

UBC Department of Psychiatry Research Day

Creating knowledge, caring for minds

ABSTRACTS

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ORAL PRESENTATIONS ABSTRACTS

1. Spontaneous Somatic-Patterned Cortical Activity in Mouse Models of Depression

Presenter: Alexander McGirr

Authors: Alexander McGirr

Faculty Sponsor: Timothy Murphy

Individuals with depression commonly present with medically unexplained somatic complaints. The neurobiology of somatisation, however, is poorly understood. In mice, we have shown that spontaneous cortical activity contains patterns resembling sensory-evoked activity. We hypothesized that depression would induce alterations in spontaneous somatic-patterned activity. **Method:** We characterized C57/Bl6 mice after the Chronic Social Defeat (CSD) and Maternal Deprivation (MD) models of depression. “Behavioural despair” and “anhedonia” were assessed using the Forced Swim Test (FST) and Sucrose Preference Test (SPT), respectively. A large craniotomy exposed the cortex and voltage-sensitive dye (VSD; Rh1692) was incubated. We recorded 6 minutes of spontaneous cortical activity (150Hz, 8.6*8.6mm field of view) after which we recorded somatic patterns of cortical activity by stimulating forelimb, hindlimb and whisker. We then searched the spontaneous activity for these spatially- and temporally-restricted somatic patterns. **Results:** Mice exposed to CSD and MD had increased behavioural despair and anhedonia. Both defeated and deprived mice had a higher frequency of somatic-patterned matches in spontaneous cortical activity. The depressive and somatic phenotype was rescued with citalopram treatment. Somatic-patterned activity was linearly related to the FST. **Conclusion:** Mouse models of depression are associated with spontaneous somatic-patterned cortical activity, a putative neurobiological substrate of somatisation. **Implications/Relevance:** This study provides a potential tool for investigating sensorimotor alterations in depression. An understanding of spontaneously occurring somatic-patterned motif matches in cortical activity may inform human experience of unexplained somatic complaints and serve as a biomarker of somatization.

2. Resting State Mesoscopic Calcium Imaging of Mouse Cortex Provides Functional Parcellation and Topography

Presenter: Matthieu Vanni

Authors: Matthieu Vanni

Faculty Sponsor: Dr. Timothy Murphy

Brain function arises from assembly of neurons computing similar features. Correlation methods previously showed that several modules synchronized activity can co-exists within cortex. However, their limits and number are underexplored. Wide field calcium imaging was performed on mice to explore what rules this parcellation. **Methods:** Transgenic mice expressing the calcium indicator GCaMP6 were implanted with a chronic window covering most of the cortex including sensori-motor, cingulate, retrosplenial and visual cortex. Wide-field fluorescence was collected on anesthetized animals or awake head-fixed quiet or performing a task. The correlations signals between each pair of pixel were calculated to generate seed pixel correlation maps as well as distance parcellation. **Results:** Seed pixel correlation maps revealed 2–3 clusters of correlated activity delimited by stable boundaries. This spatial organization was confirmed by other parcellation methods such as distance tree, K-means or community structure. Interestingly, the number and structure of these clusters was strongly dependent of the behavior activity for at least, three different conditions: 1) anesthetized or awake quiet, 2) learning a task and 3) performing a learned task. **Conclusion:** These results showed that within mouse cortex, several functional modules run in parallel and their spatial limit are directly related to behavior. **Implications/Relevance:** The understanding of neural substrate of psychiatric diseases involves the use of animal model such as mice that offer a high potential of genetic engineering. However, current approach such as fMRI lacks spatial resolution and sensitivity that recent neurophotonic approach such as mesoscopic calcium imaging can overcome.

3. Modulation of GABA_A Receptors by a Novel Associated Protein

Presenter:	Yuan Ge
Authors:	Yaun Ge
Faculty Sponsor	Ann Marie Craig

γ -Aminobutyric acid (GABA) is the major inhibitory neurotransmitter in the adult mammalian central nervous system (CNS). The fast inhibitory actions of GABA are mediated by GABA type A receptors (GABA_ARs). Deficits in GABA_AR-mediated transmission contribute to the etiology of epilepsy, anxiety disorders, and mood disorders. In contrast with numerous studies of glutamate receptor associated proteins and their involvement in the modulation of excitatory synapses, much less is known about GABAergic synapses. Using a novel combined transgenic, tandem affinity purification, and proteomic approach, we did a sequential purification from tagged GABA_AR α 2 subunit transgenic mice followed by mass spectrometry, and several associated proteins were identified including GARP1 (GABA_A Receptor associated Protein 1). GARP1 is a novel trans-membrane protein, and no specific function has been reported. We found that overexpression of GARP1 dramatically decreases GABA_AR-mediated currents by reducing surface expression of GABA_ARs in HEK293 cells. In rat hippocampal cultured neurons, overexpression of GARP1 reduces inhibitory synaptic transmission without altering excitatory synaptic transmission. Furthermore, shRNA-mediated knockdown of GARP1 selectively increases inhibitory but not excitatory synaptic transmission, and promotes synaptic surface expression of GABA_ARs, which can be rescued by a shRNA-resistant GARP1. These results indicate GARP1 is a novel associated protein which modulates function and trafficking of GABA_ARs. A detailed understanding of the mechanisms that regulate functional expression of GABA_ARs at synapses is critical to our understanding of the causes and development of treatments for neurological disorders such as epilepsy and anxiety.

4. Investigating the ascending and descending prefrontal-midbrain projections using optogenetics

Presenter: Alireza Haratikia

Authors: Alireza Haratikia, Barak Caracheo, Natalia Gorelova

Faculty Sponsor: Jeremy Seamans

Midbrain dopamine (DA) neurons located in the ventral tegmental area (VTA) exert critical modulatory effects on target neurons in the prefrontal cortex (PFC) and in turn provide essential regulatory control over motivated behaviours and cognition. In a reciprocal manner, DA neurons are themselves targeted by afferent glutamate projections from PFC neurons. We investigated the effects of optogenetic activation of the PFC-VTA pathway during instrumental task involving reward, motivation and effort. **Methods:** Rats received bilateral PFC injections of the AAV5 vector carrying the ChR2 gene under the control of the CAMKII promotor, to produce pyramidal cell type specific expression. Three to 4 months post-injection, rats were implanted with a tetrode array in the PFC for multiple single unit recordings as well as a fiber optic in the VTA for optogenetic stimulation. Rats were trained to press levers under different schedules to obtain food reward. **Results:** Optical stimulation delivered to the VTA led to the antidromic activation of ChR2 containing pyramidal neurons in the PFC. Only a subset of activated neurons showed clear task correlates. In addition, optogenetic activation also excited DA neurons and caused the release of DA throughout the brain. We found that PFC neurons modulated by the indirect release of DA tended to turn off during operant responding. **Clinical relevance:** Extracellular levels of DA play an important role in normal and pathological conditions involving the PFC such as schizophrenia and depression. If we are to understand these disease states, it is necessary to first understand how the PFC and the VTA reciprocally interact. Preliminary data suggest that certain PFC neurons can themselves control DA levels in the PFC and thereby indirectly regulate task-dependent activity.

5. Brain Perfusion SPECT Distinguishes TBI from PTSD in Military Cohorts and Large Community Datasets

Presenter: Robert Tarzwell

Authors: Robert Tarzwell

Faculty Sponsor: Robert Tarzwell

Introduction: PTSD and TBI have significant symptom overlap and frequently cooccur, often making clinical differentiation problematic. Treatments for one can be ineffective or contraindicated in the other. **Methods:** Brain perfusion SPECT scans performed as part of a psychiatric workup in 196 veterans and 9282 civilians were retrospectively divided into pure PTSD, pure TBI, and cooccurrence, then compared with a database of 100 normal scans, then 11,147 highly comorbid scans with neither PTSD nor TBI. **Results:** In military and civilian samples with no other psychiatric comorbidity, brain perfusion SPECT separates TBI from PTSD, or identifies cooccurrence, with 100% accuracy. In highly comorbid populations, accuracy is 65.85%. **Conclusion:** Resting state brain perfusion SPECT may be an incrementally useful test to differentiate TBI from PTSD, or identify cooccurrence, in situations of clinical equipoise, even with significant psychiatric comorbidity. **Implications/Relevance:** Given the different treatments for PTSD and TBI, the clinical difficulty distinguishing them often due to the similarity of circumstances which can give rise to them a test which differentiates them, or identifies cooccurrence, especially in the setting of comorbidity, reflects a significant advance in psychiatric diagnostics by the addition of specific, reliable, neurobiological markers to clinical acumen. Psychiatry operates under the postulate that specifically defined syndromes are proxies for specific neurobiologies, thus allowing patients with syndromes to be grouped together for treatment studies and then treatment algorithms. Direct elucidation of neurobiology opens the possibility of specific treatment targeting, increasing the likelihood and speed of response.

6. Gender Differences in the Experience of Depression in Parkinson's Disease

Presenter: Andrew Perrin

Andrew J Perrin, MD, PhD (resident); Ekaterina Nosova, PhD; Kim Co; Adam Book; Oscar Yu; Vanessa Silva; Christina Thompson; Valerie O'Neill, RN; Sharon Yardley, RN; Skyla Burden, RN; Martin J McKeown, MD, BEng; A Jon Stoessl, MD; Matthew J Farrer, PhD; Silke Appel-Cresswell, MD

Authors:

Faculty Sponsor

30-40% of Parkinson's patients experience depression during their illness. Identifying which factors most effectively discriminate depressed from non-depressed patients can facilitate prompt treatment and allow improvements in quality-of-life. *Methods:* 654 patient records at a tertiary referral centre were reviewed for clinical and demographic factors. We used recursive partitioning to determine which items on the Beck Depression Inventory (BDI) were most useful in differentiating patients who scored in the depressed range (≥ 14) from those who scored in the non-depressed range (≤ 13) at the first visit only ($n = 307$). *tResults:* Females and patients with a younger age at symptom onset were at highest risk of depression. Males and females could be distinguished by their differential profiles in recursive partitioning.

Conclusion/Implications: Males and females with Parkinson's disease likely experience depression differently. Further studies are required to understand the gender-specific nature of non-motor symptoms in Parkinson's disease. Little is known regarding the gender-specific experience of depression, both in the Parkinson's and non-Parkinson's populations. We hope to use our newly identified gender-specific patterns of depressive symptoms to further elaborate gender-based differences in psychiatric syndrome expression. We aim to undertake future clinical and genetic studies in this vein

7. If You Build It, Will They Come? Opening Access to a New Online Bipolar Wellness Centre

Presenter: Erin Michalak

Authors: Erin Michalak

Faculty Sponsor: Erin Michalak

The CREST.BD network launched its new online Bipolar Wellness Centre (www.bdwellness.com) on World Bipolar Day 2015. Produced with knowledge translation research funding from CIHR, the website has been in preparation for over two years. Within the Bipolar Wellness Centre are a variety of tools and resources designed to support self-management strategies in people with bipolar disorder (BD) and their healthcare providers. This includes a sophisticated Quality of Life (QoL) Tool (www.bdqol.com) that allows people with BD to measure their QoL over time, and provides them with tailored information on self-management strategies that reflect their personal QoL profile. The Bipolar Wellness Centre also features four unique intervention arms geared towards disseminating the knowledge housed within the website, including videos showing concrete examples of BD self-management strategies in action, 14 expert webinars on different QoL domains, a 'Living Library' connecting domain 'experts' directly with individuals with BD and three in-person workshops to be held in Ontario in June 2015.

Given the considerable investment in the development of the QoL Tool and Bipolar Wellness Centre, we are particularly interested in evaluating implementation strategies to maximise access to self-management via the sites. In collaboration with the UBC eHealth Strategy office, CREST.BD has developed a mixed methods evaluation framework to assess the effectiveness of each of the four intervention arms (videos, webinars, workshops or 'Living Library'). Pilot data will be presented on the video, webinar and workshop interventions.

8: Mortality Among 497 Homeless People in Vancouver During a 2-Year Follow-Up

Presenter: Mohammadali Nikoo

Authors: Mohammadali Nikoo

Faculty Sponsor: Michael Krausz

Introduction: Homeless people live on average 2-3 decades less than the general population. We aim to investigate the rate and causes of mortality among homeless. **Methods:** AtHome study was a multi-center field trial recruiting 497 homeless participants with mental disorders in Vancouver from 2009 to 2013. Mortality data was collected through admin source and/or self-report. Cox regression analysis identified variables predicting increased mortality. **Results:** During a 1325.1 person-year observation, mortality rate was 31/497 (6.2%) from which 22 were confirmed through admin source. The confirmed reasons were drug/ alcohol overdose (36.4%), cancer (13.6%), suicide (13.6%), heart diseases (9.1%), respiratory diseases (9.1%), HIV (4.5%) and unknown (13.6%). Older age (HR=1.05 95% CI 1.02-1.09), age at onset of homelessness (HR=1.04 95% CI 1.01-1.06), age of first alcohol use ((HR=0.34 95% CI 0.15-0.80), age of first drug use (HR=0.37 95% CI 0.15-0.91), working for a minimum of one year in the past (HR=2.78 95% CI 1.07-7.25) and wartime service (HR=3.72 95% CI 1.43-9.69) increased risk of mortality. **Conclusions:** Mortality rate among homeless population is higher than the general population. A considerable number of deaths are due to physical health conditions. Identified risk factors for mortality emphasize on early interventions in this population. **Implications/Relevance:** Our results indicate high rate of mortality among homeless. Given that a major portion of deaths is due to physical illnesses, this area should not be neglected while addressing the mental and substance use disorders among homeless. Identified risk factors emphasize the need for early intervention in this population.

9. Forensic and Civil Psychiatric Patients: Similarities and Differences in Profiles and Risks

Presenter: Karen Petersen

Authors: Karen Petersen

Faculty Sponsor: Tonia Nicolls

Introduction: There is a perception among some care providers, policy makers, and the public that deinstitutionalization has led to the transinstitutionalization of severely mentally ill persons to the criminal justice system, particularly the forensic system. This belief is supported by the steady increase in demand for forensic mental health services in Canada and the United States. Despite the possibility that there is significant overlap between these two populations, very little research has been conducted to compare the characteristics and needs of these two groups (Seto et al., 2004; Heilbrun et al., 1995). **Methods:** Demographic information, Short-Term Assessment of Risk and Treatability (START) assessments, and behavioural outcome data, was collected for 102 forensic psychiatric and 105 tertiary psychiatric patients. **Results:** Civil psychiatric patients were older, first hospitalized at an earlier age, and had been hospitalized more frequently. There were no significant differences in START strength and vulnerabilities scores between the two groups. However, there was a trend toward civil patients having higher vulnerability scores. There were very few differences in the frequencies of negative outcomes at lower levels of seriousness (e.g., verbal aggression: shouting angrily); however, forensic patients engaged in more serious behaviours with greater frequency (e.g., aggression against others: moderate injury). **Conclusions:** This study demonstrated key similarities and critical differences between tertiary civil psychiatric patients and forensic psychiatric patients. Understanding the clinical presentation and associated needs and risks of these two populations is important to inform public policy as well as practice in both sectors. **Implications/Relevance:** These findings demonstrate the extent to which risk assessment and treatment planning needs in civil psychiatry overlap with current practices in the forensic setting and highlight the importance of ensuring that the expertise in violence risk assessment and risk management commonly of focus in forensic services is also integrated into civil psychiatric care. The projection of forensic expertise ‘upstream’ into civil psychiatric training programs and treatment settings may provide a means of preventing adverse events that may result in serious harm to the patient, the public and/or the criminalization of mental illness (e.g., Crocker et al., 2015).

POSTERS –BASIC NEUROSCIENCE AND TRANSLATION RESEARCH ABSTRACTS

1. Microglia Rapidly Adopt a Filopodia-Rich Phenotype Upon Oxygen Depletion by Sensing Tissue Acidosis.

Louis-Philippe Bernier

2. Reversible Inactivation Mapping of Cortical Sites Required for Voluntary Forelimb Movements in VGAT-ChR2 Transgenic Mice

Raghu Ram Katreddi,

3. Brain Networks Involved in Delusions of Reference in Schizophrenia

Sara Larivière

4. ASPIREdb – An Interactive Web-Based System for the Exploration of Complex Phenome-Genome Datasets

Patrick Tan,

5. White Matter Integrity Deficits in Substance-Induced Psychosis

Taylor Willi

6. Modulation of GABA_A Receptors by a Novel Associated Protein

Yuan Ge

7. Role of palmitoylation in NMDA receptor trafficking and function in corticostriatal co-culture

Liang Wang

8. Uncoupling GluN2B-NMDA receptors from PSD-95 by Tat-NR2B9c peptide in Huntington's disease corticostriatal co-culture

Cadou Buren

9. BDNF and homeostatic plasticity in YAC128 cortical neurons

(Faculty Sponsor: Lynn Raymond)

Amy Smith

10. Deficits in synaptic plasticity in YAC128 striatal neurons depend on stimulation frequency

(Faculty Sponsor: Lynn Raymond)

Marja Sepers

POSTER PRESENTATIONS-BASIC NEUROSCIENCE AND TRANSLATIONAL RESEARCH

1. Microglia Rapidly Adopt a Filopodia-Rich Phenotype Upon Oxygen Depletion by Sensing Tissue Acidosis.

(Faculty supervisor: Dr. Brian MacVicar, Djavad Mowafaghian Centre for Brain Health)

Louis-Philippe Bernier, Postdoctoral Fellow

Introduction: Microglia are highly motile cells that play a pivotal role in monitoring brain homeostasis by constantly probing the environment and responding to extracellular cues. They are involved in long-term stroke recovery, however the acute responses of microglia to the metabolic stresses of ischemia remain unclear. **Methods:** We used two-photon imaging *in vivo* and in acute brain slices to monitor the initial effect of anoxia on the morphological phenotype and dynamic properties of microglia. **Results:** The highly ramified morphology of resting microglia is rapidly transformed during oxygen depletion with extension of fine actin-dependent filopodia followed by retraction of microtubule-dependent ramifications. This rapidly reversible switch in morphology drives significant changes in microglial sensing behavior, affecting microglial cells capacity to respond to tissue damage. Our observations indicate that increased intracellular cyclic AMP is a key trigger of both filopodia extension and retraction of ramifications. **Conclusion:** During short anoxia insults, the accompanying acidic shift in the extracellular environment causes microglia to adopt a filopodia-rich phenotype through an increase in cyclic AMP induced by activation of the G_s-coupled proton-sensing receptor TDAG8. **Implications/Relevance:** Characterizing the highly specialized sensing structures of microglia and defining the molecular cues responsible for the functional switch of microglial behaviour observed upon oxygen depletion will likely provide promising targets for stroke treatment

2. Reversible Inactivation Mapping of Cortical Sites Required for Voluntary Forelimb Movements in VGAT-ChR2 Transgenic Mice

Raghu Ram Katreddi, PhD student at Dr. Tim Murphy lab, Department of Psychiatry, UBC

Authors: Raghu ram Katreddi, Greg Silasi, Jamie D. Boyd, Jeffrey M. LeDue, Stephen H Scott (Centre for Neuroscience, Queen's University), Timothy H Murphy.

Introduction: The aim of the study is to understand the cortical regions that are required to execute a voluntary forelimb movement. **Methods:** Vesicular γ -aminobutyric acid transporter-channelrhodopsin2(VGAT-ChR2) transgenic mice with chronic cranial windows were water restricted and trained in head fixed stage to pull a robotic lever to get a water reward. A blue laser was targeted to various cortical points to cause reversible local inhibition(by activation of GABAergic interneurons) while the mouse pulls the lever repeatedly over a 1 min sampling epoch and total number of pulls was compared with the control point which was out of the cranial windows. **Results:** 6mW train of 5ms pulses delivered at 100Hz to the contralateral primary motor cortex(M1) reduced the rewarded lever pulls by $90\pm 16.8\%$ relative to a control site. This effect is reversible as the mouse started pulling lever within seconds the laser was off the M1 site. This extent of inhibition was not seen at other contralateral points such as visual, retrosplenial cortex, parietal association area and even ipsilateral M1. **Conclusions:** Only contralateral M1 is required for the execution of voluntary movement. Implications: This method can be used to study reorganisation of the cortex post ischemic stroke responsible for behavioral recovery. **Implications/Relevance:** This automatic high throughput behavioral task aids in looking at the new reorganised cortical areas responsible for the behavioral recovery, if any, in the animal after stroke in execution of forelimb movement both acutely and chronically. This eventually helps clinically to focus on the prospective reorganised cortical region for the behavioral recovery post stroke.

3. Brain Networks Involved in Delusions of Reference in Schizophrenia

(Faculty Sponsor: Dr. Todd S. Woodward)

Sara Larivière, Undergraduate Student

Introduction: Delusions of reference in schizophrenia are thought to result from misattributions of self-relevance to neutral events. Activation of regions within the cortical midline structures (CMS) and ventral striatum has been previously associated with self-referential processing; however, we have yet to evaluate the specificity of activity seen in these regions to individuals with current delusions. **Methods:** We analyzed data from a task designed to elicit self-referential thought using a multivariate analysis technique that enabled the separation of temporally distinct, task-based functional brain networks. Healthy control subjects (n = 17) and schizophrenia patients with (n = 18) and without (n = 17) current delusions of reference were shown ambiguous statements and evaluated whether these were personally self-relevant. **Results:** Two functional networks revealed that schizophrenia patients, irrespective of delusional status, demonstrated significantly greater activity in self-referential regions relative to healthy control subjects.

Conclusion: Involvement of the CMS and ventral striatum plays an important role in processing self-referential thoughts. The functional analysis revealed that sustained hyperactivity involving these brain regions may underlie self-referential ideation in schizophrenia patients.

Implications/Relevance: Abnormal activity in brain networks underlying self-referential processing may be a trait feature of schizophrenia rather than being specific to individuals with current delusions. Identification of abnormal activity in brain networks present during a task designed to elicit self-referential thought leads to developing a more accurate functional and anatomical understanding of delusions of reference in schizophrenia. Ultimately, developing a biological understanding of this common symptom of schizophrenia can lead to better treatment options.

4.ASPIREdb – An Interactive Web-Based System for the Exploration of Complex Phenome-Genome Datasets

(Faculty Sponsor: Paul Pavlidis)

Patrick Tan, Staff at Pavlidis Lab

Introduction: As whole exome and genome sequencing are becoming more commonly used in identifying disease causing variants in the clinical setting, clinicians are tasked with the challenge of prioritizing which variants to validate. Tools such as GATK are often used to call and filter variants based on coverage and genotype quality while tools such as ANNOVAR is used for annotating variants with genes and subsequently predict the mutation's functional impact based on sequence conservation. These tools however does not incorporate the proband's phenotype which can provide important insights to identifying the most relevant genes.

Methods, Results and Conclusion: Towards this end, we have developed ASPIREdb (<http://aspiredb.chibi.ubc.ca/>), a powerful web-framework for the analysis of variants using phenotype information such as gender and phenotypic abnormalities. Researchers create their own projects which can be made private, public or shared with collaborators. Within a project, users upload their filtered list of variants (SNV, CNV, Indels) and optionally upload phenotypes for each anonymized subject. Those phenotypes which are coded with Human Phenotype Ontology IDs are automatically recognized and linked to disease associated genes through the Phenocarta web tool. Finally, ASPIREdb provides easy access to a gene's epigenetic and transcriptomic signatures via the UCSC Genome Browser and Gemma. **Implications/**

Relevance: ASPIREdb offers a user-friendly yet powerful query interface that lets investigators further narrow down variants based on variant characteristics such as location, length, genes overlapped and position overlap with DECIPHER or DGV reference databases. Moreover, clinicians can perform burden analyses between two subject groups and identify statistically significant phenotypic differences and compare the number of genes affected between groups.

5. White Matter Integrity Deficits in Substance-Induced Psychosis

(Faculty Sponsor: William Panenka)

Taylor Willi Graduate Student

Introduction: White matter abnormalities are a well known characteristic of primary psychotic disorders. The most frequently observed abnormalities are seen in frontal and temporal regions. Whether similar white matter deficits are present in those who experience substance-induced psychosis (SIP), which is also defined by the presence of hallucinations and delusions, has not been investigated. **Methods:** Diffusion tensor imaging was employed to investigate white matter abnormalities associated with substance-induced psychosis (SIP) in cocaine dependent individuals with (n=24) or without (n=43) SIP. Tract based spatial statistics (TBSS) was used to investigate diffusion parameters between groups. **Results:** The SIP group showed significantly lower FA than cocaine dependent non-psychotic subjects in voxels within the (i) bilateral anterior limb of internal capsule, (ii) the splenium, genu, and body of the corpus callosum, (iii) bilateral inferior longitudinal fasciculus, bilateral superior longitudinal fasciculi, (iv) bilateral posterior corona radiata, left superior corona radiata (v) left cingulate gyrus and left hippocampal cingulum, and (vi) left minor forceps (all p-values ≤ 0.05). **Conclusions:** SIP is associated with white matter abnormalities in diffusion properties of fronto-temporal, fronto-thalamic, and interhemispheric pathways. **Implications/Relevance:** These data suggest that the emergence of psychosis in both primary psychotic disorders and in substance-induced psychoses share common neuropathologies. Understanding structural abnormalities associated with psychosis (outside of the context of schizophrenia), will provide insight into potential mechanisms of the emergence of psychotic symptoms. As SIP is a transient psychosis, understanding its structural implications may provide insight into how psychosis is occurring, and why it has such a short duration.

6. Modulation of GABA_A Receptors by a Novel Associated Protein

(Faculty Sponsor: Anne Marie Craig)

Yuan Ge

γ -Aminobutyric acid (GABA) is the major inhibitory neurotransmitter in the adult mammalian central nervous system (CNS). The fast inhibitory actions of GABA are mediated by GABA type A receptors (GABA_ARs). Deficits in GABA_AR-mediated transmission contribute to the etiology of epilepsy, anxiety disorders, and mood disorders. In contrast with numerous studies of glutamate receptor associated proteins and their involvement in the modulation of excitatory synapses, much less is known about GABAergic synapses. Using a novel combined transgenic, tandem affinity purification, and proteomic approach, we did a sequential purification from tagged GABA_AR α 2 subunit transgenic mice followed by mass spectrometry, and several associated proteins were identified including GARP1 (GABA_A Receptor associated Protein 1). GARP1 is a novel trans-membrane protein, and no specific function has been reported. We found that overexpression of GARP1 dramatically decreases GABA_AR-mediated currents by reducing surface expression of GABA_ARs in HEK293 cells. In rat hippocampal cultured neurons, overexpression of GARP1 reduces inhibitory synaptic transmission without altering excitatory synaptic transmission. Furthermore, shRNA-mediated knockdown of GARP1 selectively increases inhibitory but not excitatory synaptic transmission, and promotes synaptic surface expression of GABA_ARs, which can be rescued by a shRNA-resistant GARP1. These results indicate GARP1 is a novel associated protein which modulates function and trafficking of GABA_ARs. A detailed understanding of the mechanisms that regulate functional expression of GABA_ARs at synapses is critical to our understanding of the causes and development of treatments for neurological disorders such as epilepsy and anxiety.

7. Role of palmitoylation in NMDA receptor trafficking and function in corticostriatal co-culture

(Faculty Sponsor: Dr. Lynn A. Raymond)

Liang Wang, Graduate Student

Liang Wang^{1,2}, Rujun Kang², Shaun Sanders⁴, Michael R. Hayden⁴, and Lynn A. Raymond^{2,3}

Previous studies show a critical role of NMDA receptor (NMDAR) localization and subunit composition in determining its excitotoxicity in Huntington's disease (HD). Our lab has found in an HD mouse model that GluN2B-NMDAR at extrasynaptic (Ex) sites are increased in striatum at an early stage and lead to impaired striatal neuronal survival signaling; however, the mechanism underlying altered NMDAR trafficking in HD remains unknown. Others have shown that posttranslational modification of GluN2A and GluN2B subunits by palmitoylation, the addition of palmitate to cysteines in two C-terminal domain clusters, regulates surface expression and synaptic targeting of NMDAR. Notably, a palmitoyl acyl transferase (PAT) enzyme, DHHC17 (HIP14), also interacts with huntingtin, the protein mutated in HD, and the HIP14-deficient mice develop features resembling HD. We have examined, for the first time, the role for palmitoylation and HIP14 in regulating GluN2B-NMDAR trafficking and NMDAR functioning in corticostriatal co-culture. We found that reduced GluN2B-NMDAR palmitoylation may contribute to increased Ex-NMDAR in striatal neurons, but that decreased HIP14 function is not involved in either GluN2B-NMDAR trafficking. Further, knock-down of HIP14 in co-culture has no effect on NMDA function. These studies will grant us deeper understandings on the dynamics between synaptic/Ex NMDAR trafficking and provide novel therapeutic targets for pharmacological interventions in HD. Supported by funding from CIHR.

8. . Uncoupling GluN2B-NMDA receptors from PSD-95 by Tat-NR2B9c peptide in Huntington's disease corticostriatal co-culture

(Faculty Sponsor: Lynn Raymond)

Cadou Buren

Caodu Buren^{1,2}, Lily Zhang², Lynn Raymond²

Huntington's disease (HD) is a progressive neurodegenerative disorder, which results from an expansion in the CAG repeat region of the Huntingtin (Htt) gene. Multiple studies suggest that mutant Htt (mHtt) expression leads to a deficiency in the major astroglial glutamate transporter and an elevation in extrasynaptic NMDA receptor (NMDAR) expression, especially those containing GluN2B subunit, in striatum. These changes may contribute to NMDAR overactivation and cell death. Uncoupling of PSD-95 from GluN2B with a disrupting peptide, NR2B9c, can rescue the increased vulnerability of HD striatal neurons to NMDA-induced apoptosis, suggesting the peptide has therapeutic potential in HD. However, little is known about the effects of this peptide on synaptic function. Here, we investigated whether TatNR2B9c treatment to weaken the PSD-95/GluN2B interaction can ameliorate synaptic signaling changes in striatal neurons in corticostriatal co-culture from the YAC128 HD mouse, a model that expresses human Htt of 128 repeats. Surprisingly, the peptide reduced rather than improved pro-survival signaling, as reflected in nuclear levels of phospho-cAMP Responsive Element Binding protein (pCREB). Moreover, 1-hour treatment with TatNR2B9c decreased synaptic GluN2B-NMDAR; effects on synaptic GluN2A-NMDAR are being assessed. Currently, we are using whole-cell patch clamp recording to test whether NR2B9c peptide reduces synaptic NMDAR function, which may contribute to impaired survival signaling. In addition, we will assess whether this peptide rescues other changes associated with mHtt expression in striatal neurons, such as enhanced extrasynaptic NMDAR. Together, these studies will lay the foundation for a preclinical trial of Tat-NR2B9c peptide in HD mice

9. BDNF and homeostatic plasticity in YAC128 cortical neurons

(Faculty Sponsor; Lynn Raymond)

Amy I. Smith-Dijak^{1,2}, James B. Mau², Lynn A. Raymond²

Huntington disease (HD) is a neurodegenerative disorder caused by a polyglutamine expansion in the huntingtin protein, producing mutant huntingtin (mHtt). This causes neurodegeneration beginning in the striatum, and produces a range of motor, cognitive and behavioural symptoms. Many pre- and postsynaptic proteins interact with mHtt, and the function of at least some of these proteins is affected by the disease-causing mutation. This includes the neurotrophin brain-derived neurotrophic factor (BDNF), the release of which is impaired in HD. One of the consequences of these changes in protein function is alterations in synaptic signaling and plasticity. Particularly affected are the cortico-striatal synapses, especially those between cortical neurons and striatal spiny projection neurons (SPNs). We set out to examine changes in synaptic scaling, a form of homeostatic plasticity in which the strength of a neuron's synapses are uniformly increased or decreased in order to keep the neuron's overall level of activity within an optimal range, in excitatory synapses onto cortical pyramidal neurons. We measured the amplitude and frequency of miniature excitatory postsynaptic currents (mEPSCs) following 48 hours of treatment with either tetrodotoxin (TTX) or water (vehicle) onto cortical pyramidal neurons from either wild-type (WT) or YAC128 mice cultured *in vitro* to DIV 21 to determine the effect of treatment with TTX on synaptic strength. The frequency of mEPSCs increased and their amplitude tended to increase in WT cells treated with TTX relative to those treated with vehicle, but TTX treatment caused no change in either frequency or amplitude of mEPSCs in YAC128 cells. We then tested whether impaired BDNF release could be responsible for the observed deficit by attempting to recreate it in WT cells by adding BDNF or TrkBFc to the cell culture medium 48 hours before treatment with either TTX or vehicle. We also used immunocytochemical techniques to further assess the changes taking place in WT and YAC128 cells in response to treatment with TTX or vehicle. This will allow us to better understand the dysfunction occurring on the presynaptic side of the cortico-striatal synapse in HD and what makes this synapse particularly vulnerable to the HD mutation.

10. Deficits in synaptic plasticity in YAC128 striatal neurons depend on stimulation frequency

(Faculty Sponsor; Lynn Raymond)

Marja Sepers

Marja D. Sepers, Amy Smith-Dijak and Lynn A. Raymond

Animal models of Huntington's disease (HD) show altered cortical-striatal presynaptic glutamate release, glutamate uptake, and trafficking/signaling of postsynaptic glutamate receptors, changes which often precede the motor phenotype. Synaptic proteins form interaction hubs with wild-type huntingtin (Htt), and we hypothesize that early alteration of these interactions impact plasticity of excitatory synapses onto striatal medium-sized spiny projection neurons (SPN) in HD mice. We recorded from striatal SPN in acute brain slice, stimulating excitatory afferents to test the response to synaptic plasticity-inducing protocols, comparing YAC128 with wild-type (WT) FVB/N mice crossed with mice expressing eGFP in D2-dopamine receptor-expressing SPN. Long-term depression (LTD) of excitatory postsynaptic current or field potentials, induced by 100Hz stimulation (high frequency stimulation - HFS), was robust in striatal SPN from WT mice but significantly attenuated in YAC128 mice; the difference was most pronounced for D2-SPN, which are more vulnerable in early HD. HFS-LTD in WT SPN was associated with an increased paired-pulse ratio (PPR), consistent with a presynaptic locus for synaptic depression, whereas no change in PPR was observed after HFS in YAC128 SPN. Previous studies indicate that HFS-induced striatal LTD is mediated by retrograde endocannabinoid signaling from SPN to presynaptic cortical cannabinoid receptor-1 (CB1). Consistent with this, our pharmacological experiments in slice and immunocytochemical data from cortical-striatal co-cultures suggest reduced numbers/function of CB1 in YAC128 cortical neurons. On the other hand, short-term plasticity – Depolarization-induced Suppression of Excitation (DSE) – also mediated by CB1, was intact in YAC128 SPN, suggesting that presynaptic CB1 receptor alterations differentially impact signaling in long- vs. short-term plasticity at cortical-striatal synapses. An opposing role for altered NMDA-type glutamate receptor signaling in HFS-LTD is also being explored. Finally, LTD induced by 5 min of 10Hz stimulation, which is not mediated by endocannabinoid signaling and is observed at both cortico- and thalamo-striatal synapses, was similar in YAC128 and WT SPN. These results will increase understanding of early cognitive impairment, as well as striatal vulnerability to excitotoxicity, in HD.

Supported by the Cure Huntington Disease Initiative and Canadian Institutes for Health Research

POSTER PRESENTATIONS TRANSLATIONAL AND CLINICAL RESEARCH

1. Lessons from Our Second-Best Teachers: A Review of Family-Informed Advances in Management of Delirium

Dr. Alan Bates, Clinical Assistant Professor

2. Nutrition Initiatives Developed to Address the Needs of Mental Health Service Users

Dr. Mandeep Bhatti^{1,2}, Dr. Candida Graham^{1,2,3}, Nansi Long⁴

(¹Northern Medical Program Researcher, ²University of Northern British Columbia, ³University Hospital of Northern British Columbia Psychiatry Services, ⁴Activity Centre for Empowerment Coordinator)

3. Physical Activity Programs Developed to Address the Needs of Mental Health Service Users

Dr. Mandeep Bhatti^{1,2}, Dr. Karim Saleh^{1,2,3}, Dr. Candida Graham^{1,2,3}

(¹Northern Medical Program Researcher, ²University of Northern British Columbia, ³University Hospital of Northern British Columbia Psychiatry Services)

4. Peer Lead Development Program for Mental Health Service Users in Prince George, BC

(Faculty Sponsor: Dr. Candida Graham, Academic Psychiatrist, Northern Medical Program, UNBC, Prince George, BC)

Alice Graham, UBC Medical Student (Year 2), Northern Medical Program, Prince George, BC

5. Disadvantaged Mental Health Service Users

(Faculty Sponsor: Dr. Candida Graham)

Sabrina Trigo Undergraduate Research Assistant

Authors: Sabrina Trigo, Richard Massey, Alice Graham, & Candida Graham

6. Parent Mindfulness Skills Training vs. Peer Support for Parents of Obsessive-Compulsive Disorder affected Children -Early results.

(Faculty Sponsor Dr. Evelyn Stewart)

Clare Bleakley MBChB, Kouros Edalati MD, Rhonda Ellwyn BA, Fern Jasper-Fayer PhD, Evelyn Stewart MD

7. Coercive and disruptive symptoms in a pediatric OCD population and their response to treatment.

(Faculty Sponsor Dr. Evelyn Stewart)

Clare Bleakley MBChB, Elaine Chan BSc, Evelyn Stewart MD (supervising faculty)

8. Obsessive-compulsive disorder with and without comorbid tics: implications of the new DSM-5 specifier

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Clare Bleakley MBChB, Adrian Loh MBBS, Katherine McKenney PhD, Annie Simpson PhD, Andrea Boyle PhD, Rhonda Ellwyn BA, Elaine Chan BSc, S. Evelyn Stewart MD

9. The Prevalence of Childhood Traumatic Experiences of Abuse and Neglect in a Homeless Population with Mental Illness

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(Faculty Sponsor: Dr. Jehannine Austin)

Emma L. Leach, Genetic counselling graduate student

Co-authors: *Emily Morris, Hannah J. White, Angela Inglis, Jehannine Austin*

18. Stress Response to Cognitive Assessments in Patients with Concurrent Mental Health and Substance Use Disorders

(Faculty Sponsor: Dr. Christian G. Schütz)

Amanda Lee, Undergraduate Student

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Michelle Pritchard, Research Project Coordinator

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Natasha Leech, Forensic Psychiatric Services Commission/BC Mental Health and Substance Use Services Research Assistant

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Toby Schmitt, B. Sc.

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Mohit Singh, MD

Authors: *Mohit Singh, Dipinder Keer, Jan Klimas, Evan Wood, and Dan Werb*

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(Faculty Sponsor: Professor Raymond Lam)

Kurtis Stewart

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Robert Stowe MD, FRCPC, UCNS; Christine Tyson, PhD, FCCMG; Monica Hrynychak, MD, FRCPC, FCCMG; Trevor Hurwitz, MBChB, MRCP, FRCPC; and William Honer, MD, FRCPC

28. SHEWAY Project ‘One Year After’: Changes in Staff Practices, Attitudes and Trauma-Related Knowledge 12 months After a Comprehensive Trauma-Informed Training Curriculum

(Faculty Sponsor: Michael Krausz)

Authors: Verena Strehlau Langheimer, UBC Psychiatry Research Track Resident PGY-2; Iris Torchalla, Honorary Post-doctoral Fellow UBC Psychiatry; Isabelle Aube Linden, Michael Krausz, Professor UBC Psychiatry

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(Faculty Sponsor Dr. William Honer,)

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Gillian E.S. Munro (Resident), Tonia Nicholls, & Elham Forouzan

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Raymond W. Lam¹, Robert D. Levitan², Anthony J. Levitt², Edwin M. Tam¹, Lakshmi N. Yatham¹, Cindy Woo¹

35. Multi-site Study of Family Functioning Impairment in Pediatric Obsessive Compulsive Disorder

(Faculty Sponsor: Evelyn Stewart)

Elaine Chan, Yu-Pei Hu, Dianne Hezel, Rhonda Ellwyn, Elana Pearl Ben-Joseph, Daniel Geller, David Pauls, S. Evelyn Stewart

36. Executive Functioning Impairment on Daily Functioning of OCD-Affected Youth

Juliana Negreiros, PhD, Elaine Chan, BSc, Laura Belschner, MSc, Lynn D. Miller, PhD, S. Evelyn Stewart, MD

Supervisor: S. Evelyn Stewart

37. Correlating functional outcomes with clinical symptoms in patients treated for Major Depressive Disorder.

(Faculty Sponsor: Dr. Raymond Lam)

Dr. David Sarfati

POSTER PRESENTATIONS

1. Lessons from Our Second-Best Teachers: A Review of Family-Informed Advances in Management of Delirium

Dr. Alan Bates, Clinical Assistant Professor

Introduction: Delirium can be a frightening experience for family caregivers who often know little about it. **Methods:** To review the current literature about family caregivers in delirium, we searched PubMed using “delirium”, “family”, and “family caregivers”. **Results:** Breitbart et al. (2002) found that significant distress is common in caregivers of delirious patients and that distress is greater in caregivers than in nurses or patients. Gagnon et al. (2002) found that providing education increased family members’ confidence they were making good decisions. Online resources include Yale’s hospitalelderlifeprogram.org, Vanderbilt’s ICUdelirium.org, and Vancouver Island Health Authority videos. Without education, caregivers may attribute delirium to non-organic causes such as stress. Family members are good at noticing early signs such as sleep disturbance and Steis et al. (2012) showed they can be integrated into screening through the Family Confusion Assessment Method (FAM-CAM). Family caregivers can provide interventions such as frequent reorientation and their participation in care may improve patients’ psychological recovery from acute illness. **Conclusion:** Family caregivers of patients with delirium experience significant distress, and educating them and involving them in care is beneficial to patients. **Implications/Relevance:** As we refine management of delirium, it’s important we also make advances in supporting and enabling family caregivers.

2. Nutrition Initiatives Developed to Address the Needs of Mental Health Service Users

Dr. Mandeep Bhatti^{1,2}, Dr. Candida Graham^{1,2,3}, Nansi Long⁴

(¹Northern Medical Program Researcher, ²University of Northern British Columbia, ³University Hospital of Northern British Columbia Psychiatry Services, ⁴Activity Centre for Empowerment Coordinator)

Introduction: Mental health service users (MHSUs) have markedly elevated rates of cardio-metabolic disturbance. Epidemiologic evidence highlights the relationship between MHSU's cardio-metabolic disturbance and poor nutrition. Authors point to smoking and poor diet as contributors to cardio-metabolic disease with this population. We therefore saw the importance of addressing nutritional needs for MHSUs. **Methods:** The research engaged with MHSUs in an iterative process to develop a Nutritional Initiative drawing on *Self-Determination Theory [SDT]* and *Community-Based Participatory Research (CBPR)*. **Results:** Five areas related to nutrition were identified by MHSUs as part of an iterative process: information on the availability of community budget food resources, a peer-lead community kitchen, the need for individual nutritional sessions, and the need for a peer-lead tobacco reduction program [TR]. **Conclusion:** This poster outlines a nutritional program whose structure was developed collaboratively with MHSUs in Prince George to help improve their nutritional habits and aid them in tobacco reduction. **Implications/Relevance:** We aimed to develop a collaborative community-based nutritional initiative to meet the needs of MHSUs. Therefore, this project has direct clinical relevance informing clinicians and policy makers of the types of nutritional initiatives that MHSUs want to participate in and how they want them delivered.

3. Physical Activity Programs Developed to Address the Needs of Mental Health Service Users

(Faculty Sponsor: Dr. Candida Graham)

Dr. Mandeep Bhatti^{1,2}, Dr. Karim Saleh^{1,2,3}, Dr. Candida Graham^{1,2,3}

(¹Northern Medical Program Researcher, ²University of Northern British Columbia, ³University Hospital of Northern British Columbia Psychiatry Services)

Introduction: Mental health service-users (MHSUs) have elevated rates of cardio-metabolic disorders. Exercise interventions show moderate improvements. With community engagement we have developed collaborative physical activity programs with the BC Schizophrenia Society at the Activity Centre of Empowerment (ACE), Prince George, specifically meeting the needs of MHSUs with severe enduring mental illness. **Methods:** The research team engaged with MHSUs, at the ACE Centre to develop a Physical Activity Initiative using a joint methodological approach drawing from *Self-Determination Theory (SDT)* and *Community-Based Participatory Research (CBPR)*. **Results:** Three physical activity programs highlighted in the poster were developed by an iterative process and are peer lead by MHSUs with collaboration from community partners. Preliminary results are provided. **Conclusion:** This program has shown improvement for participants in their ability to incorporate exercise into their lives, quality of life and participants' ability to undertake work, home management, social & private activities and maintain close relationships. **Implications/Relevance:** This project has empowered MHSUs to engage in their own health behaviors and highlights that this approach yields quality of life improvement as well as increased participation in exercise for participants with severe remitting mental illness. The research has produced a sustainable community exercise program for MHSUs.

4. Peer Lead Development Program for Mental Health Service Users in Prince George, BC

(Faculty Sponsor: Dr. Candida Graham)

Alice Graham, UBC Medical Student (Year 2)

Increasingly, peer lead programs are showing efficacy in the mental health field, and value in empowering Mental Health Service Users (MHSUs) to manage health issues. Benefits of peer support include improved socialization and modelling of recovery. A community project with the Activity Centre of Empowerment (ACE) in Prince George is helping to empower MHSUs to improve lifestyle factors such as nutrition and tobacco reduction. Focus groups at ACE acknowledged that having Peer Leads for each health program would act as a strong facilitating factor. A Peer Leadership Program was therefore developed to address challenges identified by past Peer Leads (group dynamics, conflict resolution, and openness with Peer Lead selection) and help Peer Leads spearhead and support health programs at ACE. Goals of the Peer Leadership Program were impartial selection of Peer Leads for each health program through an application and interview process, support for Peer Leads in the form of biweekly meetings that incorporated planning, debriefing, and skills development, and ongoing evaluation of Peer Lead performance via liaison with community instructors. The project has highlighted the need for skills training specific to each health program, and the importance of interpersonal skills training for Peer Leaders when working with MHSU groups.

5. Disadvantaged Mental Health Service Users

(Faculty Sponsor: Dr. Candida Graham)

Sabrina Trigo Undergraduate Research Assistant

Sabrina Trigo, Richard Massey, Alice Graham, & Candida Graham

Mental health service-users [MHSUs] face various barriers in adopting healthy behaviours and improving health outcomes. Among these barriers, tobacco usage remains a significant determinant of health for MHSUs. While health promotion in the area of smoking cessation has led to significant decreases in tobacco usage, in the general population, smoking rates for Mental Health Service Users [MHSUs] have not fallen. Increasingly, research is drawing attention to the benefits of peer lead smoking reduction programs for this population. As part of a larger ongoing community participatory based research project, a twelve-week peer lead tobacco reduction program is occurring in Prince George, Northern British Columbia within a psychosocial rehabilitation centre. This study will help determine the feasibility of such future peer lead programs in the region. The structure of the peer support program has been developed through an iterative process between researchers, community partners, and mental health service-users and is outlined in this poster. Preliminary baseline data highlights the need for positive relationships and peer leadership to support tobacco reduction. The group developed a closed 12 week program with initial high frequency meetings. Through the iterative research process, participants continue to guide development of the tobacco reduction program facilitated by health professionals with the aim of tobacco reduction and cessation for participants.

Implications/Relevance: Results of this study will inform healthcare professionals of the preferences of mental health service users in regards to peer lead tobacco reduction programs. Such programs are increasingly being highlighted as effective to help improve the high rates of tobacco usage in MHSUs.

6. Parent Mindfulness Skills Training vs. Peer Support for Parents of Obsessive Compulsive Disorder affected Children -Early results.

(Faulty Sponsor: Dr. Evelyn Stewart)

Clare Bleakley MBChB, Kourosh Edalati MD, Rhonda Ellwyn BA, Fern Jasper-Fayer PhD, Evelyn Stewart MD

Introduction: Pediatric obsessive-compulsive disorder (OCD) often has a disruptive effect on the family, with parents put under pressure by the child to become involved in rituals. Reducing this family accommodation improves treatment outcomes but can be challenging for parents, if children temporarily appears distressed. We investigate a parent mindfulness-based skills training (P-MBST) group in supporting parents to reduce their accommodation of OCD by increasing their ability to tolerate this distress. We include a control peer support group (PSG). **Methods:** Participants, recruited from parents who had previously recruited the GF-CBT group, were randomized into either the P-MBST or PSG. Both groups ran as weekly session over 8 weeks. Parent rated measure were completed on the parent, family and child. **Results:** 4 participants were randomized into each group, with one drop out from PSG. A positive trend was seen in the P-MBST group, particularly regarding family coping with a reduction in family accommodation (wk1 mean 12.50, wk8 5.5, $p=0.071$) and improved family function (wk1 mean 22, wk8:11.75, $p=0.027$). PSG showed similar but smaller changes. **Conclusions:** Early results have been encouraging for this novel study, with increased benefit for P-MBST above control. A larger sample size is required in order to gain generalizable results. **Implications/Relevance:** These early results on a small sample are encouraging and suggest a positive impact from P-MBST upon families of children with OCD. P-MBST may be viewed as an adjunct treatment which may increase the efficacy of cognitive behavioural therapy by helping parents reduce family accommodation.

7. Coercive and disruptive symptoms in a pediatric OCD population and their response to treatment.

(Faculty Sponsor: Dr Evelyn Stewart)

Authors: Clare Bleakley MBChB, Elaine Chan BSc, Evelyn Stewart MD (supervising faculty)

Objectives: Rage, coercive and disruptive (CD) behaviours have been increasingly recognized in pediatric obsessive compulsive disorder (OCD). However, these behaviours have not been examined in adequately powered samples. This study examines the frequency and clinical correlations of CD behaviours in pediatric OCD, in addition to their response to cognitive-behaviour therapy (CBT.) *Methods:* Sixty-five OCD-affected youth were recruited from a subspecialty OCD clinic. The coercive and disruptive behaviour scale –pediatric OCD (CD-POC), was completed at baseline. This was repeated for a subsample following CBT (N=19). Descriptive and quantitative analyses utilized SPSS version 22 and a statistical cut-off $p < 0.05$. *Results:* Mean CD-POC score at baseline was: 17.71 (± 13.6 (SD)). Most commonly reported behaviours included: 1) *imposed physical closeness/ exaggerated clinginess* (mean 1.69); 2) *forced decision-making/ reassurance by others* (mean 1.83); and 3) *forbidden actions due to disgust* (mean 1.35). Following CBT, the CD-POCS significantly decreased (mean 9.37, $p < 0.001$), with maintained improvement at one-month follow-up (mean 7.7, $p = 0.048$). A significant decrease was seen in items 1 ($p = 0.001$) and 3 ($p = 0.001$) but not 2 ($p = 0.086$). No significant correlations with OCD severity or age were identified.

Conclusion: Based on these findings, CD behaviours are pervasive in pediatric OCD. These significantly improved following CBT. Further research is needed to examine the clinical significance and outcomes of these behaviours in the context of this debilitating illness.

Potential clinical relevance: Coercive and disruptive behaviours are a common but under-recognised phenomena in pediatric OCD. This study demonstrates the importance of directly questioning about these symptoms. Recognition that these symptoms are not only associated with OCD, but can be reduced by standard CBT, may reduce the frequency of unwarranted co-morbid diagnoses.

8. Obsessive-compulsive disorder with and without comorbid tics: implications of the new DSM-5 specifier

(Faculty Sponsor: Dr Evelyn Stewart)

Clare Bleakley MBChB, Adrian Loh MBBS, Katherine McKenney PhD, Annie Simpson PhD, Andrea Boyle PhD, Rhonda Ellwyn BA, Elaine Chan BSc, S. Evelyn Stewart MD

Objectives: Obsessive Compulsive Disorder (OCD) is a debilitating illness affecting 1-3% of youth. While many studies have examined comorbidity profiles in adult OCD (1), fewer have investigated this aspect of pediatric OCD (2). The DSM-5 introduces a new specifier for cases with comorbid tics. This study examines comorbidity prevalence and their correlations, and compares OCD-affected youth with and without tics. **Methods:** Consenting subjects were recruited from a specialty outpatient OCD program at UBC. The Anxiety Disorders Interview Schedule (ADIS) was administered in addition to the Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS) and other validated measures. Descriptive and comparative analyses were employed utilizing SPSS v22 and a cut-off threshold of $p < 0.05$. **Results:** This sample comprised 98 participants (40.9% female), with a mean CY-BOCS OCD severity score of 21.3 (SD 7.6), indicating moderately severe illness. Most commonly identified comorbidities included generalized anxiety disorder (GAD) (26.1%; 25%); tic disorders (24.3% lifetime, $n=28$; 21.7%, $n=25$ current Tourette's 11.3%; motor 2.2%; vocal 3.3%; ttd 4.3%) and attention deficit hyperactivity disorder (ADHD) (any 18.5%; inattentive 9.6%; hyperactive/impulsive 2.2%; combined 4.3%). Those with comorbid tics had earlier OCD onset ($p=0.04$) increased family accommodation ($p=0.02$) and increased ADHD ($p=0.003$) comorbidity rates. **Conclusions:** Comorbid GAD, tics and ADHD are notably present in pediatric OCD, representing distinct profiles compared to adult OCD. Tic disorders present in a significant minority of cases, providing support for the new DSM-5 'OCD with tics' specifier, characterized by earlier OCD onset and increased risk for ADHD and family accommodation. Clinical implications require further study

9. The Prevalence of Childhood Traumatic Experiences of Abuse and Neglect in a Homeless Population with Mental Illness

(Faculty Sponsor: Dr. Michael Krausz)

Fiona Choi, Postdoctoral Fellow

Introduction: Childhood maltreatment increases vulnerability for an array of psychiatric disorders including, but not limited to: mood and anxiety disorders; eating disorders; PTSD; psychosis; and substance abuse, and is associated with an earlier age of onset, more severe course, and poorer response to treatment. Based on the participants in the At Home/Chez Soi study, we report on the prevalence of childhood maltreatment in a subset of the Vancouver sample. **Methods:** Childhood maltreatment was assessed using the Childhood Trauma Questionnaire (CTQ), a retrospective self-report inventory with 28 items, assessing 5 subtypes of trauma: physical abuse; sexual abuse; emotional abuse; physical neglect; emotional neglect and the presence of minimization/denial. The severity classification of ‘Moderate’ and ‘Severe’ were used to categorize the experience as “Maltreatment”. **Results:** Of the 497 participants in the Vancouver At Home study, a subset (n=110) completed the CTQ during the follow-up interview at 24 months. Participants ranged in age from 21 to 66 years (mean: 40.63; SD=10.77); 72.5% male, 24.8% female, 1.8% transgendered and 0.9% transsexual. The experience of childhood trauma meeting severity criteria for maltreatment were as follows: 48.2% emotional abuse; 45.5% physical abuse; 35.5% sexual abuse; 44.5% emotional neglect; and 49.1% physical neglect, with emotional neglect as a significant predictor of substance use disorder. **Conclusion:** The experience of childhood maltreatment is highly prevalent in those diagnosed with a mental illness and precariously housed. Of the five dimensions of abuse and neglect, emotional neglect was a strong predictor of developing a substance use disorder in adulthood. **Implications/Relevance:** Exposure to early life stress may lead to the persistent sensitization of neural circuits involved in the regulation of stress and emotional responsiveness to later life stressors and the onset and development of psychiatric disorders. Early detection and intervention are critical in minimizing the impact of risk factors in vulnerable populations.

10. Psychiatric and Substance-use Disorders is Associated with Cannabis Use in a Tertiary Concurrent Treatment Centre

(Faculty Sponsor: Dr. Christian Schütz)

Clement Chui, Undergraduate Student

Introduction: Burnaby Centre for Mental Health and Addictions (BCMHA) is a tertiary inpatient centre for patients suffering from complex concurrent mental and substance-use disorders. Given recent discussion about concerns and benefits of cannabis use, we completed a chart review to analyze the association between cannabis use disorder with other substance-use disorders and psychiatric diagnoses. **Methods:** A retrospective review of discharge diagnoses was completed on BCMHA on clients discharged in 2013 and 2014. We used bivariate chi-square analysis and multivariate logistic regression modeling. **Results:** 452 individuals were discharged within the assessed time frame and 407 were included in analysis; 103 were diagnosed with cannabis use disorder. We found binary associations with: psychotic disorder, opioid, stimulant and alcohol use disorder but not with sex, age, affective or bipolar disorder. Final regression model included three risk factors, psychotic disorders (Odds: 2.0, sig: 0.004), stimulant use disorders (2.8, 0.000) and alcohol use disorders (2.9, 0.000). **Conclusion:** One-in-four patient included in the study were diagnosed with cannabis use disorder. Cannabis use was associated with stimulant and alcohol use disorder while substance induced psychotic disorders showed the highest risk of cannabis use among psychotic disorders (3.1, 0.01).

Implications/Relevance: If cannabis becomes easily accessible through legalization, it is important to consider the impact on vulnerable populations like these. It is possible that individuals suffering from severe concurrent disorders might more easily abuse cannabis. Furthermore, cannabis use in people with substance induced psychotic disorders may perpetuate their substance induced psychosis.

11. Smartphone-Assisted Mental Health: MoodFx, a Mobile Website for Depression Management

(Faculty Sponsor: Dr. Raymond Lam)

Vanessa Evans, Research Staff

Introduction: The proliferation of powerful and personalized mobile technology such as smartphones and tablets presents exciting new opportunities for innovations in mental health care, often referred to as “mobile” or “mMental Health”. The Mood Disorders Centre and the eHealth Strategy Office developed MoodFx, an interactive, mobile-optimized website that empowers depressed individuals to monitor their symptoms and functioning with easy access to scientifically and clinically valid scales, the use of which has been shown to improve depression treatment outcomes. We present results from the first user satisfaction survey of over 500 registered users. **Methods:** Users were contacted by email with a request to complete a 5-minute, voluntary, anonymous user feedback survey. **Results:** Approximately 13% of then-registered users (N = 64, 79% female) completed the survey. 70% of respondents either agreed or strongly agreed that “MoodFx has been helpful for me,” and MoodFx scored in the 75th percentile for usability according to a widely-used industry standard scale. However, fewer individuals than expected (less than 30%) reported sharing their results with a health care provider. **Conclusion:** Users have found MoodFx both helpful and easy to use. Future effort should be directed at encouraging users to use MoodFx with health care providers, such as their family doctors and therapists. **Implications/Relevance:** Empowering depressed individuals to monitor their symptoms and functioning can engage patients in their treatment, helping them to see if they are improving, and, if not, notify their care provider. MoodFx can also promote the use of standardized rating scales for depression management, a practice known to improve treatment outcomes.

12. An Indo-Canadian Cross Cultural Qualitative Study on Caregivers of Persons with Dementia

(Faculty Sponsor: Dr. Videsh Kapoor)

Dr. Nadeesha L Fernando

Introduction: Currently 62% of people with dementia live in low-middle-income countries (LMIC). Given limited resources in LMIC, families are often primary caregivers for persons with dementia. In this study, we will be comparing qualitative interviews of caregiver experiences in Mysore, India with Vancouver, Canada. We will be focusing on caregiver education, current experiences and access to resources. **Methods:** Semi-structured interviews will be conducted in high-income countries and LMIC. Similar open-ended questions will be asked of participants in high and lowmiddle income countries and using qualitative methods results will be compared. **Results:** Data analysis in progress. **Conclusions:** Data analysis in progress. **Implications/Relevance:** From our knowledge, this is the first qualitative study of its kind that will examine caregiver educational needs in two different economic and cultural systems. We hope to present our initial hypothesis and methods to the research community in order to network on global mental health. Data gathering is completed; analysis is pending.

13. Working Alliance and Illness Perception in Depressed Patients Starting TMS Treatment

(Faculty Sponsor: Dr. Fidel Vila-Rodriguez)

Vanessa Fong

Introduction: Positive therapeutic working alliance has been associated with improved treatment adherence and outcome in depression. The way in which patients perceive their depression may also impact treatment commitment and response. Our study examines the relationship between illness perception and working alliance in Transcranial Magnetic Stimulation (TMS) therapy for depression. Two self-rated questionnaires were utilized: the Brief Illness Perception Questionnaire (BIPQ) and the Working Alliance Inventory (12-item) (WAI-12). Higher BIPQ scores represent a more threatening illness perception; higher WAI-12 scores indicate greater satisfaction with the alliance. **Methods:** Twenty depressed patients completed the BIPQ and WAI-12 prior to starting a course of TMS. We hypothesize that the 'cognitive illness representation' (BIPQ) will be negatively correlated with 'goal' and 'task' dimensions (WAI-12), while the 'emotional' representation (BIPQ) will be negatively correlated with the 'bond' dimension (WAI-12). **Results:** Our cross-sectional data revealed a positive correlation with the 'emotional' and 'bond' scores: those who were more concerned and emotionally affected by their depression were more likely to feel a stronger working alliance at the start of TMS treatment. There was a gender difference in the BIPQ and WAI-12 scores, but the sample size is small. **Conclusion:** Early identification of Illness perception and working alliance may influence management of the patient during treatment. Our future data analysis will include comparisons to treatment completion, adherence, and response. **Implications/Relevance:** Systematically addressing patients' beliefs and therapeutic alliance may positively impact treatment outcome.

14. Recording of Seizure Variables in Electroconvulsive Therapy

(Faculty Sponsor: Dr. Fidel Vila-Rodriguez)

Katherine Green, Undergraduate

Introduction: Electroconvulsive therapy (ECT) is the most effective treatment for severe depression. ECT is a noninvasive convulsive neurostimulation therapy with a longstanding history in the treatment of severe mental illness. Despite its frequent use, the intricacies of treatment variables that produce good seizures versus poor seizures are not well understood. We are investigating connections between EEG seizure patterns during ECT treatments and patient health outcomes. Specifically, this retrospective chart review aims at looking at the EEG measurements of Coherence, Amplitude, Rhythm, Suppression in induced tonic-clonic seizures in patients being treated in UBC hospital between January 2011 and May 2013. **Methods:** Retrospective chart review was performed on charts of from the neurostimulation service at UBC Hospital between January 2011 and May 2013. **Results:** The mean number of treatments in an index course of ECT was 12.82 ± 6.56 treatments. Results indicate that there is a correlation between gender and quantity of ECT treatments, in our sample there were more female patients, and on average female patients received longer ECT courses. Results show an unusual distribution of diagnosis across gender. A higher proportion of males were treated for depression than expected, and a higher proportion of females were treated for psychosis than expected. **Conclusion:** In our sample, we found a higher proportion of male patients receiving ECT for depression whereas the converse was true for psychosis. This result is in contrast to other group's findings. This may be a result of the mixed population of inpatients and outpatients in our sample. **Implications/Relevance:** This project looks at ECT records in order to move towards a standardized recording procedure that more accurately represents the treatment being administered.

15. Potentially Treatable Illnesses Increase Mortality in Marginally Housed Adults in Vancouver: A Prospective Cohort Study

(Faculty Sponsor: Dr. William G. Honer)

Andrea Jones, MD/PhD student

Introduction: Socially disadvantaged people experience greater risk for illnesses that may contribute to premature death. This study evaluated the impact of potentially treatable illnesses on mortality among precariously housed adults. **Methods:** A prospective community sample (N=371) of adults living in Vancouver was assessed for physical and mental illnesses for which treatment is currently available in principle. Mortality rates were compared with 2009 Canadian rates. Left-truncated Cox proportional hazards modeling with age as the time-scale was used to assess risk factors for earlier mortality. **Results:** During 1269 person-years of observation, 31/371 (8%) of participants died. Compared with age- and sex-matched Canadians, the standardized mortality ratio was 8.29 (CI: 5.83-11.79). Among participants less than 55 years of age, psychosis (HR: 8.12, CI: 1.55-42.47) and hepatic fibrosis (HR: 13.01, CI: 3.56-47.57) were associated with earlier mortality. Treatment rates for these illnesses were low (psychosis: 32%, HCV: 0%) compared to other common disorders (HIV: 57%, opioid dependence: 61%) in this population. **Conclusions:** Hepatic fibrosis and psychosis are associated with increased mortality in people living in marginalized housing. **Implications/Relevance:** Prioritized management of psychosis and liver disease may be critical to reduce unnecessary deaths among inner city adults. Vulnerably housed adults have greater than eight-fold increase in mortality risk. For individuals with complex multimorbidities living in marginalized conditions, earlier detection and treatment of psychosis and liver disease may prevent premature mortality.

16. Epilepsy and Seizures in the Mentally Ill Homeless: Psychiatric Comorbidities and Substance Use

(Faculty Sponsor: Dr. Christian Schütz)

Shahin Khayambashi, Undergraduate Student

Introduction: Clinical studies indicate that individuals suffering from epilepsy and seizures may be more likely to suffer from psychiatric co-morbidities. **Methods:** 497 mentally ill homeless in Vancouver (AtHome study) were assessed in standardized interviews. We used bivariate analysis to assess the prevalence of psychiatric disorders as well as substance use associated with a history of epilepsy and seizure. Further analyses are based on multivariate logistic regression. **Results:** Individuals reporting seizures were more likely to suffer from mania/hypomania and mood-congruent psychoses, and to suffer from more than 2 psychiatric co-morbidities. There was no significant difference with drug of choice, although those with a history of seizures consumed alcohol and cocaine in larger amounts. **Conclusion:** Compared to other mentally ill homeless individuals, those with a history of seizures were more likely to suffer from bipolar disorder and reported higher levels of alcohol and cocaine consumption. **Implications/Relevance:** Findings were consistent with findings from clinical populations: alcohol and cocaine use may induce seizures. Seizures and bipolar disorder may have overlapping underlying molecular mechanism. Clinicians need to be aware that seizures and epilepsy are common among homeless. Further investigations are needed to disentangle underlying mechanism and the question of causality. Research has consistently shown that epileptic patients are at a higher risk of also suffering from psychiatric disorders. Thus, in treating epilepsy it is important to respect the psychosocial consequences of this disease. Reducing the quantity of seizures may have only minimal impact on the patients' quality of life.

17. Exploring Physician Perceptions of Psychiatric Genetic Counseling and Conceptual Barriers to Referrals

(Faculty Sponsor: Dr. Jehannine Austin)

Emma L. Leach, Genetic counselling graduate student

Emily Morris, Hannah J. White, Angela Inglis, Jehannine Austin

Introduction: The world's first specialist psychiatric genetic counselling (PGC) service was founded in Vancouver in 2012. While clear benefits of PGC services have been demonstrated, experience reveals that many physicians do not regularly refer to the clinic. Understanding the barriers preventing physicians from making referrals to PGC will allow the development of mitigating strategies. **Methods:** Qualitative telephone interviews were conducted with 12 physicians from Vancouver who were aware of a local PGC clinic, with the aim to understand the process by which physicians make decisions about referring patients for PGC. **Results:** Patient cues and physicians' perceptions about the purpose of PGC inform their referral practices. Physicians perceive PGC to be an information-focused intervention and patient psychotherapeutic needs are not perceived as cues for referral to PGC. Physicians consider referral when patients express desire for information about recurrence risk or etiology that they feel unable to address themselves. **Conclusion:** Further work is necessary to increase physicians' awareness of: a) the importance of psychotherapeutically-oriented counselling around issues of risk and etiology, and b) the role that genetic counsellors can play in this domain, in a manner that is complementary to and supportive of the role of the physician. **Implications/Relevance:** These data suggest that further work is necessary to position PGC in physicians' minds as a service that could potentially benefit most individuals with psychiatric disorders and their families.

18. Stress Response to Cognitive Assessments in Patients with Concurrent Mental Health and Substance Use Disorders

(Faculty Sponsor: Dr. Christian G. Schütz)

Amanda Lee, Undergraduate Student

Introduction: This study is based on a neuropsychological test of impulsive decision-making in individuals with concurrent mental health and substance use disorders. Stress may impact impulsive decision making. Testing itself may be a stressor. We examined subjective stress levels induced by cognitive assessments, particularly differences between healthy individuals and patients, differences in specific test used and changes over time. We hypothesized that patients would experience more stress than controls, cognitively more demanding tests would induce more stress and re-tests would be less stressful than the original test. **Methods:** A computerized Cantab battery was used to measure aspects of impulsive decision-making. Self-reported stress levels were measured via a Visual Analogue Scale (VAS) given after each cognitive test and the 14-question Perceived Stress Scale (PSS). Subjects were healthy controls ($n = 50$) and patients of the Burnaby Center for Mental Health and Addictions ($n = 56$) between 20-54 years old who underwent two assessments 3 months apart. **Results:** VAS scores were higher for patients than controls while PSS scores did not differ. Stress responses differed significantly between controls and patients on 4 out of 6 tests (CGT, IST, SWM and DDT). Patient PSS scores decreased over time. PSS and VAS scores did not correlate. **Conclusion and Implications/ Relevance:** The study starts to disentangle the role of stress in cognitive testing and impulsive decision-making. This is relevant for understanding underlying mechanisms and treatment. Further analysis is needed to understand how well subjective responses correlate with objective stress measures and if stress and test responses correlate.

19. The Relationship Between Objective and Subjective Cognitive Functioning on Quality of Life in Bipolar Disorder and Healthy Volunteers

Sylvia Mackala

Mackala, S.A., Ahn, S., Hidirođlu, C., Michalak, E.E., Yatham, L.N., & Torres, I.J.

Introduction: Individuals with bipolar disorder (BD) show cognitive impairments, which significantly impair one's well-being. There are mixed findings on the relationship between subjective and objective cognitive functioning in BD, and less is known about the influence of cognitive complaints and quality of life (QOL). The purpose of this study was to evaluate the relationship between objective and subjective cognitive functioning on QOL in BD, and to assess whether the relationship can generalize to healthy volunteers. **Methods:** Outpatients with BD (n=75) and healthy volunteers (n=41) completed subjective (Cognitive Failures Questionnaire; CFQ) and objective cognitive measures (verbal learning and executive functioning). Significant predictors of QoL (Quality of Life in Bipolar Disorder questionnaire) were assessed through multiple hierarchical regressions. Effect size differences on objective and subjective measures between euthymic outpatients (n=53) and healthy volunteers were assessed through independent-sample t-tests. **Results:** After accounting for symptoms of depression ($R^2=.54$, $p<.001$) and objective cognitive performance ($\Delta R^2=.01$, $p>.05$), subjective cognitive complaints further predicted QoL ($\Delta R^2=.04$, $p<.01$) in outpatients. There were no significant differences on verbal learning ($t(114) = -.58$) and executive functioning ($t(114) = 1.81$) between outpatients and healthy volunteers. When euthymic outpatients and healthy volunteers were compared (to account for the affect of depression on QOL), outpatients still reported greater cognitive complaints (CFQ; $M=37.85$, $SD=15.88$) and poorer QOL ($M=174.49$, $SD=20.86$) than healthy volunteers ($M=24.90$, $SD=10.70$; $M=191.27$, $SD=23.75$, respectively). The differences for CFQ ($t(90) = 4.71$, $p<.001$) and QOL ($t(92) = -3.64$, $p<.001$) represented medium-sized effects (CFQ $r = .44$; QOL $r = .35$). **Conclusion:** Objective cognitive measures failed to predict QOL, which may be due to the fact that outpatients performed within normal range. This suggests that poorer cognitive functioning predicts poorer QOL only if objective performance is significantly impaired. There were no significant differences on objective cognitive functioning between outpatients and healthy volunteers, yet there were significant differences on subjective cognitive complaints (CFQ) and QOL even after controlling for mood symptoms. Further research is needed to investigate other determinants of QOL that could give reason for the differences between BD and healthy volunteers. Nevertheless, clinicians should implement subjective cognitive assessments to guide treatment strategies.

20. The Safety and Efficacy of Adjunctive Modern Antidepressant Therapy With a Mood Stabilizer or Antipsychotic in Acute Bipolar Depression: A Meta-Analysis of Randomized Placebo Controlled Trials

(Faculty Sponsor: Dr. Lakshmi Yatham)

Alexander McGirr

Introduction: Bipolar disorder is defined by mania/hypomania, yet depressive episodes are common and impairing. Unmet clinical need in bipolar depression has stoked interest and controversy surrounding antidepressant efficacy in bipolar depression and the risk of treatment-emergent mania/hypomania. Yet the data for adjunctive modern antidepressants in acute bipolar depression is limited. **Method:** We synthesized randomized, double-blind, placebo-controlled trials (RCTs) of modern antidepressants adjunctive to a mood stabilizer/antipsychotic in acute bipolar depression (CRD#42015016024). Analyses employed pooled random-effects models. The primary outcome was clinical remission; secondary outcomes were clinical response, depressive symptoms, treatment-emergent mania/hypomania and tolerability. **Results:** We identified 6 RCTs representing 1381 patients with bipolar depression. Modern antidepressants were not associated with higher rates of clinical remission or response than placebo. However, sensitivity analyses suggested greater efficacy (remission NNT=14). Meta-regression suggested decreasing efficacy with longer treatment. Antidepressants had superior efficacy in clinician-rated depressive symptoms (SMD=-0.16). Acutely, they were not associated with treatment-emergent mania/hypomania, but were associated with increased risk in 52-week extension periods (NNH=19). **Conclusion:** Time-limited adjunctive modern antidepressant treatment appears efficacious in bipolar depression, though the effect is small. Acute treatment with adequate mood stabilization, is not associated with increased risk of treatment-emergent mania/hypomania, though prolonged treatment should be avoided. **Implications/Relevance:** Antidepressant treatment in bipolar depression is one of the most controversial topics in psychiatry. Few studies have examined modern antidepressants, such as SSRIs, and similarly few studies have examined antidepressants as an adjunct to adequate mood stabilization. Our data synthesizes RCTs on this topic to guide clinical decision making.

21. Personality Correlates of Psychopathy in Women Removed From Family Care in Childhood

(Faculty Sponsor: Dr. Tonia Nicolls)

Gillian Munro

Gillian E.S. Munro, Tonia Nicholls, & Elham Forouzan

The majority of psychopathy research has been conducted in incarcerated men, with relatively few studies in women. While lower base rates are consistently reported in female samples, some studies have found differential personality correlates. In particular, psychopathy is primarily correlated with antisocial personality disorder in men, and with borderline personality disorder in women. As such, it is unclear whether current conceptualizations of psychopathy are generalizable to women. To further examine the personality correlates of psychopathy in this population, a sample of 74 women removed from their families by Quebec's Youth Protection system were recruited in young adulthood. Contrary to our hypothesis, results indicated no relationship between psychopathy and borderline personality disorder. Psychopathy was associated with antisocial personality disorder, substance abuse, and other personality traits consistent with studies of male offenders. Rates of psychopathy were also higher in this sample as compared to previous research with women. These data suggest that the current conceptualization of psychopathy may be generalizable to female samples, and do not necessarily support the presence of differential personality correlates. Furthermore, our results also suggest that this population may represent a reservoir of women at an unusually high risk of psychopathy, and as such warrants further examination. This study suggests the current conceptualization and measurement of psychopathy can be extended to women, which has relevance for assessment and management. It also suggests that women placed in care in childhood may represent a group at unusually high risk of developing psychopathy, and who may benefit from early intervention.

22. Level of Care Assessments: A Systematic Review of Measures Appropriate for Psychiatric Patients in Emergency Departments

(Faculty Sponsor: Dr. Tonia Nicholls and Dr. Johann Brink)

Michelle Pritchard, Research Project Coordinator

Introduction: Individuals with complex and concurrent disorders (CCD) cycle between multiple agencies with little therapeutic benefit and at considerable cost. With emergency departments (EDs) often being the first point of contact for this population, there is a need to identify measures appropriate for use to guide placement decisions based on level of risk and need. A gap exists in research and practice regarding how best to match the complex needs of SAMI individuals to service intensity. **Methods:** A systematic literature review was conducted using electronic databases, including PsycINFO, Web of Science, Medline, PubMed, and Google Scholar. A hierarchical-criterion decision-making approach was employed with efficiency, ease of use, and demonstrated ability to support valid and reliable decision-making around risk, care-levels, and treatment needs for EDs as the criteria. **Results/Conclusion:** Of nine measures identified we concluded that the Level of Care Utilization System (LOCUS) is the most suitable instrument available for use in EDs to determine care needs and placements.

Implications/Relevance: The LOCUS could facilitate decision making in emergency psychiatry while ensuring that patients receive optimal care. LOCUS is required for accessing beds at the Burnaby Centre and will be an integral aspect of the continuum of care for this population. PHSA has provided LOCUS training for all BC HAs and collaborated to develop online cases and training materials to support this initiative. We will conduct a pilot implementation of the LOCUS to test its validity and reliability and investigate how to best meet the needs of individuals with CCD.

23. Exploring START Risk Formulations

(Faculty Sponsor: Dr. Tonia Nicholls)

Natasha Leech Research Assistant

Introduction: Although the Short-Term Assessment of Risk and Treatability (START) has been the subject of considerable research, little attention has been paid to the qualitative aspects of the form, such as the ‘Risk Formulation.’ Given that risk formulations are integral to linking risk assessment and risk management (e.g. Logan & Johnstone, 2010), there is a need for further exploration into the START risk formulation, and how the START is used in clinical practice.

Methods: Demographic information, 6 months of outcome data (aggression, self-harm, etc), and two independent STARTs were collected for 102 forensic psychiatric in-patients. Half the STARTs were completed by a multidisciplinary treatment team, and half were completed by START content experts as part of a larger study. **Results:** Risk formulations tended to focus exclusively on violence to others as an outcome (68.6%). While only 31.4% of risk formulations considered adverse outcomes other than violence (i.e. suicide) outcomes other than violence were present in a sizable minority of cases. **Conclusion:** This study examined key themes present in the risk formulations for forensic psychiatric patients. Themes that emerged brought to light a number of key risk factors that are routinely considered in both risk assessment and risk management. The potential for risk formulations to serve as a link between risk assessment and risk management is also discussed. **Implications/Relevance:** Findings suggest violence may not be the sole behavior that clinicians should be anticipating when formulating risk management plans. Many other behaviors were assessed as moderate or high risk (such as UAL and substance use), and yet were not described in the risk formulation. Further policy may be needed to ensure a risk formulation is included for patients rated Moderate and/or High for other START risk estimates.

24. Characterization of Vulnerably Housed Individuals with Traumatic Brain Injury

(Faculty Sponsor: Dr. William Panenka)

Toby Schmitt, B. Sc.

Introduction: Vancouver's downtown eastside is home to a marginalized group of homeless and vulnerably housed individuals. Occupants of single room occupancy hotels (SROs) in this area have high rates of substance dependence, viral infection, and mental illness. Traumatic brain injury (TBI) is an additional common comorbidity. **Methods:** 288 participants recruited as part of a larger longitudinal study (HOTEL, P.I. W. Honer) were categorized according to TBI presence and severity. Participants were evaluated with a neurocognitive and symptom battery, urine drug screens, blood tests, psychiatric diagnosis, and multimodal MRI. **Results:** TBI was endorsed by 31% of subjects, most commonly from assault. Related symptoms including headaches, dizziness, fainting, and memory problems were more prevalent among the TBI group compared to controls. Mood disorders and criminal convictions were more prevalent in moderate and severe TBI. TBI occurred before moving to the downtown eastside for 57% of subjects; 17% of subjects with TBI migrated to the downtown eastside one to three years after their most severe head injury. **Conclusion:** Traumatic brain injury was widespread and associated with persistent physical symptoms in the study population. The temporal relationship between TBI and migration to the downtown eastside suggests TBI may be a risk factor for homelessness. **Implications/Relevance:** This study's findings emphasize the need for healthcare providers to assess the presence and severity of traumatic brain injury in patients who are homeless. Clinicians should be aware of the severity-dependent TBI-associated comorbidities in this population.

25. Topiramate for Cocaine Dependence: A Systematic Review and Meta-Analysis of Randomized Control Trials

Mohit Singh, MD

Authors: Mohit Singh, Dipinder Keer, Jan Klimas, Evan Wood, and Dan Werb

Objectives: To assess the effectiveness of topiramate in treating cocaine use disorder through review of randomized control trials (RCT), and a meta-analysis on efficacy and tolerability data. **Methods:** Peer-reviewed studies were identified from the following databases: the Cochrane Drugs and Alcohol Group Specialized Register, Cochrane Central Register of Controlled Trials, MEDLINE, EMBASE CINAHL, PsycINFO and PubMed. We employed Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines to systematically review, extract, and analyze findings. RCTs comparing topiramate alone or in combination with other drugs and/or psychosocial interventions versus placebo, no treatment and other pharmacological or psychosocial interventions were included. Effects were calculated according to a fixed-effects meta-analytic model. Outcomes included treatment retention, abstinence, craving, urine screens and undesired or adverse treatment effects. **Results:** A total of 5 studies met inclusion criteria ($n = 518$). Topiramate was compared with placebo (4 studies), and no medication (1 study). Studies were conducted in the USA (80%) and the Netherlands (20%). The mean duration of RCTs was 13 weeks (Range: 12-18 weeks). Systematic review of studies showed variation in outcome findings. Meta-analytic results showed no significant differences between topiramate and placebo in improving treatment retention (risk ratio [RR] = 0.84; 95% Confidence Interval [CI]: 0.67-1.05, $p = 0.12$). Compared with a placebo, use of topiramate was associated with increased continuous abstinence (RR = 2.52; 95% CI: 1.35-4.73, $p = 0.004$). No favorable effects in terms of treatment retention or decrease in cocaine use were observed for topiramate use relative to no medication. **Conclusions:** Topiramate does not appear to consistently improve treatment retention or craving. At high doses it appears beneficial for continuous abstinence from cocaine; however, this is based on limited efficacy trials. More research is needed to determine the efficacy of topiramate in managing cocaine use disorder.

26. Can Depressive Symptomatology Predict Work Productivity Loss in Patients With Depression?

(Faculty Sponsor: Professor Raymond Lam)

Kurtis Stewart

Introduction: Major Depressive Disorder (MDD) is associated with significant impairment in occupational functioning. This study sought to determine which depressive symptoms predicted work productivity loss in patients with MDD and dysthymia. **Methods:** Patients (N=385) with MDD or dysthymia completed the Quick Inventory of Depressive Symptomatology, Self-Rated (QIDS-SR) and Lam Employment Absence and Productivity Scale (LEAPS) questionnaires to assess depressive symptoms and work functioning. A multiple regression analysis was developed to predict work productivity loss, as defined by the LEAPS work productivity subscale, from patients' depressive symptomatology. **Results:** The LEAPS symptom items of poor concentration or memory, low energy or motivation, and having trouble getting along with people or avoiding them, and the QIDS-SR sleep symptoms domain, significantly predicted productivity, accounting for 59.7% of the variance in LEAPS productivity scores. The LEAPS items were stronger predictors than the QIDS-SR item. **Conclusion:** Compared with each of the 9 symptom domains of the QIDS-SR, the LEAPS depression symptoms were stronger predictors of work productivity loss. Given that the LEAPS asks respondents how bothered they were by their depressive symptoms specifically in the context of work, the LEAPS may have greater utility in examining depressive symptoms impacting occupational functioning than the QIDS-SR alone. **Implications/Relevance:** For clinicians assessing depressed patients' work functioning, our results suggest that the LEAPS is a useful scale, given its brevity and measurement of both work productivity and the occurrence of depressive symptoms in the workplace, as opposed to administering a scale that assesses symptoms more generally.

27. VAMP7 is a Gene of Interest in Bipolar Disorder and Catatonia

Robert Stowe

Robert Stowe MD, FRCPC, UCNS; Christine Tyson, PhD, FCCMG; Monica Hrynychak, MD, FRCPC, FCCMG; Trevor Hurwitz, MBChB, MRCP, FRCPC; and William Honer, MD, FRCPC

We evaluated two brothers with intellectual disability, and childhood-onset bipolar disorder. In their mid-thirties, both developed manic delirium progressing to a severe malignant catatonia – NMS spectrum syndrome responsive only to ECT. Their mother suffers from depression and probable mild ID. Chromosomal microarray and FISH studies revealed a maternally inherited 528 kb duplication on Xq28 completely overlapping the VAMP7 gene. The vesicular SNARE protein VAMP7 is strongly implicated in neuronal morphogenesis, neurite outgrowth, and trafficking of the myelin constituents proteolipid protein (PLP) and cyclic nucleotide phosphodiesterase (CNP). Disruption of VAMP7 reduces brain weight, and PLP and CNP content of myelin, as has been reported in bipolar disorder and schizophrenia. A catatonic phenotype in aging mice, and in older humans with schizophrenia, is linked to CNP polymorphism. Reelin, strongly implicated in neurodevelopmental and major psychiatric disorders, operates through VAMP7 to promote neurotransmitter release *independent* of synaptic activity. VAMP7 mediates neurotransmitter vesicle-membrane fusion in sympathetic neurons. Presynaptic localization of VAMP7 is restricted to regions of striking relevance to catatonia: hippocampal glutamatergic terminals, GABAergic terminals in GPi/SNpr; the amygdala, including the BNST; and spinal motor neurons. We hypothesize that malignant catatonia resulted from VAMP7 overexpression and resulting central and peripheral catecholamine release.

28. SHEWAY Project ‘One Year After’: Changes in Staff Practices, Attitudes and Trauma-Related Knowledge 12 months After a Comprehensive Trauma-Informed Training Curriculum

(Faculty Sponsor: Michael Krausz)

Authors: *Verena Strehlau Langheimer, UBC Psychiatry Research Track Resident PGY-2; Iris Torchalla, Honorary Post-doctoral Fellow UBC Psychiatry; Isabelle Aube Linden, Michael Krausz, Professor UBC Psychiatry*

Introduction: SHEWAY, located in Vancouver's Downtown Eastside, offers a broad range of services for new mothers with substance use issues. Trauma-informed services that address both trauma and substance abuse appear to improve clinical outcome in patients with complex concurrent disorders. When providing training in trauma-informed topics it is often not clear if it is changing care providers practices. **Methods:** Over one year in 2013/2014 we delivered eight 2-hour workshop sessions on Trauma/PTSD-related topics relevant for the staff at Sheway. One year after the workshop, we evaluated the impact of the training on Sheway staff's care practice, using a self-report measure. **Results:** 17 out of 20 staff members completed the 12-months follow-up questionnaire, and 14 (82%) reported that the training-workshop has influenced their practice that they ‘very often/sometimes’ would use workshop material in their daily practice. Eleven participants (65%) described that the workshop had influenced team dynamics that they would ‘very often/always’ incorporate trauma-informed topics in their considerations.

Conclusion: We anticipated that the workshop would support long-term impact of the care approach for Sheway staff members and eventually for the mothers who are accessing Sheway. Follow-up after 12 months post-training seems promising that Sheway staff experience a practice shift towards a more trauma-informed care approach. **Implications/Relevance:** The findings and the developed module-based training and handbook can be used to provide clinicians of different backgrounds with trauma-informed and trauma-related training with likely lasting impact on their daily practice of treatment providers [at least for 12 months post-training].

29. Quality of Life Impairment in Perinatal Women with Comorbid MDD/GAD: Pharmacotherapy Treatment Outcome

(Faculty Sponsor: Dr. Shaila Misri)

Elena Swift Research Assistant

Introduction: Comorbid Generalised Anxiety Disorder (GAD) and Major Depressive Disorder (MDD) in perinatal women is often underdiagnosed resulting in poor maternal recovery. We describe treatment outcomes and quality of life (QoL) in pregnant and postpartum women with MDD and Anxiety Disorders. **Methods:** Pregnant and postpartum women with MDD were recruited for two separate trials of antidepressant monotherapy. Chi-square compared percentage remission (Ham-D, Ham-A) for pregnant women with excessive worry (PSWQ \geq 62, N=14) and those without (N=15). Postpartum women with (N=11) and without GAD (N=8) are compared longitudinally using GEE on MADRS, HAM-A and PSWQ; Q-LES-Q scores are described.

Results: *Pregnancy* - Excessive worry associated with significantly lower percentage remission on Ham-D (21.4% vs. 60.0%; $\chi^2(1)=4.44$, $p=0.035$). Similar differences on Ham-A were not significant (21.4% vs. 46.7%; $\chi^2(1)=2.04$, $p=0.15$).

Postpartum - MADRS (B=-5.93(SE=.52), $p<.000$), Ham-A (B=-3.92(SE=.59), $p<.000$), and PSWQ (B=-3.41(SE=.81), $p<.000$) decreased significantly, but GAD women had consistently higher scores on MADRS (B=4.96(SE=1.78), $p=.005$), Ham-A (B=4.39(SE=1.72), $p=.011$) and PSWQ (B=21.28(SE=2.89), $p<.000$). Final mean PSWQ for GAD women (51.3,SD=10.82) remained higher than non-GAD women pre-treatment (42.8,SD=14.76). Non-GAD women improved more on all Q-LES-Q domains. **Conclusions:** Women with comorbid MDD/GAD: in pregnancy were less likely to achieve remission of depression; postpartum were slower to remit, did not recover same QoL, did not resolve excessive worry. **Implications/Relevance:**

There is an urgent need for recognition of differential clinical outcomes of GAD with pregnant and postpartum women undergoing antidepressant treatment. Given the high prevalence and the chronic debilitating course of MDD/GAD comorbidity, our findings merit replication in a better powered study of perinatal population.

30. The Hotel Study: Downtown Community Court Cohort

(Faculty Sponsor: Dr. William Honer)

Magdalena Szumilas, RI

Introduction: The Hotel Study is an epidemiologic survey of individuals residing in DTES, with participants recruited from five single room occupancy (SRO) hotels as well as the Downtown Community Court (DCC). **Methods:** This study presents baseline characteristics of participants recruited from DCC (n=67). Variables include history/current drug use, physical and psychiatric health, history of criminal and violent behaviour, and health services utilization. **Results:** Most participants recruited were male, white, unemployed, and receiving social assistance and/or long term disability. The vast majority of participants reported history of homelessness. Criminal history was common, with a median 40 arrests, most often for theft. Heroin, cannabis, and crack cocaine were the most commonly and frequently reported substances. One third of participants reported amphetamine use. Two-thirds of participants had at least one admission and/or treatment for mental health in their lifetime. Nearly half of participants tested positive for HCV, and 14 percent for HIV. Significant traumatic brain injury was reported by 14 percent of participants, and a similar number had cognitive impairment. **Conclusion:** This preliminary analysis of data from the DCC cohort of The Hotel Study shows a predominantly male, white, educationally and economically disadvantaged group with a history of homelessness, numerous arrests for predominantly “quality of life” offences, significant stimulant and opiate use, and high rates of HCV and HIV at baseline assessment. A large proportion of participants had history of mental health problems and services use. Further work in this area will focus on follow-up assessments and comparison of this group with the larger SRO cohort. **Implications/Relevance:** The Hotel Study is an epidemiologic survey of individuals residing in DTES, with participants recruited from five single room occupancy (SRO) hotels as well as the Downtown Community Court (DCC). Information about history/current drug use, physical and psychiatric health, history of criminal and violent behaviour, and health services utilization will aid in understanding, planning for, and providing psychiatric services to this population.

31. A Transcriptomics Approach for Revealing Cell-Type Proportion Changes in Psychiatric Disorders

(Faculty Sponsor: Paul Pavlidis)

Lilah Toker, Postdoctoral Fellow

Introduction: Increasing evidence has accumulated regarding the involvement of cellular death and neuroinflammation in neuropsychiatric disorders. Since different cell-types express distinct sets of genes, it is plausible that changes in cellular populations would result in transcriptional alterations in the bulk tissue. Thus, given that the cell-type specific transcripts are known, changes in cellular populations can potentially be inferred from expression data of bulk tissue. Publicly available expression data from brains of psychiatric patients and healthy subjects provide the opportunity to accomplish this task without the need for additional experiments.

Methods: We used a cell-type enriched marker gene database compiled by our group to infer changes in different neuronal and glial populations in four brain datasets of psychiatric patients and healthy subjects. Using statistical methods, we were able to infer changes in several cellular populations that are partially supported by previous studies using direct cell counting methods.

Results: The changes were more prominent in schizophrenic patients than in subjects with bipolar disorder. Moreover, the estimated changes in cellular populations were specific to bipolar-I patients and were not observed in bipolar-II patients. The inferred changes were similar across the four datasets, supporting the robustness of our method. **Conclusion and**

Implications/Relevance: Differences in cellular populations between subjects can be further applied to model cell-type specific transcriptional changes, added as covariates in differential expression analyses, and facilitate network analyses. Detecting the affected cells will provide new directions for future studies and assist in the understanding of the pathophysiology of the disorder.

32. Effects of Exercise on the Basal Ganglia Morphology in Schizophrenia

(Faculty Sponsor: Dr. William Honer)

Melissa Woodward, Graduate Student

Schizophrenia has been associated with morphological brain deficits, including hippocampal and basal ganglia volume (McClure et al., 2013), associated with neurocognitive deficits.

Psychotropic medications ameliorate psychosis, however they adversely affect metabolism and cardiovascular functioning and further increase changes in striatal volume (Stassnig, Brar & Ganguli, 2011). In contrast, physical activity is known to mediate some of the negative metabolic effects of antipsychotic medication (Bredin, Warburton & Lang, 2013) as well as ameliorate regional brain volumes. It is expected that physical activity would result in remediation of basal ganglia volume and reduced symptom severity in a cohort of chronic schizophrenia in-patients. MRI scans and assessments were conducted at baseline, Week 6 and Week 12. Physical activity significantly decreased nucleus accumbens volume while increasing HDL and decreasing PANSS score. Percent change in nucleus accumbens volume, HDL and PANSS score are all significantly correlated in the clozapine-treatment group only. These data suggest that clozapine exerts a differential metabolic effect on the nucleus accumbens and may result in greater benefits of cardiovascular exercise on nucleus accumbens remediation. Further work would investigate whether these effects are seen in other regions of the brain implicated in psychosis, including the frontal grey matter and the thalamus.

Better understanding of the beneficial effects of exercise on basal ganglia volume, as well as clinical symptoms, would be critical in understanding the potential for physical activity as a non-pharmaceutical intervention in these patients.

33. Personality Correlates of Psychopathy in Women Removed From Family Care in Childhood

(Faculty Sponsor: Dr. Tonia Nicolls)

Gillian E.S. Munro (Resident), Tonia Nicholls, & Elham Forouzan

The majority of psychopathy research has been conducted in incarcerated men, with relatively few studies in women. While lower base rates are consistently reported in female samples, some studies have found differential personality correlates. In particular, psychopathy is primarily correlated with antisocial personality disorder in men, and with borderline personality disorder in women. As such, it is unclear whether current conceptualizations of psychopathy are generalizable to women. To further examine the personality correlates of psychopathy in this population, a sample of 74 women removed from their families by Quebec's Youth Protection system were recruited in young adulthood. Contrary to our hypothesis, results indicated no relationship between psychopathy and borderline personality disorder. Psychopathy was associated with antisocial personality disorder, substance abuse, and other personality traits consistent with studies of male offenders. Rates of psychopathy were also higher in this sample as compared to previous research with women. These data suggest that the current conceptualization of psychopathy may be generalizable to female samples, and do not necessarily support the presence of differential personality correlates. Furthermore, our results also suggest that this population may represent a reservoir of women at an unusually high risk of psychopathy, and as such warrants further examination.

This study suggests the current conceptualization and measurement of psychopathy can be extended to women, which has relevance for assessment and management. It also suggests that women placed in care in childhood may represent a group at unusually high risk of developing psychopathy, and who may benefit from early intervention.

34. A Randomized Placebo-Controlled Study of Light Therapy, Fluoxetine and the Combination for Nonseasonal Major Depression

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Objective: Bright light therapy is an evidence-based treatment for seasonal depression, but there is limited evidence for its efficacy in nonseasonal major depressive disorder (MDD). Our aim was to determine the efficacy of light therapy, alone and in combination with fluoxetine, for nonseasonal MDD. **Methods:** This double-blind, randomized, placebo-controlled 8-week trial involved 3 Canadian centres. Entry criteria included DSM-IV criteria for MDD of at least moderate severity; active medical illness or substance use, bipolar disorder, seasonal pattern and treatment-resistance were excluded. Patients were randomly assigned to 1 of 4 conditions: (1) active light monotherapy (active 10,000 lux fluorescent white light box for 30 minutes daily) plus placebo pill; (2) active antidepressant monotherapy (placebo inactive negative ion generator for 30 minutes daily plus fluoxetine 20mg/day); (3) combined light and antidepressant (active light box plus fluoxetine); and (4) placebo (sham inactive negative ion generator plus placebo pill). The primary outcome was change score on the Montgomery-Asberg Depression Rating Scale (MADRS), with secondary outcomes of response (MADRS \geq 50% reduction) and remission (MADRS \leq 10). Statistical analysis was conducted with ANOVA and *post hoc* Tukey's tests for change scores, and with binary logistic regression for response/remission outcomes.

Results: 131 patients were screened and 122 randomized. The overall ANOVA for change score on the MADRS was significant, with preplanned contrasts and *post hoc* tests showing that light monotherapy ($p=0.006$) and light+fluoxetine combination ($p=0.0001$) were superior to placebo, while fluoxetine monotherapy was not; light+fluoxetine combination was also superior to fluoxetine monotherapy ($p=0.017$). For response, combination light+fluoxetine was superior to placebo, light and fluoxetine monotherapy; for remission, combination was also superior to both placebo and fluoxetine, while light monotherapy was superior to fluoxetine.

Conclusion: Light therapy, both as monotherapy and in combination with fluoxetine, was found to be efficacious in the treatment of patients with nonseasonal MDD. The combination of light and fluoxetine appeared to have the greatest efficacy.

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35. Multi-site Study of Family Functioning Impairment in Pediatric Obsessive Compulsive Disorder

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Supervisor: S. Evelyn Stewart

Abstract

Introduction: The impacts of pediatric obsessive-compulsive disorder (OCD) extend beyond the affected children to their family members. Our study used two independent samples to examine domains of OCD-related family functioning impairment, contribution by specific OCD symptoms, and change with illness severity. **Methods:** Samples of OCD-affected subjects and their parents were ascertained from Boston, US (N=60 trios), and Vancouver, Canada (N=36 trios). The validated OCD Family Functioning (OFF) Scale captured frequencies of impairment across domains of family functioning as reported by youth and their mothers and fathers.

Results: Mean years of age at OCD onset, worst severity, and study ascertainment were 8.3 (SD 3.7), 12.1 (SD 3.3), and 13.8 (SD 2.9), respectively. The most commonly disrupted daily activities included morning and bedtime routines (61.9% to 66.7%). OCD symptoms that most frequently impaired family functioning included intrusive thoughts, somatic or illness worries, and “just right” feelings. Compared with fathers, youth and their mothers reported higher emotional impacts of OCD overall ($P < 0.001$). **Conclusion:** Complementary patient and parent reports identify a high prevalence of OCD-related family functioning impairments encompassing emotional, social, and occupational realms. Impairments appear to fluctuate with OCD severity and are associated with specific symptoms. **Implications:** Parallel findings across these international samples suggest generalizability of findings.

36. Executive Functioning Impairment on Daily Functioning of OCD-Affected Youth

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Supervisor: S. Evelyn Stewart

Introduction: OCD is a neuropsychiatric illness that often begins in childhood and has significant impact on family, academic, occupational, and social functioning. While most research has directly assessed executive function (EF) via standardized test batteries, exploring deficits in behaviours associated with EF may address the lack of ecological validity of direct executive function measures and provide information about EF impacts on daily functioning of OCD-affected youth. **Methods:** This study examined parents' perception of their children's daily behaviour associated with EF, using the Behavior Rating Inventory of Executive Function (BRIEF), a rating scale designed to assess eight different aspects of EF, including inhibition, shifting, emotional control, initiation, working memory, planning/organization, organization of materials, and monitoring. OCD-affected youth's (n=33) BRIEF performance and reported academic difficulties were compared to those of matched healthy controls (n=33). **Results:** There were statistically significant group differences across all BRIEF T-scores ($0.001 < p < 0.002$). Convergence between school-reported difficulties and parent-reported EF difficulties was observed, especially in subjects of math and writing. **Conclusion:** OCD probands exhibit more executive dysfunction-associated behaviours that negatively impact functioning across environments. **Relevance:** This is one of the first studies that assessed a range of observed behaviour difficulties associated with OCD-affected youths' ability to self-regulate cognitive and social problem solving.

37. Correlating functional outcomes with clinical symptoms in patients treated for Major Depressive Disorder.

(Faculty Sponsor: Dr. Raymond Lam)

Dr. David Sarfati

Introduction Given the high prevalence of MDD among working age individuals it is important to include an assessment of work functioning within the clinical evaluation and management of depression. This study seeks to correlate symptom improvement and resolution, as measured on the MADRS, with functional improvement as measured on work functioning scales, including the LEAPS. **Method** This study compares changes in depressive symptomatology following treatment, as measured by remission and response on the MADRS, with improvements in work functioning as measured by the LEAPS Productivity Subscale, HPQ Performance Item, HPQ Productivity Subscale, and SDS Work/School Item. We use both absolute change in the aforementioned work functioning scales, and LEAPS Productivity subscale ‘remission’ as outcome measures. **Results:** Improvements in work performance and productivity correlate to a significant extent with improvement in depressive symptomatology as indicated by MADRS response (HPQ performance item; 1.2 vs. 0.19, LEAPS productivity subscale; 3.8 vs. 2.1, HPQ productivity subscale; 3.5, 1.9). Forty-seven (47) percent of MADRS responders and forty-five (45) percent of MADRS remitters experienced remission on the LEAPS productivity subscale, compared to sixteen (16) and twenty-two (22) percent respectively, for non-responders and non-remitters. **Conclusion** The LEAPS productivity subscale provided similar sensitivity to the HPQ productivity subscale -the gold standard in productivity assessment – in assessing work disability. =Less than half of patients who are considered in remission on the MADRS experienced ‘remission’ from a functional perspective. Functional limitations persist after resolution of clinical symptoms. This suggests an important role for the LEAPS and other work functioning scales in determining the course and length of treatment in patients diagnosed with MDD. It may be argued that depression is most devastating in its consequences on a person’s social and occupational functioning, and that deficiencies in these areas are more sensitively detected by the LEAPS. **Clinical Relevance:** Our data suggests that functional limitations persist after resolution of clinical symptoms. The LEAPS and other work functioning scales play an important role in determining the course and length of treatment in patients diagnosed with MDD. It may be argued that depression is most devastating in its consequences on a person’s social and occupational functioning, and that deficiencies in these areas are more sensitively detected by the LEAPS