience a 15-20 year shorter life expectancy due to premature cardiovascular disease. This presents a complex health issue that requires specialist attention to both mental and physical care. However, the healthcare system in Ontario currently lacks consistent collaboration between physical and mental health care, resulting in gaps in treatment and poor health outcomes.

Methods: This mixed method (sequential quantitative-qualitative), feasibility study engages youth with early episode psychosis. Participants are randomized into a high or low-intensity intervention for 12-weeks. Low-intensity participants get an account on an e-platform where they can access psychoeducational resources and attend live virtual webinars on modifiable health behaviours like diet, physical activity, and smoking, selected for their connection to cardiovascular risk factors. The platform also has a discussion board, goal setting tool, and a programmable calendar. The high-intensity participants receive the low-intensity intervention with the additional support of 1:1 weekly video calling with a Care Coordinator who is supported by a Virtual Care Team (VCT) consisting of psychiatrists, an addictions specialist, dietician, occupational therapist, and peer mentor who provide case consultations on a weekly basis.

Results: Preliminary results and Patient Journeying from this ongoing feasibility study will be presented to outline progress of the study to date.

Conclusions/Implications: This study seeks to assess engagement within this special population and improve satisfaction in provision of care. It presents an innovative way of bridging the gap in services between mental and physical care models through the use of technology, with important implications for extending the use of collaborative approaches to care.
Abstract Title
Neurocognition across mood states among adolescents with bipolar disorder

Full Abstract
Purpose: Neurocognitive dysfunction is evident among youth with bipolar disorder (BD). However, few studies have examined neurocognition across different mood states.

Methods: 151 adolescents aged 13 - 20 were included: 20 BD - Depressed (BD-D), 28 BD - hypomanic / mixed (BD-M), 20 BD - Euthymic (BD-E), and 83 healthy controls (HC). Diagnoses were determined using the KSADS - Present and Lifetime Version. Symptomatic status was defined by a score of 3 or more on the Psychiatric Rating Scales for depression and hypomania. Neurocognition was assessed with 6 Cambridge Neuropsychological Tests Automated Battery subtests. A composite score was computed for each subtest. Groups were compared using ANCOVAs covarying for IQ. We hypothesized that HC would have the best and BD-D would have the worst neurocognitive scores compared to other groups.

Results: The groups differed significantly on Affective Go / No - Go (AGN) [F(3,141) = 5.54, p = 0.001, η² = 0.11], Spatial Span (SSP) [F(3,143) = 2.84, p = 0.04, η² = 0.06], Intra - Extra Dimensional Set Shift (IED) [F(3,143) = 3.90, p = 0.010, η² = 0.08], and Rapid Visual Information Processing (RVP) [F(3,143) = 7.614, p < .001, η² = 0.14]. SSP and IED did not survive Bonferroni correction. Post-hoc comparisons revealed a significant difference on RVP: HC performed significantly better than BD-E (p = 0.021), BD-M (p = 0.012) and BD-D (p = 0.002). Unexpectedly, for AGN, BD-E participants performed better than HC (p = 0.002), BD-M (0.019) and BD-D (p = 0.002).

Conclusions: The association of symptomatic status with neurocognition in adolescents with BD depends on mood polarity and neurocognitive domain. Prospective studies are warranted in order to evaluate the impact of mood symptoms on the course of neurocognition and vice versa.
Purpose: Gender-Based Violence (GBV) has serious consequences on women’s health and wellbeing, particularly in female youth who are refugees. These include emotional, physical and sexual suffering. Settlement experiences can exacerbate refugee’s exposure to repeated victimization and interlocking oppression. Effective interventions that target GBV in refugee youth have not been extensively studied. Our study aimed to review the literature on gender-transformative interventions and approaches that promote the well-being of refugee youth who have experienced GBV.

Methods: We applied Arskey & O’Malley’s (2005) five-stage scoping review framework. Primary studies published between January 2000 to October 2018 that focused on interventions to prevent GBV or offered services to refugee youth were selected. Seven electronic databases were searched. We then applied a gender-transformative, intersectionality and trauma-informed approach to analysis.

Results: Nine studies met the eligibility criteria. Few studies addressed interventions on GBV for refugee youth. In addition, most articles did not exclusively focus on the youth population. Of the interventions identified, recurring themes included implementing a multisectoral approach to GBV interventions, empowering women, reducing gender disparities and capacity building within communities. Interventions need to be context driven, whether the setting is in a refugee camp or a post-migration community.

Conclusion: This review offers insight into the social, political and economic factors that intersect to influence interventions that target GBV for refugee youth. Further research is needed to understand the facilitators and barriers to effective implementation of interventions that target refugee youth.
Purpose: Sex differences in onset, presentation and prevalence of psychiatric disorders are common. Elucidating brain differences between the sexes in the general population is an essential first step towards understanding sex differences in psychiatric disorders and potentially protective mechanisms at play. Increased variability of brain metrics is suggested to relate to increased vulnerability for psychiatric disorders.

Methods: Here we investigate sex differences in variability of brain structure in multiple large open source datasets ranging from childhood to late life; Philadelphia Neurodevelopmental Cohort (PNC; n=1,347, 8-21 years), Human Connectome Project (HCP; n = 1,032, 22 - 35 years and Open Access Series of Imaging Studies (OASIS; n = 609, 43 - 95 years). Cortical surfaces were reconstructed with FreeSurfer. Global and subcortical volumes, as well as cortical thickness (CT) and cortical surface area (SA) were extracted for regions of the Desikan-Killiany parcellation. Variance ratios between males and females were computed with F-tests. Additionally, Mahalanobis distance was used to calculate dispersion of metric sets.

Results: Variance ratio and Mahalanobis distance analyses indicated both volume (global, q < 0.02, subcortical, q < 0.0001) and SA (q < 0.0001) are more variable in males compared to females, independent of the effect of total brain volume. Whereas, variance in CT was similar for males and females (q > 0.08). Additionally, findings were stable across age (age-by-sex interactions, q > 0.09).

Conclusion: Males display increased variability of brain structure across a number of metrics that is stable across age. Reduced variability in brain structure in females compared to males may relate to reduced vulnerability in females for certain psychiatric disorders.
Purpose: Human imaging studies have implicated abnormal amygdala-ventromedial prefrontal cortex (vmPFC) activity in the pathogenesis of Post-Traumatic Stress Disorder (PTSD) and anxiety disorders. The endocannabinoid system and in particular, up-regulation of the major endocannabinoid enzyme fatty acid amide hydrolase (FAAH), are believed to contribute to dysregulated neural function within this circuitry. The goal of the current study was to test the hypothesis that FAAH levels in the amygdala modulate neural coupling between amygdala and vmPFC.

Methods: 34 (19 female) healthy subjects (ages 19-58) with no history of psychiatric illness or drug abuse completed positron emission tomography (PET) imaging with the FAAH probe [C-11]CURB as well as resting-state functional magnetic resonance imaging (rsfMRI) scans. Correlation analyses between [C-11]CURB binding and rsfMRI were carried out.

Results: In total, 31 healthy participants were analyzed. Under False Discovery Rate (FDR) correction, we found a significant negative correlation between the activity [C-11]CURB binding in the bilateral amygdala and coupling between the amygdala and vmPFC (p<0.000001, R2=0.77). Further exploratory analyses showed positive correlations between [C-11]CURB binding and right cortical areas including the superior frontal gyrus (p<0.01) and superior parietal lobule (p<0.05).

Conclusions/Implications: Our results, in line with the imaging finding that FAAH genetic variation C385A; rs324420) is linked with amygdala-vmPFC coupling, suggest that the endocannabinoid anandamide (the main substrate for FAAH) modulates amygdala network functional connectivity. This supports the view that AEA modifying drug (i.e.: FAAH inhibitors) could correct aberrant neural processing (i.e.: amygdala-vmPFC imbalance) in disorders such as PTSD.
Purpose: Bipolar disorder (BD) is associated with elevated body mass index (BMI). In turn, elevated BMI in BD is linked to increased severity of psychiatric symptoms, including suicide attempts. We have previously reported that greater BMI is associated with decreased frontal cortical volumes, and that cerebral blood flow (CBF) is elevated in the anterior cingulate cortex (ACC) and middle frontal gyrus in adolescents with BD. Here we examine the relationship between regional CBF and BMI, regarding which remarkably little is known.

Methods: Adolescents with BD (n=72) and healthy controls (HC; n=57), mean age 17.34±1.42 years, were included. CBF was measured using pseudocontinuous arterial spin labeling (ASL) 3T MRI. Regression analyses examined the main effects of BMI and diagnosis, and BMI-by-diagnosis interaction on CBF in three regions of interest (ACC, middle frontal gyrus and amygdala). Results: There was a significant positive effect of BMI on ACC CBF across the sample (β=.32, p=.03). There was also a significant BMI by diagnosis interaction (β=.30, p=.04), explained by a positive association between BMI and ACC CBF in HC (β=.30, p=.03), while no significant relationship was found in BD (β=.07, p=.57). Data from vertex-wise whole-brain analyses are forthcoming.

Conclusions: Adolescents with BD do not manifest a normative association between BMI and ACC CBF. Given the paucity of literature on this topic, potential reasons for this discrepancy are uncertain. Future analyses from this sample will evaluate for clinical factors, such as mood symptoms and psychotropic medications, that may provide insights regarding the observed findings.
Purpose: Subjective cognitive decline (SCD) is conceptualized as a preclinical stage of Alzheimer disease (AD) but lacks uniform operationalization. In the current study, we compared perception of memory ability amongst older adults with SCD, mild cognitive impairment (MCI) and normal cognition (CN) and assessed its association with hippocampal volume, a robust marker of future cognitive decline.

Methods: Participants were 87 older adults classified as MCI [n = 20, mean age = 70 (5.9)], SCD [n = 34, mean age = 71 (6.2)], or CN [n = 33, mean age = 80 (7.0)] based on medical, psychiatric, and neuropsychological (NP) assessments. SCD reported memory change and concern but had normal NP performance. MCI met NP criteria of scores on at least two memory tests > 1.5 standard deviations lower than expected, relative to overall intellect. Self-perception of memory was evaluated using the Memory Functioning Questionnaire (MFQ). 3D T1-weighted anatomical scans were acquired using MPRAGE at 3T, and processed using FreeSurfer v6.0.

Results: MCI and SCD groups rated their overall memory ability on the MFQ as poorer than CN, but only SCD participants perceived deficits specifically in destination memory (remembering to whom you told information) and prospective memory (remembering future intent). Left hippocampal volume in SCD and CN participants was correlated with overall subjective (rp = 0.37, p = 0.022), destination (rp = 0.31, p = 0.046), and prospective (rp = 0.43, p = 0.005) memory abilities.

Conclusions/Implications: These findings suggest that impairment in destination and prospective memory may be one of the earliest memory changes in preclinical AD and support the need for a better understanding of the nature of subjective memory complaints in SCD.
Purpose: Established in 2011, the CBTp Service provides evidence-based treatment to clients with a primary psychotic disorder across the Complex Care and Recovery Program at CAMH. Although it has evolved as one of the largest Canadian training sites for CBTp, there has yet to be a systematic program of research built into this service. The goal of the proposed study was to develop a sustainable evaluation and data collection methodology within a naturalistic clinical setting, and to extend the literature on mechanisms of change underlying the efficacy of CBTp.

Method: A standardized assessment process was developed and implemented in the CBTp Service to examine clinician- and client-rated perspectives of recovery. Assessments are conducted at pre-, mid-, and post-treatment to determine the pathways through which CBTp exerts its effect on outcomes. Variables include client characteristics (demographics, illness history, service engagement, neurocognition, symptoms, functioning, self-reported recovery), and therapy characteristics (therapist alliance, group cohesion, homework compliance).

Results: Approximately 30 participants are currently enrolled in this ongoing prospective study. Repeated measures ANOVAs will examine whether changes across three time-points over the course of CBTp (pre-, mid-, and post-treatment) vary as a function of patient- or clinician-rated outcomes. Exploratory analyses will examine predictors of patient- and clinician-rated outcomes to determine whether unique predictors exist for differential measures of recovery.

Conclusions/Implications: Patient perspectives of recovery and predictors of outcome in CBTp are understudied, yet critical to better tailoring this intervention to the clinical needs of clients, which will ultimately lead to more personalized treatment for psychosis.
Purpose: Selective Serotonin Reuptake Inhibitors (SSRIs) are associated with an increased risk of falls in older adults. Changes in gait, including spatiotemporal parameters and centre of pressure, are associated with falls and these changes are apparent in depression and aging, although few studies have looked directly at the impact of SSRIs on these measures. This study investigates whether the treatment of depression in older adults with the SSRI sertraline is associated with gait parameters linked to falls, namely velocity, single support COP path efficiency (SSCOP) and double support percent (DS%) at self-pace and during dual task (DT) conditions.

Methods: 8 healthy and 12 depressed older adults were included in the study with a mean age of 69.4 (SD 2.6) and 71.6 (SD 4.4), respectively. The individuals with depression were provided open-label treatment with sertraline. Gait was assessed at baseline, and 3, 6 and 12 weeks after sertraline initiation. Mood, anxiety, executive functioning, and fear of falling were tracked over the study.

Results: At baseline, there was a significant difference between depressed and control subjects in DS% during DT but not DT cost velocity or SSCOP. At self-pace there were no significant differences. In the mixed effect models there was a significant improvement in DS% during DT conditions in the depressed group.

Conclusions: Gait is impaired in people with depression who are not on antidepressant therapy. In this pilot study, there was no evidence for impairment in gait stability on sertraline, but a decrease in DS% over time with treatment for depression.
Purpose: Paramedics are at risk for PTSD and Depression as a result of critical incidents. While supervisor support post-incident is a robust predictor of resilience, we found, via a needs assessment on 60 paramedics, there were barriers to accessing support: stigma, and difficulty with emotions. Our overarching goal became developing a tool to improve access to support. We developed two analyses enabling paramedics to access support without feeling stigmatized or overwhelmed.

Methods: Data was collected from 201 paramedics, based on a personal index critical incident, and the time it took to recover from behavioural and physiological symptoms of the Acute Stress Reaction. Associations between recovery time from symptoms and later sequelae were measured. In the second analysis, associations between characteristics of the incident and later depression and PTSD were measured. The third analysis measured relationships between downtime, length of time they experienced it, and depression and PTSD symptoms.

Results: Paramedics can detect relative risk of high depression and PTSD scores very early. Risk at least doubles if physical reactions of panic occur at all, or disrupted sleep, or irritability, or social withdrawal persist beyond one night. The second study showed that the paramedic’s emotional experience is predictive at the time of the incident. The downtime study showed that one-half hour to one day is optimal against depression.

Conclusions: A tool is presented that allows paramedics to present a need for support, on the basis of risk factors for sequelae, without experiencing stigma or being overwhelmed with emotions.
Objectives:
Buprenorphine-naloxone is a first line treatment for opioid use disorder, as it reduces overdoses and prevents relapse. Due to its unique properties as a partial agonist of the mu opioid receptor, it presents unique challenges during surgical procedures and when it must be reinitiated. Patients receiving buprenorphine treatment are often young, and are expected to have common surgical procedures. Very little is known about the impact of surgery on buprenorphine treatment adherence, and how disruption of buprenorphine treatment during the perioperative period impacts addictions outcomes. The objectives of this study are to (a) understand the patient population receiving buprenorphine and surgical procedures (b) understand factors which impact discontinuation of buprenorphine perioperatively and (c) study the impact of post-operative buprenorphine discontinuation on long-term adherence.

Methods:
This study will involve administrative data from the Institute for Clinical Evaluative Sciences (IC/ES). Specifically, a cohort will be constructed of buprenorphine users from the Narcotics Monitoring Service who have an incident surgical procedure. The first part of the study will describe the patients, their demographic characteristics, their providers and the kinds of procedures which are most common. The second part will involve an exploratory analysis of the factors driving discontinuation of buprenorphine post-operatively, using a logistic regression model. Finally, a survival analysis will be used to study discontinuation of buprenorphine in the year after the incident surgical procedure.

Results:
At this time we are developing a Dataset Creation Plan for this project.

Conclusions:
This is an important study because addictions outcomes are understudied in the context of acute perioperative pain. Buprenorphine is an increasingly common treatment, and administrative databases provide an opportunity to understand the scope of this issue and the impact that perioperative management has in this patient population.
**Purpose:** The goal of this study is to examine the potential benefits of using a consumer grade EEG-based biofeedback device, evaluating the effects of meditation home practice on OCD symptom alleviation, as related to specific OCD related beliefs.

**Method:** Treatment seeking participants (N=71) with a principal diagnosis of OCD were randomized to a waitlist control condition, or they completed 8 weeks of technology assisted mindfulness meditation using the “Muse” EEG headset. Participants completed measures assessing OCD symptoms (using the Yale-Brown Obsessive Compulsive Scale (YBOCS)) and OCD Beliefs (using the Obsessive Beliefs Questionnaire (OBQ)) at pre-treatment, session 4, and week 8.

**Results:** Latent Difference Score (LDS) models were utilized, examining YBOCS and each OBQ subdomain (OBQ RT: Responsibility/Threat estimation; OBQ PC: Perfectionism/Certainty, OBQ ICT: Importance/Control of Thoughts). In the YBOCS and OBQ RT model, there was no longitudinal relationship between these two variables. In the YBOCS and OBQ PC model, there was a significant reciprocal relationship between these two variables, in which YBOCS values predicted subsequent increases in OBQ/PC and vice versa: $\chi^2 (22, N = 71) = 5.48; \chi^2/df = 1.10; AIC = 49.48, CFI = .99, RMSEA = .04$. Similarly, in the YBOCS and OBQ ICT model, there was a significant reciprocal relationship between these two variables $\chi^2 (22, N = 71) = 6.07; \chi^2/df = 1.22; AIC = 50.06, CFI = .96, RMSEA = .05$.

**Conclusions/Implications:** These results have implications for theoretical and treatment modelling of OCD beliefs during mindfulness treatment for OCD, consistent with the cognitive vulnerability model.
**Purpose:** Parental attributions, which are thoughts or beliefs that parents possess about the causes of their child’s behaviour, may play an important role in the emergence of childhood mental health problems, and may be a potential target for optimizing intervention. Therefore, the goals of this systematic review are to first characterize the associations between parental attributions and children’s internalizing and externalizing symptomatology across highly prevalent childhood mental health disorders. Second, to characterize whether parental attributions are associated with psychosocial treatment outcomes.

**Methods:** This systematic review is reported in accordance with PRISMA guidelines. A systematic search of five databases (Psychinfo, EMBASE, Pubmed, Cochrane Central Register of Controlled Trials, and Proquest) was conducted. Full-text English articles of primary, quantitative research studies investigating parental attributions and mental health disorders in children between the ages of 3 and 17 were included.

**Results:** The systematic search yielded an initial 19379 studies for assessment. Following screening and full text analysis, 35 studies met full inclusion criteria. Findings show that parental attributions are more child-causal rather than parent-causal for externalizing and internalizing behavior in children with mental health disorders. Furthermore, most mothers believe they are not ready to seek or complete treatment for their child’s symptomatology which may influence treatment outcomes.

**Conclusions/Implications:** It may be prudent to consider the role of parental attributions when selecting psychosocial interventions for childhood mental health disorders. Specifically, a prior screening of parents’ readiness for enrolling their child in and completing a psychosocial treatment program may optimize treatment outcomes.
Hsu, Jonathan

Department: Brain and Therapeutics
Division: Resident (For Psychiatry Residents PGY1 – PGY5, or Psychiatry Subspecialty Program)
Affiliation: Centre for Addiction & Mental Health
Setting: Centre for Addiction & Mental Health
Abstract Type: Poster Presentation
Research Theme: Treatment refractory depression, transcranial magnetic stimulation, antidepressant response
Abstract Title: Impact of prior treatment trials on remission with theta burst versus high-frequency repetitive transcranial magnetic stimulation for treatment resistant depression
Co-Authors: Hsu, Jonathan Kloiber, Stefan Kloiber, Stefan Kloiber, Stefan Kloiber, Stefan Kloiber, Stefan Kloiber, Stefan Kloiber

Full Abstract

Purpose: Multiple prior treatment failures is associated with reduced remission rates with various antidepressant treatments including repetitive transcranial magnetic stimulation (rTMS). Intermittent theta burst stimulation (iTBS) is a newer form of rTMS where less is known regarding clinical predictors of response. The theta burst versus high-frequency repetitive transcranial magnetic stimulation in patients with depression (THREE-D) study demonstrated that iTBS was non-inferior to traditional 10 Hz rTMS for the treatment of treatment resistant depression (TRD). The study aims to determine if prior pharmacotherapy trials affect the rate of remission from depression with two types of rTMS (iTBS and 10Hz).

Methods: Compare remission rates based on prior and type of pharmacotherapy using data from the THREE-D trial, a randomized non-inferiority clinical trial in adult participants with a treatment-resistant major depressive episode. We used Pearson’s chi square tests to compare remission rates between participants categorized by different degrees of treatment resistance. We also investigated the impact of medication class type on remission rates using Fisher’s exact test.

Results: Participants with 3 versus <3 treatment failures had a statistically significant difference in remission: 17.3% versus 29.4% (χ² 4.87; df = 1; p = 0.03). There was no significant difference observed in remission rates for lower levels of treatment failures or between the different rTMS protocols. There were no statistically significant differences in remission rates based on previous medication trial types.

Conclusions: Three or more treatment failures are associated with statistically significant lower remission rates with rTMS.
Purpose: Tobacco smoking is a leading cause of morbidity and mortality. Despite having efficacious pharmacotherapy and behavioural intervention their integration in routine clinical practice remains a challenge due to structural, organizational and clinical barriers. Technology-enabled solutions can mitigate these barriers. Our objective was to develop and demonstrate the feasibility of a web-based technology platform for multi-site implementation of a clinical pathway for tobacco use assessment, treatment and follow-up.

Methods: The intervention sites are primary care and addictions treatment settings that are implementing the STOP Study, an open label real-world intervention with Nicotine Replacement Therapy for treatment-seeking smokers. Questionnaires and co-creation meetings were used to curate information on current technology uses at the sites, their clinical and operational workflows into use-case scenarios for the platform. The platform was built to specification by a contracted software company.

Results: The technology platform was built with data capture, workflow, medication tracking and reporting capabilities. Adoption is 100% among the 290 STOP Study sites, where 1,327 practitioners use the platform. On average 1,960 new patient assessments and 8,173 treatment visits are completed monthly. So far 107,000 patients have been treated for smoking cessation using the platform, of whom 37.5% reported drinking above lower-risk guidelines and 38.7% reported mood symptoms. Therefore, automated screening and intervention pathways for alcohol and mood symptoms were built and integrated in the platform.

Conclusions/Implications: The technology platform is a feasible solution for expanding practitioner scope of practice and organization capacity for delivering smoking cessation treatment with potential for other related interventions.
Purpose: Mild vascular cognitive impairment (mVCI) is often a prodromal stage of dementia characterized by mild cognitive deficits caused by cerebrovascular disease. Verbal memory is often affected in mVCI. While oxidative stress is found in dementia pathology, the role of endogenous peripheral antioxidant systems have not been thoroughly investigated in mVCI. The purpose of this study is to investigate the correlation between plasma glutathione concentrations and verbal memory in mVCI.

Methods: Patients aged 55-85 are recruited at entry into a cardiac rehabilitation program. mVCI is diagnosed based on a history of vascular disease and diagnostic criteria for subcortical ischemic MCI, which includes: 1) performance ≥1 standard deviation below the mean in verbal memory and/or executive function tests and 2) neuroimaging evidence of white matter hyperintensities. Verbal memory is assessed using the Hopkins Verbal Learning Test-Revised and age- and education-standardized Z-scores are calculated. Plasma glutathione will be measured using spectrophotometry. A sample size of 55 participants is needed to detect an association between plasma glutathione concentrations and verbal memory performance with a medium effect size (power=0.8, alpha=0.05).

Results: There are 14 participants enrolled currently in the study (mean age=70±7.25 years, 78% male, mean total years of education=16±5.28); 12 (92%) patients have hypertension, and 11 (84%) have dyslipidemia. The mean verbal memory Z-score=-1.32±0.9. Blood samples for glutathione analysis have been collected from all participants.

Conclusions/Implications: This study will determine if plasma glutathione is a useful marker of early cognitive changes in mild VCI.
Katz, Danielle

Purpose: Post-event processing (PEP), or the retrospective and ruminative analysis of performance in social situations, has been posited to be an important component in the maintenance of social anxiety symptoms. Previous research has demonstrated that dispositional PEP changes from pre- to post-treatment. However, it remains unclear how momentary PEP following social interactions changes over the course of cognitive behavioural therapy (CBT) for social anxiety disorder. The purpose of the present study was to examine how PEP changes over the course of treatment based on momentary PEP measurement, and how such changes predict treatment outcome.

Methods: Participants (N = 33) with social anxiety disorder were enrolled in group CBT. During the first two, middle, and final weeks of treatment, participants completed repeated experience sampling measurements of PEP following social interactions.

Results: Momentary PEP following social interactions decreased over the course of treatment, and decreases in momentary PEP predicted lower social anxiety symptom severity following treatment.

Conclusions/Implications: The results of the study demonstrate that momentary experiences of PEP can be influenced by treatment, and in turn may impact treatment outcome. The findings have significant clinical and theoretical implications.
Purpose: Chronic Major Depressive Disorder (CMDD) is a common, disabling illness that is often complicated by high reactivity to social stress. To further elucidate the nature of this reactivity, the current study evaluated whether the personality dimensions of neuroticism and extraversion influenced cortisol responses to a social challenge in CMDD patients vs. controls.

Methods: Fifty participants with CMDD and 58 healthy controls completed the Trier Social Stress Test (TSST) using a standard protocol. Neuroticism and extraversion were measured using the Revised NEO Personality Inventory. Hierarchical linear regressions assessed associations between independent variables neuroticism and extraversion and dependent variable cortisol area-under-the-curve increase (AUCi) in response to the TSST in the two study groups.

Results: The extraversion-by-group interaction was a significant predictor of cortisol AUCi, while no significant findings related to neuroticism were found. Simple slopes analysis revealed a significant negative association between extraversion and AUCi in the CMDD group, but not in healthy controls. Post-hoc analysis of the raw cortisol data over time found that CMDD participants with higher extraversion scores had significantly higher pre-challenge cortisol levels than did other study participants, however this did not explain or confound the AUCi results.

Conclusions: In participants with CMDD but not in controls, higher levels of extraversion were associated with higher pre-challenge cortisol levels and decreased cortisol reactivity during the TSST, however these two findings were statistically independent. These findings underline the importance of considering personality factors when studying stress biology in CMDD patients. Extraversion may prove to be an important intermediate target for both research and clinical work in this complex, heterogenous and often treatment-resistant population.
Purpose: Pregnancy is a high-risk period for the onset of obsessive-compulsive disorder (OCD). Though personality factors from the Five Factor Model (FFM) have been linked to the presence and severity of OCD, they have not yet been examined as risk factors for the onset of obsessive-compulsive symptoms during pregnancy. The purpose of the present study was to examine the associations between normal personality traits and OCD vulnerability in non-clinical participants during the antenatal period.

Method: Participants (N = 881) between 11 and 32 weeks pregnant were recruited from university hospital OB-GYN departments during pregnancy and completed measures of the FFM and obsessive-compulsive symptoms.

Results: A total of 15.9% of participants reported OCD symptom levels above the clinical cut-off scores. The FFM domains of neuroticism and agreeableness predicted greater likelihood of impairing obsessive-compulsive symptoms. Neuroticism also predicted greater severity on all OCD symptom domains, while agreeableness only predicted severity on three domains.

Conclusions/Implications: The results of this study suggest that the trait neuroticism and agreeableness are significantly associated with the presence and severity of OCD symptoms during pregnancy. The study also demonstrated that a significant proportion of women may experience clinically significant but diagnostically sub-threshold OCD symptoms in the antenatal period.
Background: Bipolar disorder (BD) is characterized by neurostructural abnormalities and excessive cardiovascular risk. Cholesterol contributes to cardiovascular risk and is associated with the neurocognitive and mood symptoms in BD; however, it has not been examined in relation to neuroimaging phenotypes. Therefore, we investigated cholesterol levels in relation to brain structure in adolescents with BD vs. healthy controls (HC).

Methods: Eighty-seven adolescents (n=44 BD, n=43 HC), ages 13-20 years, were scanned using a 3T MRI to acquire T1-weighted images. Blood levels of low-density-lipoprotein (LDL), high-density-lipoprotein (HDL), triglycerides and total cholesterol (TC) were obtained. A vertex-wise analysis examined if the relationship of lipid levels with either cortical volume, thickness or surface area (SA) was different between BD and HC, after controlling for age, sex and intracranial volume (only SA and volume). Results were thresholded at a vertex-wise value of 1.3 (p≤0.05).

Results: Analyses revealed a lipid-by-diagnosis interaction effect with reduced cortical size in four clusters. Triglyceride levels were associated with reduced cortical thickness in an inferior-parietal cluster (size 4293.00, cluster-wise-p=0.0001), reduced volume in an insula cluster (size 1762.05, cluster-wise-p=0.01) and reduced volume in a precentral gyrus cluster (size 1580.64, cluster-wise-p=0.03). Additionally, TC was associated with reduced volume in a superior-parietal cluster (size 1520.69, cluster-wise-p=0.03).

Conclusion: These preliminary findings suggest that triglycerides are negatively associated with regional neurostructure in adolescents with BD. Further research is necessary to determine how lipids are associated with other neuroimaging phenotypes, and to evaluate whether optimization of lipid levels has salutary effects on psychiatric clinical outcomes.
Aims: Glucose dysregulation has been shown to have an impact on brain structure and function in the general population. Patients with schizophrenia have a higher incidence of glucose dysregulation compared to the general population. This increased risk appears to be conferred by illness specific factors and antipsychotic medications. We aim to study the effects of glucose dysregulation on the brain in patients with schizophrenia as compared to healthy controls.

Hypotheses: We predict that higher values of glycated hemoglobin (HbA1c) will be associated with smaller hippocampal volumes and thinner cortex, with a stronger effect in patients with schizophrenia compared to healthy controls.

Methods: The Freesurfer pipeline was used to analyze Magnetic Resonance Images collected from 300 patients with schizophrenia spectrum disorders (SSD) and 180 matched controls. HbA1c was measured through blood samples. Multiple regression models for each volumetric measure were run to test for an HbA1c by Group interaction, with covariates of sex, age, BMI, and site of MRI scan.

Results: Based on preliminary analyses, there does not appear to be a significant HbA1c by Group interaction term in models examining differences in the hippocampus ($t=-1.63$, $p=0.105$, df=327) and cortical thickness ($t=-1.39$, $p=0.166$, df=327) of patients with SSD compared to healthy controls.

Discussion / Future Directions: HbA1c is not associated with brain structure in this dataset, nor are there any differential effects of HbA1c whether someone has an SSD or not. Further investigations will examine the relationship between metabolic health and cognition.
Purpose: We present findings from the quantitative arm of a mixed-methods study that examined the mental health of immigrant and Canadian-born Pakistani youths in Canada. The goal of this study was to examine the youths’ self-rated health, mental health and psychological attributes of self-esteem, ethnic identity, and resilience by gender and place of birth.

Methods: Eighty-one youth aged 18-24 years completed an online (n= 40) or a paper-based (n=41) survey. Questions included items on demographics, self-rated health composite, Multigroup Ethnic Identity Measure (MEIM), Current Self-Esteem (CSE) instrument, and the 12 item Child Youth & Resilience Measure (CYRM). Gender and place of birth were coded as binary variables.

Results: Of the participating youth 48 (60%) were female, 29 (36%) were male, and 4 did not disclose their gender. Fifty-one youth (63%) were Pakistani-born, 18 (22%) were Canadian-born, and 12 (15%) were born in the USA, Australia, UK, and Middle East. On t-test analysis, those born in Canada, US, UK or Australia (Western countries) had higher levels of self-esteem, and higher scores on health, and mental health than youth born in Pakistan or Middle East (Eastern countries). Youth from higher income households had significantly better health, and mental health, and higher levels of self-esteem, ethnic identity exploration and ethnic identity affirmation.

Conclusion: The health and mental wellbeing of immigrant Pakistani youth is closely associated with their country and region of birth as well as with socioeconomic factors. Our study shows self-esteem, resilience and ethnic identity levels are good predictors of immigrant youths’ mental health. Keywords: Ethnic identity, immigrant Pakistani youth, resilience, self-esteem, mental health, Canada.
Purpose: Impaired insight is a common feature of schizophrenia. Cortical volume deficits in the inferior parietal area have been reported in patients with impaired insight. However, previous studies that have examined the relationship between impaired insight and cortical thickness have been mixed. The aim of this study was to examine the association between impaired insight and cortical thickness in the inferior parietal area in patients with schizophrenia.

Methods: T1-weighted images of 94 participants with schizophrenia or schizoaffective disorder were obtained. Insight was assessed using the VAGUS scale, the self-report version. MR images were processed using the CIVET processing pipeline. Whole brain vertex-wise analysis and region-of-interest analyses in the inferior parietal area, which includes the supramarginal gyrus and the angular gyrus were performed, controlling for age, sex, and illness severity.

Results: Impaired insight was associated with cortical thinning in the left inferior parietal area (P < 0.10, FDR corrected). Region-of-interest analysis showed an association between impaired insight and cortical thinning specifically in the left supramarginal gyrus.

Conclusions/Implications: Our findings support previous volumetric studies that found cortical deficits in the inferior parietal area in relation to impaired insight in patients with schizophrenia. Further neuroimaging studies are needed to elucidate the neural mechanisms that contribute to these structural deficits.
Purpose: The Major Depressive Disorder Integrated Care Pathway (MDD-ICP) was developed as structured, measurement-based, multidisciplinary treatment approach to improve outcomes for patients with MDD and treatment resistant depression (TRD) at CAMH based on current evidence and guidelines. The MDD-ICP treatment algorithm includes pharmacotherapy, psychotherapy and brain stimulation.

Methods: The MDD-ICP was piloted and implemented at the CAMH Mood and Anxiety Ambulatory Services over 1.5 years. Team-based strategy and electronic data capture were implemented. Digitization was supported by Krembil Centre for Neuroinformatics and allows availability of self-report questionnaire results on depressive symptoms, anxiety, substance use, compliance and adverse effects in real-time for measurement-based decision making.

Results: Preliminary results at baseline show average depressive symptoms in the severe range (N=143; Quick Inventory of Depressive Symptomatology SR-16 (QIDS): 17.3) and 64% of patients scored ≥ 1 on the QIDS suicide item at baseline. At discharge depression severity (N=33; QIDS change: -5.27) and suicidality (32% with QIDS suicide item ≥ 1) were significantly improved. Digitization and multidisciplinary team meetings facilitated implementation and adaptation of the MDD-ICP in a traditional clinical setting, and improved data capture and data quality.

Conclusions/Implications: Initial results show promising improvement of depressive symptoms and suicidal thoughts in patients receiving treatment in the MDD-ICP program. Next phase will include comprehensive evaluation of efficacy, appropriateness and impact of the MDD-ICP compared to treatment as usual using a randomized controlled approach. Continuation of collaborations with primary care providers and with the Krembil Centre for Neuroinformatics will be of considerable value for our understanding of patient trajectories and for collection of biological data.
Purpose: Antipsychotics are the cornerstone of treatment for schizophrenia but are associated with type 2 diabetes. We recently published data that the antipsychotic olanzapine abolishes the ability of a CNS insulin infusion to suppress hepatic glucose production, but the mechanism is unknown. The KATP channel is a key metabolic sensor downstream of CNS insulin signalling involved in glucose homeostasis. Thus, we investigated whether olanzapine inhibits CNS KATP channel activation to disrupt glucose metabolism.

Methods: Pancreatic euglycemic clamps were performed in rats. During the clamp, a somatostatin infusion inhibits endogenous insulin secretion and insulin is replaced at basal levels. Glucose is infused at a variable rate to maintain euglycemia, and the glucose infusion rate represents whole body insulin sensitivity. A radioactive tracer allows measurement of glucose kinetics. Rats also receive a single subcutaneous injection of olanzapine (OLA) or vehicle (VEH). An ICV infusion of the KATP channel activator Diazoxide (DIA) or VEH was administered throughout. Groups include (ICV-peripheral): VEH-VEH, VEH-OLA, DIA-VEH, DIA-OLA.

Results: The glucose infusion rate needed to maintain euglycemia during the clamp was higher in DIA-VEH rats compared to VEH-VEH/VEH-OLA. DIA-OLA rats had a decreased glucose infusion rate compared to DIA-VEH, indicating impaired insulin sensitivity. DIA treatment suppressed glucose production, and this was undisturbed by OLA co-treatment (DIA-OLA). Glucose uptake was increased by DIA-VEH, and this was abolished by OLA (DIA-OLA).

Conclusions/Implications: Olanzapine inhibits CNS KATP channel activation to perturb whole body insulin sensitivity via inhibition of glucose uptake, suggesting action on KATP channels as a novel way antipsychotics disrupt energy homeostasis.
Purpose: “Psychoeducation” is the process of providing education and information to those seeking or receiving mental health services. Key considerations in psychoeducation are the timing of delivery; illness state; and relevancy. In this project, users of our “Mental Health Telemetry” (MHT) electronic mood journaling system will receive customized, just-in-time psychoeducation: we have developed an algorithm to monitor users’ MHT data in real time and ‘push’ out specific psychoeducational ‘tips’ to users using a ‘dispatch algorithm based on changes observed in the data.

Methods: We developed a library of multimedia tips for people with mood disorders, and a set of ‘filters’ to identify relevant changes in MHT data over time. Rules for tip dispatch were created using a combination of filter output plus ‘meta-filters’ – filters that operate on user ratings of tips seen, tip-viewing history, etc. We ran simulations to study and optimize tip dispatch rate using MHT data (but no tip viewing history or tip ratings) collected from (n= 69) subjects in two prior studies.

Results: The dispatch algorithm will use tip viewing history and user tip ratings to choose between tips of comparable relevance; it includes logic for limiting the number of tips selected, while prioritizing certain tips (e.g., ‘see your doctor’). The algorithm will initially be tuned to dispatch tips on approximately 5% of days, balancing intrusiveness with helpfulness, with further tuning based on ‘live’ feedback from study participants.

Conclusions/Implications: This system will be deployed in 4Q18 as a new component of the MyChart electronic patient portal.
**Purpose:** Aggression and agitation are prevalent symptoms in Alzheimer’s dementia (AD-AA). Management of AD-AA is challenging and frequently results in inappropriate use of medications. As a part of Integrated Care Pathway (ICP), we developed and implemented an algorithmic measurement-based approach to standardize treatment of AD-AA. This approach showed promising results in open label pilot testing an inpatient unit and in a long term care home (LTCH).

**Objectives:** To compare the ICP to treatment-as-usual (TAU) in a multisite randomized control trial. Primary outcomes are the impact of ICP on agitation (assessed with the Cohen-Mansfield Agitation Inventory) and rates of psychotropic polypharmacy. Secondary outcomes are the use and effectiveness of non-pharmacological interventions, rate of falls, caregiver burden, and health care costs.

**Method:** This study aims to recruit 220 participants from 7 sites across Canada (3 inpatient units and 4 LTCHs). Participants meeting clinical criteria for probable or possible AD and International Psychogeriatric Association Criteria for Agitation in Dementia are enrolled and randomized to ICP vs. TAU (1:1). Participants in the ICP arm receive a structured intervention consisting of medication washout, behavioural interventions, and step wise pharmacological interventions. For both groups clinical assessments are done at baseline, and at 3, 8 and 12 weeks. Clinical Global Impression of Change (CGIC) rating is obtained every other week for 12 weeks in both groups to determine time to response (improvement defined by CGIC < 3). Further, data from the Ontario Institute for Clinical Evaluative Sciences database will be used for health economic analyses.
Background: Filial piety involves the Confucius view that children always have a duty to be obedient, respectful, and provide financial and emotional care for their parents. Filial piety has been described as both a risk and a protective factor in depression and suicide. There have been no qualitative studies examining the role of filial piety in the suicidal behaviour of Chinese women. Purpose: This study aims to explore the role of filial piety in the suicidal behaviour of Chinese women using qualitative research methodology.

Methods: Qualitative interviews were conducted with Chinese women (n=29) with a history of suicidal behaviour living in Beijing and the surrounding area. Filial piety data were extracted in a subanalysis in accordance with constructivist grounded theory.

Results: The women described family and filial piety factors that influenced their ability to fulfill family role obligations, including: 1) the rigidity of parental filial piety expectations, 2) their family environment, 3) the importance of filial piety as a personal value, 4) any punitive consequences of rebellion, and 5) how much filial piety was received. Depression led to functional impairment, reducing the women’s ability to fulfill family role obligations and causing those obligations to feel more burdensome. The inability to fulfill family role obligations increased distress, which led to suicidal behaviour. Some women described how filial piety was protective for suicidal behaviour, but their increasing depression and distress overcame their filial duty. After suicidal behaviour, treatment improved depressive symptoms, distress, and functional impairment; and shifted the balance and weighting of family and filial piety factors so the women generally felt more able to fulfill family role obligations, thereby reducing distress and future suicidal behaviour.

Conclusions/Implications: Family and filial piety factors should be part of a suicide risk assessment in Chinese women with a mental illness and suicidality. Special attention should be paid to recently changed factors that affect whether a woman feels able to fulfill family role obligations. After suicidal behaviour, these factors can be harnessed as part of recovery and to protect against future suicidal behaviour.
Introduction: Mentorship is an important component of professional development and can aid in promoting quality improvement (QI) initiatives within medicine and other health-related disciplines. The Faculty of Medicine’s Continuing Professional Development (CPD) Office at the University of Toronto is dedicated to developing an integration between CPD promotion and QI capacity. A formal mentorship program may support these initiatives. This study sets out to understand mentoring needs within the Department of Psychiatry at the University of Toronto through a qualitative needs assessment.

Method: Data collection is underway (n=12), with individual interviews addressing types of mentorship opportunities individuals are seeking in QI and CPD within psychiatry, with a focus on: (1) perceptions and understanding of mentorship in psychiatry; (2) thoughts regarding needed resources; (3) anticipated challenges; and (4) possible best fit mentorship model.

Results: Preliminary thematic analyses have revealed: (1) formal mentoring not always perceived as effective; (2) desired community of practice for mentoring and QI idea sharing; (3) importance of mentor-mentee matching; (3) busyness and lack of time as a barrier to developing and delivering QI and CPD initiatives; and (4) mentorship best when organic; emerging naturally versus forced is considered best-fit model.

Conclusions/Implications: Current results illustrate key elements when considering the type of mentorship model to build within the Department of Psychiatry. Ideas will be put forward to our Departmental CPD strategic vision with the goal of fostering mentorship connections that best fit the needs of the department in terms of QI and CPD development and growth.
Purpose: Cue-induced craving among smokers, brought on by exposure to smoking-related stimuli, is a well-documented phenomenon. Conditioning theory is used to explain how stimuli associated with smoking come to independently elicit craving to smoke. However, attachment theory may explain additional influences on cue-induced craving. This study studied the effect of a cigarette cue and the effects of an attachment figure cue on smokers’ craving and affect.

Methods: Participants were exposed to cigarette cues (i.e. cigarette) and attachment figure cues (i.e. digital photo of attachment figures). Ratings of craving, negative and positive affect were taken. Cue-reactivity as function of cue type was examined to explore the magnitude of craving effect sizes for each cue.

Results: Baseline to post-exposure differences in craving and affect were assessed in 38 smokers (29 men). Sixty-one percent of participants reported increased craving to cigarette cues (M = 61.1 [SD 29.4]) compared to neutral cues (M = 46.6 [SD 28.8]), t(37) = 3.99, p < .001. When exposed to an attachment figure photo, 56% participants reported decreased craving (M = 38.2 [SD 31.6]) compared to the neutral photo (M = 50.9 [SD 29.8]), t(35) = -2.661, p = 0.01. The effect sizes for cigarette cues (d = .50) and attachment figure photos (d = .42) were similar. Participants’ responses to attachment cues were not influenced by their reactivity to cigarette cues or their attachment figure’s smoking status.

Conclusions/Implications: These results offer further support for the influence of people cues on craving, and advances work by specifically showing the inhibitory effect of attachment figures on craving to smoke.
Purpose: Borderline personality disorder (BPD) is a serious, disabling, and burdensome illness with an estimated prevalence of 5.4% in Canada. In the recent years, there have been growing efforts to develop a neurobiological model of BPD including structural, functional, and neurometabolic abnormalities. The aim of this review is to provide an overview on recent advances in knowledge of the neurobiological basis of borderline personality disorder.

Methods: We performed a literature search using PubMed to identify structural and functional neuroimaging studies comparing patients with BPD to healthy controls in English language published between January 2000 and January 2018. The following search terms were used: “borderline personality disorder AND neuroimaging.” After a review of abstracts of these articles, studies were further selected for full-text reading. References cited in the selected articles were also reviewed.

Results: There are a number of structural studies which consistently report reduced volume in limbic regions, most prominently in the amygdala and hippocampus in BPD patients. Although few in number, there have been consistent findings that BPD patients have reduced Anterior Cingulate Cortex (ACC) gray matter volume. Structural findings of higher cortical structures including dorsolateral prefrontal cortex (DLPFC) and orbitofrontal cortex (OFC) have been somewhat variable. Functional neuroimaging findings report increased activity in limbic structure, such as the amygdala, both at rest and during tasks, as well as aberrant activities in the ACC, OFC, and DL/DMPFC.

Conclusion: Current imaging findings suggest a disruption in the frontolimbic system in patients with BPD compared to healthy controls.
Purpose: Subjective memory complaints are linked with development of Alzheimer’s disease (AD) but the neural mechanisms underlying this association are varied. Multimodal neuroimaging studies suggest that large-scale network disruptions occur before amyloid plaque buildup and can lead to early alterations within the posterior default mode network (pDMN) including decoupling of the hippocampus (HC) early in AD. We investigated the association between subjective report of memory ability and functional connectivity between HC and the pDMN. We hypothesized that self-report of greater memory ability would be positively correlated with HC-pDMN functional connectivity.

Methods: Participants were 45 healthy older adults [age = 71.62(6.3), female = 30] with normal cognition based on neuropsychological assessment without neurological or psychiatric illness. Subjective memory was evaluated using the Memory Functioning Questionnaire (MFQ). 3D T1-weighted anatomical were acquired using MPRAGE and resting state were acquired using ep2d_PACE on a 3T Siemens Trio TIM and processed using CONN toolbox. Seed-based analysis used an 8 mm region of the posterior cingulate cortex (PCC, x = -6, y = -52, z = 40) in the DMN, to measure functional connectivity with left and right HC.

Results: Total MFQ and MFQ frequency of forgetting (MFQ-FF) subscale scores were significantly correlated with left HC-PCC functional connectivity (MFQ total: r = 0.36, p = 0.016; MFQ-FF: r = 0.48, p = 0.001). MFQ-FF, but not total MFQ, scores were significantly correlated with right HC-PCC functional connectivity (MFQ total: r = 0.25, ns; MFQ-FF: r = 0.37, p = 0.013).

Conclusions/Implications: These findings suggest that subjective memory complaints may reflect HC-pDMN decoupling, consistent with connectivity disruptions known to occur early in AD.
Purpose: Convergent evidence increasingly supports the role of glutamate signalling abnormalities in the pathophysiology and treatment of OCD. As a result, we attempted to replicate previous findings by investigating GRID2 and GRIK2 gene variants, in our sample of OCD patients. We hypothesized that GRID2 and GRIK2 would be associated with OCD when compared to the general population, as well as with symptom severity and antidepressant response within our sample.

Methods: OCD patients (n=150) were selected from a retrospective, naturally treated sample and compared to the 1000 Genomes Project (EUR, n=503). Among patients, symptom severity was measured using the Y-BOCS and antidepressant trials were evaluated for response using the CGI-I scale. Pearson’s chi squared was used to investigate the relationship among the GRID2 and GRIK2 variant genotype distributions and the 1000 Genomes sample, as well as antidepressant response, while linear regression was used to investigate the effect of genotypes on symptom severity.

Results: A significant difference in genotype distributions between our OCD sample and the comparison sample was observed for GRIK2 rs2852615 (X2 = 6.12, p < 0.05). The minor T allele was more frequent in OCD patients. Furthermore, symptom severity was also associated with rs2852615. Patients with the TT genotype reported more severe OCD symptoms (p < 0.05). These glutamate gene variants were not associated with antidepressant response (p > 0.05).

Conclusion: Our targeted study provides further evidence in support of a role for the glutamate GRIK2 gene in OCD risk and symptom severity. Our pharmacogenetic data sample size was limited at the time of this analysis.
Background: 9 quality indicators are publicly reported to allow an evaluation of quality in long-term care (LTC) facilities within Ontario. Separately and independently, inspections are conducted by the Ministry of Health and Long-Term Care of Ontario (MOHLTC), to identify failure to comply with LTC legislation or regulations. In this study, we aimed to examine the relationship between quality indicators and compliance in LTC facilities across Ontario.

Methods: We employed machine learning techniques to examine if quality indicators can be used to classify each home into three categories (in good standing, needing improvement, needing significant improvement) based on inspection results. A simple linear model was purposefully chosen to allow for feature analysis.

Results: After running a wide-range of models, we found only a weak relationship between quality indicators and compliance. The best-performing model was only able to achieve an accuracy of 40.1%. Feature analysis was then performed on the final model to identify which quality indicators were most indicative of compliance. 'Experiencing Worsened Pain', 'Restraint Use', and 'Worsened Pressure Ulcers' were strongly correlated with homes “needing significant improvement.” Counter-intuitively, 'Improved Physical Functioning' had an inverse relationship with homes “in good standing.”

Conclusion: Overall, this study can be seen as a first step towards empirically assessing the different methods that currently exist to measure quality of care in LTC facilities in Ontario. Further work is required to understand the limited relationship between these two datasets, as well as attempting to identify those quality indicators that most meaningfully represent quality of care.
**Purpose:** To examine the relationship between, objective and patient-reported cognitive impairment in remitted major depressive disorder (MDD), and their respective relationship to depressive symptoms.

**Methods:** Participants with remitted MDD were assessed at baseline as part of a clinical trial and completed a demographic questionnaire and a series of clinical assessments including the Montgomery-Asberg Depression Rating Scale (MADRS), British Columbia Cognitive Complaints Inventory (BC-CCI), and CNS Vital Signs neurocognitive battery (CNSVS). Correlations between cognitive and clinical variables were conducted and where appropriate, linear regression analyses.

**Results:** Twenty-one participants were screened. The sample had a mean age of 44.4 (±13.5), was 48% female, well educated (15.6±1.9 years of education), and mildly depressed (mean MADRS 7.6±5.2). Overall, perceived cognitive impairment (BC-CCI) was a poor predictor of objective cognitive impairment (CNSVS). Both the MADRS and BC-CCI concentration items (items 6 and 2, respectively) were significantly correlated (p<0.05) with reported difficulties caused by cognitive impairment at work, in relationships, and recreationally.

**Conclusions/Implications:** Self-reported cognitive complaints were found to be a poor predictor of objective cognitive impairment experienced by individuals with remitted MDD. However, perceived concentration difficulties may affect work and social functioning in remitted MDD populations. A highly educated sample such as this may have led to an underrepresentation of the cognitive impairment in remitted MDD.
Purpose: There is a high prevalence of depression among youth in Canada (11%) and appropriate management of youth depression is a pressing public health concern. Evidence-based first line treatment of adolescent depression includes psychotherapy, yet only roughly 40% of youth seek professional help in the past year (social worker, psychiatrist, psychologist, etc.). This study used detailed interviewing to better understand the barriers and facilitators to seeking psychotherapy among help-seeking and non-help-seeking youth.

Methods: Semi-structured phone interviews were conducted with 60 youth selected from a large cohort of 234 youth between 16-22 years of age who had significant GAIN-SS scores.

Results: 33 youth had sought and received psychotherapy and 27 youth had not sought psychotherapy. The themes emerging about barriers to seeking psychotherapy included issues of stigma, limited access, preference for managing issues by themselves, lack of readiness to seek help, negative attitudes about psychotherapy etc. Themes about facilitators to seeking psychotherapy included wanting to improve functioning or coping skills, unsuccessful self-management and peers or family encouraging youth to seek help. Reasons for discontinuing psychotherapy included issues related to access, the transitional age of youth, negative psychotherapy experiences, and satisfactory outcomes from psychotherapy.

Conclusions/implications: The various themes identified reflect the various level of influence of change, e.g. individual (readiness to change), interpersonal (encouragement from others), organizational (cost of services), community (stigma) and policy (availability of services). Thus, there is a need to focus on multiple factors in order to improve help seeking among youth with depression.
An audit on Electrocardiographic screening in psychiatric patients in an inpatient setting

**Purpose:** To compare our practice of ECG monitoring on psychiatric inpatients against the recommended standard care of practice. ECG monitoring for psychiatric patients is recommended within first 24 hours of admission. Psychiatric patients are at increased risk of QTc prolongation due to various psychotropic medication use. Moreover, factors such as smoking and sedentary lifestyle choices contribute towards the fact that cardiovascular risk factors are the most responsible reason for mortality in schizophrenia.

**Methods:** An audit was conducted for Electrocardiographic screening in psychiatric patients, who were admitted to the inpatient mental health unit, by reviewing their paper charts and Meditech information. 60 charts were reviewed during the month of January 2019. The time gaps between ordering ECGs and performing ECGs were assessed and compared with the standard protocol. Moreover, QT/QTc were calculated and compared with the ECG machine's interpretation.

**Results:** Out of 60 patients, ( F=32,M=28), ECG was performed on 23 (38.33%) only. 12 patients (52.17%) had ECG done within first 24 hours of admission to psychiatric services. 9 f ECGs were reported as abnormal (39.13%) initially. Only in 2 out of 9 abnormal ECGs, repeat ECGs were ordered.

**Conclusions/Implications:** This audit identified the gaps in our service, and how to improve upon, in terms of quality improvement. This is necessary, as to provide the best and patient care, enhancing clinical safety of psychiatric patients admitted to Southlake Regional Health Centre.
**Abstract Title**
Communication in High Stakes Situations: Leadership Education for Advancing Practice Simulation Course (LEAP-S)

**Full Abstract**

Introduction: There is no current standardized curricula for leadership development to fulfill the CanMEDS 2015 Leader role for Canadian residents. A key challenge when situating leadership training within a competency-based framework lies in providing sufficient experiential opportunities for all trainees. The Leadership Education for Advancing Practice Simulation Course (LEAP-S) at the Department of Psychiatry, U of T, has been designed to fill gaps in the existing curriculum. A pilot has been implemented and evaluation is ongoing.

Methods: A targeted needs assessment identified gaps and themes in leadership education which could be taught via simulations. Faculty members, simulation experts and residents collaborated to develop a day-long simulation course for leadership skills. Six practice-based scenarios were developed and simulated from identified themes: effective teamwork, management of complaints and conflict, and medical errors disclosure. Ten PGY4 residents participated in the pilot with 2 facilitators and simulated participants. A mixed qualitative and quantitative analysis approach is being used to explore both process and outcome dimensions related to leadership development grounded on Moore’s Expanded Outcomes framework.

Results: Preliminary results reveal: 75% ‘agree’ and 25 % ‘strongly agree’ with an Increase in Knowledge (n=8); 100% of the participants ‘agree’ or ‘strongly agree’ that they were Satisfied with the course (n=9). Eight of 9 participants (80%) report an Intent to Change Practice as a result of the course (n=9). One participant reported that ‘no, it is already embedded in practice.’

Conclusions: Based on the preliminary results, participants found the day valuable, with an intention to change practice.
Purpose: Neuroimaging studies have found anomalous regional brain structure among youth with bipolar disorder (BD). Thus far, it is not known whether anomalous cerebral microvasculature is associated with BD-related neurostructural differences. We examined this potential association using retinal vascular photography, a proxy of cerebral microvascular pathology.

Methods: 49 adolescents (n = 25 BD, n = 24 healthy controls [HC]), ages 14 - 19 years, underwent 3T MRI and retinal vascular photography. T1-weighted images were processed through Freesurfer to yield cortical thickness, as well as volume and surface area (SA) values for five ROIs; amygdala, hippocampus, anterior cingulate cortex (ACC), ventrolateral prefrontal cortex (vlPFC), ventromedial prefrontal cortex (vmPFC). Retinal photographs were taken following pupil dilation with a Topcon TRC 50 DX, Type 1A camera. Retinal arterial and venular caliber were measured, and the arterio-venular ratio (AVR) was computed. Wider arteriolar and narrower venular caliber are associated with better cerebral and vascular health.

Results: AVR was not significantly different between groups (t = 1.69, p = 0.097). In the BD group, higher arteriolar caliber was associated with larger prefrontal volume (r = 0.44, p = 0.03). In the HC group, narrower venular caliber was associated with greater vlPFC thickness (r = -0.57, p = 0.004) and greater AVR was associated with smaller left amygdala volume (r = -0.49, p = 0.01).

Conclusions/Implications: These preliminary findings demonstrate associations between retinal vascular caliber and brain structure among adolescents in regions relevant to BD, and to cognition and emotion in general. Prospective studies with larger samples are warranted to evaluate the directionality of these findings and to evaluate for group-by-retinal vascular interactions.
Purpose: To evaluate the minimum incidence rate and patterns of presentation of youth (<18 years of age) admitted to the intensive care unit (ICU) for medically serious self-inflicted injury.

Methods: Through the Canadian Paediatric Surveillance Program, over 2,700 paediatricians/subspecialists were surveyed via monthly emails regarding cases of medically serious self-harm, from Jan 2017- Dec 2018. Participants completed a detailed questionnaire about the case and descriptive statistics were used for analysis.

Results: Ninety-four cases (71 female; mean age 15.2 years) of confirmed (n=87) and suspected/probable (n=7) medically serious self-harm were reported. The majority (87%) of cases were reported by Quebec, Ontario, Alberta and British Columbia. There were 11 deaths by suicide (65% male). Medication ingestion was the most common method of self-harm amongst females (76%) compared with hanging among males (41%). More females than males had made a prior suicide attempt (62% versus 32%) and reported a past psychiatric diagnosis (77% versus 55%) or use of mental health services (69% versus 30%). Family conflict was the most commonly cited precipitating factor for suicide attempt (46% of cases).

Conclusions: These Canadian findings are consistent with broader international epidemiologic data that observes a gender paradox in which females demonstrate a higher rate of suicide attempts and greater mental health care engagement whereas males display increased suicide mortality and decreased involvement with mental health care. Family conflict is a potential target for suicide prevention interventions. Future research focusing on sex-specificity in risk factor identification and effectiveness of primary prevention interventions among youth is warranted.
Purpose: Monoamine oxidase B (MAO-B) is an important, high-density enzyme in the brain that generates oxidative stress through producing hydrogen peroxide, influences mitochondrial function and metabolizes non-serotonergic monoamines. Recent advances in positron emission tomography (PET) radioligand development for MAO-B in humans enable highly quantitative measurement of MAO-B distribution volume (VT), an index of MAO-B density. This is the first investigation of MAO-B in the brain of major depressive disorder that evaluates regions beyond the raphe and amygdala.

Methods: 20 patients with major depressive episodes (MDE) without current psychiatric comorbidities and 20 age-matched healthy subjects underwent [11C]SL2511.88 PET scanning to measure MAO-B VT. All participants were drug and medication free, non-smoking and otherwise healthy.

Results: Patients with MDE had significantly greater MAO-B VT in the PFC (26%, analysis of variance, F1,38=19.6, P < .001). In MDE subjects, duration of illness covaried positively with MAO-B VT in the PFC (analysis of covariance F1,18=15.2, P =.001), as well as most other cortex regions and the thalamus.

Conclusions: Greater MAO-B VT is an index of MAO-B overexpression, which may contribute to pathologies of mitochondrial dysfunction function, elevated synthesis of neurotoxic products and increased metabolism of non-serotonergic monoamines. Hence we identify a common pathological marker associated with downstream effects poorly targeted by the common selective serotonin reuptake inhibitor treatments. We also recommend that the highly selective MAO-B inhibitor medications which are compatible for use with other antidepressants and have low risk for hypertensive crisis be developed (or repurposed) as adjunctive treatment for MDE.
Purpose: γ-Aminobutyric acid (GABA), the primary inhibitory neurotransmitter in the brain, plays a significant role in aging, cognitive impairment, and neurodegenerative disorders including Alzheimer’s disease (AD). Based on early limbic involvement of AD pathology, we assessed the association between GABA normalized to creatine (GABA+/Cr) in the dorsomedial prefrontal cortex (dmPFC), which supports emotional regulation, and cognition in older adults at risk for AD.

Methods: Twenty-three older adults (11 subjective cognitive decline, 12 mild cognitive impairment, 13 females, age range 64-90 years) underwent MR imaging at 3 Tesla (Siemens Trio). GABA signals co-edited with macromolecules (GABA+) were detected at voxel of 25x40x25 mm3 localized in the dmPFC region using MEGA-PRESS. Pre and post-phase correction and spectral fitting were performed using Gannet v3.0. GABA+/Cr were correlated with neuropsychological assessments using Pearson’s correlation.

Results: dmPFC GABA+/Cr levels were positively correlated with memory performance [California Verbal Learning Test (CVLT-II) Immediate Recall Trials 1-5 (r=.54, p=.009), Brief Visuospatial Memory Test (BVMT) Immediate and Delayed Recall (r=.61, p=.04; r=.61, p=.045 respectively)] and were marginally correlated with executive function (Delis-Kaplan Executive Function System (DKEFS) Card Sorting Test (r=.60, p=.05).

Conclusions/Implications: These preliminary findings extend previous investigations of the role of GABA+/Cr in cognition. To the best of our knowledge, this is the first study to report in vivo GABA+/Cr levels in the dmPFC region in older adults at risk for AD. Future imaging studies examining functional connectivity of the dmPFC (e.g., hippocampal-dmPFC connectivity) and its link to GABA+/Cr will clarify the functional significance of these neurochemical abnormalities.
Purpose: Cue reactivity is essential in the development and maintenance of addictions; however, there are currently no validated END-related cues for use in neuroimaging and/or attentional bias research. This study aimed to develop and validate END-related visual cues using the International Affective Picture System (IAPS) procedure.

Methods: We recruited ENDs users on Amazon MTurk. Eligibility criteria included being aged 19 to 65, owning ENDs and e-liquids, and having used them within the past month. Demographics, and tobacco cigarette and ENDs use information was collected. Sixty images were then presented and rated one-by-one on the dimensions of valence, arousal, and dominance using the 9-point Likert Self-Assessment Manikin (SAM) system.

Results: In March 2019, 411 ENDs users (201M, 210F) completed the study, of whom 32 were never-smokers, 120 were former smokers, 101 were less-than-daily smokers, and 108 were daily smokers. The mean age was 33.78 and ENDs nicotine dependence was 3.65, assessed by the e-FTND. Valence was significantly correlated with arousal ($r = 0.30$) and arousal was significantly correlated with dominance ($r = 0.42$). Arousal and valence were significantly associated with greater END dependence, but dominance was not. Posthoc comparisons revealed that participants with moderate to high END dependence reported feeling significantly more positive and aroused than low dependence participants ($p<0.05$).

Conclusions/Implications: Subjective ratings were significantly correlated with END dependence, supporting the use of this database in future planned studies. By following the IAPS procedures, stimuli from this study, IAPS database, Geneva Smoking Pictures, and Geneva Appetitive Alcohol Pictures may be combined.
Title: Relationships between serum osteocalcin, depression and perceived stress in people with type 2 diabetes mellitus.

Purpose: Serum osteocalcin is emerging as a potential marker of glucose homeostasis and risk of type 2 diabetes mellitus (T2DM). In mice, osteocalcin knockouts exhibit depressive-like behaviours and knockouts of a putative osteocalcin receptor (GPR158) modulate vulnerability to chronic unpredictable mild stress. Previous studies report relationships between diabetes and depression modified by sex. Here, we assess relationships between serum osteocalcin, depression and perceived stress in men and women with T2DM.

Methods: Participants with T2DM were assessed for a depressive episode using the Structured Clinical Interview for DSM-V depression criteria (SCID-V). Subjective stress was assessed using the Perceived Stress Scale (PSS). Lower scores indicated lower subjective stress. Serum uncarboxylated osteocalcin (unOCN) was assayed from fasting morning blood by commercial ELISA.

Results: Among 64 participants (mean age 62.3±9.7, 58% women), 18 (28%) were experiencing a depressive episode (8 men, 10 women). Serum unOCN was associated with lower PSS scores in all participants without depression (rho=-0.377, p=0.028), but not in those with depression (rho=0.335, p=0.174). Among men, serum unOCN was associated with lower PSS scores in those without (rho=-0.628, p=0.012), but not in those with (rho=0.476, p=0.233) depression (trend for interaction F=4.091, p=0.055). Serum unOCN was not related to PSS scores in women with (rho=0.067, p=0.855) or without (rho=-0.011, p=0.963) depression.

Conclusions: Serum osteocalcin may be related to subjective stress in men with T2DM, and this relationship may be contingent on a non-depressed state. Further study will be needed to determine if these results are independent of other clinical characteristics.
Background: Assessing depression in people with dementia is challenging due to limitations of retrospectivity. Mobile Ecological Momentary Assessment (EMA) provides a novel approach in assessing depressive symptoms by collecting informant measures in intervals throughout the day, decreasing recall bias and increasing representativeness.

Purpose: The purpose of this study is to design an EMA application for assessing depression in individuals with dementia.

Methods: A literature review was conducted to determine commonly used and validated assessments for depression in dementia. Assessments were analyzed for common items, where items less commonly used (<50% of assessments sharing the item) or not relevant to be collected using EMA were excluded. Wording of items were analyzed to develop the specific structure of questions for the EMA assessment.

Results: Six assessments were found and demonstrated adequate performance outcomes. Items fell into either mood-related, dementia-related, vegetative, psychotic or positive mood symptom groups. The mood-related group was analyzed separately for prominent items, which were sadness, anxiety, pessimism, loss of interest and irritability. Wording of items were modified to be consistent with being collected throughout the day, rather than retrospectively. These items were incorporated as core observational domains in the application to be tested. Sadness and anxiety were additionally included as self-report items as previous studies have shown these to be most discordant between individuals with dementia and informants.

Conclusions: This research is a first step towards an innovative approach to assessing depression in dementia. Next steps involve evaluation of the application’s feasibility and reliability for assessing depression in dementia.
Purpose: Youth with neurodevelopmental disorders often feature neurocognitive differences, including alterations in response-inhibition. A limitation of current neuroimaging studies is the lack of findings on the neurobiological basis of response-inhibition in youth. As altered response-inhibition is found in children with obsessive compulsive disorder, this study sought to determine whether neural processing of response-inhibition differs in treatment-naive youth with OCD. It was hypothesized that patients would exhibit increased errors, along with changes in information processing during inhibition performance.

Methods: Data was acquired from 17 treatment-naive youth with OCD (11.7 ± 2.1 years) and 13 healthy controls (12.3 ± 2.1 years). Magnetoencephalography was used to localize and characterize neural activity in response to a Go/No-Go task between groups, followed by a comparative analysis of regions of activation, amplitude, and latency of response.

Results: In response to visual stimuli, both groups showed activation in the primary visual cortex, precuneus, and inferior temporal gyrus. During successful and unsuccessful stops both groups showed activity in the contralateral primary motor cortex (M1) followed by activation of the orbitofrontal cortices (OFC). Overall, patients showed greater M1 activity and less OFC activity. Only controls exhibited activity of the anterior cingulate cortex (ACC) following a stop error.

Conclusion: Patients showed increased activity in motor regions (M1) and decreased activity in regions associated with inhibition (OFC) and error monitoring (ACC). Functional abnormalities in these regions may be associated with deficits in cognitive control and impairment in behavioural inhibition in response to internal or external stimuli, as seen in OCD.
**Purpose:** Recent evidence suggests that the Angiotensin II type-1 Receptor Blockers (ARBs) and Angiotensin-Converting Enzyme inhibitors (ACE-I) may have different effects on cortical inflammation and amyloid clearance. This study examines associations between ARB, ACE-I, and other antihypertensive use with MRI-derived markers of neurodegeneration.

**Methods:** Cross-sectional observational study of participants ≥ 50 years of age enrolled in the Sunnybrook Dementia Study or the Vascular Brain Health Study, using at least one antihypertensive medication. Volumetric markers including ventricular and sulcal (CSF) and grey and white matter were quantified using a semi-automated brain region extraction procedure, and the brain parenchymal fraction (BPF) was calculated as a measure of global atrophy. Adjusted between-groups differences were assessed using analyses of covariance and Bonferroni-adjusted post-hoc tests.

**Results:** Among antihypertensive users (n=230 AD, n=33 mild cognitive impairment [MCI], n=19 healthy controls), 13.1% were using an ARB and 40.4% were using an ACE-I. Sulcal volume (sCSF) differed between antihypertensive treatment groups [F2,164=5.66, p=0.004]. Mean sCSF was smaller in those treated with ARBs than ACE-I (p=0.009), and other antihypertensives compared to ACE-I (p=0.03). BPF also differed [F2,164=3.191, p=0.04] and was greater in ARB users vs. ACE-I users (p=0.03). Within the AD/MCI subgroup, sCSF volume (F2,149=4.527, p=0.012) was smaller in those using an ARB vs. an ACE-I (p=0.032).

**Conclusions/Implications:** Some measures of brain atrophy, particularly sulcal expansion, were consistent with a possible neuroprotective benefit of ARB use. Atrophy was greatest in the ACE-I group, consistent with evidence that ACE-I may, in contrast to ARBs, inhibit Aβ clearance and degradation.
Plagiannakos, Christina

Full Abstract

Purpose: Individuals with schizophrenia may experience significant cognitive and functional impairments that contribute to poor community functioning. Two prominent non-pharmacological models exist to address these challenges: (i) Cognitive Adaptation Training (CAT) is a compensatory intervention that uses personalized environmental strategies to bypass cognitive and motivation difficulties. (ii) Action Based Cognitive Remediation (ABCR) is a restorative strategy that provides group-based computerized cognitive drills paired with real-world role play. While each model has been trialed individually within the general schizophrenia population, no study has compared the effectiveness of these models a) when combined, and b) in an early psychosis population. The aim of this study was to examine the effects of CAT when compared with a combination of CAT+ABCR within an early intervention population.

Methods: First, the combined CAT+ABCR intervention was developed and piloted. Second, a randomized controlled trial was conducted and 43 participants (ages 16-34) with psychosis were assigned to receive 16 weeks of either CAT (n=32) or CAT+ABCR (n=11). Community functioning, symptom severity, neurocognitive function, and goal attainment were assessed at 3 time points. Primary analysis was conducted through linear mixed effects models.

Results: There was a significant effect for community functioning for CAT but not for CAT+ABCR. Findings for symptoms, neurocognition, and goal attainment favored CAT at post intervention and follow up.

Conclusions/Implications: This study demonstrated that CAT+ABCR may be less effective than CAT alone for improving community and functional outcomes in this population. Further research is needed to explore effective methods of integrating such compensatory and restorative approaches.
Purpose: Youth experiencing mental health and/or addictions (MHA) issues and their families are often faced with navigating through a complex healthcare system. Family navigation is a model of care that aims to guide families and patients through this system and reduce barriers to accessing timely care. At present, no randomized controlled trials exist that investigate outcomes of navigation for youth with MHA concerns and their families. The purpose of this study was to determine whether access to system navigation leads to improved outcomes for youth with MHA concerns and their families when compared to those who do not have navigation support.

Methods: This pilot randomized controlled trial recruited 65 caregivers of youth (ages 13-26) experiencing MHA concerns, assigned to one of two conditions; “Navigation”, in which participants received service from a Navigator with the Family Navigation Project at Sunnybrook who provided individualized client-centered support, or “Self-Navigation”, in which participants were provided with a list of resources to engage with on their own.

Results: Findings to be presented include group differences between conditions on clinical outcomes (e.g., youth symptoms, family functioning, caregiver strain) and service utilization (e.g., emergency department visits, healthcare expenditures), as well as qualitative themes generated from interviews conducted with participants.

Conclusions/Implications: This is the first known clinical trial to investigate the outcomes of system navigation for youth with MHA concerns and their families. As demand for MHA related services increases, investigating navigation supports may address service barriers by improving access to, engagement with, and integration of services.
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**Full Abstract**

**Purpose:** To describe how patients with schizophrenia who received electroconvulsive therapy (ECT) as incapable or capable patients differ with respect to short- and long-term outcomes.

**Methods:** A retrospective chart review of all inpatients with schizophrenia who received \( \geq 1 \) acute course of ECT between 2010 and December 2018 at CAMH was completed. Short-term outcomes, including illness severity and improvement, were assessed using the Clinical Global Impression (CGI) scales. Long-term outcomes that were collected include (1) readmission within 6 months of discharge; (2) number of subsequent courses of acute ECT received and; (3) whether maintenance ECT was received.

**Results:** A total of 241 patients were included. Of these patients, 161 (67\%) were incapable and were treated with the consent of their substitute decision maker (SDM). The remaining 88 (33\%) patients were capable. The average age of included participants was 45 years. There were 144 (59\%) male participants. Sixty-eight (42\%) incapable and 33 (38\%) capable patients were readmitted within 6 months of discharge. Incapable patients had a mean 0.5 subsequent acute courses of ECT, while the mean for capable patients was 0.3. Ninety-three (58\%) incapable and 36 (41\%) capable patients were treated with maintenance ECT.

**Conclusions/Implications:** This is the only study to compare outcomes between capable and incapable patients with schizophrenia who received ECT. Despite the effectiveness of ECT, there remains much stigma on its use for incapable patients; thus, this study will inform clinicians, patients and their SDMs about the outcomes and challenges of this treatment.
Purpose: To determine if using a hidden auditor to evaluate a classroom module is an effective method to audit and improve the curriculum and teaching methods.

Method: Students who participated in a four week (once a week) program filled out rubric evaluation forms at the end of each class to indicating the effectiveness of the module used to teach the class. A hidden auditor also attended these classes and evaluated the class module using the same rubric. We compared the results from the students and auditor for any discrepancies or similarities. We conducted a literature review to find studies that use a hidden auditor and other methods to evaluate a class module.

Results: Rubrics from Lecture Days 1 through 3 showed that responses from students varied from those of the auditor. By Day 4, the rubrics indicated an overall “Excellent” rating in all categories of the rubric, with a consensus in responses between students and the auditor.

Conclusion: We found many studies that indicate the effectiveness of student feedback on improving class modules. This evidence supported our data which indicated that by the fourth lecture the ratings from the hidden auditor paralleled those of the students. However, there were no studies in our literature review which used a hidden auditor to support our method of evaluation. We hope to provide a new means of auditing for future classroom modules and teaching methods.
Background: Cardiovascular disease (CVD) is more prevalent, and occurs prematurely, in individuals with bipolar disorder (BD) vs. the general population. The American Heart Association recently positioned cardiorespiratory (i.e. aerobic) fitness as the most important modifiable CVD risk factor. Importantly, aerobic fitness is also associated with brain structure and function. No prior study has examined this topic in adolescents with BD.

Methods: Participants included 107 adolescents 13-20 years old (n=54 BD, n=53 healthy controls (HC)). Psychiatric diagnoses and symptoms were evaluated using semi-structured interviews. Physical activity was evaluated by self-report. Participants completed 20 minutes of aerobic exercise at 60-80% of estimated maximum heart rate on a bicycle ergometer. Power (watts/kg) within this heart rate range served as a previously validated proxy for aerobic fitness. Analyses controlled for age and sex.

Results: Power during recumbent cycling was significantly lower in BD vs. HC (0.91±0.32 vs.1.01±0.30, p=0.04). Within BD, higher depression symptoms were associated with lower power (r=0.31, p=0.02), and greater physical activity was associated with greater power (r=0.47, p=0.001). In multivariate analyses, there were significant main effects on power for diagnosis (HC>BD; p=.04) and sex (M>F; p...
Purpose: There is growing evidence that inflammation influences mental health. Blood interleukin levels, which regulate inflammation, have been linked to aggression and internalizing behaviours. Here, we evaluated the association of interleukin gene variants with childhood aggression and internalizing behaviours.

Methods: Samples were recruited as previously described (Malik 2014) in an ongoing study of childhood-onset aggression (255 cases, 226 controls of European ancestry). Putative functional and tag SNPs (n=16) within IL1B, IL2, and IL6 were genotyped using the Taqman® OpenArray® system. Association of SNPs with aggression case status was tested using logistic regression. Association of SNPs with parent-reported internalizing problems (Achenbach CBCL Internalizing Problems score), self-reported anxiety (RCMAS), and self-reported depression (CDI) was tested using linear regression. GxE interactions between SNPs and childhood adversity (MAYSI-2 Traumatic Experiences scale score ≥4) were tested for continuous traits within cases. Analyses included age and sex as covariates, and corrected for multiple testing using Nyholt’s procedure (a<7.69x10^-4).

Results: No significant association was observed between any of the interleukin SNPs and childhood-onset aggression. We observed significant association of IL6 variant rs2069837 with depressive symptoms (β=-4.98 for each copy of the T allele; p=7.15x10^-4), and a trend for association of rs2069837 with anxiety (β=-3.66 for each copy of the T allele; p=0.006). We observed a trend for an interaction between severe childhood adversity and IL1B variant rs1143643 with depressive symptoms (p=4.62x10^-3).

Conclusion: Our findings provide preliminary evidence that common variation in IL6 is associated with anxiety and depression symptoms in children. Replication in independent samples is needed.
Preisman, Mary

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**Full Abstract**

Purpose: The University of Toronto Department of Psychiatry is home to approximately 1000 faculty members with a range of expertise in every area of clinical work, education, and research within our field. We are leaders in competency by design residency training and continuing medical education. Despite this, a comprehensive review course of key content areas in psychiatry had yet to exist in our department. This poster looks at lessons learned from the pilot Psych Refresh review course in psychiatry based on participant feedback. Psych Refresh was open to residents and practicing physicians as an opportunity to hear dynamic speakers covering relevant topics in psychiatry followed by small group sessions where participants ran through cases coached by supportive facilitators to consolidate their learning. This poster looks at the planning process, quantitative and qualitative course feedback and future directions.

Methods: A description of needs assessment, implementation strategies and analysis of feedback will be provided. Results: Psych Refresh had 63 participants in large group didactic sessions and 48 participants in small group interactive sessions. Each participant had the opportunity to provide feedback using the new online tool, Turning Point.

Results: Based on feedback, this was a useful course and initiative with room to grow and improve for future iterations.

Conclusions/Implications: A comprehensive review course is a natural fit into the education portfolio of the U of T Department of Psychiatry. Given the scope of the project, feedback from the pilot year has given invaluable insights into improving and expanding this new curriculum.
Purpose: Many people living in long-term care (LTC) have behaviour symptoms associated with dementia. Currently, there is no standard tool for the measurement of these symptoms in LTC outside of mandated quarterly assessments. Accurate measurement of behaviour symptoms is essential to guide treatment and monitor the effect of interventions. Limitations to existing tools include lack of training, rater bias and recall errors. These limitations threaten their reliability and validity and create the risk of over- or under-treatment. In this study, we sought to understand which tools are currently used to assess behaviours in LTC and challenges associated with their use.

Methods: 300 LTCs across Canada were invited to participate in an on-line survey to establish: which behavioural assessment tools are used most, what supports their use and what makes them challenging.

Results: Of 300 LTC homes invited to participate in the survey, 110 responded, with 7 declining to participate in the survey and 103 completing the survey. Nine provinces and one territory were represented by the survey respondents. Homes reported using a mean 2.3 +/- 1.2 (range 0-7) tools. The most commonly used tools are the DOS and CMAI, followed by the ABRA and ABC charting. We were able to identify the most common reasons behaviour assessment tools are used, who completes them and interprets their results, and how these results are used.

Significance: There are important opportunities for improving the assessment of behaviour in LTC, including standardization, improved education, and the use and development of mobile technology for behaviour assessment.
Purpose: Clinical practice guidelines are meant to improve health care provider decisions in clinical care through the acquisition and application of evidence-based knowledge. Research into the use of guidelines has focused on provider adherence to guidelines in an attempt to minimized “unwarranted” deviations. Research in adaptive expertise, however, has demonstrated that physicians must remain flexible and inventive when faced with complex clinical situations and so strict adherence is likely to represent an oversimplification of a complex process. Thus, we conducted a qualitative study to explore broadly how psychiatric providers utilized CANMAT depression guidelines in different contexts.

Methods: We conducted semi-structured interviews with 7 staff psychiatrists and 10 psychiatry residents at the University of Toronto on their use of depression guidelines. We analyzed transcribed interviews using a constructivist grounded theory approach and utilized the conceptual framework of adaptive expertise to interpret the data.

Results: We identified 5 themes: 1) Providers viewed the guidelines positively and employed them regularly, 2) Providers recognized limitations of the guidelines and integrated information from numerous other sources, 3) Providers used the guidelines in various ways to accomplish clinical or educational tasks, 4) Provider training and patient care experiences influenced how they used guidelines, and 5) The complexity of the clinical situation influenced how providers used the guidelines.

Conclusion: The results of this study contribute to the current discussion regarding the use of guidelines in clinical practice and represent further research on how the framework of adaptive expertise informs understanding of problem-solving in clinical care.
Podcasting in Psychiatry Education: The User Experience

Purpose: Podcasts are a new frontier of medical education delivery and there are no studies to date that examine their use in psychiatry education. We sought to characterize the demographics, motivations, and user experiences of listeners of PsychEd, a psychiatry education podcast launched in 2017 by UofT residents.

Methods: All active PsychEd listeners were sampled by recruitment through notifications within podcast episodes. Respondents completed an online survey of 13 questions with the option to participate in an interview which was conducted over Skype, transcribed, and coded for emergent themes using a grounded-theory model.

Results: Of 97 respondents (7% of current subscribers), 40% are medical trainees, 4% practicing physicians, and the remainder include psychologists, researchers, allied health, and service users. 53% were willing to be interviewed and 9 semi-structured interviews were conducted. Podcast strengths and weaknesses were organized in tabular format. Trainees perceived the podcast as effective for attaining general knowledge, improving clinical skills, and test preparation. Primary reasons for listening included scope of content, review of knowledge, enjoyable delivery, and Canadian content.

Conclusions: Podcasts represent an opportunity to develop interprofessional curricula for learners across psychiatry, psychology, and allied health professions. Trainees seek content appropriate to their training level, that provides general and summary knowledge, and that is enjoyable. There is an international interest in Canadian psychiatry expertise. Psychiatry listeners, in particular, desire podcasts with in-depth knowledge and longer episodes, with less emphasis on test preparation.
Purpose: The proportion of non-daily smokers has dramatically increased; however, treatment approaches in this sub-population of smokers are limited. We assessed the effectiveness of nicotine replacement therapy (NRT) plus behavioural counselling in occasional (OS, non-daily), light (LS, <10 cigs per day (CPD)) and heavier smokers (HS, ≥10 CPD).

Methods: Between April 2016-November 2018, 14,410 (OS, n=505; LS, n=1,738; HS, n=12,168) participants enrolled in the Smoking Treatment for Ontario Patients program, offering cost-free NRT plus counselling to treatment-seeking smokers across Ontario. Type, dose and duration of NRT treatment was personalized. Total dose of NRT dispensed over the treatment period was calculated. Data was collected at baseline, and 6- and 12-month follow-up surveys (FUS).

Results: OS and LS were significantly more likely to report abstinence at 6- and 12-month FUS than HS. At 6-months, every per gram increase in NRT significantly increased the probability of quitting for all groups (HS: W=465.14, p<0.001; OS: W=13.17, p<0.001; LS: W=22.055, p<0.001). At 12-months, increasing NRT dose significantly increased the probability of quitting only in HS (W=154.85, p<0.001). Increased NRT dose was associated with significantly greater effects on quit outcomes in HS relative to LS at 6- (W=8.76, p=0.003) and 12-month (W=10.31, p=0.001) FUS, and remained significant after controlling for age and sex. No differences were found between LS vs. OS, or OS vs. HS.

Conclusion: NRT is not currently indicated for occasional or light smokers. However, our findings suggest that it may be helpful in these sub-populations, although effectiveness may not be dose-dependent.
**Full Abstract**

Purpose: ENDs (e.g. e-cigarettes, JUUL) may be effective for smoking cessation; however, little evidence exists regarding their long-term effectiveness in smokers intending to quit. We investigated whether frequency and duration of END use predicts long-term abstinence in daily smokers enrolled in a smoking cessation program providing cost-free nicotine replacement therapy (NRT) and in-person behavioural counselling.

Methods: At 6- and 12-month time-points, patients were categorized into daily, non-daily, or non-END users. Adjusted binary logistic regression was used to analyze 6- and 12-month quit, as well as relapse at 12-months between groups.

Results: Compared to non-users (n = 5010), non-daily END use (n = 434) was associated with 52% reduced odds of smoking abstinence at 6-months (AOR = 0.483, p < 0.001). At 12-months, daily END use (n = 295) was associated with 70% increased odds of quitting (AOR = 1.700, p < 0.001); non-daily END use (n = 384) was associated with 71% reduced odds of quitting (AOR = 0.290, p < 0.001). Non-daily END use was associated with 77% increased odds of relapse (AOR = 0.227, p < 0.001) between 6- and 12-month time points; no difference in relapse rate was observed between daily and non-END users (AOR = 0.836, p = 0.520).

Conclusion/Implications: Non-daily END use was associated with poorer quit outcomes in smokers receiving NRT plus counselling. Daily END use had no effect on quit at 6-months but was associated with lower risk of relapse at 12-months and therefore may be useful for relapse prevention following NRT treatment.  

**Word Count:** 250  
**Extra Notes**  
Authors: Ernesto Ramos BSc, Anna Ivanova MPH, Peter Selby MBBS, Laurie Zawertailo PhD  
Affiliations: University of Toronto, Centre for Addiction and Mental Health
Purpose: There is a marked shortage of mental health care providers in Ontario with the specialized knowledge and skills needed to effectively treat OCD. Project ECHO® is a novel “hub and spoke” educational model leveraging multipoint videoconferencing technology which has been shown to build treatment capacity for complex disorders. ECHO Ontario OCD has been recently launched and preliminary outcome data examined from the first cycle of practitioners.

Methods: ECHO Ontario OCD was launched in April 2018, with a 20 week curriculum covering diagnosis, psychopharmacology, and CBT principles specific to OCD. Learners completed a baseline and endpoint knowledge survey, questionnaires regarding their experience treating OCD and practice, and weekly satisfaction surveys.

Results: There were 22 participants in 18 “spoke” organizations comprising social workers, counsellors, nurses, and physicians. At baseline, 80% of participants reported having limited experience with OCD and general CBT skills; over 50% reported 0-5 years of experience. The majority endorsed seeing few OCD clients (1-5) per year, citing factors including cost, lack of access to specialists for support, and limited capacity as barriers. The program achieved high weekly satisfaction ratings, exceeding a mean of 4.3 out of 5 on a 9-item questionnaire. Pre-post knowledge tests indicated modest improvement (n=4).

Conclusion: Preliminary data on development of an OCD ECHO suggests high learner satisfaction and engagement, and if future outcome data supports knowledge and practice change, this model may be appropriate for building treatment capacity for this complex condition across Ontario.
Introduction: There are numerous services that provide “navigation” to mental health and/or addictions (MHA) resources in the healthcare system. Many providers engage in navigation to a greater or lesser extent; however, there is no widely accepted definition or nomenclature for professional roles that include navigation as a function, posing challenges for integration and delivery of appropriate services.

Purpose: To identify, define and compare the various roles that exist within the MHA system that include “navigation”.

Methods: A scoping review of relevant grey and academic literature was conducted. Data from a total of 30 academic and 25 grey literature sources were extracted. Descriptive analysis of the number of sources that mention each professional role, and distribution in literature was conducted. Thematic analysis was done to identify functions of identified roles.

Results: Eighteen roles (e.g., navigator, case coordinator, case management, etc.) were found that connect individuals to MHA services and fourteen main functions were described for the navigator role, most consistently finding and connecting to MHA services and community supports. No roles included all 14 main functions of the navigator role, although case management was the most similar.

Conclusions/Implications: There are many roles in the MHA system that include system navigation as a function. Navigator roles includes a unique combination and breadth of supports not found in other roles. Further exploration is required to increase standardization the definition of roles that connect individuals to MHA services.
Purpose: Genetics plays a significant role in tobacco dependence and smoking cessation outcomes. Varenicline and bupropion are effective cessation therapies that are affected by genetic polymorphisms resulting in pharmacokinetic and pharmacodynamic changes. We aimed to investigate the genotypic predictors of smoking cessation and develop a polygenic risk score for predicting treatment outcomes.

Methods: A genome wide association study (GWAS) was conducted on saliva samples from Medication Aids for Tobacco Cessation Health (MATCH) program participants who were randomized to varenicline or bupropion treatment. Samples were genotyped using Illumina Global Screening Array v2.0 chips. Genetic variants in the nicotinic acetylcholine receptor subunits, CYP2B6, dopamine D2-receptor, and SLC3A6 genes were statistically regressed to the primary outcome of the study (6-month abstinence from smoking). GWAS analysis was conducted using iSCAN, GenomeStudio, and R.

Results: Genomic data was collected from 495 adults (varenicline, n = 260; bupropion, n = 235). The mean age was significantly different between varenicline and bupropion groups (47.7 and 45.6 respectively; p < 0.05). Both varenicline and bupropion groups were predominantly male (57.3% and 61.7% respectively; p = 0.32) and Caucasian/European (87.7% and 90.2% respectively; p = 0.34). GWAS analysis is currently underway. We predict that different genetic polymorphisms will significantly influence smoking cessation treatment outcomes between treatment groups.

Conclusion: This analysis will shed light on the contribution of genetic factors on treatment response. The development of a polygenic risk score for smoking cessation may improve personalized pharmacotherapies for nicotine dependence.
**Full Abstract**

Purpose: Early intervention in psychosis (EIP) has been shown to improve clinical outcomes including symptom burden and hospital readmissions. The question remains: is EIP cost-effective? The purpose of this study is to evaluate the cost-effectiveness of EIP versus standard care for the management of psychosis in young adults.

Methods: We developed a Markov model to simulate the progression of a cohort of 20-year-old males with a first episode of psychosis through six “health states”: unemployed, employed, psych hospitalization, incarcerated, suicide and non-suicide death. EIP programs (specialized clinics with an emphasis on psychosocial support, which feature psychiatrists and allied health care workers) was compared to standard care (general clinic with an emphasis on medication management alone, which feature a psychiatrist and no allied health care workers). Discounted (3% annual rate) costs and quality-adjusted life-years (QALYs), in addition to the number of relapses and suicides, were projected over the lifetime of the cohort using one-year model cycles. Model input parameters were estimated from published sources, including the Lambeth Early Onset Team and the OPUS randomized control trials. Costs were derived from Medicare reimbursement.

Results: We hypothesize that EIP will be cost-effective relative to standard care. (Results to be expected by end of April 2019.)

Conclusions/Implications: If our results show that EIP is indeed cost-effective relative to standard care, then we have additional evidence to support the implementation of these programs. EIP programs provide holistic care that extend beyond medication management. These programs are beneficial at the patient, health care and societal levels.
Purpose-Although clozapine is the main treatment for patients with treatment-resistant schizophrenia, it resolves psychotic symptoms in only 30-60% of the patient population. Treatment response trajectories in patients taking clozapine remain unclear. We aimed to examine long-term clozapine response/non-response patterns, as well as determine clinico-demographic factors associated with clozapine non-response in patients with treatment-resistant schizophrenia.

Methods-A retrospective chart review was conducted to collect clinico-demographic information of 241 patients with treatment-resistant schizophrenia taking clozapine. Clozapine response was assessed at median 10.8 (interquartile range, IQR = 14.0) months (Time 1, T1) and 7.2 (IQR = 13.5) years (Time 2, T2) after its initiation. Binomial logistic regression was used to determine predictors of clozapine response at both T1 and T2 (i.e. stable clozapine response, S-ClozResp) versus non-response at both times (i.e. stable ultra-treatment-resistant schizophrenia, S-UTRS).

Results-Among clozapine responders (n = 122) at T1, 83.6% remained clozapine responsive and 16.4% became non-responsive at T2. In the UTRS group (n = 119) at T1, 87.4% remained clozapine non-responsive and 12.6% became responsive at T2. Number of pre-clozapine hospitalizations (OR = 0.95, Wald X2 = 5.20, p = 0.023) and duration of delay in clozapine initiation (OR = 0.94, Wald X2 = 5.33, p = 0.021) were associated with S-UTRS.

Conclusions-Most UTRS patients were clozapine non-responders from the start of treatment. Preventing relapses and delay to initiate clozapine in patients with treatment-resistant schizophrenia could promote long-term treatment response. Longitudinal studies are required to examine the neuropathological correlates of these factors in relation to treatment and illness progression.
Purpose: Canada established the legal criteria permitting Medical Assistance in Dying (MAiD) for adults with a grievous and irremediable medical condition in 2016. Thousands of Canadians have received MAiD, the majority of whom had advanced cancer. There has been a paucity of published research investigating MAiD in Canada. We report here on MAiD process and outcomes in a large tertiary care medical center in Toronto, Canada.

Methods: Data regarding patients who inquired about MAiD at the University Health Network in Toronto from March 2016 to February 2019 was extracted. Measures included socio-demographic and medical characteristics, rates of inquiries and receipt of MAiD, and referral for specialized psychosocial and palliative care services.

Results: Of 204 MAiD inquiries, 35% of patients (n=72) received the MAiD intervention. Of those who received MAiD, the mean age was 70.9 (SD=13.4) and 54% were male. Cancer was the most common primary diagnosis of those who received MAiD (77.8%), of which 33.9% were gastrointestinal (GI). 58% of GI MAiD interventions were pancreatic. While 88.9% of those who received MAiD had accessed specialized palliative care services, only 56.9% had accessed specialized psychosocial services.

Conclusions/Implications: Cancer is the most common diagnosis of those who received MAiD. One third of cancer patients who received MAiD had gastrointestinal cancer, the majority of which were pancreatic. These rates are disproportionate to their distribution in this hospital’s patient population. Although MAiD inquiries commonly arise from psychological concerns, many patients who request MAiD are not referred for or do not accept specialized psychosocial care.
Purpose: Multiple prior studies have examined cerebral blood flow (CBF) in relation to mood states in adults with bipolar disorder (BD). We set out examine CBF in regards to mood states in adolescents early in the course of BD, regarding which little is known.

Methods: 129 adolescents (mean age 17.34+/-1.42 years) were recruited, including 72 BD (28 hypomanic/mixed, 19 depressed, 25 euthymic) and 57 healthy controls (HC). CBF was ascertained using pseudocontinuous arterial spin labeling (ASL) magnetic resonance imaging (MRI). Region of interest (ROI) analysis (amygdala, anterior cingulate cortex (ACC), middle frontal gyrus, and total gray matter) was complemented by whole brain voxel-wise analyses. Within-BD regression analysis using age and sex as covariates examined the association of mania and depression severity with CBF.

Results: In ROI analyses, CBF differed between groups in the ACC (F=2.89, p= 0.04), with post-hoc analyses showing higher CBF in the euthymic group than in HC. An inverse relationship was found between depression scores and CBF in the ACC (ß=-0.32, p=0.02). In corrected voxel-wise analyses, CBF in the euthymic BD group was significantly higher than in the HC group in temporal, precentral, and occipital regions.

Conclusions/Implications: Elevated regional CBF in euthymic BD adolescents, divergent from prior findings of reduced regional CBF in BD adults, may relate to abnormal developmental trajectories in BD adolescents. Higher CBF in euthymic BD adolescents may reflect compensatory perfusion mechanisms required to maintain euthymia. Longitudinal studies are needed to understand the progression of perfusion abnormalities in adolescents and young adults with BD.
Purpose: Media reporting guidelines for suicide-related content are known to have an impact on the quality of reporting and deaths although relatively few studies have examined the latter. This study aims to test the impact of the guidelines released by Canadian Psychiatric Association (CPA) and journalists (Mindset).

Methods: A random sample of articles about suicide were derived from 12 major print and online publications from the media market in Ontario, Canada. Articles were coded for content including putatively harmful and protective elements and differences in content were measured by Chi-squared tests after the CPA and Mindset guidelines (January 2009 and April 2014 respectively). Suicide death data for the province was obtained from the Office of the Chief Coroner of Ontario and time series analyses using ARIMA models were used to identify associations between each guideline and suicides.

Results: Introduction of the CPA guidelines was associated with numerous improvements in quality including fewer front-page articles, moncausal (simplistic) explanations for suicide, depictions of suicide methods and more articles communicating alternatives to suicide. Associations with Mindset guidelines were more equivocal. There was no change in suicides after the CPA guideline and an increase after the Mindset guideline.

Conclusion: Guidelines were associated with modest yet meaningful improvements in reporting quality but were not associated with decreased suicides. Importantly, these guidelines appear to have facilitated dialogue and engagement within the journalism community as well as with suicide prevention experts and the impact of these ongoing efforts should be the target of future research.
Full Abstract

Purpose: Suicide contagion in peer groups and via the media is a well described phenomenon but contagion among celebrities themselves has not been a focus of scientific attention. This small case series aims to inform future prevention efforts by identifying and reporting on media portrayals of such occurrences.

Methods and material: Following recent, widely reported media coverage of prominent celebrity suicides, two potential cases of possible suicide contagion by celebrities were identified by the investigators. Google searches were conducted for both cases to identify and qualitatively analyze the characteristics of related-reporting in the mainstream media. Results: The two cases of possible suicide contagion involved the celebrities Kate Spade (from Robin Williams) and Chester Bennington (from Chris Cornell). While it is unclear whether actual contagion occurred, in both cases, media reports framed suicide deaths among celebrities as possible suicide clustering and emphasized similarities between the deceased in terms of profession, clinical profile and suicide method. Conclusion: This observational, qualitative study identified two examples in which the media portrayed possible suicide contagion among celebrities, a novel finding. Such reports are of concern as they have the potential to mediate further contagion both among celebrities and across the general public. Importantly, this is true regardless of whether the information within them is accurate. Options to prevent such contagion include education for journalists, dissemination of responsible reporting guidelines, and engagement with celebrity organizations to disseminate suicide-prevention and messaging information among members, and the proactive deployment of stories highlighting resilience in celebrities.
Purpose: Eating disorders are serious mental illnesses characterized by chronicity and high health care costs for which the most intensive form of treatment is inpatient admission. Prior research has shown that inpatient eating disorder programs have high rates of treatment incompletion, relapse following discharge and readmission. Yet, the number of admissions required to achieve weight restoration or remission remains unknown. The purpose of this study was to explore the rate and patterns of readmission to one inpatient eating disorder program.

Methods: This study analyzed existing data from a specialist inpatient eating disorder program collected between 2000 and 2016. Data was available on 648 inpatient eating disorder admissions representing 459 unique patients. Patterns of inpatient admissions and readmission were analyzed using descriptive statistics.

Results: Over a quarter of patients were readmitted during the study period. The average number of admissions per patient was 1.48. Over half of admissions were terminated prematurely. The average number of admissions to weight restoration was 1.19 and the average number of admissions to remission at one year was 1.16. Among patients who achieved weight restoration, a quarter were readmitted. Among patients who remained well for one year, a quarter were also readmitted.

Conclusions: Many eating disorder patients require more than one inpatient admission to achieve weight restoration and good treatment outcomes at longer term follow-up. Future research should further explore what factors differentiate patients who require multiple admissions to inpatient eating disorder programs to achieve clinical benefit from those who do not.
### Abstract

**Purpose:** Caring for youth with mental health and/or addictions (MHA) concerns can cause caregiver strain, which is associated with negative consequences for youth, their caregivers, and the mental health system. These caregivers may benefit from navigation services. No evidence currently exists regarding the predictors of caregiver strain in this population. Understanding caregiver strain is important in helping navigation services address families’ needs. This study aimed to determine whether (1) the mental health profile of youth and (2) the home and family situation contribute to caregiver strain in caregivers of youth with MHA concerns that access navigation services.

**Methods:** Data was collected from 66 adults caring for at least one youth with MHA issues accessing Family Navigation Project services between March and August, 2018. Multiple linear regressions were conducted to determine which factors are associated with caregiver strain.

**Results:** The first regression model indicated that higher levels of caregiver-rated youth health ($\beta=-0.577$, $p=0.001$) and lower levels of youth mental health symptom severity ($\beta=0.077$, $p<0.001$) significantly predicted lower levels of strain ($r^2_{adj}=0.478$, $F(6,47)=9.086$, $p<0.001$). The second regression model showed that higher levels of family functioning ($\beta=-0.089$, $p<0.001$) significantly predicted lower levels of strain ($r^2_{adj}=0.348$, $F(5,54)=7.287$, $p<0.001$).

**Conclusions/Implications:** Degree of caregiver strain is associated with the mental health profile of the youth and the home and family situation. Navigation services may be able to reduce caregiver strain by connecting families with resources that improve overall youth health, reduce youth mental health symptom severity, and/or improve family functioning.
Purpose: Frequent emergency department (ED) users often have comorbid psychiatric and medical issues and can generate up to 50 visits within 6 months. These individuals are often disconnected from community or hospital supports. The objective of this project was to implement Navigation and Peer Support within the Sunnybrook Health Sciences Centre ED, for the purposes of supporting frequent ED users, facilitating linkages to community, medical and psychiatric care, and ultimately reducing ED utilization.

Methods: Eleven frequent ED users identified through the Better Care System participated in this project (3M, 8F; mean age=51). They accounted for 152 ED visits collectively (6 months prior to first engagement with project team). Three Navigators (MSW’s) were available in the ED seven days per week during peak hours. Navigators provided case management, psychosocial support, assistance with resource identification/matching, and disposition planning. Two peer support workers were available to facilitate linkages to community resources and provide emotional support to patients, in person and by phone. Weekly clinical case conferences and supervision were provided by two Sunnybrook psychiatrists.

Results: ED usage was successfully reduced by 65% over four months. Participants interacted 177 times with navigators and peer support workers, (by phone and in-person) and 73% were connected to additional community/treatment services.

Conclusions/Implications: Through rapid identification and intensive inter-professional supports, the Encompass-ED Project successfully reduced ED usage of frequent users. This model of care is generalizable to other emergency departments across the province and Canada to support reductions in unnecessary and costly emergency department visits by frequent users.
Purpose: Both bipolar disorder (BD) and cannabis use are associated with neurocognitive dysfunction in adolescents. However little is known regarding the association of neurocognition with cannabis use in adolescents with BD. Therefore, we set out to examine this topic in a well-characterized sample of adolescents with BD and healthy controls (HC).

Methods: Participants included 126 adolescents (n=35 BD cannabis users, n=30 BD non-cannabis users, n=61 HC non-cannabis users), ages 14-20 years. Semi-structured interviews were used to determine diagnosis and cannabis use. Seven neurocognitive subtests of the computerized CANTAB battery were administered. A composite score was computed for each subtest. Groups were compared using an analysis of covariance (ANCOVA) covarying for IQ. We hypothesized that neurocognition would decline linearly across groups: HC>BD non-users>BD cannabis users.

Results: The groups differed significantly on tests of sustained attention (p<0.001, $\eta^2=0.12$), reversal learning (p<0.001, $\eta^2=0.12$), and visuo-spatial working memory (p=0.025, $\eta^2=0.06$), providing support for the linear hypothesis. Post-hoc analyses revealed that scores were significantly lower in BD cannabis users vs. HC (p=.01, p=.001, p=.03, respectively). In addition, sustained attention was significantly lower in BD non-users vs. HC (p=.001), and reversal learning was significantly lower in BD users vs. BD non-users (p=.01).

Conclusion: These preliminary findings suggest that cannabis use among adolescents with BD is associated with both common and unique neurocognitive deficits. Future studies are warranted to evaluate the directionality and to evaluate the impact of duration, quantity, and potency of cannabis on the observed findings.
Purpose: Heart rate variability (HRV), defined as change in time interval between adjacent heartbeats, is a well-established surrogate of emotional well-being. HRV reflects the balance between sympathetic and parasympathetic influences of the autonomic nervous system (ANS), which may be quantified as the ratio of low-frequency versus high-frequency components of HRV (LF/HF). Importantly, HRV varies with changes in breathing, a phenomenon known as respiratory sinus arrhythmia. We examined the impact of manipulating expiration to inspiration (E/I) ratio on HRV in healthy individuals. We hypothesized that longer expiration would increase HF-HRV and hence, decrease LF/HF, through enhancement of parasympathetic activity.

Methods: Twenty-seven healthy individuals (12 males, age range 21-80) completed a task where E/I ratio was modulated under three conditions: i) 1-to-1 breathing, where duration of expiration equals inspiration; ii) 2-to-1 breathing where duration of expiration is 2× inspiration; iii) 1-to-2 breathing where duration of expiration is ½ inspiration. HRV values were obtained via electrocardiogram using the BIOPAC system. LF/HF ratio as a function of E/I condition was analyzed using repeated measures ANOVA.

Results: A significant main effect of condition was found [F(2, 52) = 4.84, p = .012]. LF/HF was decreased in the 2-to-1 breathing condition compared to 1-to-1 breathing [means = 2.51(1.62) and 3.27(1.79) respectively; p = .007] but did not differ under 1-to-2 breathing.

Conclusions/Implications: Longer duration of expiration relative to inspiration enhanced parasympathetic activity in healthy individuals as indicated by decreased LF/HF ratio. These findings support the potential utility of 2-to-1 breathing as a stress management tool.
Purpose: Investigate differences in cognitive task-induced cortical DA release between healthy controls (HC), first episode psychosis (FEP), and participants at clinical-high risk state for schizophrenia (CHR) using Positron Emission Tomography (PET) imaging with [11 C]FLB457 radiotracer.

Methods: 13 FEP and 14 CHR, with no concurrent Axis I disorder, were recruited from the Center for Addiction and Mental Health and 14 HC were recruited from the community and had no current or past DSM-IV Axis I diagnosis and no family history of psychotic disorders. Each participant underwent a 90 minute dual PET scan procedure using a high-resolution PET-CT during which they performed 6 trials of the Sensory Motor Control Task and the Wisconsin Card Sorting Task. Differences in cortical DA release between groups was assessed by quantifying the displacement of the [11C]FLB457 radiotracer (ΔBPND) between scans in the anterior cingulate cortex (ACC) and dorsolateral prefrontal cortex (DLPFC) between groups. Each participant also completed an MRI scan for anatomical delineation.

Results: Statistically significant differences in [11C]FLB457 ΔBPND in DLPFC and ACC between FEP and HC and no significant differences between CHR and HC.

Conclusions/Implications: This data provides in-vivo evidence for impaired task induced DA release in the ACC and DLPFC in FEP thus supporting the cortical hypodopaminergia hypothesis of cognitive symptoms in SCZ. Further, because these DA abnormalities are not present in CHR, perhaps it develops once further along the illness. These findings can be used in identifying biological risk factors of SCZ and aid in developing preventative treatment measures.
Purpose: Between 25–75% of women diagnosed with and treated for breast cancer report body image distress. In response, a novel face-to-face group therapy, Restoring Body Image after Cancer (ReBIC) was tested in a randomized trial and found to significantly reduce body image distress and improve quality of life. Yet, practical and psychosocial barriers can diminish access to and participation in such face-to-face groups. To provide greater access to ReBIC, the current study examined the translation process and feasibility of an online version (i-ReBIC).

Methods: Six therapist-led 10-week i-ReBIC groups were completed between 2018-2019, using the well-established Cancer Chat Canada online platform. i-ReBIC translated three key components of the original manual: a) guided imagery exercises—utilizing imagery to facilitate insights on self-image difficulties; b) educational materials—providing knowledge related to sociocultural influences on the body; and c) psychotherapeutic group processes—utilizing well-established group therapy principles.

Results: The methods and results from the original trial were used as a guide to describe the translation and design of the online group. This presentation will outline the feasibility of the trial, including enrollment, retention and attrition rates, as well as implementation barriers/facilitators. Important considerations and limitations in the translation process will also be discussed.

Conclusions: Preliminary results show that an internet-delivered online group therapy using the Cancer Chat Canada online platform can improve body-image distress and increase access to psychosocial care for women diagnosed with and treated for breast cancer across Canada.
Purpose: Poor sleep quality adversely affects cardiovascular health. To increase quality of care, the American Heart Association recommends developing and evaluating practical sleep screening strategies. This study aims to establish the construct validity of a self-report screening instrument for sleep apnea and insomnia among cardiopulmonary rehabilitation participants.

Methods: Cardiopulmonary rehabilitation patients completed a 20-item sleep quality screen, including items adapted from the “STOP-Bang” (7 apnea items) and Sleep Condition Indicator (SCI, 9 insomnia items), and 4 others. Participant characteristics were extracted from paper and electronic records, including medical history, vascular risk-factors, and concomitant medications. Confirmatory factor analyses (CFA) were performed to determine if questionnaire items adequately inform underlying latent variables.

Results: 119 participants were included (78.2% male, age 62.41±10.92 years, 28 with prior apnea diagnosis). A CFA of 5 apnea items (N= 119, age and sex excluded due to poor factor loadings) provided good fit measures (CFI=1.000; TLI=1.427; SRMR=0.029; χ²=1.101, df=5, p=0.9540; RMSEA=0.000, 90%CI [0.000, 0.000], RMSEA probability<0.05=0.975). A CFA of 7 insomnia items on non-apneic patients (N=91) returned poor model fit (CFI=0.922; TLI=0.883; SRMR=0.085; χ²=60.441, df=14, p=0.000; RMSEA=0.191, 90%CI [0.143, 0.242], RMSEA probability<0.05=0.000). In those not previously diagnosed with apnea (N=91), a CFA of apnea items retained good fit (CFI=1.000; TLI=1.282; SRMR=0.096; χ²=3.406, df=5, p=0.6376; RMSEA=0.000, 90%CI [0.000, 0.120], RMSEA probability<0.05=0.739).

Conclusions/Implications: Preliminary results suggest construct validity of our modified STOP-Bang to screen for apnea. Further analyses are needed to determine construct validity of the modified SCI, with final validation at sample size (N=150) and comparisons against sleep-monitoring results.
Purpose: The World Health Organization declared depression to be the leader in disability cases worldwide. Roughly 1 in 20 Canadians over the age of 15 have reported symptoms that meet the criteria for major depressive disorder (MDD). Recently, Howard et al. published the largest genetic study on depression involving over 240,000 cases. Of the 269 genes they identified, only a few have been previously investigated in the context of MDD. Thus, to better characterize these genes, we tested for differential expression in MDD cases versus controls.

Methods: We used three independent postmortem studies on depression that assayed genome-wide expression in several brain regions. Additional analyses were performed for only the cortical regions that were studied and for each sex. Fisher's method was used to combine the direction of effect and p-values across and within the three studies.

Results: Preliminary results highlight down-regulation of Sprouty RTK Signaling Antagonist 2 (SPRY2) and up-regulation of Inositol 1,4,5-Trisphosphate Receptor Type 3 (ITPR3) in MDD cases. We did not observe a clear correspondence between differential expression and degree of genetic association within these top genes. To gain specificity, we will examine these genes in single cell studies of MDD.

Conclusions/Implications: In summary, the integration of past transcriptomic studies has prioritized several genes for more targeted follow-up studies on depression.
**Department**
Adult Psychiatry and Health Systems

**Division**

**Affiliation**
Other (including Medical Students, Administrative Staff)

**Setting**
Sunnybrook Health Sciences Centre

**Abstract Type**
Poster Presentation

**Research Theme**
Depression, cardiopulmonary fitness, seasonal rhythmicity

**Abstract Title**
Seasonal trends in cardiopulmonary fitness and relationships with depressive symptoms among participants entering cardiac rehabilitation

**Co-Authors**
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**Full Abstract**

Purpose: Cardiovascular risk factors and depressive symptoms can exhibit seasonal rhythms in the general population, but seasonal rhythmicity in cardiopulmonary fitness has not been investigated among patients with cardiovascular disease, nor the impact of depressive symptoms on its phase and/or amplitude.

Methods: We conducted retrospective analyses of consecutive participants with cardiovascular disease with an available exercise stress test result at entry into exercise-based rehabilitation (January, 2006 – November, 2017). The significance of rhythmicity in VO2Peak, peak heart rate, peak blood pressure, and peak respiratory exchange ratio (RER) was tested by comparing model fits between linear regressions with and without trigonometric functions. Models were adjusted for demographics, BMI, cardiovascular diagnosis, exercise test modality, and concomitant medications affecting cardiovascular performance. Depressive symptoms were screened using the Center for Epidemiological Studies Depression (CES-D) scale.

Results: Among n=13,145 participants, rhythmicity was observed in peak heart rate (F=7.75, p<.0001; peak-to-trough 1.64 BPM, peak December 24), VO2Peak (F=6.58, p=.0001; peak-to-trough 0.454 ml/kg/min, peak January 7), peak mean arterial pressure (F=3.05, p=.048; peak-to-trough 0.60 mmHg, peak February 2), and RER (F=4.55, p=.01; peak-to-trough 0.006, peak July 26). Among antidepressant-free participants with available CES-D, CES-D scores did not demonstrate significant rhythmicity (F=1.75, p=.17). Those with CES-D≥16 (n=2653) vs. those with CES-D<16 (n=8,307) showed lower means in each fitness outcome (p<.029) and greater RER rhythmicity (p=.029).

Conclusions/Implications. Small rhythms in fitness parameters were observed among participants entering cardiac rehabilitation. Depressive symptoms were associated with poorer fitness regardless of season, and with greater fluctuation in effort, which peaked in the summer.
Purpose: The past several decades have seen the emergence of specialized psychogeriatric dementia units (SPDUs) in tertiary care as an important setting for the management of severe behavioural and psychological symptoms of dementia (BPSD). There is a paucity of literature examining the transition from SPDU back to long-term care (LTC), once sustained improvement in BPSD is achieved.

Methods: A literature review was conducted to determine the factors that are involved in successful treatment on an SPDU, as well as factors that impact the transition from SPDUs to LTC. This information was used to design a qualitative study that explores the views and priorities that families and LTC staff have on the transition from SPDUs to LTGs.

Results: Compared to LTC, SPDUs typically involve higher staff to patient ratios and greater emphasis on nonpharmacological interventions. SPDUs have been shown to be effective in reducing the severity of BPSD, although they do not impact the rate of cognitive and functional decline. Family engagement is important to the success of interventions on an SPDU. Based on the literature review, we have designed a qualitative research study to help understand barriers and facilitators to transition to LTC after a stay on an SPDU.

Conclusions: This literature review and protocol design is the first step towards conducting a qualitative study on the transition from SPDU to LTC. Next steps involve ongoing data gathering and analysis, in coordination with the SPDU at Toronto Rehabilitation Institute and local LTC facilities.
Purpose: Smokers with a concurrent depression diagnosis are less likely to achieve abstinence, even with pharmacotherapy. The purpose of this analysis was to evaluate if depressive symptoms (but no diagnosis) alter the effectiveness of bupropion and varenicline for smoking cessation in a real-world RCT.

Methods: Participants were recruited and enrolled via the internet. Eligible participants were randomized 1:1 to receive a 12 week supply of either bupropion (SR 150 mg) or varenicline (1mg). Follow-up surveys were conducted at weeks 4, 8 and 12, to assess self-reported quit. Current depressive symptoms were assessed using the Patient Health Questionnaire 9 (PHQ 9).

Results: Participants were grouped into those with no depressive symptoms (NS) (PHQ9-2 = 0)(n=684) and those with depressive symptoms (DS)(PHQ 9-2 > 0) (n=280). In keeping with similar RCTS, varenicline was significantly more effective than bupropion. Overall, there was a medication by depressive symptom interaction whereby within the bupropion group, those with DS had significantly lower quit rates than those without (15% vs 7%), whilst the quit rates of DS and NS groups using varenicline were similar (25% vs 27%). Depressive symptoms was a significant predictor of quit in the bupropion group (p<0.007) but not in the varenicline group (p<0.08).

Conclusions: Even mild depressive symptoms can adversely affect quit outcomes. Varenicline was equally effective for people with or without depressive symptoms; however, bupropion was less effective in smokers with depressive symptoms. Given that bupropion is a widely prescribed anti-depressant these results are unexpected. Potential reasons including confounded will be discussed.
Background: The majority of patients with schizophrenia are able to achieve remission with antipsychotic treatment. Remission involves achieving symptomatic control, in which positive and negative symptoms are no greater than mild in severity. Recovery rates in schizophrenia, however, have remained low. Recovery involves achieving normal levels of social and vocational functioning in addition to sustained remission. It remains unclear why many patients are unable to achieve recovery if their symptoms are dramatically improved.

Objectives: We were interested in understanding to what extent the large gap between rates of remission and recovery in schizophrenia is a reflection of factors specific to schizophrenia versus nonspecific factors that are shared across other psychiatric illnesses.

Our objectives were to 1) compare rates of remission and recovery in schizophrenia with those reported for other major psychiatric illnesses, and 2) describe factors associated with recovery in different psychiatric disorders.

Methods: A search of the published literature was conducted for naturalistic and randomized studies that report outcomes in remission and recovery rates in major psychiatric disorders using EMBASE, PsycINFO, and PubMed.

Findings: Remission rates from a first episode of schizophrenia have been estimated to be 58.0% with higher rates reported in more recent study periods. Meta-analyses have estimated recovery rates from first episode schizophrenia at 38% and from schizophrenia more broadly at 13.5%. For other psychiatric disorders, rates of symptomatic recovery and functional recovery, respectively, were as follows: bipolar disorder (39-72% and 36-43%), major depressive disorder (MDD) (51-87% and 35-60%), and borderline personality disorder (BPD) (85-99% and 40-60%). Greater genetic predisposition predicted poor long-term outcomes in schizophrenia and was associated with lack of recovery and poor functional outcome in MDD and bipolar disorder, respectively. The absence of family history of psychiatric illness predicted earlier remission in BPD. Lower age of onset, poor premorbid functioning, and the presence of comorbidities including substance use and other psychiatric diagnoses were associated with poor functional outcome in schizophrenia and bipolar disorder. Illness severity was associated with greater disability scores and functional impairment in schizophrenia and BPD, respectively.

Conclusion: Our review showed that recovery rates appear to lag behind remission rates across many psychiatric illnesses. This gap likely reflects the effects of the determinants of health shared across disorders that limit achieving recovery, including genetic predisposition, early age of onset, and greater illness severity. This literature review highlights the importance of standardizing remission and recovery definitions in order to accurately compare and assess outcomes in patients suffering from mental illnesses.
Purpose: Oxidative stress has been implicated in the etiopathology of bipolar disorder (BD). Relatedly, BD is among the most heritable, and therefore genetic, psychiatric disorders. However, no prior study has examined oxidative stress genes in relation to neuroimaging phenotypes in BD. We evaluated two oxidative stress genes, glutathione peroxidase 3 (GPX3) rs3792797 and superoxide dismutase 2 (SOD2) rs4880, in relation to structural neuroimaging phenotypes among adolescents with BD early in their course of illness.

Methods: T1-weighted images were obtained from 69 Caucasian adolescents (BD=37; healthy controls (HC)=32; GPX3 AC/AA= 26; GPX3 CC=43; SOD2 AC/AA=53; SOD2 GG=15). Images were processed using FreeSurfer to obtain surface area, volume and thickness values for cortical regions of interest (ROIs; dorsolateral prefrontal cortex (dlPFC), ventromedial PFC (vmPFC), ventrolateral PFC (vlPFC), caudal anterior cingulate (cACC)), along with hippocampal volume.

Results: There were significant diagnosis-by-GPX3 interaction effects on cACC thickness (F=4.02; p=0.049) and vmPFC volume (F=4.34, p=0.04). The cACC interaction was due to greater thickness in BD GPX3 A carriers vs. HC A carriers (F=4.83, p=0.03). Findings did not remain significant after correction for multiple comparisons. There were no significant findings for SOD2.

Conclusion: This exploratory study yields preliminary evidence that GPX3 rs3792797 differentially impacts brain structure in regions that are relevant to BD. Further studies evaluating additional neuroimaging phenotypes, blood levels of oxidative stress markers, and neurocognition are warranted to extend upon these findings.