The University of Calgary, Department of Psychiatry Presents
The Sebastian Littmann Research Day
Village Park Inn
Friday, March 04, 2016 at 09:00 Hours

TIME	ORAL PRESENTATIONS
09:05 – 10:00	**Title: "Discovering Genes for childhood Obsessive-Compulsive Disorder"** **Author(s): Paul Arnold**
10:00 – 10:20	**Title: Signal System Development for the Youth Outcome Questionnaire** **Author(s):** Sandy Berzins, Lindsay Guyn & Robbie Babins-Wagner **Background:** Monitoring client outcomes over time can be an effective way of improving therapy effectiveness by identifying individuals who are deviating from predicted treatment response, and then taking steps to modify service delivery for these clients. A "signal system" can work alongside feedback informed treatment (FIT) and prevent treatment failure. With a signal system, feedback messages along with a progress graph indicate if therapy is on track or not after each session. In practice this requires considerable commitment; client status has to be measured at each visit so a predicted outcome pathway can be calculated and utilized at subsequent therapy sessions. At Calgary Counselling Centre (CCC), a well-developed outcome measurement and data management system exists. For children and youth, the Youth Outcome Questionnaire (YOQ and YOQ-SR), are administered at the beginning of each client visit. The results are stored in a database, along with other key variables such as age, gender, problem type and other health issues. **Methods:** Hierarchical linear modelling (HLM) was used to develop an equation that can predict outcome pathways and prediction intervals for individual clients, for both the parent completed YOQ and youth self-reports. A variety of HLM model types were constructed, using different versions of the session number used to express time, including: untransformed session values, log-transformed session numbers, and the session term expressed as a square root. Prediction intervals were calculated around the predicted value to create a signal system. Performance was tested by looking at the rate of treatment failure (using two different definitions) for clients who exceeded the upper prediction limit at least once. **Results**: For parents, the best-fitting model proved to be one using the square root of session number up to session eight, along with initial YOQ score, child/behavioural issues, and presence of medical concerns as explanatory variables, plus interaction terms of session and initial OQ. For the youth, the best-fitting model proved to be one using the square root of session number up to session eight, along with initial YOQ score, family/marital issues, plus an interaction term of session and initial YOQ. **Conclusions**. A graphical representation of the expected outcomes over time is provided in real-time to therapists after each session, and a signal message indicates deviations from their individually predicted pathway, which can be identified and treatment plans altered if indicated. Ongoing monitoring of the signal system will be done to evaluate its effectiveness.

10:20 – 10:40	**Title: A simplified intervention to modify physical activity, lifestyle, and eating behavior in obese patients with stable psychotic disorders** **Author(s):** Vera Krejcik **Background:** Individuals with severe mental illness, are disproportionately affected by obesity and its cardio-metabolic sequelae. This leads to markedly reduced longevity and increased healthcare costs. Most new antipsychotic medications, largely credited for significant advances in patients' quality of life, also appear to induce further weight gain, compounding the problem of obesity and related medical morbidity and mortality. In 2012, De Hert and colleagues developed the SIMPLE program, a 16-week week, lifestyle modification program to mitigate this weight gain. This study aimed to apply a version of the SIMPLE program to assess feasibility and generalizability to Canada. **Methods:** After partnering with Pathways to Housing, we recruited nine obese adult patients with stable schizophrenia or schizoaffective disorder. Baseline height, weight, and waist circumference were recorded prior to each of 16 weekly sessions. These sessions focused on nutrition, behavior modification, and exercise. Upon completing the intervention, feedback was solicited from participants and staff for program improvement. **Results:** We successfully delivered a version of the SIMPLE program at Pathways to Housing with positive written feedback from participants. The mean weight change was 1.74 kg, SD 4.24, but was not significant, p=0.32. **Conclusions:** The SIMPLE program could be successfully implemented at Pathways to Housing at low cost and with positive patient and staff feedback. Although the weight change was not significant, the study may have lacked power to detect changes. As feasibility and acceptability to patients has now been demonstrated, future studies should explore effectiveness in larger samples.
10:40 – 11:00	**Poster Viewing – Coffee Available**

11:00 – 11:20	**Title: Plasmalogens as a biomarker for cognition in schizophrenia** **Author(s):** Jessica Bist; Dayan Goodenowe; Thomas Raedler Schizophrenia (SCZ) is one of the world's most severe psychiatric disorders. SCZ has historically been defined by psychotic symptoms; however, focus has now turned to cognitive underperformance as a significant therapeutic challenge for SCZ patients. Cognitive deficits such as lack of attention, slower processing speed, and impaired social cognition are persistent and difficult to treat with current antipsychotics. It is known that the concentrations of specific phospholipids, called plasmalogens, are lower in people suffering from Alzheimer's Disease and SCZ. Plasmalogens have multiple roles in the human body such as membrane fusion, ion transport, and intracellular cholesterol transportation. Most importantly, plasmalogens are crucial components of neuronal plasma membranes and are found in high concentrations in brain tissue. Additionally, plasmalogens are not directly affected by antipsychotics; the decrease in serum plasmalogens is thought to be the result of the illness itself. To date, plasmalogens have not been studied in relation to the decline in cognition in SCZ. This research project will identify an assay of plasmalogens in the blood serum of patients with a confirmed diagnosis of SCZ and observe the degree of cognitive decline. We hypothesize that a decreased concentration of plasmalogens in blood serum corresponds to increased cognitive difficulties in SCZ. Participants will be recruited from the Early Psychosis Intervention Program at Foothills Medical Hospital in Calgary, Alberta, Canada. Demographic details and Measurement and Treatment Research to Improve Cognition in Schizophrenia (MATRICS) cognitive battery testing will be obtained for participants that choose to be a part of the study. Future studies could use these results for improving functional outcomes and further research into cognition deficits in SCZ.

11:20 – 11:40	**Title: Brain effects of memory training in first-episode psychosis: study protocol of a University of Calgary randomized controlled trial** **Author(s):** Lisa Buchy, Signe Bray, Jean Addington **Background:** People with psychosis show profound impairments in memory. Behavioral therapies focused on improving memory have been effective, and brain activation may increase following memory training in this population. However, cognitive therapy packages typically require supervision, sessions are often long and repetitive, dropout rates can be high and cost effectiveness is limited by the necessity for continuous supervision. Recent mental health policy suggests that computerized cognitive therapy or "brain training software" are potential methods for improving cognition in people with psychosis. The proposed study will evaluate brain changes following a structured cognitive remediation therapy using a novel memory training with the Peak Brain Fitness app in people with early psychoses. **Methods/Design:** Fourty-six people with a first-episode psychosis will be recruited from Foothills Hospital between April 1st 2016 – April 1st 2018. Participants will be randomized to either memory training or an active control condition, existing of language skills training. Participants in both groups will complete 12 hours of training (1 hour/day x 4 days/week x 3 weeks) using the Peak Brain Fitness application for android or iOS. All participants will be rated on symptoms, memory, language skills, and awareness of their cognitive functioning before and after training. All participants will complete functional magnetic resonance imaging and diffusion tensor imaging scans before and after training, to assess how changes in cognition align with neuroplastic changes in the brain. **Discussion:** The use of a novel mobile application may have the potential to increase adherence and improve our understanding of therapeutic change in people with a first-episode psychosis. This research provides a translational strategy by informing the development of imaging biomarkers for expanding treatment options for memory deficits in this population. Protocol registration: Clinicaltrials.gov NCT02584114

11:40 – 12:00	**Title: Prevalence of major depression is not changing in Canadian adolescents.** **Author(s):** Wiens K, Williams JVA, Lavorato DH, Pringsheim TM, Duffy A, Sajobi T, Bulloch AGM, Patten S **Background:** Major depression (MD) is a common mental illness characterized by loss of interest, depressed mood and reduced functional capacity. There is a belief that increasing prevalence in youth has caused an epidemic of depression, however this may be due to change in diagnostic patterns, rather than increase in MD symptoms. **Objectives:** The aim of this research is to identify whether an epidemic of depression exists in Canadian adolescents. This will be done through examining trends in prevalence of major depressive episodes over the past fifteen years (2000 to 2014). **Methods:** A series of data files from the Canadian Community Health Survey were combined into one large dataset with time as an indicator for survey year. Prevalence estimates of MD were derived at each time point based on the Composite International Diagnostic Interview, a symptom based scale for depression. Weighting and bootstrapping techniques accounted for oversampling of certain regions and the clustering techniques used by Statistics Canada. Bootstrap and survey weights were re-scaled to ensure the variance was not inaccurately estimated. Logistic regression modelling evaluated the influence of time on MD prevalence, with adjustment for age, sex and province. **Results:** The crude estimate for trends over time indicates that there is no change in prevalence of MD in 12 to 19 year old adolescents from 2000 to 2014 ($p=0.113$). The assessment of modification and confounding by age, sex and province is currently underway. **Conclusion:** Initial findings suggest that there is no epidemic of depression in the adolescent population. The in-progress analysis will provide insight into whether age and sex categories offset any existing trends. If no increasing trend in adolescent MD exists, these results will encourage policy makers to meet the current needs of adolescents, rather than anticipating an increase in MD that may not exist.
12:00 – 13:00	**Lunch Break**

13:00 – 13:40	**Title: Interfacing Law, Neuroscience, and Genetics to Support Child Sex Abuse Victims in the 21st Century** **Author(s):** Warren Binford,(based on research being conducted in collaboration with Paul Arnold and Frank MacMaster) **Abstract:** In the last forty years, the global community has taken numerous legal steps both domestically and internationally to combat the sexual abuse of children. Nonetheless, child sex abuse is widespread and certain types, including child pornography, appear to be growing worse both in prevalence and severity. With an increased awareness of the widespread sexual abuse of children, the global community has made a legal commitment not only to work to prevent child sex abuse, but also to promote the recovery of victims both physically and psychologically and reintegrate them into their communities. Unfortunately, far too little research has been conducted on child sex abuse victims, especially online sex abuse victims, to understand how best to fulfill these legal obligations. Recent advances in both neuroscience and epigenetics, however, could offer policymakers a new window into the impact that child sex abuse, including "hands off" sex abuse such as child pornography, has on victims, as well as the most effective therapies and treatments to help child sex abuse victims recover from harm. This article outlines the current international legal landscape that compels the need for additional understanding of the impact of child sex abuse on victims, as well as the neuroscientific and epigenetic research that has been conducted to date, and concludes that a robust, multidisciplinary, longitudinal study of child sex abuse victims is needed in order for the global community to fulfill its obligations to victims and ensure their full recovery and successful reintegration.

13:40 – 14:00	**Title: Integrating ACEs into Children's Mental Health Practice** **Author(s):** Ryan Clements, Jennifer Kuntz, Andrea Perri, Avril Deegan, Alan McLuckie **Background:** Since the ground breaking work of Felitti and colleagues (1998) at Kaiser Permanente, children's mental health specialists have understood that Adverse Childhood Experiences (ACEs) pose significant risk for long term negative health outcomes, including chronic obstructive pulmonary disease (Anda et al., 2006), depression (Spinhoven et al., 2010), substance abuse (Anda et al., 2002) and suicide (Brockie et al., 2015; Cluver et al., 2015; Dube et al., 2001). Recognizing the priority for trauma-informed practice, the teams of Alberta Health Services, Child and Adolescent Mental Health and Psychiatry Programs (CAAMHPP) are integrating Adverse Childhood Experiences (ACEs) into their assessment protocols as well as collecting data on ACEs pertaining to their program users in order to better inform their clinical practice. **Methods:** A program evaluation was conducted on the ACEs Questionnaires completed by 241 service users to AHS CAAMHPP programs. The ACEs Questionnaire is a ten item tool examining three domains (i.e., abuse, neglect and household dysfunction). Methods for integrating ACEs Questionnaire items into clinical practice were also examined via program evaluation methods. **Results:** For 241 service users, the average ACE score was 4 (M = 4.07; SD = 2.87) out of a possible 10. **Conclusions:** Due to the high rate of ACEs scores across CAAMPP service users, it is important that best practices for their assessment be recognized and implemented within child and adolescent mental health and psychiatry programs. An example will be presented demonstrating how one clinical team (i.e., 0-5 years) at AHS CAAMHPP has successfully integrated ACEs Questionnaire items within clinical assessment protocols.

14:00 – 14:20	**Title: Internet Gaming Disorder and Aggression, A unique withdrawal symptom or media hype?** **Author(s):** Ben Grintuch, Sam Chang **Background:** In 2007 Daniel Petric, a 16 yo from Wellington, Ohio was convicted of shooting his mother and father after they confiscated his game Halo 3 for the Xbox 360. In 2010, a 16 year old boy Kendall Anderson bludgeoned his mom to death with a claw hammer after she took away his Playstation. In 2011, Anders Behring Breivik claims to have used Call of Duty: Modern Warfare 2 to plan his attacks where he killed 77 people in Norway. Video Game use has been reported as regular by 97% of American youth aged 12-17 (Rideout, Foehr and Roberts, 2010, Lenhart et al., 2008). Currently the Video game industry surpasses both the movie and music industry in worldwide sales totalling 65 billion dollars in 2011, projected to be 102 billion dollars by 2017. Recent research has identified behavioral and structural changes associated with excessive use of video games. These include poorer sleep quality, increased suicidal ideation, increased school truancy, decreased mood, concentration and school performance (Gradisar et al, 2013, Rehbein, Kleimann and Mossle, 2010). Further, Excessive Video Game use has been shown to alter neurotransmitters in the brain leading to dopaminergic sensitization, causing craving responses in fMRI studies and decreases grey matter similar to other drugs of abuse (Weinstein, 2010, Sun et al., 2012, Han, Lyoo & Renshaw, 2012 & Han et al., 2011). With this increasing body of literature the DSM 5 now includes a condition for further study called Internet Gaming Disorder. There remains significant questions of whether there is a relationship between excessive video game use and aggression. It has been reported in the media and in some studies that aggression increases in people who play video games in excessive amounts. **Methods:** Through a review of the literature, we will present the current knowledge about any link between Internet Gaming Disorder and aggression and separate fact from fiction. By comparing to other behavioral and substance use disorders, we also hope to propose theories to account for this link
14:20 – 14:30	**Poster Viewing – Coffee Available**

14:30 – 14:50	**Title: Highlights from the 2015 National Depression Screening Day** **Author(s):** Emma Truscott, Karissa Nyman, Sandy Berzins, Robbie Babins-Wagner **Background:** National Depression Screening Day (NDSD) is an annual community collaboration spearheaded by Calgary Counselling Centre (CCC) during Mental Illness Awareness Week. As part of NDSD, CCC offers a free, anonymous, short online screening test to the public. NDSD has been running for 10 years, with the goals of increasing awareness of and destigmatizing depression. Initially the depression screen was only available for one day each year, but for the last 2 years was available for the whole week. For the first time in 2015, this test was available in both French and English, which increased accessibility. **Methods:** Participants completed the online depression screening tool, the HANDS (Harvard Department of Psychiatry/National Depression Screening Day Scale), a 10 item depression screening scale that asks about depressive symptoms experienced during the previous 2 weeks. A total score for each participant was obtained by adding up the responses for the 10 questions. Separate analyses were conducted for individuals who heard about the test through their work, through post-secondary, and for individuals who live in areas affected by the 2013 floods. **Results:** In 2015, 9478 individuals completed the NDSD over the week, the most tests taken in the history of NDSD. The majority of respondents were female, and between the ages of 20 to 29. Nearly half of respondents heard about the survey through Facebook. 40% of individuals were recommended for further evaluation of depressive symptoms, and 16% were strongly recommended for evaluation. A higher proportion of females than males were strongly recommended for evaluation. Consistent with previous years, respondents who heard about the test through their work were more likely to have scores that did not indicate depressive symptoms (62%). Respondent who had never married had higher mean scores than those who had married. **Conclusions:** The fact that the screening test was open for 1 week instead of a single day resulted in many more respondents than previous years. This increase could also be because of the increased promotion through social media. This year, many more respondents were from other countries besides Canada, which indicates the reach of the screening test is growing. As well, accessibility also increased this year as individuals could complete the test in French. This increased reach allows CCC to meet the goals of raising awareness of depression and encouraging individuals to seek further evaluation.

14:50 – 15:10	**Title: Proton Spectroscopy Study of the Dorsolateral Prefrontal Cortex in Youth with Familial Depression** **Author(s):** Xiao-Ru Yang, Lisa Marie Langevin, Natalia Jaworska, Adam Kirton, Yamile Jasaui, Marc Lebel, Ashley Harris, T. Christopher Wilkes, Rose Swansburg, Frank P. MacMaster **Background:** The dorsolateral prefrontal cortex (DLPFC) in the pathogenesis of major depressive disorder (MDD). Proton magnetic resonance spectroscopy (1H-MRS) was used to examine membrane integrity (as indexed by the choline metabolite) in the left DLPFC in adolescents and young adults with MDD, who are treatment-resistant and have a positive family history compared to healthy controls. **Methods:** Sixteen adolescents with MDD and eleven healthy controls underwent 1H-MRS. A short echo PRESS (TE = 30 ms, TR = 2000 ms) protocol was used with a voxel (4.5cc, 128 averages) placed within the left DLPFC. **Results:** In the left DLPFC, there were significantly increased choline ($p = 0.05$) and creatine concentrations ($p = 0.006$) in the MDD group compared to controls. In MDD participants, choline concentration correlated with scores on the Beck Depression Inventory ($r = 0.57$, $p = 0.03$). **Conclusions:** Increased left DLPFC Cho and Cr levels in depressed adolescents may be biomarkers for the disorder. The increased Cho levels may indicate abnormalities in neuronal membrane integrity, while increased Cr could be reflective of altered energy demands and metabolism.

15:10 - 15:30	**Title: Biomarkers of Response to Transcranial Magnetic Stimulation in Youth with Treatment Resistant Major Depression** **Author(s):** Jasaui Y, Kirton A, Swansburg R, Sembo M, Wilkes TC, MacMaster FP **Background:** Major Depressive Disorder (MDD) is a mental disorder with a very high impact on society. Approximately 15% of youth suffer from MDD, half of who do not respond to current treatments. Repetitive transcranial magnetic stimulation (rTMS) is an emerging intervention for treatment resistant MDD in adolescents. However, remission rates are still low. MDD has been associated with low levels of glutamate in the left dorsolateral prefrontal cortex (DLPFC). We hypothesized an increase in glutamate concentrations in the DLPFC and a decrease in depressive symptoms. **Methods:** 29 MDD youth underwent 3 weeks of rTMS targeting the left dorsolateral prefrontal cortex (DLPFC). Baseline and post-intervention magnetic resonance imaging scans, and short echo proton magnetic resonance spectroscopy. Response was determined by a 50% reduction of depression scores. **Results:** Depressive symptoms decreased after 3 weeks of rTMS (t=8.16, p=0.000). In responders, glutamate levels increased by 13.98% (t=-3.40, p=0.012), while in non-responders, glutamate levels decreased by -6.04% (t=3.46, p=0.007). Higher treatment response was observed in males compared to females (t=2.15, p=0.043), and a lower number of comorbidities was associated to response (r=-0.72, p=0.000). **Conclusions:** The development of biomarkers is necessary for evidence-based medicine, providing us with essential information for a personalized treatment and, a reduction of personal burden and ineffective treatments.

15:30 – 15:50	**Title: Meta-analytic Studies of Major Depression Epidemiology** **Author(s):** Scott B. Patten **Objective**: Epidemiological studies seek to describe patterns of distribution of disease in populations. A limiting factor in this approach is sample size. Inadequate sample size leads to imprecision in estimates quantifying these patterns. The objective of this study was to explore the application of data synthesis techniques as a means of overcoming this limitation. **Methods**: One-step and two-step approaches to individual-person meta-analysis were applied to a series of national survey datasets. **Results**: A series of patterns emerged with application of these techniques. Mode effects were identified in perceptions of mental health, a pattern of increasing use of antidepressant medications (which has now leveled off) and self-reported diagnoses was seen, but no change in prevalence over time. A previously undetected age by sex interaction was also seen. Marked seasonal and latitude effects were observed, which have not been previously reported in Canada. **Conclusions**: Increased precision through application of data synthesis approaches has produced a more refined description of major depression epidemiology in Canada.
15:50 – 1600	**Awards & Closing Comments**

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