### POSTER PRESENTATIONS

**FOOTHILLS II**

<table>
<thead>
<tr>
<th>Title: Youth At-Risk of Serious Mental Illness</th>
<th>Author(s): Kyle Judd, Catherine Marshall, Glenda MacQueen, Jian Li Wang, Signe Bray, Catherine Lebel, Jean Addington</th>
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<td>The majority of serious mental illnesses (SMI) first emerge in adolescence, with 75% of persistent SMI beginning between the ages of 10 and 24. There are many components that remain unknown in regards to youth mental health including how best to (i) identify those who are at-risk, (ii) appropriately define the stage of illness, and (iii) predict who will go on to experience an SMI. As there are many changes that occur during adolescence it can be challenging to determine an accurate diagnosis. One possible way to circumvent this issue is to use a clinical staging model, with a focus on severity of concern rather than a specific diagnosis. The aim of the current study is to provide additional knowledge regarding the types of risk factors young people present with when they are initially help-seeking and to determine the stage of illness at first presentation. The current study will consist of 240 youth, ages 12 – 25 that are experiencing early mood symptoms or sub-threshold psychotic symptoms, youth at risk due to a family history of SMI and healthy controls. The following will be assessed: depression, anxiety, mania, subthreshold psychotic symptoms, trauma, family history, functioning, alcohol and drug use. MRI scans and blood draws will be completed. The purpose of the study is to develop predictive models using clinical data. Biomarker data will also be added to the predictive model. Study design and preliminary data will be presented.</td>
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<th>Title: Cognitive Behavioral Social Skills Training for Youth at Risk of Psychosis</th>
<th>Author(s): Daniel Devoe, Monika Allen, Catherine E. Marshall, Laina B. McAusland, Jean M. Addington</th>
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<td><strong>Introduction:</strong> Youth at clinical high risk (CHR) for psychosis often exhibit significant deficits in social and role functioning and poor social functioning may be a predictor for later conversion to psychosis. Even in those at CHR who do not ultimately develop psychosis, a large proportion have persisting functional deficits. Cognitive Behavioral Social Skills Training (CBSST) is a treatment that may improve functioning and is increasingly being used in psychosis. It has been adapted for youth at CHR. The goal of this study is to compare the effectiveness of CBSST compared to psychoeducation and support, for the improvement of functioning and prevention of disability. <strong>Methods:</strong> Seventy-five individuals at CHR will be recruited and randomized to one of two treatments (CBSST or Psychoeducation) that run weekly for 18 weeks. The primary outcome will be changes in social and role functioning. This will be measured at baseline, end of treatment, and 6 months post treatment as assessed by global social and role functioning scales. Secondary outcomes will include change in prodromal symptoms, depression, and anxiety. <strong>Results:</strong> Results pending. <strong>Conclusions:</strong> Adapting CBSST to fit into community based programs for youth at CHR of psychosis creates an opportunity to increase the number of youth who could have access to and benefit from CBSST. <strong>Learning Objectives:</strong> As part of the implementation learning process, training materials and treatment workbooks have been revised to promote easier use of CBSST in the environment of brief community based visits. Additionally, we will identify key elements for developing effective CBSST strategies for youth at CHR</td>
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<th>Title: Aerobic Exercise Intervention for Youth At-Risk of Serious Mental Illness</th>
<th>Author(s): Syl Corbett, Glenda MacQueen, Jian Li Wang, Signe Bray, Catherine Lebel, Jean Addington</th>
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<td><strong>Introduction:</strong> Without a discrete diagnosis of serious mental illness, youth at risk may lack treatment jeopardizing potentially positive illness trajectories. The developing brain has the potential for positive change with lifestyle modifications, such as engaging in aerobic exercise. This study is investigating the effects of aerobic exercise on clinical symptoms, working memory and hippocampal volumes in youth at risk for serious mental illness. <strong>Methods:</strong> 40 youth between the ages of 12 to 25 years old considered at risk for serious mental illness form the cohort for this study. All participants are assessed for symptoms, working memory, fitness along with magnetic resonance imaging</td>
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(MRI) scans to measure hippocampal volumes pre and post the 4 month long aerobic exercise intervention.  
**Results:** This study is currently underway and results are pending.  
**Conclusions:** Conclusions drawn from this study are pending.  
**Learning Objectives:** Given the substantial evidence of the health benefits of aerobic exercise on healthy populations, such study will not only provide a treatment option, but also help us gain an understanding of the underpinning mechanisms that influence the brain, specifically in the hippocampus, in this currently underserved at-risk population.

**Title:** Perceptual abnormalities in clinical high risk and the role of trauma, cannabis use and anxiety  
**Author(s):** Yun Lu, Catherine Marshall, Kristin S. Cadenhead, Tyrone D. Cannon, Barbara A. Cornblatt, Thomas H. McGlashan, Diana O. Perkins, Larry J. Seidman, Ming T. Tsuang, Elaine F. Walker, Scott W. Woods, Carrie E. Bearden, Daniel Mathalon, Jean Addington  
**Background:** Recent research suggested that perceptual abnormalities are a group of diverse experiences. Previous literature has suggested a link between early traumatic experiences, cannabis use, anxiety and the experiences of perceptual abnormalities. Perceptual abnormalities are frequently endorsed attenuated psychotic symptoms in people at clinical high risk (CHR) of psychosis. However, few studies have explored the subtypes of perceptual abnormalities and their relationships with the above environmental and affective factors in CHR population.  
**Methods:** 441 CHR individuals who met criteria for attenuated psychotic symptom syndrome (APSS) determined by the Structured Interview for Psychosis-risk Syndromes (SIPS) were assessed on severity and content of perceptual abnormalities, early traumatic experience, cannabis use and self-reported anxiety.  
**Results:** Bivariate analysis suggested that both simple auditory and simple visual perceptual abnormalities were more likely to be reported by CHR who had traumatic experiences, who are current cannabis users, and who have higher level of anxiety. Multiple regression analysis revealed that only trauma and anxiety were independent predictors of both simple auditory and simple visual perceptual abnormalities.  
**Conclusions:** Future studies examining perceptual abnormalities in CHR should consider the subtypes of the symptom. Studying subtypes of perceptual abnormalities and their relationship with environmental and affective factors may improve our understanding of the symptom and benefit development of clinical implications.

**Title:** Cortical Thickness and Treatment Response to Repetitive Transcranial Magnetic Stimulation in Youth with Treatment Resistant Major Depressive Disorder  
**Author(s):** McEllan Q, Kirton A, Wilkes TC, Schwartz KD, Ma K, Jaworska N, Langevin LM, Swansburg R, Zewdie E, Ciechanski P, Damji O, MacMaster FP.  
**Background:** Presently, treatment options for major depressive disorder (MDD) in youth are limited in both effectiveness and duration. Repetitive transcranial magnetic stimulation (rTMS) is an emerging intervention for treatment-resistant depression (TRD) in youth. Morphological characteristics, such as cortical thickness, can be objectively measured and are therefore potential candidates as biomarkers of response. Identification of biomarkers will allow clinicians to transition from the current trial-and-error method of treatment to personalized, precision medicine. Here, we investigate cortical thickness as a biomarker of response to rTMS treatment. We hypothesize that the target site for rTMS, the dorsolateral prefrontal cortex (DLPFC), will differ in cortical thickness between responders and non-responders to treatment.  
**Methods:** Structural MRI data was collected on a 3.0T GE MR750w. High-frequency rTMS treatment was applied to the left DLPFC (120% RMT, 10Hz, 75 trains/3000 pulses per session) in 22 adolescents with TRD (13 – 21 years). The FreeSurfer processing stream was used for cortical reconstruction.  
**Results:** Half of the participants (n=11) responded to rTMS treatment, defined as ≥ 50% reduction in Hamilton Depression Rating Score (Ham-D; range -17.65 to 78.95%, mean 45.21%, SD ± 25.43). At baseline, responders had thinner left rostral middle frontal (p=0.0001) and right superior frontal (p=0.006) regions compared to non-responders. Percent change in Ham-D negatively correlated with right lateral orbitofrontal cortical thickness in
The idea that food could be addicting has become a highly debated topic and has immense implications for research surrounding obesity. It is unclear if addictive eating might be better typified as a substance use disorder called “food addiction,” or as a behavioural “eating addiction.” There has been little qualitative exploration of how individuals who feel addicted to food and/or eating experience these symptoms. Therefore, the purpose of this study was to provide a qualitative comparison of individuals’ experiences of food and eating addiction. Methods: Twelve individuals who reported personally experiencing food addiction, eating addiction, or both, were recruited online and through a university research participation system. Using an interview guide, individual interviews were conducted, then underwent thematic analysis. Results: Preliminary analyses indicated two overarching themes, environmental cues and accommodations and persistent cognitions. Environmental cues and accommodations encompasses the environmental factors that contribute to participant’s distressing eating behaviours, including the ready availability of prepared foods, and environmental cues, such as being at home or at work, that can trigger the eating behaviours. Persistent cognitions refers to cognitive aspects of food and eating addiction, including uncontrollable urges to eat and distorted thought patterns about the consequences of eating. Conclusion: The two themes identified represent behavioural processes, including interactions with the environment and thoughts that are associated with the behaviour of eating. All participants appear to have experienced a behavioural eating addiction to some extent, whereas only some reported feeling addicted to one or more specific foods. This observation suggests, at the very least, food and eating addiction might not be mutually exclusive. These distressing eating behaviours could involve characteristics of both a behavioural addiction and a substance use disorder. This finding may help inform targeted interventions and future addiction research.
| Title: Descriptive analysis of the Reality Challenged Clinic: A Program Evaluation  
*Author(s):* Ortega I, Wilkes C, Stewart R.  
**Background:** Reality Challenged Clinic (RCC) is a tertiary care subspecialty multi-disciplinary clinic based at the Foothills Medical Centre (FMC) for patients aged 15 to 25 years of age at time of referral. The purpose of RCC is to provide service to youth experiencing psychotic symptoms of difficult-to-manage nature, many of who are diagnosed with concurrent disorders including ASD, OCD, complex trauma, and who do not meet criteria for other mental health programs. **Methodology:** We will conduct a program evaluation of a cross-section of quantitative data originally gathered for clinical purposes at the RCC. **Results:** Descriptive statistics will be provided outlining the clinical profiles of 42 individuals currently enrolled in the RCC, including data pertaining to diagnosis, type of treatments accessed, welfare status, community supports, and other contextual variables. **Conclusions:** The results will be used to inform clinical decisions including identifying potential community-based resources beneficial to optimize patient care. |
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| Title: The Effect of Repetitive Transcranial Magnetic Stimulation on Cerebral Blood Flow in Youth with Treatment Resistant Depression  
*Author(s):* Raveen Virk, Yamile Carranza, Elodie Boudes, Kristina Lynberg, Adam Kirton, R. Marc Lebel, Rose M. Swansburg, Frank P. MacMaster  
**Background:** Major Depressive Disorder (MDD) is a leading cause of disability worldwide. The disorder is especially problematic in youth, with approximately 20% affected by the time they turn 18 years old. Repetitive transcranial magnetic stimulation (rTMS) has been shown to benefit individuals with treatment resistant depression (TRD). Cerebral blood flow (CBF) is responsible for supplying oxygen and vital nutrients to the brain, and could be used as a potential biomarker for response to rTMS treatment. The objective of this project is to compare CBF levels of participants at baseline and in response to rTMS treatment. In addition, see if there is a correlation between CBF and glutamate values. **Methods:** Twenty-four patients with TRD were treated with rTMS over a period of three weeks: 15 sessions, high-frequency rTMS Resting state CBF was acquired using arterial spin labelling MRI prior to and following treatment. Treatment response was measured using the 17-item Hamilton Depression Rating Scale (Ham-D). Gannet was used to acquire a mask for the left dorsolateral prefrontal cortex (LDLPFC). FSL was used to acquire CBF values. Glutamate concentrations were acquired with lcmodel. **Results:** There was no significant difference in CBF between responders and non-responders at baseline and post treatment. We observed a significant change in CBF between baseline and post-treatment in responders (p=0.048). A correlation between baseline CBF and baseline glutamate values (r=0.041) was seen. There was no correlation between baseline CBF and change in HAM-D; however, there is a correlation between baseline glutamate and change in Ham-D (r=0.048). **Conclusion:** Our preliminary analyses suggest baseline CBF in the LDLPFC may not be a good biomarker to predict treatment response. Baseline glutamate in the LDLPFC may be a biomarker of response to rTMS treatment in adolescents with TRD. |
| Title: Pilot study of cognitive remediation for youth at risk of serious mental illness  
*Author(s):* Danijela Piskulic, Sylvia Romanowska, and Jean Addington  
**Abstract:** Poor cognition is a hallmark of schizophrenia and has also been reported in those with severe mood disorders. Although milder, these cognitive deficits have been observed in youth with subthreshold psychotic symptoms who are considered to be at clinical high risk for psychosis (CHR). Moreover, there is clear evidence, in both established psychotic and mood disorders and in CHR samples, that deficits in cognition are associated with poor functional outcomes. Given this association, cognition is an excellent treatment target. The primary aim of this pilot project is to test the effectiveness of a novel computerized cognitive remediation therapy (CRT) in improving cognition in youth deemed to be at risk of serious mental illness (SMI) according to the clinical staging model of mental health disorders, following the addition of a counselling intervention,
motivational interviewing (MI), to improve adherence to CRT. One group will receive CRT and the other CRT plus MI. This study will provide pilot data on the feasibility and efficacy of the novel CRT and MI in improving cognition, treatment adherence and social functioning over a 10-week period in people at risk of SMI. We predict improved treatment adherence and greater improvements in cognition at the end of treatment and 12-months post baseline in those receiving CRT+MI compared to CRT alone, which will be associated with improved functional outcomes. There are currently no published CRT studies in populations at risk of SMI other than those at risk of psychosis, which makes this project timely and innovative.

Title: Evaluation of a CBT-based skills group for adults with attention deficit hyperactivity disorder

Author(s): Sara Binder; Carmen Guenther

Background: The prevalence of ADHD in adults is approximately 4.4% and there are over 870,000 adult Canadians with untreated ADHD. Over 85% of adults with ADHD suffer from a comorbid psychiatric disorder. Those with undiagnosed and untreated ADHD suffer significant functional impairment. The treatment of ADHD is highly effective and involves pharmacologic and psychosocial modalities. A multidisciplinary ADHD service was established at the Psychiatric Adult Services (PAS) clinic, one of the primary adult psychiatric outpatient care at the Foothills’ Medical Centre (FMC) in Calgary in 2012. This service involves specialized pharmacological and psychotherapeutic management, including an 8-week CBT-based Skills Group that began in Sept 2014. Our objective is to determine if Adult Self Report Scales (ASRS) and Weiss Functional Impairment Rating Scales (WFIRS) scores decreased during treatment in the 8-week Skills Group. Methods: A retrospective cohort study of all individuals who participated in our skills group from the first group in Sept 2014 to the most recent (8th) group which terminated in June 2016. Data was collected as part of the treatment process at the first and final group meetings and was obtained for analysis by chart review. Subjects were identified using sign-up rosters. Participants were adults aged 18-64 who were being followed at PAS and had been diagnosed with ADHD using a standard set of validated rating scales and a full Psychiatric assessment. No comorbidities were excluded other than those with primary Psychotic disorders, as this population is excluded from follow-up at PAS. Statistical analysis included descriptive, univariate, bivariate, and multivariate analysis using Stata software. Results: Of 55 subjects, 21 were male with a mean age of 39.7 +/- 13.57 years. At diagnosis, mean ASRS part A score was 4.59 +/- 1.13 and total score was 12.04 +/- 3.22. Participants attended an average of 6.87 +/- 1.75 of the total 8 skills groups and most (46/53) were receiving pharmacologic treatment for ADHD. Participants had significant reductions in the number of positive items in ASRS Part A (1.575 +/- 1.34, p=0.0000) and total ASRS (4.75 +/- 3.54, p=0.0000) scores as well as total WFIRS (22.52 +/- 21.18, p=0.0000) scores during the 8-week treatment period. Discussion: ADHD is an important area of adult outpatient psychiatric care. Specialized multidisciplinary treatment offers comprehensive treatment of ADHD that may affect function and be important management strategies in addition to pharmacotherapy. Further research and program development are needed in this area. Limitations to our study include the use of self-report scales, lack of a specific scale to monitor treatment progress, and the concurrent treatment with other modalities.

Title: Prevalence of Mild Behavioral Impairment in Mild Cognitive Impairment and Subjective Cognitive Decline, and its association with caregiver burden

Author(s): Faisal Sheikh, Zahinoor Ismail, Moyra E. Mortby, Philip Barber, Alicja Cieslak, Karyn Fischer, Robert Granger, David B. Hogan, Aaron Mackie, Colleen J Maxwell, Bijoy Menon, Patricia Mueller, David Patry, Dawn Pearson, Jeremy Quickfall, Tolulope Sajobi, Eric Tse, Meng Wang and Eric E Smith

Background: Mild Behavioural Impairment (MBI) has been defined as later-life acquired, sustained neuropsychiatric symptoms (NPS) in cognitively normal individuals or those with Mild Cognitive Impairment (MCI), and has been hypothesized to identify individuals at increased risk for cognitive decline. We developed an operational definition of MBI and tested whether the presence of MBI was related to caregiver burden in patients with subjective cognitive decline (SCD) or MCI assessed at a memory clinic. Methods: MBI was assessed in 282 consecutive memory clinic patients between January 2010 until September 2015 with SCD (n=119) or MCI (n=163) in accordance with the
ISTAART-AA research diagnostic criteria. We operationalized a definition of MBI using the Neuropsychiatric Inventory Questionnaire (NPI-Q). Caregiver burden was assessed using the Zarit caregiver burden scale. Generalized linear regression with a negative binomial distribution was used to model the effect of MBI domains on caregiver burden.  

**Results:** While MBI was numerically more prevalent in MCI (85.3%) than in SCD (76.5%), this difference did not meet the threshold for statistical significance (p=0.06). Overall prevalence of the various MBI domains were: **affective dysregulation (77.8%); impulse control (64.4%); decreased motivation (51.7%); social inappropriateness (27.8%); and abnormal perception or thought content (8.7%).** Affective dysregulation and decreased motivation were more prevalent in MCI than SCD patients (p=0.033 and 0.006, respectively). Caregiver burden was 3.35 times higher when MBI was present after controlling for age, education, sex and MCI (p<0.0001).  

**Conclusions:** MBI was common in non-demented memory clinic patients and was strongly associated with caregiver burden. These data show that MBI is a common and clinically relevant syndrome.