

37th Annual Department of Psychiatry

Harvey Stancer Research Day

June 16, 2011

Keynote and Plenary Sessions:
The Munk Centre for International Studies
1 Devonshire Place

Lunch and Poster Sessions:
Trinity College
6 Hoskin Avenue



Psychiatry
UNIVERSITY OF TORONTO

Harvey Stancer Research Day Program Committee 2011

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Chair, Harvey Stancer Research Day

Associate Professor, Department of Psychiatry, University of Toronto

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Our sincere thanks to **Mr. Sergiy Tyshchenko** for his assistance with the development and support of the Harvey Stancer Research Day submissions system.

We are also very appreciative of the Department of Psychiatry Faculty members who contributed their time and expertise to the review and adjudication of the awards.



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Research Day Chair's Foreword



Dear Colleagues,

I cordially welcome you all to Department of Psychiatry's annual Harvey Stancer Research Day. I am proud to present a new scientific program featuring the tremendous accomplishments made by our researchers in the last year.

Research Day is a major function of the Department of Psychiatry. It fosters collegiality and allows researchers to present a synopsis of their current research to one another, to the Toronto psychiatric community and to the public. In particular, it provides the opportunity for junior members in our Department, including residents, fellows and students, to prepare and deliver an academic presentation. Finally, as the research done in our department is highly varied, Research Day represents a unique forum through which key discoveries made in the last year can be showcased to our entire community.

Dr. Trevor Young has graciously agreed to accept my invitation to present this year's keynote address. In addition to becoming Chair of our department, Dr. Young and members of his team have published several landmark papers in the last year and Dr. Young will be presenting these exciting findings in his keynote.

The keynote lecture will be followed by five 30-minute plenary lectures. The Harvey Stancer Plenary Committee has chosen the top 5 outstanding manuscripts that were published in *Science*, *Nature*, the *Archives of General Psychiatry* (2) and *Journal of Neuroscience* and will be presented by Drs. John Vincent, Fang Liu, Aristotle Voineskos, Jeffrey Meyer and Albert Wong, respectively. Sincere thanks to everyone who submitted papers for this event and I strongly encourage you all to do so in the future. This opportunity ensures that the brightest people and best research in our department is showcased.

Following the morning session, there will be poster and oral sessions, which will be chaired by our plenary lecturers. Chosen this year were the top 50 poster and oral abstracts submitted. Given the tremendous research expertise and diversity in our department, these sessions promise to be highly informative and inspiring.

I wish you all a fruitful meeting and hope that you will take away many positive experiences from what I am sure will be an exciting day.

With best personal regards,

A stylized, handwritten signature in black ink, consisting of a large, sweeping loop followed by a vertical stroke and a horizontal tail.

Z. Jeff Daskalakis, MD, PhD, FRCP(C)
Director, Harvey Stancer Research Day
Associate Professor of Psychiatry
Centre for Addiction and Mental Health
University of Toronto

Keynote Address:

“Setting the Balance: Energy Metabolism in Mood Disorders”



Dr. L. Trevor Young, MD, PhD, FRCPC
Professor and Chair, Department of Psychiatry,
University of Toronto

The impact of bipolar disorder and depression continues to become increasingly clear along with a large number of treatments available for our patients. While we continue to focus on evidence of neurocognitive changes and cellular loss and damage in specific brain regions, the exact etiology remains uncertain. Large scale studies have pretty much conclusively shown that there are no specific genes for these disorders rather than multiple genes of small effect which confer increased for these illnesses. Continued progress on studying post-mortem brain tissue and blood cells from patients have demonstrated new possibilities for biological causes of these disorders. Recent interest has been focused on energy metabolism and mitochondrial function. Evidence from a number of labs, including the author's, have shown that oxidative stress and damage is increased in patients with bipolar disorder which may be related to abnormalities within the electron transport chain. Build up of oxidative metabolites may lead to cellular damage and loss. Studies from animal models and patients suggest that treatment with mood stabilizers may reduce oxidative damage and ultimately prevent cellular damage and loss. Interestingly, oxidative damage has been identified as important in neurodegenerative diseases including movement disorders such as Parkinson's Disease. More recently mitochondrial abnormalities have been identified in blood cells from patients with autism suggesting that these pathways may be important targets to explore in serious mental disorders. These findings help to broaden yet focus the search for the specific causes of mood disorders and make way for novel effective treatments.

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Full Program:

MORNING PROGRAMMING:

KEYNOTE ADDRESS and PLENARY SESSIONS

Location: Munk Centre for International Studies, Vivian Campbell Conference Room

8:00 – 8:30 am	Registration and Breakfast				
8:30 – 9:00 am	Chair's Welcome and Keynote Address Dr. L. Trevor Young <i>"Setting the Balance: Energy Metabolism in Mood Disorders"</i>				
9:00 – 9:30 am	Basic Neuroscience: Dr. John Vincent <i>"Identification of the alpha 1,2-mannosidase gene, MAN1B1, as a gene with elevated mutation frequency in non-syndromic autosomal recessive intellectual disability"</i>				
9:30 – 10:00 am	Clinical Research, including Clinical Trials: Dr. Fang Liu <i>"Uncoupling Dopamine D1-D2 Receptor Complex Exerts Antidepressant-like Effects"</i>				
10:00 – 10:30 am	Health Systems and Social Policy: Dr. Jeffrey Meyer <i>"Elevated Brain Monoamine Oxidase A Binding in the Early Postpartum Period"</i>				
10:30 – 10:45 am	Break				
10:45 – 11:15 am	Imaging Neuroscience: Dr. Aristotle Voineskos <i>"The Brain Derived Neurotrophic Factor Val66Met Polymorphism and Prediction of Neural Risk for Alzheimer Disease"</i>				
11:15 – 11:45 am	Quality Improvement and Education Research: Dr. Albert Wong <i>"Disc1 Point Mutations in Mice Affect Development of the Cerebral Cortex"</i>				
LUNCH and POSTER SESSION					
11:45 – 1:00 pm	Location: Seeley Hall, Trinity College				
Poster Presentations	BEHZADI, Arian BLUMBERGER, Daniel BRANDL, Eva CASSIN, Stephanie CHAU, Sarah CHIU, Aubrey CHIUCCARIELLO, Lina CHOW, Tiffany COSTAIN, Gregory DeLUCE, Jasna (2)	DOAN, Bridget DOWLATI, Yekta DURRANI, Samir FERGUSON, Charmaine FERVAHA, Gagan GARCIA, Kristine GAROFANU, Camelia (2) GIACOBBE, Peter (2) HASSAN, Ahmed HOWLETT, Andrew	KHOKHAR, Jibrán KREINDLER, David MAMO, David MANN, Amandeep MATTHEWS, Brittany MAZEREEUW, Graham MIZRAHI, Romina OOI, Cara	PARK, Laura Seohyun PUSHPARAJ, Abhiram RICHTER, Margaret SAME, Michael SAPIRMAN, Vivian SELVANATHAN, Thiviya SHAHEEN, S-M SINOPOLI, Vanessa	SOCKALINGAM, Sanjeev (2) SOLIMAN, Alexandra TRAINOR, John TRAN, Christopher TREMBLAY, Lescia WHITTY, Carolyn YE, Bing ZIVKOVIC, Nevena

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AFTERNOON PROGRAMMING:

CONCURRENT ORAL PRESENTATION SESSIONS

1:00 pm – 3:00 pm	Research Theme:
Location: Munk Centre Room 023N Basement level	<p style="text-align: center;">Basic Neuroscience Chair: Dr. John Vincent</p> <p><u>Ana Andreazza</u>; Jun Feng Wang, Li Shao, Trevor Young. <i>Increased Levels Of Protein Oxidation In Synaptosomal Proteins From Postmortem Prefrontal Cortex Of Subjects With Bipolar Disorder.</i></p> <p><u>Paul Arnold</u>; Ke Wu, Frank MacMaster, Philip Easter, James Kennedy, Gregory Hanna, David Rosenberg. <i>The Association Between Glutamate System Genes And Brain Volume Alterations In Children With OCD.</i></p> <p><u>Marc Fadel</u>; Frankie Lee, Albert Wong. <i>A Look At Migrating Neurons From Disc1 Mutant Mice.</i></p> <p><u>Margaret Hahn</u>; Araba Chintoh, Loretta Lam, Adria Giacca, Steve Mann, Paul Fletcher, Tony Cohn, Melanie Dawn Guenette, Gary Remington. <i>Atypical Antipsychotics and Effects of Muscarinic, Serotonergic, Dopaminergic and Histaminergic Receptor Binding on Insulin Secretion In Vivo: An Animal Model.</i></p> <p><u>Gabriela Novak</u>; Theresa Fan, Brian F. O'Dowd, Susan R. George. <i>Early life stress, dopamine receptors and implications for schizophrenia.</i></p> <p><u>Tarek Rajji</u>; Yinming Sun, Farzak Farazan, Ramsey D'Souza, Caroline Wass, Benoit Mulsant, Zafiris Daskalakis. <i>Assessing plasticity in the dorsolateral prefrontal cortex in patients with schizophrenia.</i></p> <p><u>Zeynep Yilmaz</u>; Allan S. Kaplan, Clement C. Zai, Robert D. Levitan, James L. Kennedy. <i>Role of the GRIN2B gene in the presence of comorbid psychiatric diagnoses in women with bulimia nervosa.</i></p> <p><u>Clement Zai</u>; Nabilah Chowdhury, Arun Tiwari, Zeynep Yilmaz, Vincenzo de Luca, Daniel Mueller, Aristotle Voineskos, Herbert Meltzer, Jeffrey Lieberman, Steven Potkin. <i>Genetic Study Of Neuregulin 1 Signaling In Tardive Dyskinesia.</i></p>

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**AFTERNOON PROGRAMMING:
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1:00 pm – 3:00 pm	Research Theme:
Location: Munk Centre Vivian Campbell Conference Room, Main Floor, South Building	Clinical Research, including Clinical Trials Chair: Dr. Fang Liu

Kevin Chopra; Arun Ravindran, Robert Levitan.
Investigating the influence of personality on stress physiology in chronic depression.

Cindy-Lee Dennis; Julie Weston.
Psychosocial And Psychological Interventions For The Prevention Of Postpartum Depression: An Updated Cochrane Systematic Review

George Foussias; Steve Mann, Konstantine Zakzanis, Rob van Reekum, Ofer Agid.
Motivational deficits as the key predictor of cross-sectional and longitudinal functioning in schizophrenia.

Benjamin Goldstein; David Axelson, Tina Goldstein, Michael Strober, Neal Ryan, Martin Keller, Boris Birmaher.
Predictors of first-onset substance use disorders among adolescents with bipolar spectrum disorders.

Allison Kelly; David Zuroff, Michelle Leybman, Paul Gilbert.
Predictors and correlates of social safeness: testing a tripartite model of affect regulation.

Daniel J. Mueller; Alexander Soibel, Arun Tiwari, Natalie Freeman, Olga Likhodi, Lauren O'Driscoll, James L. Kennedy.
Pharmacogenetics in psychiatry: from bench to bedside.

Rachel Rabin; Konstantine Zakzanis, Tony George.
The effects of cannabis use on neurocognition in schizophrenia: a meta-analysis.

Tarek Rajji; Aristotle Voineskos, Meryl Butters, Dielle Miranda, Tamara Arenovich, Mahesh Menon, Zahinoor Ismail, Robert Kern, Benoit Mulsant.
Cognitive performance of patients with schizophrenia across seven decades.

Catherine Reis; Ayal Schaffer, David Kreindler, Anthony Levitt.
Very early change in depressive symptoms during augmentation treatment with quetiapine xr: evidence from a mental health telemetry study.

Victoria Wing; Ingrid Bacher, Becky Wu, Zafiris J. Daskalakis, Tony P. George.
A preliminary study of repetitive transcranial magnetic stimulation for smoking cessation in schizophrenia.

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**AFTERNOON PROGRAMMING:
 CONCURRENT ORAL PRESENTATION SESSIONS**

1:00 pm – 3:00 pm	Research Theme:
Location: Munk Centre Room 108N Main floor, North Building	<p style="text-align: center;">Health Systems and Social Policy Chair: Dr. Jeffrey Meyer</p> <p><u>Melanie Barwick</u>; Peter Chaban, Chuck Cunningham, Rhonda Martinussen, Rosemary Tannock, Lindsay Bennett, Sabine Johnson. <i>Implementing practice change in child and youth mental health: preliminary findings and research program overview.</i></p> <p><u>Vincenzo De Luca</u>; Celine Teo, Bronwyn McKenzie, James L. Kennedy. <i>The influence of ethnicity on suicide attempt in major psychoses.</i></p> <p><u>Janet Ellis</u>; Carmine Malfitano, Jennifer Jones, Tommy Choy, Rebecca Withers, Rachel Ehrlich, Lianne Trachtenberg, Gary Rodin. <i>Prevalence and correlates of distress in patients with head and neck cancer undergoing radiation therapy.</i></p> <p><u>Sean Kidd</u>; Albina Veltman, Cole Gatley, Jacky Chan, Jacqueline Cohen. <i>Lesbian, gay, and transgender persons with severe mental illness: negotiating wellness in the context of multiple sources of stigma.</i></p> <p><u>Paul Kurdyak</u>; Tara Gomes, Zhan Yao, Muhammad Mamdani, Chelsea Hellings, Benedikt Fische, Jurgen Rehm, Ahmed Bayoumi, David Juurlink. <i>Use of other opioids during methadone therapy: a population-based study.</i></p> <p><u>Sarah Royal</u>; Stephanie Cassin, Sanjeev Sockalingam. <i>Loss of control and its relationship to mood, eating psychopathology, and quality of life in bariatric surgery candidates.</i></p> <p><u>Sanjeev Sockalingam</u>; Susan Wnuk, Rachel Strimas, Raed Hawa, Allan Okrainec. <i>Psychosocial variables affecting quality of life in bariatric surgery candidates: the role of attachment avoidance.</i></p> <p><u>Beth Sproule</u>; Bruna Brands. <i>Pathways to prescription opioid addiction.</i></p> <p><u>Simone Vigod</u>; Geoffrey Anderson, Cindy-Lee Dennis, Sophie Grigoriadis, Andrea Gruneir, Paul Kurdyak, Joel Ray, Mary Seeman, Paula Rochon. <i>Schizophrenia Understood in the Perinatal period: Psychiatric Outcomes and Reproductive Trajectories (The SUPPORT Study) - Phase 1.</i></p>

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**AFTERNOON PROGRAMMING:
CONCURRENT ORAL PRESENTATION SESSIONS**

1:00 pm – 3:00 pm	Research Theme:
Location: Munk Centre Room 208N 2nd floor, North Building	<p style="text-align: center;">Imaging Neuroscience Chair: Dr. Aristotle Voineskos</p> <p><u>Stephanie Ameis</u>; Jin Fa, Conrad Rockel, Aristotle Voineskos, Nancy Lobaugh, Latha Soorya, Ting Wang, Eric Hollander, Evdokia Anagnostou. <i>Impaired frontal white matter connections in autism spectrum disorders: a diffusion tensor imaging study.</i></p> <p><u>Philip Gerretsen</u>; Mahesh Menon, David Mamo, Bruce G. Pollock, Ariel Graff-Guerrero. <i>Anosognosia or lack of illness awareness in schizophrenia: an FMRI study.</i></p> <p><u>Sharon Hung</u>; Jeffrey Meyer, Julia Sacher, Sylvain Houle, Pablo Rusjan. <i>Partial volume effects correction of positron emission tomography images by iterative deconvolution.</i></p> <p><u>Danilo de Jesus</u>; Margaret Richter, Sylco Hoppenbrouwers, Melissa Daigle, Jasna Deluce, Lakshmi Ravindran, Paul Fitzgerald, Zafiris Daskalakis. <i>Neurophysiologic evidence of cortical inhibition and excitability dysregulation in obsessive compulsive disorder.</i></p> <p><u>Linda Mah.</u> <i>Neural mechanisms of antidepressant efficacy of the dopamine receptor agonist pramipexole in treatment of bipolar depression.</i></p> <p><u>Nicolaas Paul L.G. Verhoeff</u>; Kie Honjo, Edward David Kaye, Ana Petrovic-Poljak, Alan A. Wilson, Pablo Rusjan, Sylvain Houle, Robert van Reekum, Morris Freedman, Sandra E. Black. <i>Amyloid imaging with [11c]sb-13 pet in patients with mild alzheimer's disease : A test-retest reliability study of distribution volume ratio estimates.</i></p> <p><u>Daphne Voineskos</u>; Aristotle Voineskos, Tarek Rajji, James Kennedy, Jeffrey Daskalakis. <i>Neural plasticity in the pathophysiology and treatment of schizophrenia.</i></p> <p><u>Andrea Levinson</u>; Paul Fitzgerald, Gabriela Favalli, Daniel Blumberger, Melissa Daigle, Zafiris Jeff Daskalakis. <i>Evidence of cortical inhibitory deficits in major depressive disorder.</i></p>

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**AFTERNOON PROGRAMMING:
 CONCURRENT ORAL PRESENTATION SESSIONS**

1:00 pm – 3:00 pm	Research Theme:
Location: Trinity College Larkin Building Room 341	<p>Quality Improvement and Education Research Chair: Dr. Albert Wong</p> <p><u>Waleed Alghamdi</u>; Sayed Abd alkader, Waleed Alghamdi. <i>Finding patients for psychotherapy in the psychiatry training program at the University of Toronto: a QI project.</i></p> <p><u>Alexandra Carling-Rowland</u>; Gary Rodin, Gavin Andrews. <i>Investigating generalizability of psychosocial oncology research trials: a systematic review.</i></p> <p><u>Ahmed Hassan</u>; Manar ELBohy, Elena Miula. <i>Delineating the physical environment challenges for demented inpatients.</i></p> <p><u>Jennifer Hensel</u>; David Banayan, John Langley. <i>Staff versus client perceptions of met and unmet needs in a first episode psychosis program.</i></p> <p><u>Nicole Koziel</u>; Carly Ruderman, Priyanka Chowdhury. <i>Changing stigma: evaluating the impact of workman arts' youth film program.</i></p> <p><u>Cara Ooi</u>; Monidipa Bhattacharyya. <i>An evaluation of resident educational needs in the child and adolescent suicide risk assessment.</i></p> <p><u>Mary Preisman</u>; Jennifer Hirsch, Arielle Salama. <i>Crisis averted! Enhancing resident performance in the psychiatric emergency room setting</i></p> <p><u>Adam Toews</u>; Patrick Lo, Albert Allen; <i>Continuity of psychiatric emergency care: rates of follow-up contact with primary care physicians for patients discharged from the ER</i></p> <p><u>Gwyneth Zaj</u>; Karen Ng, Matt Levy. <i>University of Toronto psychiatry residency training program – survey to implement a new patient log.</i></p>

Plenary Session: Basic Neuroscience

IDENTIFICATION OF THE ALPHA 1,2-MANNOSEDASE GENE, MAN1B1, AS A GENE WITH ELEVATED MUTATION FREQUENCY IN NON-SYNDROMIC AUTOSOMAL RECESSIVE INTELLECTUAL DISABILITY



John Vincent, Molecular Neuropsychiatry & Development Lab, Neurogenetics Section, CAMH;
Muhammad Arshad Rafiq, Molecular Neuropsychiatry & Development Lab, Neurogenetics Section, CAMH;
Andreas Kuss, Max Planck Institute for Molecular Genetics, Berlin, Germany;
Rosanna Weksberg, Program for genetic and Genomic Biology, Hospital for Sick Children;
Abdul Noor, Molecular Neuropsychiatry & Development Lab, Neurogenetics Section, CAMH;
Kelley Moremen, Complex Carbohydrate Research Center, University of Georgia, Athens, GA, USA;
Muhammad Ayub, University of Durham, UK;
Hans Hilger Ropers, Max Planck Institute for Molecular Genetics, Berlin, Germany;;
Hossein Najmabadi, Genetics Research Center, Univ of Social Welfare and Rehabilitation Sciences, Tehran, Iran;
Muhammad Ansar, Quaid-i-Azam University, Islamabad

A statement of the purpose of the study: The aim of this study is to identify the gene for autosomal recessive non-syndromic intellectual disability at a locus on 9q34.3 (MRT15).

A statement of the methods: We have used genome-wide genotyping using SNP microarrays to identify an overlapping homozygosity-by-descent locus on chromosome 9q34.3 (MRT15) in 5 consanguineous families with non-syndromic autosomal recessive intellectual disability (NS-ARID) — 4 from Pakistan, and 1 from Iran.

A summary of the results, presented in sufficient detail to support the conclusions: Using a combination of next generation sequencing and Sanger sequencing we have identified mutations in the gene MAN1B1, encoding the mannosyl oligosaccharide, alpha 1,2-mannosidase gene. In one Pakistani family, MR43, a homozygous nonsense mutation, W473X, segregated with the disorder. We also identified the missense mutation, E397K, which segregates in 3 families from the same village with likely shared inheritance. In an Iranian family, the missense mutation R334C segregates with the condition. Both missense mutations are at amino acid residues that are conserved across the animal kingdom, and potentially disrupt the oligosaccharide binding properties at the enzyme's catalytic domain.

A statement of the conclusions reached: MAN1B1 is to our knowledge the 8th gene for NS-ARID to be discovered, and is one of the few NS-ARID genes with an elevated mutation frequency in patients with NS-ARID from different populations.

Plenary Session: Clinical Research, including Clinical Trials

UNCOUPLING DOPAMINE D1-D2 RECEPTOR COMPLEX EXERTS ANTIDEPRESSANT-LIKE EFFECTS



Fang Liu, CAMH;

*Lin Pei, Department of Neuroscience, Centre for Addiction and Mental Health;
Shupeng Li, Department of Neuroscience, Centre for Addiction and Mental Health;
Min Wang, Department of Neuroscience, Centre for Addiction and Mental Health;
Mustansir Diwan, Department of Neuroscience, Centre for Addiction and Mental Health;
Hymie Anisman, Institute of Neuroscience, Carleton University;
Paul J. Fletcher, Department of Neuroscience, Centre for Addiction and Mental Health;
José N. Nobrega, Department of Neuroscience, Centre for Addiction and Mental Health;
Fang Liu, Department of Neuroscience, Centre for Addiction and Mental Health.*

A statement of the purpose of the study: Major depression (MD) is an illness associated with significant morbidity that may lead to substantial functional impairments. With current antidepressant treatments, only 1/3 of patients achieve full remission after a single-trial of antidepressant medications. Even with multiple antidepressant trials, 10-15% of patients continue to experience persistent depressive symptoms. Thus, identification of novel therapeutic target to develop novel antidepressant

A statement of the methods: We confirmed the existence of dopamine D1 and D2 receptor complex in rat and post-mortem human brain tissue using co-immunoprecipitation method. We identified the amino-acid sequence that is responsible for the D1-D2 complex formation using affinity purification and in vitro binding assay. We tested the potential antidepressant-like effects of the interfering peptide that is able to disrupt the D1-D2 complex using both the forced swimming test and the learned helplessness test.

A summary of the results, presented in sufficient detail to support the conclusions: We found that the coupling between D1 and D2 receptors was significantly increased in postmortem brain of patients suffering from major depression. Biochemical analyses revealed that D1 and D2 receptors form hetero-dimers via a direct protein-protein interaction. Administration of an interfering peptide that disrupts the D1-D2 complex significantly reduced immobility in the FST without affecting locomotor activity, and decreased escape failures in learned helplessness tests.

A statement of the conclusions reached: Our study provides the first direct evidence implicating the D1-D2 complex in the pathology of depression, and also identifies an interfering peptide with antidepressant-like effects. Our findings may provide a new therapeutic strategy for the treatment of MD.

Plenary Session: Health Systems & Social Policy

ELEVATED BRAIN MONOAMINE OXIDASE A BINDING IN THE EARLY POSTPARTUM PERIOD



Jeffrey Meyer, Centre for Addiction and Mental Health.

A statement of the purpose of the study: A number of biological theories have been proposed for the generation of low mood states, however, in humans, the most robust effects upon mood tend to be observed after monoamine depletion (i.e depletion of serotonin, norepinephrine and dopamine). Monoamine oxidase A (MAO-A) is an enzyme in the brain that metabolizes these neurotransmitters. I recently discovered that MAO-A binding, particularly in prefrontal and anterior cingulate cortex, is elevated during major depressive episodes, replicated this finding and found that MAO-A binding in these regions is elevated prior to recurrence of major depressive episodes. In women, over the first three days postpartum, estrogen levels drop 100 to 1000 fold. Changes in estrogen levels have an inverse relationship with MAO-A density, however, MAO-A levels had not been measured in early postpartum in any species. Using [11C] harmine positron emission tomography, I discovered that MAO-A binding was strikingly elevated (on average 43 per cent) throughout the brain in the immediate postpartum period. An elevation in MAO-A levels in early postpartum can be viewed as a monoamine lowering process contributing to the sadness of postpartum blues. Instead of a purely psychosocial model for postpartum blues, I propose an additional neurobiological model composed of estrogen decline, followed by elevation in MAO-A binding, low mood and a subsequent high risk period for MDE. This model has direct implications for preventing postpartum depression through targeting elevated MAO-A levels or compensating for elevated MAO-A levels during postpartum blues.

A statement of the methods: Design: Case-control study. Setting: Tertiary care academic psychiatric hospital in Toronto, Ontario, Canada. Participants: Fifteen healthy women who were 4 to 6 days postpartum and 15 healthy women who had not recently been postpartum underwent carbon 11-labeled harmine positron emission tomography scanning. All women were nonsmoking and medication free. Main Outcome Measure: MAO-A total distribution volume, an index of MAO-A density, was measured in prefrontal cortex, anterior cingulate cortex, anterior temporal cortex, thalamus, dorsal putamen, hippocampus, and midbrain.

A summary of the results, presented in sufficient detail to support the conclusions: MAO-A total distribution volume was significantly elevated (mean, 43%) throughout all analyzed brain regions during the early postpartum period.

A statement of the conclusions reached: Elevated MAO-A levels in the early postpartum period can be interpreted as a marker of a monoamine-lowering process that contributes to the mood change of postpartum blues. Rather than a purely psychosocial model, we propose a neurobiological model of estrogen decline, followed by elevated MAO-A binding, low mood, and subsequently a period of high risk for major depressive episodes. Our model has important implications for preventing postpartum depression and for developing therapeutic strategies that target or compensate for elevated MAO-A levels during postpartum blues.

Plenary Session: Imaging Neuroscience

THE BRAIN DERIVED NEUROTROPHIC FACTOR VAL66MET POLYMORPHISM AND PREDICTION OF NEURAL RISK FOR ALZHEIMER DISEASE



Aristotle Voineskos, CAMH;

Jason Lerch, Hospital for Sick Children;

Daniel Felsky, CAMH;

Sajid Shaikh, CAMH;

Tarek Rajji, CAMH;

Dielle Miranda, CAMH;

Nancy Lobaugh, Sunnybrook Health Sciences Centre;

Benoit Mulsant, CAMH;

Bruce Pollock, CAMH;

James Kennedy, CAMH.

A statement of the purpose of the study: To determine whether the BDNF val66met gene variant interacts with age to predict brain and cognitive measures in healthy volunteers across the adult lifespan in an intermediate phenotype pattern related to Alzheimer's disease by examining: (i) cortical thickness, (ii) fractional anisotropy of white matter tracts (i.e. white matter integrity) and (iii) episodic memory performance in each individual.

A statement of the methods: Using high resolution MRI and diffusion tensor tractography, we examined the interaction of the BDNF val66met variant with age in relation to cortical thickness of gray matter, fractional anisotropy of white matter tracts (i.e. white matter integrity) and episodic memory performance in a sample of 69 healthy volunteers across the adult lifespan (age range = 19-82).

A summary of the results, presented in sufficient detail to support the conclusions: The BDNF val66met interacted with age to predict: i) cortical thickness (prominently at entorhinal cortex, $F(1,65) = 12.5$, $p = 0.008$ and inferior temporal gyrus $F(1,65) = 13.9$, $p = 0.004$), ii) fractional anisotropy of white matter tracts ($F(1,65) = 14.0$, $p < 0.001$, prominently at white matter tracts connecting to medial temporal lobe: cingulum bundle and inferior longitudinal fasciculus) and iii) episodic memory performance $F(1,61) = 6.2$, $p = 0.016$.

A statement of the conclusions reached: The BDNF gene confers risk in an age-dependent manner on the brain structures and cognitive functions that are consistent with the neural circuitry vulnerable in the earliest stages of Alzheimer's disease. Using a combination of genetics, multimodal brain imaging, and cognitive testing, our novel findings provide convergent evidence, in vivo, for a BDNF genetic mechanism of susceptibility in an intermediate phenotype related to Alzheimer's disease.

Plenary Session: Quality Improvement and Education Research

DISC1 POINT MUTATIONS IN MICE AFFECT DEVELOPMENT OF THE CEREBRAL CORTEX



Albert Wong, CAMH.

A statement of the purpose of the study: Disrupted-in-Schizophrenia 1 (DISC1) is a strong candidate gene for schizophrenia and other mental disorders. DISC1 regulates neurodevelopmental processes including neurogenesis, neuronal migration, neurite outgrowth, and neurotransmitter signaling. Abnormal neuronal morphology and cortical architecture are seen in human postmortem brain from patients with schizophrenia. However, the etiology and development of these histological abnormalities remain unclear.

A statement of the methods: Golgi stain, BrdU labeling and immunohistochemistry with antibodies against neurons, dividing cells or specific cortical layers were used to assess the number, timing of birth and distribution of neurons in mice carrying point mutations in the Disc1 gene.

A summary of the results, presented in sufficient detail to support the conclusions: We analyzed the histology of two Disc1 mutant mice with point mutations (Q31L and L100P) and found a relative reduction in neuron number, decreased neurogenesis, and altered neuron distribution compared to wild-type littermates. Frontal cortical neurons have shorter dendrites and decreased surface area and spine density.

A statement of the conclusions reached: Overall, the histology of Disc1 mutant mouse cortex is reminiscent of the findings in schizophrenia. These results provide further evidence that Disc1 participates in cortical development, including neurogenesis and neuron migration.

Oral Presentations: Basic Neuroscience

INCREASED LEVELS OF PROTEIN OXIDATION IN SYNAPTOSOMAL PROTEINS FROM POSTMORTEM PREFRONTAL CORTEX OF SUBJECTS WITH BIPOLAR DISORDER.

Ana Andreazza, University of Toronto;
Jun Feng Wang, University of British Columbia;
Li Shao, University of British Columbia;
Trevor Young, University of Toronto.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: Growing evidences have shown that oxidative stress damage is key contributors to the pathophysiology of bipolar disorder (BD). Recently, our group found decreased mitochondrial complex I activity and increased oxidative and nitrosative damage to mitochondrial proteins in the prefrontal cortex from BD patients. Furthermore, lipid peroxidation and RNA oxidative damage has been found increased in postmortem brain from BD and SCZ patients. Therefore, the objective of this study was to evaluate the oxidative damage to proteins in isolated mitochondrial and synaptosomal fractions from postmortem pre-frontal cortex from patients with BD or SCZ.

A statement of the methods: Postmortem pre-frontal cortex from subjects with BD or SCZ, and from non-psychiatric comparison controls was generously provided by the Harvard Brain Tissue Resource Center. Mitochondrial and synaptosomal fractions were isolated using the percoll gradient method. The quality of extraction was verified by electron microscopy followed by immunoblotting analysis. The oxidative damage to protein was assessed by measuring carbonyl levels using immunoblotting analysis.

A summary of the results, presented in sufficient detail to support the conclusions: We found increased levels of protein oxidative damage in synaptosomal fractions from the pre-frontal cortex of patients with BD, but not in SCZ. Interestingly, we did not find any alterations in levels of oxidative damage to mitochondrial proteins in both BD and SCZ.

A statement of the conclusions reached: These results indicate that oxidative damage is more prevalent in synaptosomal than mitochondrial proteins in patients with BD. Oxidative damage to proteins can impair the proteins' functionality, which may contribute to cellular loss. Next we will identify the protein targets for oxidative damage, which can offer important insights for new pharmacological drug development.

THE ASSOCIATION BETWEEN GLUTAMATE SYSTEM GENES AND BRAIN VOLUME ALTERATIONS IN CHILDREN WITH OCD

Paul Arnold, Hospital for Sick Children;
Ke Wu, University of Toronto;
Frank MacMaster, Wayne State University;
Philip Easter, Wayne State University;
James Kennedy, Centre for Addiction and Mental Health;
Gregory Hanna, University of Michigan;
David Rosenberg, Wayne State University.

Classification: Neuroscience

A statement of the purpose of the study: Previously, we identified positive associations between glutamate system genes and ventral prefrontal and thalamic volumes, measured using magnetic resonance imaging (MRI) in

psychotropic-naïve children with OCD (Arnold et al., 2009). In this study we conducted a more comprehensive investigation of glutamatergic candidate genes and regional brain volumes in children with OCD.

A statement of the methods: The sample included 20 psychotropic-naïve pediatric OCD patients evaluated using structural magnetic resonance imaging (sMRI). Brain regions and genes were selected based on prior evidence of involvement in OCD or preclinical models of OCD. We analyzed a total of 519 single nucleotide polymorphisms (SNPs) in nine glutamatergic candidate genes using linear regression, with age and intracranial volume as covariates.

A summary of the results, presented in sufficient detail to support the conclusions: After correcting for multiple comparisons by adjusting for the average number of SNPs tested per gene (57.7), no statistically significant associations were identified. However, SNPs in several candidate genes showed nominal association ($P < 0.05$) with specific brain regions. The two top ranked associations were between SNPs in DLGAP1 (rs1116345 and rs342483) and ACC volume (adjusted $P = 0.07$). Seven SNPs in DLGAP2 were nominally associated with orbital frontal cortex volume. Thalamus volume was nominally associated with SNPs in GRIN2B, SLC1A1 and SLITRK5. Basal ganglia volume was nominally associated with SNPs in GRIK3 and SLC1A1.

A statement of the conclusions reached: These preliminary results suggest that glutamate candidate genes, particularly DLGAP1 and DLGAP2, may be associated with volumetric alterations in brain regions implicated in OCD. We are currently collecting a larger sample in order to confirm our findings.

A LOOK AT MIGRATING NEURONS FROM DISC1 MUTANT MICE.

Marc Fadel, Dept of Psychiatry, University of Toronto; Division of Molecular Neuroscience, CAMH;
Frankie Lee, Dept of Pharmacology, University of Toronto; Division of Molecular Neuroscience, CAMH.;
Albert Wong, Depts of Psychiatry, Pharmacology, Univ of Toronto; Division of Molecular Neuroscience, CAMH..

Classification: Neuroscience

A statement of the purpose of the study: Disrupted-in-Schizophrenia 1 (DISC1) is a strong candidate gene for schizophrenia and other mental disorders. DISC1 regulates neurodevelopmental processes including neurogenesis, neuronal migration, neurite outgrowth, and neurotransmitter signaling. Recently, it was shown that Disc1 mutant mice with point mutations (Q31L and L100P) have a relative reduction in neuron number, decreased neurogenesis and altered neuron distribution compared to wild-type littermates (Lee FH, Fadel MP, Preston-Maher K, Cordes SP, Clapcote SJ, Price DJ, Roder JC, Wong AH. Disc1 Point Mutations in Mice Affect Development of the Cerebral Cortex. *Journal of Neuroscience*, March 2011, 31:3197-3206). These results provide further evidence that Disc1 participates in cortical development, including neurogenesis and neuron migration.

Presently, it is not possible to visualize neuron migration in the developing embryonic cortex. Primary embryonic cortical cultures were created from E14 mice to determine if this system could be used as an adequate model of neuron migration.

A statement of the methods: Migrating cells were visualized using time lapse phase contrast video microscopy over extended periods of time. Following time lapse imaging, the identity of the migrating cells can be confirmed using immunofluorescent markers to neurons and glia cells.

A summary of the results, presented in sufficient detail to support the conclusions: Migrating cells are identified, indicating the feasibility of this method for the further study of embryonic neuronal migration.

A statement of the conclusions reached: This lays the ground work for future studies investigating the role of DISC1 in neuronal migration using this method.

**ATYPICAL ANTIPSYCHOTICS AND EFFECTS OF MUSCARINIC, SEROTONERGIC,
DOPAMINERGIC AND HISTAMINERGIC RECEPTOR BINDING ON INSULIN SECRETION IN VIVO:
AN ANIMAL MODEL**

Margaret Hahn, Institute of Medical Science, Univ of Toronto; CAMH;
Araba Chintoh, Institute of Medical Science, Univ of Toronto; CAMH;
Loretta Lam, Department of Physiology, University of Toronto;
Adria Giacca, Department of Physiology, University of Toronto;
Steve Mann, CAMH, Toronto;
Paul Fletcher, CAMH, Toronto; Department of Psychology, Univ of Toronto,;
Tony Cohn, CAMH, Toronto; Department of Psychiatry, Univ of Toronto;
Melanie Dawn Guenette, Institute of Medical Science, University of Toronto; CAMH;
Gary Remington, Institute of Medical Science, Univ of Toronto; Dept of Psychiatry, University of Toronto.

Classification: Schizophrenia Research

A statement of the purpose of the study: Atypical antipsychotics (AAPs) have been associated with increased risk of type 2 diabetes, with evidence suggesting direct, weight gain independent effects. The heterogeneous binding profile of the AAPs may influence receptors also implicated in glucose metabolism. This study aimed to clarify weight gain-independent mechanisms of AAP-induced changes in insulin secretion by deconstructing their receptor binding profile with representative antagonists.

A statement of the methods: Healthy Sprague-Dawley rats were pretreated with a single subcutaneous dose of darifenacin 6mg/kg (n=10), a selective M3 muscarinic antagonist; ketanserin 2mg/kg (n=10), a 5HT2A antagonist; raclopride 0.3mg/kg (n= 11) a selective D2/D3 antagonist; terfenadine 20mg/kg (n=9) a selective H1 antagonist; or, vehicle (n=11). The hyperglycemic clamp technique was employed following injection. Mixed models analysis was conducted with Bonferroni correction.

A summary of the results, presented in sufficient detail to support the conclusions: Acute treatment with darifenacin and ketanserin significantly decreased insulin response to glucose challenge as compared to control, which was confirmed in the darifenacin group by a reduction in C-peptide levels and the disposition index. Treatment with raclopride resulted in an increase in insulin and a strong tendency to increased C-peptide levels. H1 blockade did not result in acute effects on insulin or C-peptide.

A statement of the conclusions reached: Weight gain-independent effects of antipsychotics on glucose dysregulation may be related to direct inhibitory effects of muscarinic (M3) and serotonergic (5HT2) antagonism on insulin secretion. Based on expression of D2-like receptors in pancreatic β -cells, which mediate inhibition of insulin secretion, we propose that prolonged D2 blockade with antipsychotics may predispose to depletion of insulin stores and an eventual defect in pancreatic compensation.

EARLY LIFE STRESS, DOPAMINE RECEPTORS AND IMPLICATIONS FOR SCHIZOPHRENIA.

Gabriela Novak, CAMH and The University of Toronto;
Theresa Fan, CAMH and The University of Toronto;
Brian F. O'Dowd, CAMH; Department of Pharmacology, University of Toronto;
Susan R. George, CAMH; Departments of Pharmacology and Medicine, Univ. of Toronto.

Classification: Schizophrenia Research

A statement of the purpose of the study: The purpose of this study was to analyze the biomolecular changes induced by early life stress and their relevance for the later development of schizophrenia.

A statement of the methods: We used maternal deprivation to induce stress in rats during the first two weeks of life and then immobilization to induce stress at puberty in a subgroup of these animals. The changes in expression of genes, including the dopamine 2 receptors (D2R) and calcium/calmodulin-dependent protein kinase II beta

(CaMKIIb), which have previously been linked to the etiology of the disease, were measured in the rat striatum using Quantitative Real-Time PCR.

A summary of the results, presented in sufficient detail to support the conclusions: The levels of D2Rs and CaMKIIb were significantly upregulated, but the levels of closely related genes, namely D1Rs and CaMKIIa, were unchanged by the treatment. The upregulation by maternal deprivation and then by pubertal stress had an additive affect on the upregulation of CaMKIIb.

A statement of the conclusions reached: The second week of life in rats parallels the development of the striatum in humans during the second trimester, a known susceptibility period in humans for later predisposition to schizophrenia. Previously, we have shown that CaMKIIb, but not CaMKIIa, is upregulated in both schizophrenia patients, as well as in animal models of the disease and correlates with the development of dopamine supersensitivity, which is a key parameter present in both animal models and humans with schizophrenia. Therefore, we propose that both CaMKIIb and D2Rs may be part of a key biomolecular pathway involved in the etiology of the disease.

ASSESSING PLASTICITY IN THE DORSOLATERAL PREFRONTAL CORTEX IN PATIENTS WITH SCHIZOPHRENIA

Tarek Rajji, Centre for Addiction and Mental Health, University of Toronto;
Yinming Sun, Centre for Addiction and Mental Health, University of Toronto;
Farzak Farazan, Centre for Addiction and Mental Health, University of Toronto;
Ramsey D'Souza, Centre for Addiction and Mental Health, University of Toronto;
Caroline Wass, Centre for Addiction and Mental Health, University of Toronto;
Benoit Mulsant, Centre for Addiction and Mental Health, University of Toronto;
Zafiris Daskalakis, Centre for Addiction and Mental Health, University of Toronto.

Classification: Schizophrenia Research

A statement of the purpose of the study: The purpose of this study is to directly assess plasticity in the dorsolateral prefrontal cortex (DLPFC) in patients with schizophrenia using paired associative stimulation (PAS).

A statement of the methods: PAS is a transcranial magnetic stimulation (TMS) protocol that assesses plasticity through induction of long-term plasticity (LTP)-like activity ("LTP"). PAS typically involves the repeated pairing of peripheral nerve stimulation of the right median nerve with TMS of the contralateral motor cortex (M1). When applied to M1, PAS results in potentiation of the motor evoked potential (MEP) of the right abductor pollicis brevis muscle. First, we combined PAS with electroencephalography (TMS-EEG) to assess the effect of PAS on not only MEP but also cortical evoked activity (CEA) in M1 and DLPFC in controls. Then, we assessed the effect of PAS on CEA in DLPFC in patients with schizophrenia.

A summary of the results, presented in sufficient detail to support the conclusions: Among 4 controls PAS to M1 resulted in potentiation of CEA $F(3,6) = 6.92, p < 0.05$. MEP and CEA correlated strongly (Pearson's $r = 0.72; p = 0.002$). In another group of 7 controls, PAS resulted in potentiation of both MEP and CEA and potentiation of MEP correlated strongly with potentiation of CEA (Pearson's $r = 0.62; p = 0.001$). Finally, in a sample of 7 controls and 5 patients, PAS to DLPFC resulted in a maximal increase in CEA of 156% in controls but only 116% in patients. The difference in maximal CEA potentiation between controls and patients was of a large effect size (Cohen's $d = 0.80$).

A statement of the conclusions reached: PAS is novel brain stimulation that, when combined with TMS-EEG approach, it can directly assess plasticity in DLPFC of patients with schizophrenia. Our data also suggest that patients with schizophrenia have impaired plasticity in DLPFC using this technique.

ROLE OF THE GRIN2B GENE IN THE PRESENCE OF COMORBID PSYCHIATRIC DIAGNOSES IN WOMEN WITH BULIMIA NERVOSA

Zeynep Yilmaz, University of Toronto, Centre for Addiction and Mental Health;

Allan S. Kaplan, University of Toronto, Centre for Addiction and Mental Health, Toronto General Hospital;

Clement C. Zai, University of Toronto, Centre for Addiction and Mental Health;

Robert D. Levitan, University of Toronto, Centre for Addiction and Mental Health;

James L. Kennedy, University of Toronto, Centre for Addiction and Mental Health.

Classification: Neuroscience

A statement of the purpose of the study: GRIN2B gene regulates the activity of NMDA receptor NR2 subunit, which acts as the agonist binding site for glutamate and has been associated with anxiety and impulse control-related disorders. Majority of patients with bulimia nervosa (BN) also report a history of anxiety disorders and a significant proportion have impulse control problems, suggesting that BN may also be associated with glutamatergic abnormalities. The purpose of this study is to (1) examine the frequency of GRIN2B genetic variants in BN and healthy controls and (2) explore the role of the GRIN2B gene in comorbid psychiatric disorders among bulimic women.

A statement of the methods: For the first part of the study, we genotyped 243 women with BN and equal number of ethnicity-matched female controls for GRIN2B rs2284411, rs1806201, rs1019385 and rs890, markers previously associated with psychiatric disorders. We then performed genetic analyses on the BN probands to investigate if the GRIN2B variants and haplotypes were associated with comorbid psychiatric diagnoses and severity of eating disorder symptoms.

A summary of the results, presented in sufficient detail to support the conclusions: The data analysis for the first part of the study is currently underway. Within the BN group, we found a significant association of GRIN2B markers and haplotypes with a lifetime history of anxiety disorders ($p = .015$). GRIN2B genotypes or haplotypes were not associated with childhood ADHD or history of substance use in BN probands.

A statement of the conclusions reached: To our knowledge, this is the first study to look at the role of GRIN2B gene in BN. The pathophysiology of BN with comorbid anxiety disorders may be a distinct subphenotype related to underlying glutamatergic abnormalities, and these finding may have implications for treatment for BN patients with comorbid anxiety disorders.

GENETIC STUDY OF NEUREGULIN 1 SIGNALING IN TARDIVE DYSKINESIA

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Nabilah Chowdhury, CAMH;

Arun Tiwari, CAMH;

Zeynep Yilmaz, CAMH;

Vincenzo de Luca, CAMH;

Daniel Mueller, CAMH;

Aristotle Voineskos, CAMH;

Herbert Meltzer, CAMH;

Jeffrey Lieberman, CAMH;

Steven Potkin, CAMH.

Classification: Schizophrenia Research

A statement of the purpose of the study: A recent study on genetically modified mice pointed to a possible role of neuregulin in orofacial dyskinesia (Tomiya et al, 2009). Although the NRG1 gene has been associated with schizophrenia, its role in TD has not been investigated.

A statement of the methods: We explored the possible association of variants in the genes for neuregulin (NRG1) and its receptor (ERBB4) with TD in our European sample of schizophrenia patients who had been assessed for the presence of TD using the Schooler and Kane criteria (n=196).

A summary of the results, presented in sufficient detail to support the conclusions: Our preliminary findings revealed that the NRG1 markers rs35753505 and rs6994992 were not associated with TD status, while the ERBB4 marker rs839523 C allele was over-represented in schizophrenia patients with TD (OR=2.71; 95% confidence interval: 1.48-4.95). Total AIMS scores were higher in patients carrying the rs839523 CC genotype compared to carriers of the other two genotypes, after including age as a covariate (p=0.016).

A statement of the conclusions reached: Our results suggest that ERBB4 plays a role in TD. Further analysis with additional polymorphisms and functional study of the associated polymorphisms are required to better interpret these findings.

Oral Presentations: Clinical Research, including Clinical Trials

INVESTIGATING THE INFLUENCE OF PERSONALITY ON STRESS PHYSIOLOGY IN CHRONIC DEPRESSION

Kevin Chopra, Dept of Psychiatry, University of Toronto;
Arun Ravindran, Centre for Addiction and Mental Health, Toronto; University of Toronto;
Robert Levitan, Centre for Addiction and Mental Health, Toronto; University of Toronto.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: The personality dimension of neuroticism has been linked to stress reactivity and stress related illness such as anxiety and depression. In contrast, extraversion may be a resilience factor for both psychiatric illness and stress sensitivity. The current study evaluated associations between neuroticism and extraversion and cortisol stress responses to a social challenge in chronic major depressive disorder (CMDD) vs. healthy controls.

A statement of the methods: Fifty-one participants with CMDD and 57 healthy controls completed the Trier Social Stress Test (TSST). Neuroticism and extraversion were measured using the Revised NEO Personality Inventory. Linear regressions were used to assess associations between neuroticism and extraversion and cortisol responses, as measured by AUC_g and AUC_i, during the social stressor.

A summary of the results, presented in sufficient detail to support the conclusions: A linear regression, controlling for depression severity, revealed a significant association between the extraversion x group interaction and AUC_i (Beta 1.6, $t(103) = 2.4$, $p < .02$). Extraversion significantly predicted a blunted AUC_i in CMDD but not in healthy controls. Neuroticism was not associated with cortisol reactivity in either CMDD or healthy controls.

A statement of the conclusions reached: Extraversion predicted lower cortisol stress responses to a social challenge in CMDD subjects. In contrast, no significant relationship between neuroticism and cortisol responses was found. Most work to date in depression has linked vulnerability factors with increased stress reactivity. The current results suggest that studying resilience factors such as extraversion may provide an increased understanding of how personality influences stress responses in depressed populations.

PSYCHOSOCIAL AND PSYCHOLOGICAL INTERVENTIONS FOR THE PREVENTION OF POSTPARTUM DEPRESSION: AN UPDATED COCHRANE SYSTEMATIC REVIEW

Cindy-Lee Dennis, University of Toronto and Women's College Research Institute;
Julie Weston, University of Toronto.

Classification: Women's Mental Health

A statement of the purpose of the study: To assess the effects of psychosocial and psychological interventions compared with usual antepartum, intrapartum, or postpartum care to reduce the risk of postpartum depression.

A statement of the methods: All published and unpublished randomised controlled trials of preventive psychosocial or psychological interventions in which the primary or secondary aim was a reduction in the risk to develop postpartum depression. All trials recruited pregnant women or new mothers less than 6 weeks postpartum. Eligible studies were abstracted, assessed for methodological quality, and pooled using relative risk for categorical data and weighted mean difference for continuous data.

A summary of the results, presented in sufficient detail to support the conclusions: Twenty-five trials, involving over 15,000 women, were included. Overall, women who received a psychosocial or psychological

intervention were less likely to develop postpartum depression than those receiving standard care (relative risk (RR)=0.80, 95% confidence interval (CI) 0.67 to 0.95). Psychosocial interventions significantly decreased the risk by 17% (0.83, 0.70 to 0.99); psychological interventions were not significant. Identifying women 'at-risk' assisted in the prevention of postpartum depression (0.66, 0.47 to 0.91). Interventions with only a postnatal component were more beneficial (0.73, 0.59 to 0.90) than interventions that incorporated an antenatal component. Individually-based interventions (0.72, 0.55 to 0.93) appear to be just as effective as those that are group-based (0.88, 0.78 to 0.98) and women who received multiple-contact interventions (0.80, 0.67 to 0.95) were less likely to experience postpartum depression as those who received a single-contact intervention.

A statement of the conclusions reached: Psychosocial or psychological interventions reduce the number of women who develop postpartum depression.

MOTIVATIONAL DEFICITS AS THE KEY PREDICTOR OF CROSS-SECTIONAL AND LONGITUDINAL FUNCTIONING IN SCHIZOPHRENIA

George Foussias, Centre for Addiction and Mental Health;

Steve Mann, Centre for Addiction and Mental Health;

Konstantine Zakzanis, University of Toronto Scarborough;

Rob van Reekum, University of Toronto;

Ofer Agid, Centre for Addiction and Mental Health.

Classification: Schizophrenia Research

A statement of the purpose of the study: The negative symptoms of schizophrenia are comprised of two key symptom subdomains: 1) diminished expression (affective flattening and poverty of speech); and 2) amotivation, and contribute to functional impairment in this illness. Recent data, including our own work, suggests that motivational deficits serve as a critical determinant to functioning. This study explores the longitudinal relationship between motivational and pleasure deficits, cognitive dysfunction, and functional outcomes over 1 year in schizophrenia.

A statement of the methods: Stable outpatients between the ages of 18 and 55 with schizophrenia were evaluated at baseline, 6 months, and 1 year for severity of positive and negative symptoms, motivational deficits, hedonic experience, cognitive deficits, and functional status.

A summary of the results, presented in sufficient detail to support the conclusions: 23 participants (mean age of 42 years, mean duration of illness of 15 years) were assessed serially over 1 year. Stepwise hierarchical regression revealed that baseline motivational deficit was the strongest predictor of both baseline and future functioning. Specifically, amotivation accounted for between 58% and 76% of the variance in functioning cross-sectionally and longitudinally over 1 year. Positive symptoms, diminished expression, depression and cognitive dysfunction explained an additional 5% to 12% of the variance in functioning cross-sectionally and longitudinally.

A statement of the conclusions reached: Negative symptoms have been repeatedly implicated in poor functional outcome, with recent work suggesting that motivational deficits are the central link between negative symptoms and poor functioning. The present data extends previous findings and highlights the critical role motivational deficits play in predicting longitudinal functional outcomes in schizophrenia.

PREDICTORS OF FIRST-ONSET SUBSTANCE USE DISORDERS AMONG ADOLESCENTS WITH BIPOLAR SPECTRUM DISORDERS

Benjamin Goldstein, Sunnybrook Health Sciences Centre;

David Axelson, Western Psychiatric Institute and Clinic;

Tina Goldstein, Western Psychiatric Institute and Clinic;

Michael Strober, UCLA;

Neal Ryan, Western Psychiatric Institute and Clinic;

Martin Keller, Brown University;

Boris Birmaher, Western Psychiatric Institute and Clinic.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: Substance use disorders (SUD) are common in bipolar disorder (BP) and are associated with significant morbidity. We prospectively examined the predictors of first-onset SUD among adolescents with BP.

A statement of the methods: Subjects were 167 adolescents (12-17 years old) in the Course and Outcome of Bipolar Youth (COBY) study, who fulfilled DSM-IV criteria for BP-I, BP-II, or operationalized criteria for BPNOS. Baseline demographic, clinical, and family history variables, and clinical variables during follow-up, were examined as they relate to first-onset SUD.

A summary of the results, presented in sufficient detail to support the conclusions: New-onset SUD was observed among 32% of subjects over 221.1 ± 109.6 weeks of follow-up. Alcohol experimentation most robustly predicted first-onset SUD. Lifetime ODD/CD and panic disorder at baseline and family history of SUD were each associated with increased risk of first-onset SUD. Family cohesiveness and treatment with anti-depressants at baseline were associated with lower risk of SUD. Greater hypo/manic symptom severity in the preceding 12 weeks predicted greater likelihood of SUD; greater use of anti-manic medication during that period predicted lower likelihood of SUD.

A statement of the conclusions reached: Delaying initiation of alcohol use, mitigating the burden of other comorbidities, improving family cohesiveness, and assertive pharmacological treatment of BP could delay or prevent SUD in this high-risk population.

PREDICTORS AND CORRELATES OF SOCIAL SAFENESS: TESTING A TRIPARTITE MODEL OF AFFECT REGULATION

Allison Kelly, Toronto General Hospital, University of Toronto;

David Zuroff, McGill University;

Michelle Leybman, McGill University;

Paul Gilbert, Kingsway Hospital.

Classification: Psychiatry, Health & Disease

A statement of the purpose of the study: Gilbert (2005) synthesized recent neuroscience research to suggest three distinguishable affect regulation systems that generate negative affect (NA) in response to threat, activating positive affect (PA) in the face of resource seeking and acquisition, and social safeness in response to affiliation. We tested hypotheses derived from Gilbert's theory with a focus on identifying the predictors and correlates of social safeness.

A statement of the methods: Two 7-day daily diary studies, each with 50 male and 50 female college students, administered baseline measures of social behaviour (Study 1) and maladjustment (Study 2) and daily measures of PA and NA (Watson & Tellegen, 1988), social safeness (Gilbert et al., 2009), received social support (Cutrona, 1987), and, in Study 1, self-compassion (Neff, 2003) and self-criticizing.

A summary of the results, presented in sufficient detail to support the conclusions: In Study 1, multilevel modeling revealed that at the between- and within-subjects levels, social safeness was predicted by received social support, self-compassion, low self-criticizing. At both levels, higher social safeness predicted more agreeable, less quarrelsome, and less submissive behavior, and greater compassion goals. Almost all results remained significant when controlling NA and PA. Study 2 also found that controlling for NA and PA, mean social safeness predicted trait self-criticism, insecure attachment, low self-esteem, and depressive symptoms, as well as borderline, paranoid, and avoidant personality traits.

A statement of the conclusions reached: Findings support Gilbert's theory, demonstrating that: social safeness is responsive to interpersonal relations and intrapersonal self-relating in expected ways; high social safeness predicts

more positive patterns of social behavior; and low social safeness is associated with an array of maladaptive traits and symptoms.

PHARMACOGENETICS IN PSYCHIATRY: FROM BENCH TO BEDSIDE

Daniel J. Mueller, University of Toronto;

Alexander Soibel, CAMH;

Arun Tiwari, CAMH;

Natalie Freeman, CAMH;

Olga Likhodi, CAMH;

Lauren O'Driscoll, CAMH;

James L. Kennedy, CAMH.

Classification: General Psychiatry

A statement of the purpose of the study: Antipsychotic and antidepressant medication are widely used for psychiatric conditions such as schizophrenia, depression, anxiety or OCD symptoms. Two polymorphic enzymes, CYP2D6 and CYP2C19, metabolize a large number of these medications. Functional polymorphisms in these enzymes can confer altered enzymatic activity, potentially leading to toxic or subtherapeutic drug levels.

A statement of the methods: As part of a new study at our Pharmacogenetics Research Clinic, patients with a diagnosis of schizophrenia or mood disorders were prospectively enrolled and genotyped for CYP2D6 and CYP2C19. Patients were assessed of current and previous treatment response and occurrence of side effects. Within 6 weeks, the physicians were provided with an interpretation of the genotypic results and informed about the potential clinical implications. This feedback is intended to enhance physicians' training skills, which they then discuss with their patients. Finally, the physicians were asked to complete a questionnaire evaluating the usefulness of the genotypic information provided by the study. After 12 weeks, the clients were assessed again to monitor potential adjustments of medications and their overall treatment outcome.

A summary of the results, presented in sufficient detail to support the conclusions: Overall, physicians have returned excellent feedback that the genotyping results have been very helpful in allowing them to either select medications which their patients are likely to better tolerate, or to adjust doses based on genotype results and serum levels.

A statement of the conclusions reached: In summary, our findings suggest that CYP2D6 and CYP2C19 genotyping provides useful information that help physicians to improve pharmacotherapy for individual patients.

THE EFFECTS OF CANNABIS USE ON NEUROCOGNITION IN SCHIZOPHRENIA: A META-ANALYSIS

Rachel Rabin, ;

Konstantine Zakzanis, Department of Psychology, University of Toronto Scarborough;

Tony George, Department of Psychiatry and The Institute of Medical Sciences, U of T; CAMH.

Classification: Schizophrenia Research

A statement of the purpose of the study: This meta-analysis was conducted to determine the magnitude of effect of cannabis consumption on cognition in schizophrenia without the confounding effects of other co-morbid substance use disorders.

A statement of the methods: Eight studies met inclusion criteria yielding a total sample of 942. Three hundred and fifty six of these participants were cannabis-users with schizophrenia, and 586 were patients with no cannabis use. Neuropsychological tests were grouped into seven domains (general cognitive ability and intelligence; selective, sustained and divided attention; executive abilities; working memory and learning; retrieval and recognition;

receptive and expressive language abilities and visuo-spatial and construction abilities). Effect sizes were computed for each cognitive domain between cannabis-using patients and patients with no history of cannabis use.

A summary of the results, presented in sufficient detail to support the conclusions: Effect size differences in cognitive performance in the schizophrenia group as a function of cannabis use were in the small to medium range, denoting superior performance in cannabis-using patients.

A statement of the conclusions reached: Cannabis use likely has modest and possible clinically insignificant effects on neurocognitive function in schizophrenia. Future studies examining this relationship may benefit from introducing appropriate comparison groups, employing a longitudinal design and controlling for potential confounding factors.

COGNITIVE PERFORMANCE OF PATIENTS WITH SCHIZOPHRENIA ACROSS SEVEN DECADES

Tarek Rajji, Centre for Addiction and Mental Health, University of Toronto;

Aristotle Voineskos, Centre for Addiction and Mental Health, University of Toronto;

Meryl Butters, University of Pittsburgh;

Dielle Miranda, Centre for Addiction and Mental Health, University of Toronto;

Tamara Arenovich, Centre for Addiction and Mental Health, University of Toronto;

Mahesh Menon, Centre for Addiction and Mental Health, University of Toronto;

Zahinoor Ismail, Centre for Addiction and Mental Health, University of Toronto, University of Calgary;

Robert Kern, US Department of Veterans Affairs, University of California, Los Angeles;

Benoit Mulsant, Centre for Addiction and Mental Health, University of Toronto.

Classification: Geriatric Psychiatry

A statement of the purpose of the study: The objectives of this study are (1) to characterize cognition in older patients with schizophrenia, and (2) to determine the effect of aging, schizophrenia, and their interaction on cognition.

A statement of the methods: Using the Measurement and Treatment Research to Improve Cognition in Schizophrenia (MATRICS) Consensus Cognitive Battery, we assessed 59 older patients with schizophrenia, age 50 or above, and compared them to 33 age and sex matched control subjects. We then combined data from these subjects with data from 235 patients with schizophrenia and 333 control subjects, age 19-81, who participated in the MATRICS study to assess the effect of aging, schizophrenia, and their interaction on cognition.

A summary of the results, presented in sufficient detail to support the conclusions: Compared to older controls, older patients with schizophrenia were impaired on all cognitive measures. Compared to controls across four age groups (<40, 40-49, 50-59, and 60 or above), patients were also impaired on all cognitive measures. Further, there was an aging effect among patients and controls. However, there was no interaction effect between aging and schizophrenia on any measure. Among both patients and controls, age-related decline started between age 40 and 49 on some measures (executive function, speed of processing, and visual memory and working memory) but between 50 and 59 on other measures (attention, naming, and verbal memory and working memory).

A statement of the conclusions reached: Older patients with schizophrenia experience deficits in all cognitive domains. Compared to age matched controls, patients with schizophrenia experience in cognitive deficits that are comparable across all age groups. They also experience similar patterns of age-related declines. These findings support the hypothesis that schizophrenia is a syndrome of premature aging. Longitudinal studies are needed to confirm these findings.

VERY EARLY CHANGE IN DEPRESSIVE SYMPTOMS DURING AUGMENTATION TREATMENT WITH QUETIAPINE XR: EVIDENCE FROM A MENTAL HEALTH TELEMETRY STUDY

Catherine Reis, Sunnybrook Health Sciences Centre;

*Ayal Schaffer, Sunnybrook Health Sciences Centre; University of Toronto;
David Kreindler, Sunnybrook Health Sciences Centre; University of Toronto;
Anthony Levitt, Sunnybrook Health Sciences Centre; University of Toronto.*

Classification: General Psychiatry

A statement of the purpose of the study: Introduction: The trajectory of response to treatment for depression is poorly understood. The purpose of this study was to use real-time “mental health telemetry” to prospectively examine change in depressive and anxiety symptoms for depressed patients receiving augmentation treatment with an atypical antipsychotic.

A statement of the methods: Methods: Six-week, open-label study of the addition of Quetiapine XR (range 50-300 mg, mean final dose 107 mg) to patients with MDD who were non-responsive to standard antidepressant treatment. In addition to 6 scheduled study visits, all participants completed wirelessly transmitted self-report ratings of depressive and anxiety symptoms (“Mental Health Telemetry”) twice-daily on a Palm Treo Smartphone for one week prior to baseline, as well as during the entire treatment phase.

A summary of the results, presented in sufficient detail to support the conclusions: Results: Among all participants (n=26, mean age 45.7 years, 69% female, 54% with comorbid GAD), there was a 3.7 point mean drop in total score of the QIDS-Self Report as reported by Mental Health Telemetry (16.6 to 12.9). Of this change, 54% of the improvement occurred during the first 72 hours of treatment. Overall response rate ($\geq 50\%$ decrease in HDRS17 at endpoint) was 68%, with 44% of patients achieving remission ($\text{HDRS17} \leq 8$). Mean HAM-A scores changed from 19.0 (baseline) to 10.6 (final).

A statement of the conclusions reached: Conclusions: Very early changes in depressive symptoms were found among MDD patients receiving augmentation treatment with Quetiapine XR. This novel approach to close monitoring of study participants using Mental Health Telemetry provides tremendous opportunity for better understanding of patient outcomes in both research and clinical settings.

A PRELIMINARY STUDY OF REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION FOR SMOKING CESSATION IN SCHIZOPHRENIA.

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Zafiris J. Daskalakis, Schizophrenia Program, Centre for Addiction and Mental Health, Toronto, ON, Canada;
Tony P. George, Schizophrenia Program, Centre for Addiction and Mental Health, Toronto, ON, Canada.*

Classification: Addiction Psychiatry

A statement of the purpose of the study: It is highly important to develop better smoking cessation treatments for people with schizophrenia due to the high smoking prevalence and low cessation rates in this population. This study aimed to determine the safety and efficacy of repetitive transcranial magnetic stimulation (rTMS) targeted to the dorsolateral prefrontal cortex (DLPFC) as an adjunctive therapy to the transdermal nicotine patch (TNP) for the treatment of nicotine dependence in schizophrenia.

A statement of the methods: Participants with a diagnosis of schizophrenia or schizoaffective disorder were enrolled in a 10-week randomized, double-blind, sham-controlled trial in which they received active (n=7) or sham (n=7) rTMS (20 Hz to the DLPFC) in weeks 1-4 (5 sessions/week). All participants received weekly behavioural counselling and TNP in weeks 3-9.

A summary of the results, presented in sufficient detail to support the conclusions: Data were analyzed using an intention-to-treat approach. rTMS resulted in minimal side effects and did not exacerbate psychiatric symptomatology. rTMS did not increase end of trial abstinence rates but did reduce tobacco cravings. In week 1, scores on the Tiffany Questionnaire for Smoking Urges increased between pre- and post-TMS assessments in the sham group; active rTMS significantly blunted this increase in craving induced by short-term abstinence.

A statement of the conclusions reached: This preliminary study suggests that rTMS is well tolerated by smokers with schizophrenia. Although rTMS did not increase quit rates (possibly due to the application of TNP in both groups), promising effects on tobacco craving were identified. rTMS may therefore prove to be an effective tobacco treatment for this hard to treat population and should be further investigated using a larger sample and without TNP application.

Oral Presentations: Health Systems and Social Policy

IMPLEMENTING PRACTICE CHANGE IN CHILD AND YOUTH MENTAL HEALTH: PRELIMINARY FINDINGS AND RESEARCH PROGRAM OVERVIEW

Melanie Barwick, Hospital for Sick Children;
Peter Chaban, Hospital for Sick Children;
Chuck Cunningham, McMaster University;
Rhonda Martinussen, OISE;
Rosemary Tannock, OISE;
Lindsay Bennett, Hospital for Sick Children;
Sabine Johnson, Hospital for Sick Children.

Classification: Child & Adolescent Psychiatry

A statement of the purpose of the study: Despite the push to implement evidence-based practice in mental health, we know little of how best to conceptualize, plan, or evaluate successful implementation.

A statement of the methods: Research objectives include:

- 1) Systematic review of motivational interviewing training (the EBP) (in progress)
- 2) Focus groups with educators and CYMH practitioners regarding preferences for practice change (completed)
- 3) Two discrete choice conjoint experiments (consumer preference modeling surveys) to study factors influencing practice change (ongoing)
- 4) All data will inform the implementation plans which will be initiated in Fall 2011 for one year.

Methods: Systematic review; focus groups; discrete conjoint experiments; Multiple case study.

A summary of the results, presented in sufficient detail to support the conclusions: Results:

- 1) Systematic review is ongoing
- 2) Focus groups: Practitioners reported themes evident in the organizational change literature such as needing ongoing support through exposure to client's outcome data, good supervision, a sense of competence, and adequate training.
- 3) Discrete conjoint experiments / consumer preference surveys: preliminary data
- 4) Multiple case study: Fall 2011-Fall 2012

A statement of the conclusions reached: The beginnings of culture change and emergence of new business practices are evident in practitioner and educator perspectives on EBPs and practice change, although more supports are needed, both at system and organizational levels.

THE INFLUENCE OF ETHNICITY ON SUICIDE ATTEMPT IN MAJOR PSYCHOSES

Vincenzo De Luca, CAMH;
Celine Teo, CAMH;
Bronwyn McKenzie, CAMH;
James L. Kennedy, CAMH.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: The aim of this study is to determine the influence of ethnicity on lifetime suicide attempt and further understand the significance of ethnicity as risk factor for suicide attempt in bipolar and schizoaffective disorders.

A statement of the methods: Retrospective analysis was used to identify sub-groups characterized by presence or absence of suicide attempt in schizophrenia and bipolar disorder. Differences in clinical features were analyzed for these sub-groups using multivariate logistic regression.

A summary of the results, presented in sufficient detail to support the conclusions: Logistic regression analysis yielded significant association with age at onset and number of hospitalizations but there was no association between white ethnicity and suicide attempt lifetime.

A statement of the conclusions reached: Our findings support the notion of early onset psychoses as a predictor of suicide attempt in bipolar disorder and schizophrenia however there was no association between White European ethnicity and suicide attempt in major psychoses.

PREVALENCE AND CORRELATES OF DISTRESS IN PATIENTS WITH HEAD AND NECK CANCER UNDERGOING RADIATION THERAPY

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Jennifer Jones, University of Toronto;
Tommy Choy, University of McMaster;
Rebecca Withers, University of Toronto;
Rachel Ehrlich, University of McGill;
Lianne Trachtenberg, University of Toronto;
Gary Rodin, University of Toronto.

Classification: Psychiatry, Health & Disease

A statement of the purpose of the study: The aim of this study were to identify the prevalence and correlates of depression and anxiety in patients with head and neck cancer

A statement of the methods: Patients with head and neck cancer were consecutively recruited from radiation review clinics at Princess Margaret Hospital. Participants were screened for depression, anxiety, social difficulty and physical distress. Additional health and demographic questionnaires were completed, examining psychosocial factors and severity and number of physical symptoms. Statistical analyses were conducted using the Statistical Package for the Social Sciences, version 19 for Windows. Descriptive statistics were calculated for all variables. Univariate comparisons of variables were made using χ^2 , Spearman and Pearson correlation coefficients, Student t tests and ANOVA. Stepwise discriminant, function and multiple linear regression analyses were undertaken to examine potential predictors of depression and anxiety.

A summary of the results, presented in sufficient detail to support the conclusions: Of 523 patients approached, 269 (55%) agreed to participate in this study. Of these, 32% scored above the cutoffs on the social difficulty inventory; 22% on the PHQ9 for depression; and 12% on the GAD7 anxiety subscale of the PHQ. Social difficulty, attachment style, satisfaction with social support and physical distress were the strongest correlates of both depression and anxiety.

A statement of the conclusions reached: In this high-risk population, depression and anxiety are linked to the physical burden of disease, to the concomitant social difficulties, and to the experience of support. Further research should concentrate on the early identifiable and most modifiable factors to prevent distress, particularly social difficulty and optimal symptom management.

LESBIAN, GAY, AND TRANSGENDER PERSONS WITH SEVERE MENTAL ILLNESS: NEGOTIATING WELLNESS IN THE CONTEXT OF MULTIPLE SOURCES OF STIGMA

Sean Kidd, Dept of Psychiatry, Univ of Toronto;
Albina Veltman, McMaster University;

*Cole Gately, OISE, Univ of Toronto;
Jacky Chan, McMaster University;
Jacqueline Cohen, East Coast Forensic Hospital.*

Classification: Culture, Community & Health Studies

A statement of the purpose of the study: In the present study we have examined the interaction of sexual identity and severe mental illness (SMI) among three stigmatized groups who have been largely neglected in the literature to date: lesbian, gay and transgender individuals with SMI.

A statement of the methods: In the present study, 11 individuals with SMI from a mid-sized Canadian city who self-identified as lesbian, gay, or transgender participated in a series of interviews about their experiences of sexual identity, gender, mental illness, and psychiatric services. Their narratives were analyzed using grounded theory methods.

A summary of the results, presented in sufficient detail to support the conclusions: The participant narratives were characterized primarily by a search for connection, belongingness, and a coherent and valued sense of self in the context of multiple forms of stigmatization. Having experienced across multiple contexts longstanding discrimination, exclusion, and in some cases, violence, most of the participants described having had the experience of “not belonging anywhere.” This sense of alienation left participants struggling to hide various aspects of their identity and facing the challenging task of finding people who would accept them despite at least two major sources of stigma.

A statement of the conclusions reached: The findings suggest that if stigma was not the cause of the mental illness experienced by these participants, it certainly had a profoundly negative impact on their mental health and quality of life. At the service provision level, these findings provide compelling evidence that it is critical that providers develop relevant skills, non-judgmental attitudes, and safe and accepting settings for this group of individuals who represent a large proportion of the SMI client base.

USE OF OTHER OPIOIDS DURING METHADONE THERAPY: A POPULATION-BASED STUDY

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Chelsea Hellings, ICES;

Benedikt Fischer, Centre for Applied Research in Mental Health and Addictions, Faculty of Health Sciences, Simon Fraser Univ.;

Jurgen Rehm, CAMH;

Ahmed Bayoumi, HPME;

David Juurlink, ICES.

Classification: Addiction Psychiatry

A statement of the purpose of the study: To determine the extent to which other opioids are prescribed to patients receiving methadone.

A statement of the methods: We studied patients aged 15 to 64 years with publically-funded drug coverage who received at least 30 days of continuous MMT from April 1, 2003 to March 31, 2010. We measured the proportion of patients who received more than 7 days of a non-methadone opioid during MMT. A secondary analysis examined the extent to which non-methadone opioids were prescribed by physicians or dispensed by pharmacies not involved in a patient's MMT.

A summary of the results, presented in sufficient detail to support the conclusions: Among 18,759 patients treated with methadone, 3456 (18.4%) received at least one prescription for non-methadone opioids of more than 7 days' duration. In this group, the median number of non-methadone opioid prescriptions dispensed per year was

11.9 (IQR 4.1 to 25.0). The most frequently prescribed opioids were codeine and oxycodone. Of the 73,520 non-methadone opioid prescriptions of more than 7 days' duration, nearly half (45.8%) originated from non-MMT prescribers and pharmacies.

A statement of the conclusions reached: Many patients receiving MMT receive overlapping prescriptions for other opioids, often for extended periods. The associated prescribing patterns suggest that many such prescriptions may be duplicitous.

LOSS OF CONTROL AND ITS RELATIONSHIP TO MOOD, EATING PSYCHOPATHOLOGY, AND QUALITY OF LIFE IN BARIATRIC SURGERY CANDIDATES

Sarah Royal, Toronto Western Hospital;

Stephanie Cassin, Bariatric Surgery Program, Toronto Western Hospital;

Sanjeev Sockalingam, Bariatric Surgery Program, Toronto Western Hospital.

Classification: Psychiatry, Health & Disease

A statement of the purpose of the study: In this study, we aimed to examine the relationship between loss of control over eating (LOC) and eating disorder symptoms, night eating, depressive symptoms, and quality of life prior to surgery.

A statement of the methods: Consecutive bariatric surgery candidates (N = 66) at the Toronto Western Hospital Bariatric Surgery Program completed the Eating Disorder Examination Questionnaire (EDE-Q), the Night Eating Questionnaire (NEQ), the Patient Health Questionnaire-9 (PHQ-9), and the Short-Form 36 Health Survey (SF-36) at the time of their initial assessment. Participants had a mean body mass index of 47.2 kg/m² and 76.5% of the sample was female.

A summary of the results, presented in sufficient detail to support the conclusions: Loss of control was defined as the presence of any LOC episodes in the previous 28-day period. LOC was reported by almost half of the sample (44.1%). Scores for patients with and without LOC episodes were compared using t-tests. The results indicated that patients reporting LOC over eating prior to bariatric surgery scored significantly higher on the EDE-Q ($t = -2.61$; $p < .05$), the NEQ ($t = -2.82$; $p < .01$), the PHQ-9 ($t = -3.04$; $p < .005$), and the mental health component score of the SF-36 ($t = 2.32$; $p < .05$) compared to patients who did not report LOC.

A statement of the conclusions reached: Our study is the first to demonstrate a relationship between LOC and eating disorder psychopathology, night eating, and depressive symptoms in patients who present for bariatric surgery. Future studies are needed to elucidate the post-operative predictive value of pre-surgical LOC.

PSYCHOSOCIAL VARIABLES AFFECTING QUALITY OF LIFE IN BARIATRIC SURGERY CANDIDATES: THE ROLE OF ATTACHMENT AVOIDANCE

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Susan Wnuk, Bariatric Surgery Psychosocial Program, Toronto Western Hospital;

Rachel Strimas, Bariatric Surgery Psychosocial Program, Toronto Western Hospital;

Raed Hawa, Department of Psychiatry, University Health Network;

Allan Okrainec, Department of Surgery, University of Toronto.

Classification: Psychiatry, Health & Disease

A statement of the purpose of the study: Purpose: Relationship styles, based upon attachment theory, may provide novel insights into pre- and post-bariatric surgery outcomes including health related quality of life (HRQOL). In this study, we aimed to determine the relationship between psychosocial variables, including attachment style, and HRQOL in bariatric surgery candidates.

A statement of the methods: Methods: A total of 70 consecutive bariatric surgery patients presenting to a multi-site bariatric surgery assessment centre were included in this study. We assessed depression, social support, attachment avoidance, attachment anxiety, HRQOL (SF-36), sexual abuse and eating disorder psychopathology. SF-36 physical (PCS) and mental component scores (MCS) were compared to a normative sample and analyzed using t-tests. Predictors of HRQOL were analyzed using multiple linear regression analyses.

A summary of the results, presented in sufficient detail to support the conclusions: Results: SF-36 PCS and MCS scores in pre-bariatric surgery sample were significantly lower than an age-matched reference population. Depression, attachment anxiety, attachment avoidance and eating disorder psychopathology scores were negatively correlated with SF-36 MCS. Nearly 45% of patients had a history of childhood sexual abuse; however, this was not significantly correlated with SF-36 MCS. Psychosocial factors did not significantly predict SF-36 PCS ($p=0.06$). SF-36 MCS scores were significantly predicted by BDI scores ($p=0.001$) and attachment avoidance ($p=0.003$) in our multiple regression model.

A statement of the conclusions reached: Conclusions: This is the first study to demonstrate an association between depression, attachment avoidance and poor mental HRQOL in bariatric surgery candidates. Future studies are needed to examine the effect of attachment avoidance on post-bariatric surgery outcomes.

PATHWAYS TO PRESCRIPTION OPIOID ADDICTION

Beth Sproule, CAMH and Faculty of Pharmacy and Dept of Psychiatry, University of Toronto;
Bruna Brands, Health Canada and Dept of Pharmacology and Toxicology, University of Toronto.

Classification: Addiction Psychiatry

A statement of the purpose of the study: Pathways to prescription opioid addiction are likely more varied than for other substances of abuse due to the possibility of therapeutic exposure. The objective of this study was to determine the pathways leading to prescription opioid addiction.

A statement of the methods: Adults with prescription opioid addiction were interviewed to determine lifetime timelines related to prescription opioid use.

A summary of the results, presented in sufficient detail to support the conclusions: A total of 347 interviews were conducted in 3 provinces. Preliminary results from 150 subjects (mean age 36 ± 9 years, 61% male) are available. First exposures were recreational for 37% and therapeutic for 63% (with recreational first exposures more common in younger participants). Many (55%) had regular periods of therapeutic use. Mean ages at key events include: 21 ± 7 years (first exposure); 25 ± 8 years (start of transition period to addiction); 28 ± 8 years (first became a problem); 31 ± 9 years (first sought treatment); 17 ± 4 years (cannabis first became a problem in 25%); 20 ± 7 years (alcohol first became problem in 42%); 23 ± 10 years (first diagnosed with mood disorder in 35%); 23 ± 9 years (first diagnosed with anxiety disorder in 21%).

A statement of the conclusions reached: From the analysis to date, it appears that prescription opioid addiction is a later development in life compared to other substance use problems, and the diagnosis of mood or anxiety disorders. Regular therapeutic use was common. Understanding the role of therapeutic exposures in prescription opioid addiction and the phenomenology of the progression to addiction is critical for the development of prevention and treatment approaches.

SCHIZOPHRENIA UNDERSTOOD IN THE PERINATAL PERIOD: PSYCHIATRIC OUTCOMES AND REPRODUCTIVE TRAJECTORIES (THE SUPPORT STUDY) - PHASE 1.

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Cindy-Lee Dennis, University of Toronto, Women's College Research Institute;
Sophie Grigoriadis, University of Toronto, Women's College Research Institute, University Health Network;

Andrea Gruneir, Univ of Toronto, Institute for Clinical Evaluative Sciences, Women's College Research Institute;
Paul Kurdyak, University of Toronto, Institute for Clinical Evaluative Sciences, CAMH;
Joel Ray, University of Toronto, Institute for Clinical Evaluative Sciences, St. Michael's Hospital;
Mary Seeman, University of Toronto;
Paula Rochon, Univ of Toronto, Institute for Clinical Evaluative Sciences, Women's College Research Institute.

Classification: Women's Mental Health

A statement of the purpose of the study: Women with schizophrenia have lower birth rates than women in the general population. With recent advances in treatment that include fertility-sparing second generation antipsychotic drugs, affected women may be increasingly likely to become pregnant. We evaluated longitudinal birth rate trends among women with schizophrenia in Ontario.

A statement of the methods: We used population-based administrative health databases and calculated annual combined livebirth/stillbirth rates for all women in Ontario aged 15-49 from 1996-2009. We investigated the change in birth rates among women with schizophrenia across time and compared birth rates among women with schizophrenia to: 1) women with other major mental health disorders including bipolar disorder, major depressive disorder and other psychotic disorders (MMH) and 2) women with minor mental health disorders (e.g. mild affective illness, anxiety disorders) or no history of mental health problems (minMH).

A summary of the results, presented in sufficient detail to support the conclusions: From 1996-2009, we identified 2,537 births among women with schizophrenia. The annual birth rate per 1000 women with schizophrenia increased from 13.0-15.6 (+0.24/1000/year, 95% CI 0.03-0.46). Birth rates among women with schizophrenia were lower than among women with MMH (mean RR=0.46, SD=0.04) and this relative rate remained constant over time (p=0.28). Birth rates among women with schizophrenia were also lower than among women with minMH (mean RR=0.37, SD=0.05). However, the RR increased from 0.30 (95% CI 0.25-0.35) in 1996/7 to 0.42 (95% CI 0.37-0.48) in 2009/10 (+1%/year, p=0.002).

A statement of the conclusions reached: More women with schizophrenia are giving now giving birth. Determining the reasons for this trend, as well as psychiatric, maternal and newborn outcomes of those births, are the next steps.

Oral Presentations: Imaging Neuroscience

IMPAIRED FRONTAL WHITE MATTER CONNECTIONS IN AUTISM SPECTRUM DISORDERS: A DIFFUSION TENSOR IMAGING STUDY

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Aristotle Voineskos, The Centre for Addiction and Mental Health, University of Toronto, Department of Psychiatry;

Nancy Lobaugh, Sunnybrook Health Sciences Centre, Clinical Integrative Biology-Brain Sciences Program;

Latha Soorya, Mt Sinai School of Medicine, Department of Psychiatry;

Ting Wang, Mt Sinai School of Medicine, Department of Psychiatry;

Eric Hollander, Montefiore Medical Center, University Hospital for Albert Einstein College of Medicine;

Evdokia Anagnostou, Holland Bloorview Kids Rehabilitation Hospital, Bloorview Research Institute, Dept of Pediatrics.

Classification: Child & Adolescent Psychiatry

A statement of the purpose of the study: Objective: Abnormal white matter development may play a key role in the etiopathogenesis of Autism Spectrum Disorders (ASD). Here, we employed Diffusion Tensor Imaging (DTI) and Tract Based Spatial Statistics (TBSS) to evaluate potential disturbance of white matter microstructure throughout the brain in ASD.

A statement of the methods: Method: DTI scans were acquired for 19 children and adolescents with ASD (7-18 years; mean 12.3 ± 3) and 16 age and IQ matched controls (mean 12.5 ± 3) on a 3T MRI system. DTI values for fractional anisotropy (FA), mean diffusivity (MD), radial and axial diffusivity, were examined. Global effects of age by group interactions were first examined, followed by voxel-wise analyses comparing ASD with controls in: (i) the full cohort (ii) children only (≤ 12 yrs.), and (iii) adolescents only (>12 yrs.).

A summary of the results, presented in sufficient detail to support the conclusions: Results: Significant age by group interactions on global DTI diffusion indices were found for all three diffusivity measures, but not for FA. Voxel-wise analyses revealed prominent diffusion measure differences in ASD children but not adolescents. Widespread increases in MD and radial diffusivity in ASD children were most prominent in frontal white matter regions. Follow-up region-of-interest analyses revealed significant fronto-parietal and fronto-temporal white matter tract impairment in ASD.

A statement of the conclusions reached: Conclusion: Our findings highlight white matter disruption in children with ASD, particularly prominent in frontally based white matter tracts. Overall, our work provides evidence for alterations in white matter organization in ASD, that is most pronounced in children with this disorder.

ANOSOGNOSIA OR LACK OF ILLNESS AWARENESS IN SCHIZOPHRENIA: AN FMRI STUDY

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Mahesh Menon, Schizophrenia Program, CAMH;

David Mamo, Geriatric Mental Health Program, CAMH;

Bruce G. Pollock, Geriatric Mental Health Program, CAMH;

Ariel Graff-Guerrero, Schizophrenia Program, CAMH.

Classification: Schizophrenia Research

A statement of the purpose of the study: Anosognosia or lack of illness awareness occurs in both schizophrenia and right hemisphere lesions due to stroke, dementia, and traumatic brain injury. In the latter conditions, anosognosia is thought to arise from unilateral hemispheric dysfunction or interhemispheric disequilibrium, which provides an anatomical model for exploring anosognosia in other neuropsychiatric disorders, such as schizophrenia.

To-date, we are unaware of any functional imaging studies that have directly explored the relationship between illness awareness and schizophrenia.

A statement of the methods: Thirteen subjects with schizophrenia underwent a paradigm designed to challenge illness awareness during functional MR BOLD imaging acquisition. During scanning, subjects answered either “yes, agree” or “no, disagree” to questions specific to the various domains of illness awareness (i.e. global illness awareness, symptom awareness, awareness of need of treatment, or awareness of negative consequences of the illness) or a neutral condition. Analyses were performed using SPM8.

A summary of the results, presented in sufficient detail to support the conclusions: According with the theory that anosognosia arises from right hemispheric dysfunction or interhemispheric disequilibrium, it is proposed that poor illness awareness in schizophrenia would be associated with either reduced right hemispheric activity, or conversely, increased left hemispheric activity in the frontal, temporal, parietal and insular cortices.

A statement of the conclusions reached: This is the first functional imaging study of illness awareness and schizophrenia. Identification of the neural correlates of anosognosia in schizophrenia would provide putative regions for treatment intervention with focal techniques, such as transcranial magnetic stimulation.

PARTIAL VOLUME EFFECTS CORRECTION OF POSITRON EMISSION TOMOGRAPHY IMAGES BY ITERATIVE DECONVOLUTION.

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Jeffrey Meyer, PET Centre CAMH, Department of Psychiatry, University of Toronto;
Julia Sacher, University of Leipzig;
Sylvain Houle, PET Centre CAMH, Department of Psychiatry, University of Toronto;
Pablo Rusjan, PET Centre CAMH.

Classification: Neuroscience

A statement of the purpose of the study: The ability of positron emission tomography (PET) to accurately quantify true concentrations of radioactivity in tissue is compromised by partial volume effects (PVE). PVE arise from the point spread function of the scanner (PSF) and the tissue sub-resolution heterogeneity. Classical PVE correction methods are based on a magnetic resonance images (MRI) of higher resolution (Rousset 1998; Muller-Gartner 1992). Recently it has been proposed to correct the PSF effects using iterative deconvolution (ID) (Tohka 2008) which overcomes the need for an MRI. The aim of this work is to study the feasibility of applying ID for images acquired with a PET/CT camera.

A statement of the methods: Images of a phantom and eleven subjects were obtained with MR and [11C] DASB PET. The PET images were PVE corrected with ID, Rousset, and Muller-Gartner methods. The co-registered MRI was used to delineate regions of interest (ROIs) for the pre-frontal cortex and the putamen. Time activity curves (TAC) and binding potentials (BPND) of those ROIs were compared.

A summary of the results, presented in sufficient detail to support the conclusions: ID improves the recovery measurements in the phantom study. While in the human putamen all the methods show almost identical TACs, in the pre-frontal cortex, ID correction is smaller than MRI based correction. BPNDs after applying ID were significantly higher than uncorrected, but significantly lower than those estimated by Rousset or Muller-Gartner.

A statement of the conclusions reached: ID is a simple and promising technique for PVE correction estimation when MRIs are not available. However, when MRIs are available, classical methods are preferable because of their explicit management of the sub-resolution heterogeneity.

NEUROPHYSIOLOGIC EVIDENCE OF CORTICAL INHIBITION AND EXCITABILITY DYSREGULATION IN OBSESSIVE COMPULSIVE DISORDER

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Sylco Hoppenbrouwers, Utrecht University, Utrecht, The Netherlands;
Melissa Daigle, Centre for Addiction and Mental Health, University of Toronto, Toronto, Ontario, Canada;
Jasna Deluce, Sunnybrook Health Sciences Centre, Toronto, Ontario;
Lakshmi Ravindran, CAMH, University of Toronto, Toronto, Ontario, Canada;
Paul Fitzgerald, The Alfred and Monash University School of Psychology and Psychiatry, Melbourne, Australia;
Zafiris Daskalakis, CAMH, University of Toronto, Toronto, Ontario, Canada.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: To test the hypothesis that patients with obsessive-compulsive disorder (OCD), regardless of medication status, will demonstrate deficits in cortical inhibition and/or increased cortical excitability compared to healthy controls.

A statement of the methods: 34 patients with OCD (11 medicated and 23 unmedicated) and 34 healthy subjects were enrolled. Cortical inhibition (CI) represents a neurophysiologic process that is mediated, in part, through γ -aminobutyric acid (GABA) inhibitory interneurons. CI was measured using transcranial magnetic stimulation (TMS) paradigms known as short-interval cortical inhibition (SICI), intra cortical facilitation (ICF) and cortical silent period (CSP).

A summary of the results, presented in sufficient detail to support the conclusions: Patients with OCD demonstrated significant shortened CSP ($p < 0.001$, Cohen's $d = .91$) and increased ICF ($p = 0.009$, Cohen's $d = .71$) compared to healthy subjects. By contrast, there were no significant deficits in SICI.

A statement of the conclusions reached: Our findings suggest that OCD is associated with dysregulation in cortical GABA_B receptor mediated inhibitory neurotransmission and in mechanisms associated with glutamatergic neurotransmission compared to healthy subjects. Such dysregulation may be the neurophysiological corollary that may lead to the generation and persistence of intrusive thoughts. Additionally, while other psychiatric disorders have been associated with deficits in CI, OCD represents the only psychiatric disorder thus far identified that is associated with both excessive glutamatergic neurotransmission and impaired GABA_B receptor mediated neurotransmission.

NEURAL MECHANISMS OF ANTIDEPRESSANT EFFICACY OF THE DOPAMINE RECEPTOR AGONIST PRAMIPEXOLE IN TREATMENT OF BIPOLAR DEPRESSION

Linda Mah, Kлару, Rotman Research Institute, Baycrest.

Classification: Neuroscience

A statement of the purpose of the study: The D2/D3 receptor agonist pramipexole has clinical efficacy as an antidepressant, but its neural mechanisms are unknown. We used 18FDG-PET to investigate the cerebral metabolic effects of pramipexole augmentation of mood stabilizers in bipolar II depression.

A statement of the methods: Fifteen bipolar II depressed patients on mood stabilizers were imaged at baseline and following 6 wk of pramipexole ($n = 7$) or placebo ($n = 8$) augmentation.

A summary of the results, presented in sufficient detail to support the conclusions: Relative to placebo, pramipexole treatment was associated with reductions in normalized metabolism in bilateral orbitofrontal cortex, left ventrolateral prefrontal cortex (PFC), and right anteromedial PFC. Voxel-wise analyses additionally showed decreased normalized metabolism in the left inferior parietal cortex and medial frontopolar cortical (BA 10P) area of the anteromedial PFC following pramipexole treatment.

A statement of the conclusions reached: These pramipexole-induced effects on regional metabolism suggest a mechanism of antidepressant action distinct from that previously reported under serotonin reuptake inhibitor treatment and appear compatible with evidence that the central dopaminergic system plays a role in the pathophysiology of bipolar depression.

AMYLOID IMAGING WITH [11C]SB-13 PET IN PATIENTS WITH MILD ALZHEIMER'S DISEASE : A TEST-RETEST RELIABILITY STUDY OF DISTRIBUTION VOLUME RATIO ESTIMATES

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Kie Honjo, Division of Neurology, Department of Medicine, Sunnybrook Health Sciences Centre and U of T;

Edward David Kaye, Kunin-Lunenfeld Applied Research Unit, Baycrest; Institute of Medical Science, U of T;

Ana Petrovic-Poljak, Mood and Related Disorders Clinic, Baycrest;

Alan A. Wilson, PET Centre, CAMH; Department of Psychiatry, University of Toronto;

Pablo Rusjan, PET Centre, Centre for Addiction and Mental Health;

Sylvain Houle, PET Centre, Centre for Addiction and Mental Health;

Robert van Reekum, Department of Psychiatry, University of Toronto;

Morris Freedman, Rotman Research Institute, Baycrest; Division of Neurology, Department of Medicine, U of T;

Sandra E. Black, Division of Neurology, Department of Medicine, Sunnybrook Health Sciences Centre and U of T.

Classification: Geriatric Psychiatry

A statement of the purpose of the study: To assess the reliability of in-vivo beta-amyloid imaging with [11C]SB-13 positron emission tomography (PET) in patients with mild Alzheimer's disease (AD).

A statement of the methods: Ten mild AD patients (7 males, 3 females; age 72 ± 13 years; MMSE scores 22.3 ± 2.9) each underwent an MRI scan and two 90-minute PET scans following about 10 mCi intravenous administration of [11C]SB-13. The test-retest intervals for the PET scans were 42 ± 17 days. Regions of interest were created using a semi-automated brain region extraction from the MRI images, which were then coregistered with the PET images. Distribution volume ratios (DVRs) were calculated by adding 1 to the following binding potential estimates, proportional to the product of the density of the beta-amyloid binding sites and the affinity of [11C]SB-13 for these sites: (1) Lammertsma's simplified reference tissue models versions 0 (SRTM) and 2 (SRTM2), and the 4-parameter reference tissue model (4PTRM); or (2) Ichise's noninvasive multilinear reference tissue models versions 0 (also called Ichise's non-invasive plot or MRTM0), 1 (MRTM), and 2 (MRTM2). Coefficients of variation (COVs: [standard deviation / average]*100%) for the DVRs were calculated.

A summary of the results, presented in sufficient detail to support the conclusions: Average \pm standard deviation of the COVs for of the [11C]SB-13 PET DVRs for all brain regions combined for the 10 mild AD patients were $3.6 \pm 3.5\%$ (SRTM), $7.1 \pm 10.8\%$ (SRTM2), $3.3 \pm 2.5\%$ (4PRTM), $2.0 \pm 0.9\%$ (MRTM0), $4.0 \pm 3.2\%$ (MRTM), and $4.6 \pm 4.6\%$ (MRTM2).

A statement of the conclusions reached: Our preliminary data suggest that [11C]SB-13 PET DVRs are reliable in mild AD patients. We are comparing which DVR provides optimum effect sizes to distinguish mild AD patients from controls.

NEURAL PLASTICITY IN THE PATHOPHYSIOLOGY AND TREATMENT OF SCHIZOPHRENIA

Daphne Voineskos, Dept. of Psychiatry, University of Toronto.

Aristotle Voineskos, CAMH

Tarek Rajji, CAMH

James Kennedy, CAMH

Jeffrey Daskalakis, CAMH

Classification: Neuroscience

A statement of the purpose of the study: Neuroplasticity is the adaptation of the brain's structural and molecular features to changes in its environment by strengthening and pruning synaptic pathways. Through long term potentiation and depression, this results in new learning and the formation of memory. Several neurophysiological and molecular studies have demonstrated abnormal neuroplasticity in schizophrenia. Schizophrenia is also defined as a disorder with altered learning and memory processes. We will outline the molecular and structural components of neuroplasticity and its relationship to learning and memory. Learning and memory involve long-term synaptic

efficacy changes, as well as axonal connectivity and growth alterations. We will then demonstrate how abnormal neuroplasticity is linked to the pathophysiology of schizophrenia. Finally, we present the innovative therapeutic approaches that have the potential to rectify the abnormal pathophysiological mechanisms of schizophrenia. Brain stimulation techniques have shown promise in stimulating plasticity in several regions of the brain. Learning and memory enhancement have been shown to be direct correlates of this stimulation. Significant differences in response to brain stimulation have been shown between healthy subjects and patients with schizophrenia.

A statement of the methods:

A systematic literature review was performed over several searches through Pubmed and Web of Science. The information obtained was then assembled into concise sections summarizing the main points of seminal research that has been performed in this area of neuroscience.

A summary of the results, presented in sufficient detail to support the conclusions:

Neuroplasticity is the adaptation of the brain's structural and molecular features to changes in its environment by strengthening and pruning synaptic pathways. Through long term potentiation and depression, this results in new learning and the formation of memory. Several neurophysiological and molecular studies have demonstrated abnormal neuroplasticity in schizophrenia. Schizophrenia is also defined as a disorder with altered learning and memory processes. Learning and memory involve long-term synaptic efficacy changes, as well as axonal connectivity and growth alterations. Abnormal neuroplasticity has previously been linked to the pathophysiology of schizophrenia.

A statement of the conclusions reached:

Abnormal neuroplasticity has previously been linked to the pathophysiology of schizophrenia. Innovative therapeutic approaches have the potential to rectify the abnormal pathophysiological mechanisms of schizophrenia. Brain stimulation techniques have shown promise in stimulating plasticity in several regions of the brain. Learning and memory enhancement have been shown to be direct correlates of this stimulation. Significant differences in response to brain stimulation have been shown between healthy subjects and patients with schizophrenia.

EVIDENCE OF CORTICAL INHIBITORY DEFICITS IN MAJOR DEPRESSIVE DISORDER

Andrea Levinson, CAMH;

Paul Fitzgerald, Alfred Psychiatry Research Centre, Melbourne, Australia;

Gabriela Favalli, CAMH;

Daniel Blumberger, CAMH;

Melissa Daigle, CAMH;

Zafiris Jeff Daskalakis, CAMH.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: In this study, we endeavored to measure cortical inhibition in medicated patients with treatment resistant major depressive disorder (TRD), unmedicated patients with major depressive disorder and medicated euthymic patients with a history of major depressive disorder and compare them to healthy subjects.

A statement of the methods: 25 patients with TRD, 16 unmedicated patients with major depressive disorder, 19 medicated euthymic patients with previous major depressive disorder (i.e., HAM-D17 < 8) and 25 healthy subjects were enrolled. Cortical inhibition was measured using transcranial magnetic stimulation paradigms known as short interval cortical inhibition and the cortical silent period, which index GABA_A and GABA_B receptor mediated inhibitory neurotransmission, respectively.

A summary of the results, presented in sufficient detail to support the conclusions: All major depressive disorder patient groups demonstrated significant cortical silent period deficits compared to healthy subjects. By contrast, only TRD patients demonstrated significant deficits in short-interval cortical inhibition compared to healthy subjects, medicated euthymic major depressive disorder patients and unmedicated major depressive disorder patients. TRD patients also demonstrated a significantly greater RMT compared to all other clinical subgroups and healthy subjects suggesting that TRD was also associated with hypoeccitability of the frontal cortex.

A statement of the conclusions reached: Our findings suggest that GABAB neurophysiological deficits are closely related to pathophysiology of major depressive disorder. Our findings also suggest that more severe illness is selectively associated with GABAA receptor mediated inhibitory deficits.

Oral Presentations: Quality Improvement and Education Research

FINDING PATIENTS FOR PSYCHOTHERAPY IN THE PSYCHIATRY TRAINING PROGRAM AT THE UNIVERSITY OF TORONTO: A QI PROJECT

Waleed Alghamdi, University of Toronto;
Sayed Abd alkader, University of Toronto;
Waleed Alghamdi, University of Toronto.

Classification: Education Psychiatry

A statement of the purpose of the study: We aim to assess the process of finding psychotherapy patients for residents in the psychiatry training program at the University of Toronto.

A statement of the methods: We will invite residents (PGY2 – PGY5) and psychotherapy supervisors to complete an anonymous survey addressing the aforementioned issues. This survey will inquire about some qualitative as well as quantitative measures around the process of finding psychotherapy patients.

We will also conduct a number of focus groups with residents of different training levels at different hospital sites to identify specific areas for improvement.

We will provide some recommendations and attempt to implement some of the ideas provided by residents and supervisors in order to improve this process.

A summary of the results, presented in sufficient detail to support the conclusions: In Progress

A statement of the conclusions reached: In Progress

INVESTIGATING GENERALIZABILITY OF PSYCHOSOCIAL ONCOLOGY RESEARCH TRIALS: A SYSTEMATIC REVIEW

Alexandra Carling-Rowland, University of Toronto;
Gary Rodin, Psychosocial Oncology and Palliative Care Research Division at the Ontario Cancer Institute.;
Gavin Andrews, Department of Aging, Health and Society, McMaster University.

Classification: Culture, Community & Health Studies

A statement of the purpose of the study: The generalizability and validity of clinical research is based, in part, on the extent to which the sample studied is representative of the population of interest. Canada is proud of its multicultural and linguistically diverse populace, but this adds to the complexity of psychosocial oncology research design. Do communication and literacy barriers preclude patients from participation, and can barriers be overcome?

A statement of the methods: A systematic review of psychosocial oncology studies was undertaken to explore whether or not participants represented the research population. The inclusion criteria comprised peer-reviewed studies published from 2005 to 2010 examining the psychosocial interventions in a cancer population. Under specific focus were participant inclusion and exclusion criteria, race, education, accommodations and reported study limitations. Studies regarding pediatric cancer, and family members were excluded.

A summary of the results, presented in sufficient detail to support the conclusions: Interim analysis (39 studies) revealed that participants frequently do not represent the population under study. Patients not fluent in the research study language were explicitly excluded. Sixty percent of studies demanded literacy skills as an inclusion criterion, and of the 29 studies that included data on participant education, 69% showed that the sample was better educated

than the population. Nine studies (23%) attempted to accommodate participants with literacy issues and the majority acknowledged limitations of participation bias including language, race, and education.

A statement of the conclusions reached: Strategies to overcome communication barriers are being applied to the study examining Managing Cancer and Living Meaningfully (CALM). Efforts to include vulnerable populations in psychosocial research by addressing language and literacy issues is an ethically sound research principle

DELINEATING THE PHYSICAL ENVIRONMENT CHALLENGES FOR DEMENTED INPATIENTS.

Ahmed Hassan, University of Toronto Department of Psychiatry;
Manar ELBohy, University of Toronto Department of Psychiatry;
Elena Miula, University of Toronto Department of Psychiatry;

Classification: Geriatric Psychiatry

A statement of the purpose of the study: Aim: In order to more accurately delineate the physical environment challenges for patients with dementia and the impact on patient and staff safety a needs assessment from frontline health care workers will be conducted.

A statement of the methods: Background: Alzheimer's disease and related dementias significantly alter perceptual functioning. The extent of these perceptual changes is dependent on pre-existing sensory impairment, time of day and the social and physical environment. Spatial and time disorientation is among the first manifestations of dementia. A consistent observation, however, is that the perceptual functioning of patients with dementia is influenced by the physical environment. The amount, type, and variety of stimuli are very important: both under and over stimulation can contribute to confusion, illusions, frustration, and agitation. Dementia patients often have difficulty navigating to dining rooms, especially in an acute care unit. Difficulty remembering scheduled events such as mealtime can cause frustration and lead to aggressive behaviors. Such problematic behaviors threaten patient safety, other co-patient's safety and the safety of members of the healthcare team.

Setting: The Geriatric Mental Health Program (GMHP) at the Center of Addiction and Mental Health (CAMH) has 48 in-patient beds. A significant number of patients admitted to these beds have cognitive impairment. The physical environment of these units pose potential problems for the orientation of patients with dementia and cognitive impairment.

Methods: A short survey questionnaire will be distributed to in-patient staff from the GMHP. In addition, a short focus group session with frontline staff and management will take place with a structured interview format.

A summary of the results, presented in sufficient detail to support the conclusions: underprocess.

A statement of the conclusions reached: underprocess.

STAFF VERSUS CLIENT PERCEPTIONS OF MET AND UNMET NEEDS IN A FIRST EPISODE PSYCHOSIS PROGRAM

Jennifer Hensel, University of Toronto;
David Banayan, University of Toronto;
John Langley, St. Michael's Hospital.

Classification: Health Systems

A statement of the purpose of the study: Among chronically mentally ill populations, client and worker perceptions of client needs have been shown to vary particularly in terms of self care, harm to others and symptoms. There has been little study of these areas in first episode populations where needs may be unique and engagement in early intervention is particularly critical. This study examines the use of a standardized tool in such a population that could allow for staff and client perceptions to be consolidated and hence improve care.

A statement of the methods: This study will use a new assessment tool, the Ontario Common Assessment of Need (OCAN), to obtain a baseline of client and staff perceptions of client needs at the STEPS first episode program affiliated with St. Michael's Hospital. Approximately 20-30 clients and their respective key worker will each complete an OCAN independently. Additional demographic information will be obtained from the STEPS database. Client and staff OCANs will be combined and compared using descriptive and non-parametric statistics. The primary outcome measure will be the number of met and unmet needs according to both clients and staff and the correlations between the two. Key workers will be provided with the results of the study and encouraged to follow-up with their clients. This study focuses on the patient-centredness and effectiveness domains of quality improvement.

A summary of the results, presented in sufficient detail to support the conclusions: The study is underway.

A statement of the conclusions reached: Conclusions to follow.

CHANGING STIGMA: EVALUATING THE IMPACT OF WORKMAN ARTS' YOUTH FILM PROGRAM

Nicole Koziel, University of Toronto;

Carly Ruderman, University of Toronto Medical School;

Priyanka Chowdhury, University of Toronto Medical School.

Classification: Culture, Community & Health Studies

A statement of the purpose of the study: This study evaluates the impact of a film-based educational intervention, *Rendezvous in the Classroom*, on the attitudes of high school students toward mental illness.

A statement of the methods: This study was a follow-up to research conducted in 2010, which suggested that the *Rendezvous in the Classroom* film program increased, rather than decreased, stigma in youths. As a quality improvement project, research outcomes were used to help Workman Arts revise the program and outcomes were re-assessed.

Students from grades 9-12 across high schools in the Greater Toronto Area participated in this study. Student surveys were administered before and after the film program to assess for the following dimensions of stigma: stigmatizing attitudes, social distance, and social responsibility. Post-film program focus groups were also conducted to obtain qualitative impressions of the film program. The Wilcoxon-sign test was applied to measure within-subject changes in survey responses and qualitative analysis was applied to focus group content to assess for change in stigma.

A summary of the results, presented in sufficient detail to support the conclusions: Data collection is currently underway and will conclude in April.

Previous results suggested a slight but significant increase in all dimensions of stigma following the film program, but also a keen interest to learn more about etiology and treatment of mental illness. The program was revised this year to address these learning needs.

A statement of the conclusions reached: Film can be an effective way to capture the attention of youth and raise awareness of mental health issues. However, for an educational film program to be effective in reducing stigma, careful attention must be paid to how the issues raised in the films are addressed, and education is required surrounding such exposure so that stigma is reduced rather than potentially increased.

AN EVALUATION OF RESIDENT EDUCATIONAL NEEDS IN THE CHILD AND ADOLESCENT SUICIDE RISK ASSESSMENT

Cara Ooi, University of Toronto, Department of Psychiatry;
Monidipa Bhattacharyya, University of Toronto, Department of Psychiatry;

Classification: Education Psychiatry

A statement of the purpose of the study: To assess core psychiatric resident gaps in knowledge at different stages of clinical training and to make recommendations for improvement in residency training in the emergency suicide risk assessment in children and adolescents.

A statement of the methods: Though psychiatric residents commonly assess suicide risk in the pediatric population, there is limited psychiatric literature regarding methods of resident training and the assessment of resident knowledge and proficiency in this area. Focus groups were conducted with pre-rotation core Child Psychiatry residents (n=15), post-rotation residents (n=14) and Emergency Psychiatry Staff (n=3) at a tertiary care children's hospital in Toronto, Ontario. All groups were asked to list child-specific suicide risk factors and factors for safe discharge from the emergency department. Groups were asked to discuss resident gaps in knowledge as well as suggestions for improvements to the residency training. Quantitative data was evaluated using an agreement factor to compare resident consensus to staff consensus, assuming the staff opinion to be the gold standard. Qualitative data was organized into themes and differences between groups were ascertained.

A summary of the results, presented in sufficient detail to support the conclusions: There was no improvement in risk factor identification and some mild improvement in safe discharge factor identification following the core clinical Child Psychiatry rotation. In contrast to staff, residents did not identify shame/rejection or behavioural symptoms as important risk factors for suicide. Post-rotation residents were more aware of the importance of screening for substance use and involving families in a safe discharge. All residents described gaps in knowledge with respect to the child-specific assessment, the importance of developmental factors, and parental involvement in the risk assessment; however, post-rotation residents focused more on the lack of knowledge with regards to contextual factors, community resources, systems factors, and discharge factors. Staff focused more on contextual and system factors and less on specific risk factors. Residents and staff suggested improvements in specific tools and materials, increased clinical experience and the implementation of a formal curriculum.

A statement of the conclusions reached: The core Child Psychiatry clinical experience did not significantly improve either resident knowledge of or comfort with the child and adolescent emergency suicide risk assessment. Residents and staff identified similar gaps in knowledge and suggested improvements in the materials, formal curriculum, and clinical experience available to psychiatric residents. We propose several recommendations based on these suggestions.

CRISIS AVERTED! ENHANCING RESIDENT PERFORMANCE IN THE PSYCHIATRIC EMERGENCY ROOM SETTING

Mary Preisman, University of Toronto Department of Psychiatry;
Jennifer Hirsch, University of Toronto Department of Psychiatry;
Arielle Salama, University of Toronto Department of Psychiatry.

Classification: Education Psychiatry

A statement of the purpose of the study: Enhancing resident preparedness, confidence, and performance on call in the psychiatric emergency department setting.

A statement of the methods: A literature review was conducted to ascertain current knowledge and directions in preparing psychiatric residents for on call work in the emergency department setting. An overview of the current residency curriculum was done.

A focus group with residents from multiple sites was held to determine resident learning needs with respect to call. Focused interviews with staff psychiatrists involved in emergency work were performed to understand staff perspective.

This information was synthesized to create useful/practical materials for residents to use on call in the psychiatric emergency milieu.

A summary of the results, presented in sufficient detail to support the conclusions: There is much room for research and literature regarding preparedness for on call duties at the residency level and most clinical resources are not practical for use in very acute care situations.

Residents and staff identified areas of learning needs including specific clinical problems and system/site specific issues.

The needs identified could be addressed with the use of convenient, easy-to-use, attractive pocket sized cards with key clinical and decision making guides.

The effect on the resident on call experience must be studied further.

A statement of the conclusions reached: There is much room for research in the area of preparing and training residents for on call emergency room duties.

Residents and staff across sites have identified common areas of need in resident learning.

These needs can be addressed in the form of pocket sized, practical clinical guides that can easily be used in the emergency room setting.

CONTINUITY OF PSYCHIATRIC EMERGENCY CARE: RATES OF FOLLOW-UP CONTACT WITH PRIMARY CARE PHYSICIANS FOR PATIENTS DISCHARGED FROM THE ER

Adam Toews, University of Toronto Department of Psychiatry;
Patrick Lo, University of Toronto Department of Psychiatry;
Albert Allen, University of Toronto Department of Psychiatry;

Classification: Health Systems

A statement of the purpose of the study: The purpose of this study is to investigate the continuity of psychiatric care for patients who were assessed at the CAMH emergency by examining the rate of follow-up contact by the assessment team to the patients' primary care physicians and/or psychiatrists upon discharge of the patients.

A statement of the methods: Only the patients who were assessed and discharged from the CAMH ER (i.e. either discharged home or to another facility), but not those who were admitted or left before being assessed, were included in this study. Charts of patients who fulfilled our inclusion criteria within a randomly selected 1-week period were reviewed, with the following data collected: each patient's primary care physician or psychiatrist & their contact information if available, the continuity of care as part of the discharge plan (i.e. contacting patient's physicians), the presence of acute safety concern or psychotic symptoms. The patients' physicians were contacted within a week to ascertain if they had been notified of their patients' discharge. Additional feedback from these physicians was obtained for service improvement. These data were analyzed to provide quantitative and qualitative information regarding the continuity of care at the CAMH ER.

A summary of the results, presented in sufficient detail to support the conclusions: Pending

A statement of the conclusions reached: Pending

UNIVERSITY OF TORONTO PSYCHIATRY RESIDENCY TRAINING PROGRAM – SURVEY TO IMPLEMENT A NEW PATIENT LOG

Gwyneth Zai, Department of Psychaitry, St. Michael's Hospital, University of Toronto;
Karen Ng, Department of Psychiatry, Centre for Addiction and Mental Health, University of Toronto;
Matt Levy, Department of Psychaitry, St. Michael's Hospital, University of Toronto.

Classification: Education Psychiatry

A statement of the purpose of the study: In response to the recent accreditation, the University of Toronto (U of T) Psychiatry Residency Training Program is implementing a new patient logging system in the upcoming academic year. This is to address the inconsistent experience across training sites that residents have reported. Furthermore, there is concern from residents regarding completion of the program requirements, specifically if there is sufficient evidence for completing the mandatory cases.

A clinical log does not exist in mandatory clinical rotations except for child psychiatry with the use of a paper log. Moreover, residents have reported problems tracking other requirements such as the longitudinal psychotherapy cases spanning five years of residency. Therefore, it is necessary to implement a new patient log system for residents to track their cases.

A statement of the methods: After consulting with the program director and other parties involved with preparing the patient log, we conducted a brief survey, which were completed by psychiatry residents within the program. The survey includes residents' prior experience with patient log, time required and willing to complete the log, helpful tips, information to track, advantages and barriers of completing a patient log, roles of supervisor(s), repercussions if any, and other comments. One of the major challenges is to ensure a high response rate; therefore we have distributed paper copy of our survey to core seminars for each specific rotation.

A summary of the results, presented in sufficient detail to support the conclusions: We are currently collecting survey responses and will be analyzing data shortly.

A statement of the conclusions reached: The results of this survey and additional comments will help the program to implement a better patient log system. The patient log system will be re-evaluated after it has been launched.

Poster Theme: Basic Neuroscience

UNDERSTANDING GENETIC MECHANISMS OF ANTIPSYCHOTIC-INDUCED WEIGHT GAIN - IMPLICATION OF 5-HT2C GENE VARIANTS

Eva J. Brandl, Centre for Addiction and Mental Health;
Clement C. Zai, Centre for Addiction and Mental Health;
Michelle Sicard, Centre for Addiction and Mental Health;
Arun K. Tiwari, Centre for Addiction and Mental Health;
Renan P. Souza, Centre for Addiction and Mental Health;
Jeffrey A. Lieberman, New York State Psychiatric Institute;
Herbert Y. Meltzer, Psychiatric Hospital at Vanderbilt University;
James L. Kennedy, Centre for Addiction and Mental Health;
Daniel J. Müller, Centre for Addiction and Mental Health.

Classification: Neuroscience

A statement of the purpose of the study: Variants of HTR2C, the gene encoding 5-HT2C receptors, have been repeatedly shown to influence antipsychotic-induced body weight gain. Nonetheless, more extensive studies remain necessary to reach the goal of transferring pharmacogenetic results into clinical practice.

A statement of the methods: We investigated HTR2C polymorphisms (-1165A/G, -759C/T, -697G/C, Cys23Ser) in 205 patients from three samples. Sample A (n=68, collected in Germany) was assessed up to six weeks using different antipsychotics. Sample B (n=78, collected in North America) were treatment-resistant or intolerant to typical antipsychotics and treated with clozapine for six weeks. Sample C (n=59, collected in North America) consisted of patients treated with four antipsychotics (clozapine, olanzapine, haloperidole and risperidone) weight was assessed on average after 11 weeks.

As HTR2C is X-linked, we also performed analyses in the total sample by taking into consideration the X chromosome.

A summary of the results, presented in sufficient detail to support the conclusions: Genotypic, allelic, and haplotypic analysis of percent weight change, and at least 7% weight gain, revealed a significant association with HTR2C. We found a significant association of -759C, -697G, Cys23 haplotype with significant weight gain (OR= 1.93; 95% C.I.: 1.04-3.56 p=.0015). Similarly, the -759C, -697G, Cys23 haplotype was associated with the highest average percent weight gain, but results were not statistically significant (p=.123).

A statement of the conclusions reached: Our findings are consistent with previous study investigating HTR2C variants giving further evidence to the influence on antipsychotic-induced weight gain. However, results need to be replicated in larger samples and more polymorphisms have to be considered in all the serotonin receptor genes to better assess possible clinical application.

INVESTIGATING THE ASSOCIATION BETWEEN OBSESSIVE-COMPULSIVE DISORDER AND THE GLUTAMATE GENES SLC1A1, DLGAP3, AND GRIN2B

Bridget Doan, SickKids, University of Toronto;
Paul Arnold, Hospital for Sick Children;
Stephanie Taillefer, Hospital for Sick Children;
S-M Shaheen, Hospital for Sick Children.

Classification: Child & Adolescent Psychiatry

A statement of the purpose of the study: This study examines three glutamate genes currently undergoing investigation (SLC1A1, GRIN2B, and DLGAP3) as candidate genes for Obsessive-Compulsive Disorder diagnosis in a large family based study and explores the influence of both gender and phenotype on alterations in these genes.

A statement of the methods: Proband and family members were assessed using the Structured Clinical Interview for the DSM-IV, and affected individuals were also evaluated using the Yale-Brown Obsessive Compulsive Scale (YBOCS). The association between OCD diagnosis and alterations in the candidate genes was tested in 252 families using the Family Based Association Test (FBAT); haplotype analysis was also performed. In addition, FBAT was used to test for association when the sample was stratified by gender and phenotype. In total, 36 single nucleotide polymorphisms (SNPs) were investigated for DLGAP3, 32 for SLC1A1, and 10 for GRIN2B.

A summary of the results, presented in sufficient detail to support the conclusions: Alterations in the glutamate genes DLGAP3 and SLC1A1 were significantly associated with OCD diagnosis in both additive and recessive models. Alterations in these genes showed male-specific and hoarding-specific associations. GRIN2B did not show a significant association with OCD diagnosis.

A statement of the conclusions reached: Although requiring replication, these results provide evidence that DLGAP3 and SLC1A1 are associated with susceptibility to OCD. GRIN2B's lack of association can possibly be attributed to the much less comprehensive analysis due to the limited number of SNPs investigated. In concordance with basic neuroscience and clinical neuroimaging studies, these results provide further support for the presence of glutaminergic neurotransmission abnormalities in OCD.

THE DRUG METABOLIZING ENZYME CYP2B6 IS INDUCED IN MONKEY BRAIN BY ETHANOL CONSUMPTION

Charmaine Ferguson, University of Toronto and Centre for Addiction and Mental Health;

Sharon Miksys, University of Toronto and Centre for Addiction and Mental Health;

Rachel Tyndale, University of Toronto and Centre for Addiction and Mental Health.

Classification: Neuroscience

A statement of the purpose of the study: CYP2B6 metabolizes a variety of substrates including clinical drugs, drugs of abuse and toxins. We have detected higher levels of CYP2B6 in the brains of human smoking alcoholics compared to non-smoking non-alcoholics. We hypothesize that nicotine and ethanol are the inducers responsible for the higher levels of brain CYP2B6 in smoking alcoholics. This study assessed the effect of ethanol self-administration and nicotine treatment, separately and in combination, on brain CYP2B6 protein levels in monkeys.

A statement of the methods: Forty monkeys were randomized into four groups (N=10/group): an ethanol-only group, a nicotine-only group, an ethanol + nicotine group and a control (no drug) group. Ethanol (10% alcohol in sucrose solution) was voluntarily self-administered by the monkeys and nicotine was given as subcutaneous injections (0.5 mg/kg bid). After 21 days of drug exposure, the animals were sacrificed, brain tissue was collected and CYP2B6 protein levels were measured by immunoblotting.

A summary of the results, presented in sufficient detail to support the conclusions: Average daily alcohol consumption was 38.12 ± 7.8 ml/kg (approximately 3.0g of ethanol/kg) and nicotine did not affect voluntary consumption levels. CYP2B6 was induced by ethanol in the putamen (1.5-fold) and the caudate (3.2-fold). Nicotine did not significantly induce CYP2B6 in any of the brain regions assessed. An interaction between nicotine and ethanol was demonstrated by induction of CYP2B6 in the thalamus of monkeys receiving ethanol + nicotine, but not by either drug alone.

A statement of the conclusions reached: These results suggest that ethanol, alone and in combination with nicotine, may impact brain CYP2B6 levels and resulting metabolism of substrates, leading to altered sensitivity to various drugs and neurotoxins

THE INFLUENCE OF CYP2B-MEDIATED METABOLISM IN THE BRAIN ON NICOTINE SELF-ADMINISTRATION

Kristine Garcia, Dept. Pharmacology and Toxicology and Psychiatry, University of Toronto, and CAMH;

Kathy Coen, CAMH;

Sharon Miksys, Dept. Pharmacology and Toxicology and Psychiatry, University of Toronto, and CAMH;

Anh Dzung Le, Dept. Pharmacology and Toxicology, University of Toronto, and CAMH;

Rachel Tyndale, Dept. Pharmacology and Toxicology and Psychiatry, University of Toronto, and CAMH.

Classification: Neuroscience

A statement of the purpose of the study: Our goal was to determine whether nicotine metabolism within rat brain alters nicotine self-administration (NSA). Genetic variation in the human CYP2B6 enzyme can influence smoking behaviours which is not accounted for by differences in peripheral nicotine metabolism. As CYP2B is expressed in both human and rat brain, and can metabolize nicotine, it is possible that differences in smoking behaviours are due to variable metabolism within the brain.

A statement of the methods: To investigate a role for brain CYP2B-mediated nicotine metabolism in NSA we used a mechanism-based inhibitor. C8-xanthate (C8X) is a selective substrate that CYP2B metabolizes into a reactive intermediate which irreversibly binds to the enzyme inactivating it. Rats were given C8X in artificial cerebrospinal fluid (ACSF), or ACSF alone, intracerebroventricularly (ICV) into the right lateral ventricle. Male Wistar rats self-administered nicotine under both fixed ratio (FR) and progressive ratio schedules at three nicotine doses: 0.0075, 0.015, and 0.03 mg/kg/infusion.

A summary of the results, presented in sufficient detail to support the conclusions: C8X inhibition of brain CYP2B resulted in: (1) increased active lever presses during FR at 0.0075 mg/kg and PR at all doses, (2) a greater proportion of rats acquiring NSA behaviour at 0.0075 mg/kg and (3) rats reaching higher numbers of infusions and breakpoints during PR at all doses. Nicotine and cotinine plasma levels did not differ between ACSF and C8X-injected rats, confirming that CNS inhibition did not affect peripheral metabolism.

A statement of the conclusions reached: These results suggest that inhibiting brain CYP2B-mediated nicotine inactivation results in nicotine being more reinforcing. This supports the possibility that differences between people in CYP2B6 brain levels may alter smoking behaviours.

ETHNIC DIFFERENCE IN ANTIPSYCHOTIC DOSAGE: CULTURAL AND GENETIC DIFFERENCE

Ahmed Hassan, University of Toronto;

Celine Teo, University of Toronto;

James Kennedy, University of Toronto;

Vincenzo De Luca, University of Toronto.

Classification: Culture, Community & Health Studies

A statement of the purpose of the study: This retrospective study determines if high dosing of antipsychotic is more common for certain ethnicity considering both the self-reported ethnicity and the geographical ancestry calculated using 191 DNA markers.

A statement of the methods: METHODS: We collected ethnicity data (self-reported) and DNA sample from 241 schizophrenia patients at CAMH. We calculated the CPZe at the time of the assessment as our main outcome.

A summary of the results, presented in sufficient detail to support the conclusions: BACKGROUND: Side effects of antipsychotic medication are among the first reasons for noncompliant with treatment for schizophrenia or schizoaffective disorder. It is very common but hard to predict. These side effects are usually seen above the recommended dosage of antipsychotic prescription, which falls between 300 and 1000 chlorpromazine equivalents (CPZe) per day. Several studies have indicated that demographic characteristics can influence the individual's

dosage of medication to fall above the recommended range. Some of the factors included to influence excess antipsychotic dosing were the hospital cultures.

RESULTS: We did not find any significant difference between White Europeans and Non White Europeans (self-reported) regarding the CPZe ($p=0.23$) furthermore when we considered the geographical ancestry determined by using the 191 SNPs we could not find any association between the White ancestry and CPZe.

A statement of the conclusions reached: **CONCLUSION:** Our preliminary analysis shows that there is no evidence that different ethnic groups receive different dose of antipsychotics.

LOCAL INHIBITION OF CYP2B-MEDIATED CHLORPYRIFOS ACTIVATION IN RAT BRAIN REDUCES NEUROTOXICITY

Jibran Y. Khokhar, CAMH and Departments of Pharmacology and Toxicology, and Psychiatry;
Rachel F. Tyndale, CAMH and Departments of Pharmacology and Toxicology, and Psychiatry.

Classification: Addiction Psychiatry

A statement of the purpose of the study: Chlorpyrifos (CPF) is a commonly used insecticide that is metabolized by CYP2B enzymes to the toxic acetylcholinesterase (AChE) inhibitor chlorpyrifos oxon (CPO), resulting in cholinergic over-stimulation and neurotoxicity. Rat brain CYP2B activates CPF in vitro and this activity correlates well with CPF toxicity. **HYPOTHESIS:** Inhibition of brain, but not liver, CYP2B will attenuate CPF toxicity by blocking the local activation to CPO.

A statement of the methods: Rats received ICV injections of CYP2B mechanism-based inhibitors or ACSF (vehicle). Behavioural and neurochemical outcomes including incline plane, functional observational battery, body temperature, AChE activity and CPF/CPO levels were measured at 24-72h post-CPF (62.5-250 mg/kg s.c.) treatment.

A summary of the results, presented in sufficient detail to support the conclusions: CNS CYP2B inhibition significantly reduced CPF neurotoxicity in a variety of measures including gait, mobility, arousal, and aerial righting reflex scores as well as incline plane angle at 24h post-treatment following both single and repeated inhibitor injections. However, only repeated inhibitor treatments maintained the reduction in neurotoxicity at 48-72h, suggesting a recovery in central CYP2B activity in the single inhibitor-treated animals, and a resulting increase in local CPF activation and toxicity. In addition, CPF-induced hypothermia in the first 24h post-treatment, thought to be centrally mediated, was blocked by both single and repeated central inhibitor treatment ($p<0.01$). Consistent with the neurotoxicity data, ACSF-treated animals had higher brain CPO concentrations than inhibitor-treated animals (15 vs. 0ng/g, $p<0.001$) with no differences in plasma CPF (108 vs. 103ng/ml).

A statement of the conclusions reached: Rat brain CYP2B enzyme is functional in situ contributing substantially to the local CNS activation of CPF and its neurotoxicity.

EMOTION IS FRACTAL: FINDING THE AFFECT IN BRAIN DYNAMICS

David Kreindler, Sunnybrook Health Sciences Centre; Dept of Psychiatry, Univ of Toronto;
Charles J Lumsden, Department of Medicine, University of Toronto.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: Clinical assessments of affect sample the emotional state at one point in time: they provide no information about how affect progresses from day to day during the course of disease and treatment, or about how system history and temporal evolution impacts emotions. Time series (TS) signals provide a method for providing a more meaningful, quantitative description of phenomenology, even in cases where data results from lived experience. Quantitative characteristics of TS of emotions over time may inform us about constraints on the underlying systems that give rise to TS of emotions.

A statement of the methods: We used mental health telemetry to collect twice-daily mood symptom self-report ratings over ≥ 500 days using visual analog scales in ($n=19$) healthy subjects and ($n=19$) subjects with rapidly-cycling bipolar disorder. Power law exponents were calculated using least-squares regression to power spectra created using Fourier transforms.

A summary of the results, presented in sufficient detail to support the conclusions: Power law exponents were consistently found to be between zero and one for symptom items but not control items. These results tell us that emotions are neither cyclic nor low-dimensional chaotic, but rather fractal.

A statement of the conclusions reached: Only a limited set of system architectures can give rise to fractal dynamics, thus constraining the possible set of candidate systems underlying emotion. Comte, Ravassard, & Salin's (2006) network model of sleep highlights how testable models with fractal dynamics can be created from experimental data. This finding also has important implications for (i) the relevance of conventional statistical measures to emotions, (ii) the time scales on which emotions can 'best' be understood, and (iii) affective illness as continuous with or dichotomous from health.

BRAIN CYP2D6 ENZYME AS A POSSIBLE NEUROPROTECTIVE CANDIDATE AGAINST PARKINSON'S DISEASE.

Amandeep Mann, Centre for Addiction and Mental Health and University of Toronto;

Sharon Miksys, Centre for Addiction and Mental Health and University of Toronto;

Andrea Gaedigk, Children's Mercy Hospital & clinics, Kansas city, Missouri;

Stephen Kish, Centre for Addiction and Mental Health and University of Toronto;

Deborah Mash, University of Miami, Florida;

Rachel Tyndale, Centre for Addiction and Mental Health and University of Toronto.

Classification: Neuroscience

A statement of the purpose of the study: The goals of this study were to determine the importance of functional CYP2D6 in neurotoxicity and to measure ontogenic changes in brain CYP2D6 levels as well as differences between Parkinson's disease (PD) cases and age matched controls.

A statement of the methods: CYP2D6 protein was assessed using western blotting and immunocytochemistry. Activity was determined by AMMC metabolism and MPP+ induced cell death was measured with/without CYP2D6 inhibitors.

A summary of the results, presented in sufficient detail to support the conclusions: In human SH-SY5Y dopaminergic cells blocking CYP2D6 activity with four diverse inhibitors, quinidine, propranolol, metoprolol or timolol, increased MPP+ induced neurotoxicity. Expression of human brain CYP2D6 ($n=76$) increased from fetal to 80 years of age. Compared to age-matched controls, PD cases ($N=9/\text{group}$) had lower CYP2D6 levels in the frontal cortex ($\sim 51\%$, $P=0.001$), cerebellum ($\sim 40\%$, $P<0.001$), and the hippocampus ($\sim 47\%$, $P>0.05$) consistent with lower CYP2D6 increasing risk. In the caudate/putamen CYP2D6 levels were similar using Western blotting, likely due to the increase in astrocytes and much higher cellular CYP2D6 immunocytochemical staining in PD-affected brain regions of cases.

A statement of the conclusions reached: Blocking CYP2D6 function increased MPP+ neurotoxicity due to a reduction of MPP+ metabolic inactivation. Consistent with CYP2D6 being protective, PD cases express lower brain CYP2D6. Together this suggests that brain CYP2D6 may play an important role in neuroprotection and variation in the brain CYP2D6 levels may alter risk for neurological diseases.

BRAIN-DERIVED NEUROTROPHIC FACTOR (BDNF) VAL66MET POLYMORPHISM IS ASSOCIATED WITH INCREASED CARBOHYDRATE INTAKE IN FOUR YEAR-OLD CHILDREN

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Michael J. Meaney, Dept of Psychiatry and Neurology, McGill University, Douglas Mental Health Univ Institute;
Robert D. Levitan, Department of Psychiatry, University of Toronto and Centre for Addiction and Mental Health.

Classification: Child & Adolescent Psychiatry

A statement of the purpose of the study: To study the role of brain-derived neurotrophic factor (BDNF) gene variation on food intake and preference in young children.

A statement of the methods: Fifty-six four year-old children (26M, 30F) were selected from an established prospective birth cohort in Montreal, Canada and administered a snack test meal for 30 minutes. Total caloric and individual macronutrient intake (sugar, protein, carbohydrate, and fat) were compared across carriers vs. non-carriers of the BDNF Val66Met polymorphism. A multivariate analysis of variance test was initially used to ascertain the overall effect of the Val66Met polymorphism on food intake. Between-subject analyses were subsequently performed to determine the effect of the Val66Met polymorphism on total caloric and individual macronutrient intake.

A summary of the results, presented in sufficient detail to support the conclusions: The MANOVA confirmed that the Val66Met polymorphism affected the overall pattern of food intake ($F=2.46$, $df=5.50$; $p=0.045$, $\eta^2=0.20$) and was associated with greater carbohydrate intake in particular [$F=6.12$, $df=(1,54)$; $p=0.017$, $\eta^2=0.10$, mean intake = $45.6\pm 11.6g$ vs. $32.6\pm 17.1g$ in Val66Met polymorphism carriers vs. non-carriers]. While associations with all other dependant variables (total caloric, sugar, protein, and fat intake) were not statistically significant, positive associations with total caloric and sugar intake approached significance.

A statement of the conclusions reached: The observed multivariate effect supports our hypothesis that the BDNF Val66Met polymorphism influences food intake as early as age 4. The between-subject effects suggest that the macronutrient intake most affected by this genotype is carbohydrate intake. Identifying and understanding genetic differences that mediate food preference and overeating informs prevention and treatment interventions and are, thus, high priorities for childhood obesity research.

ELECTRICAL STIMULATION OF THE GRANULAR INSULAR CORTEX ATTENUATES NICOTINE-TAKING AND NICOTINE-SEEKING BEHAVIOURS IN RATS

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Clement Hamani, Toronto Western Hospital, CAMH;

Jose Nobrega, CAMH, UofT;

Bernard Le Foll, CAMH, UofT.

Classification: Neuroscience

A statement of the purpose of the study: We wished to evaluate the effects of electrically stimulating the granular insular cortex on nicotine-taking and -seeking behaviour in rats.

A statement of the methods: Male Long Evans rats were trained to self-administer nicotine (0.03 mg/kg/infusion) initially under a fixed-ratio 5 (FR5) schedule of reinforcement. Rats were then implanted with electrodes into the granular insular cortex. The brain area was electrically stimulated (0.2 mA, 130 Hz, 90 us pulse width) during nicotine taking sessions under both FR5 and progressive ratio (PR) schedules of reinforcement. The behaviour was then extinguished and electrical stimulation was conducted during reinstatement of nicotine-seeking behaviour induced by nicotine-associated light cues or nicotine priming injections (0.15 mg/kg, intraperitoneal).

A summary of the results, presented in sufficient detail to support the conclusions: Electrical stimulation of the granular insula was found to significantly attenuate nicotine-taking behaviour under both FR5 and PR schedules of

reinforcement as well as reinstatement induced by both nicotine-associated cues and nicotine priming injections. Electrical stimulation of the granular insula in rats trained to self-administer food pellets under an FR5 schedule showed no effects on behaviour.

A statement of the conclusions reached: Electrical stimulation of the granular insula is able to attenuate nicotine-taking and nicotine-seeking behaviour in rats trained to self-administer nicotine. Future work will evaluate the optimal parameters to achieve the greatest attenuation as well as examining the role of the granular insula in other addictive behaviours.

ANTIDEPRESSANT-LIKE EFFECTS OF NON-INVASIVE DELIVERY OF IMIPRAMINE TO THE RAT HIPPOCAMPUS USING A NOVEL FOCUSED ULTRASOUND TECHNIQUE

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Anthony Levitt, Sunnybrook Health Sciences Centre; University of Toronto, Department of Psychiatry;
Kullervo Hynynen, Sunnybrook Health Sciences Centre; University of Toronto, Department of Medical Biophysics;
José Nobrega, Centre for Addiction and Mental Health; University of Toronto.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: A preliminary set of experiments examined the capability of a novel focused ultrasound (FUS) technique to disrupt the blood-brain barrier in a site specific manner and to facilitate antidepressant-like effects by delivering imipramine to the hippocampus.

A statement of the methods: Three Sprague-Dawley rats (Group 1) received MRI-guided FUS to the hippocampus using a technique aimed at site-specifically disrupting the BBB, and were then intraperitoneally injected with a low dose of imipramine known to be ineffective under normal circumstances. As controls, groups of two rats received FUS to the hippocampus without imipramine (Group 2); low dose imipramine without FUS (Group 3); and higher, therapeutically-relevant doses of imipramine without FUS (Group 4). Ninety minutes post-FUS, the rat forced swim test (FST) was performed as a test for antidepressant-like effect.

A summary of the results, presented in sufficient detail to support the conclusions: The capture of MR images following FUS and administration of an MR contrast agent, verified the existence of localized regions in which BBB disruption had occurred. Robust antidepressant-like responses were observed in the FSTs of rats receiving low dose imipramine and FUS (Group 1) compared with the control rats of Groups 2 and 3. For the Group 4 rats, an antidepressant-like response was evident but less robust than that of the Group 1 rats.

A statement of the conclusions reached: 1) FUS can induce BBB disruption; 2) BBB disruption can be delivered to highly localized, user-selected regions of the brain; and 3) BBB disruption via FUS appears to facilitate delivery of imipramine and other molecules to specific regions of the brain in higher than normal concentrations, inducing antidepressant-like effects.

A GENETIC STUDY ASSOCIATING BRAIN VOLUME ABNORMALITIES WITH SEROTONIN SYSTEM GENE VARIANTS IN PEDIATRIC OBSESSIVE-COMPULSIVE DISORDER

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Philip Easter, Wayne State University;

James Kennedy, Centre for Addiction and Mental Health;

Gregory Hanna, University of Michigan;

David Rosenberg, Wayne State University;

Paul Arnold, Hospital for Sick Children.

Classification: Child & Adolescent Psychiatry

A statement of the purpose of the study: This study attempts to associate serotonergic system gene polymorphisms with volumetric brain region abnormalities in a clinical, pediatric OCD sample.

A statement of the methods: Genetic and structural magnetic resonance imaging (sMRI) brain data were collected from a clinic-based, pediatric sample of 20 medication-naïve OCD patients, ages 7 to 17, at Wayne State University in Detroit, Michigan. Analysis was carried out to examine the serotonin transporter gene (SLC6A4), serotonin receptor 2A gene (HTR2A), and serotonin receptor 1B gene (HTR2B), which have been identified and implicated in OCD. In addition, studies have attributed the disorder to brain region abnormalities, where the basal ganglia has proven to be a key component. Variants spanning each gene were examined and tested for association with volume changes in specific regions of the brain.

A summary of the results, presented in sufficient detail to support the conclusions: In HTR2A, the C allele of single nucleotide polymorphism (SNP), rs1923886, was found to be significantly associated with reduction in volume of the left putamen (adjusted P-value of 0.035). The same SNP was nominally associated with total and right putamen volume (not significant after adjustment for multiple comparisons).

A statement of the conclusions reached: The identified brain volume change is consistent with findings implicating the basal ganglia in OCD pathophysiology. They identify the putamen, a structure within the basal ganglia, with a specific genetic variant in children with OCD. Unique brain patterns potentially allow for the determination of endophenotypes (intermediate phenotypes) that may be associated with decreased heterogeneity compared to complex behaviours, thereby facilitating the identification of specific genotypic associations.

LOOKING BEYOND THE SCALE: AN INTERDISCIPLINARY MODEL FOR MANAGING PSYCHOSOCIAL ISSUES IN BARIATRIC SURGERY

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Lorraine Gougeon, Toronto Western Hospital;

Raed Hawa, University Health Network, University of Toronto.

Classification: Psychiatry, Health & Disease

A statement of the purpose of the study: The University of Toronto Bariatric Surgery Collaborative is inter-hospital initiative aimed at delivering bariatric surgery to over 600 patients per year. The Toronto Western Hospital (TWH) is one of two Bariatric Surgery Assessment Centres within this collaborative and we provide data on an interdisciplinary approach to the assessment of bariatric surgery candidates.

A statement of the methods: We assessed 134 patients between November 1, 2010 and June 1, 2010. Baseline data was collected on all candidates and included self-reported depression (as per PHQ-9 or BDI), BMI, and gender. Patient satisfaction survey was administered to patients 1 to 2 months post-surgery (n=39).

A summary of the results, presented in sufficient detail to support the conclusions: The average age of bariatric surgery candidates was 45.1 years, 87% were females and the mean Body Mass Index of patients was 46.9 (range 35-103). At baseline, the mean PHQ-9 depression score was 9.95 and 57% of patients had a positive screen for depression (PHQ-9 \geq 10). Following implementation of our interdisciplinary model of care, bariatric surgery patients were highly satisfied with the knowledge of the clinical team (95%), perceived patient improvement in mental health pre-surgery (84%) and perceived future improvement as a result of the program (100%). The programs was highly recommended by patients (83%).

A statement of the conclusions reached: An interdisciplinary model consisting of psychosocial education and assessment is needed given the rates of psychiatric comorbidity pre-surgery and possible impact post-surgery. The TWH Bariatric Surgery Program is offering a range of psychosocial interventions pre- and post-surgery to improve overall outcomes and is supported by preliminary data demonstrating high patient satisfaction.

A FAMILY-BASED ASSOCIATION AND BRAIN EXPRESSION ANALYSIS OF THE READING DISABILITIES CANDIDATE GENE DYX1C1

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Ashley Pitch, Sick Kids Hospital;

Elizabeth Kerr, Sick Kids Hospital;

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Cathy Barr, Univ of Toronto, Institute of Medical Sciences; Toronto Western Hospital; Sick Kids Hospital.

Classification: Child & Adolescent Psychiatry

A statement of the purpose of the study: The DYX1C1 gene has been proposed as a candidate gene for reading disabilities (RD) based on a chromosomal translocation, but association studies have yielded mixed results. This study investigated the role of DYX1C1 in RD through family-based genetic association of multiple sample sets and analyses of expression in brain tissue.

A statement of the methods: In our sample of 441 families, with one or more children with reading difficulties, 10 single nucleotide polymorphisms (SNPs) in DYX1C1 were genotyped. Categorical, haplotype and quantitative analyses were performed using Haploview, Transmit and FBAT, respectively. SNPs with a trend towards association in the categorical analysis were genotyped in additional samples of 100 RD sibling pair families and a population-based sample tested for reading measures. To examine expression levels, 40 post-mortem individuals were genotyped and real-time PCR was performed using tissues from three brain regions.

A summary of the results, presented in sufficient detail to support the conclusions: Of the 10 markers that were included in the categorical analysis, rs692691 showed a trend towards association with RD ($p=0.0575$), but these results were not replicated in the additional samples. In the quantitative analysis, rs1789126 showed modest evidence of association with single word reading ($p=0.037$) and spelling ($p=0.044$), total receptive language ($p=0.034$) and phonological awareness ($p=0.039$). There was no correlation between rs262691 variants and DYX1C1 expression in brain.

A statement of the conclusions reached: Our results do not provide strong evidence for DYX1C1 as a RD candidate gene. Although some markers showed a trend towards association, these were not the same positive SNPs reported in previous studies and may be a signal pointing to another susceptibility gene within the same region.

THE BURDEN OF OBESITY AMONG ADULTS WITH BIPOLAR I DISORDER IN THE UNITED STATES

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Ayal Schaffer, Sunnybrook Health Sciences Centre, University of Toronto, Columbia University;

Shang-Min Liu, Sunnybrook Health Sciences Centre, University of Toronto, Columbia University;

Carlos Bianco, Sunnybrook Health Sciences Centre, University of Toronto.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: Previous studies of clinical samples of adults with bipolar disorder (BD) suggest that there is increased prevalence of obesity and that obesity is associated with greater BD severity. We therefore examined this topic in a representative epidemiologic sample.

A statement of the methods: The 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions was used to determine whether the prevalence of obesity is elevated among subjects with lifetime BD, and whether obesity is associated with greater severity of BD.

A summary of the results, presented in sufficient detail to support the conclusions: The age-, race-, and sex-adjusted prevalence of obesity was significantly greater among subjects with BD versus controls (odds ratio (OR) 1.76, 95% confidence interval (CI) 1.50-2.05, $p < 0.001$). Obesity among subjects with BD was significantly associated with greater age, female sex, comorbid anxiety and medical conditions, and treatment utilization. The lower prevalence of substance use disorders (SUD) among obese versus non-obese adults with BD was not statistically significant. In multivariable analyses, the most robust correlates of obesity among adults with BD were greater age (OR 1.01, 95% CI 1.00-1.02), female sex (OR 1.43, 95% CI 1.10-1.87), and history of medication treatment for depression (OR 1.73, 95% CI 1.31-2.28).

A statement of the conclusions reached: The increased prevalence of obesity in BD and its association with illness severity, particularly in relation to depression, cannot be attributed to biases inherent in treatment-seeking samples. Future studies are needed to examine the direction of the observed association and to develop preventive and treatment strategies seeking to mitigate the burden of obesity in BD.

Poster Theme:
Clinical Research, Including Clinical Trials

THE D3 DOPAMINE RECEPTOR IN COCAINE USERS: PET STUDIES WITH [11C]-(+)-PHNO

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Doris Payer, Addiction Imaging Research Group, CAMH;

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Toney George, Department of Psychiatry, University of Toronto;

Tina McCluskey, Addiction Imaging Research Group, CAMH;

Dennis James, Addiction Program, CAMH;

Raj Sohi, Addiction Program, CAMH;

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Classification: Addiction Psychiatry

A statement of the purpose of the study: BACKGROUND - Previous positron emission tomography studies have shown that drug-addiction is associated with lower D2-type dopamine receptors in brain. In contrast, repeated exposure to drugs in rodents increases D3 receptor, a member of the D2 receptor subfamily. Despite the suspect role of the D3 receptor in reward-related behaviors and addiction, there are no data on the status of this receptor in living addicted individuals

Objective_ To test the hypothesis, via PET measurements of the D3-preferring ligand [11C]-(+)-PHNO, that unlike the D2 dopamine receptor which is reportedly down-regulated in cocaine addiction, D3 receptor binding would be increased in cocaine users

A statement of the methods: 6 healthy subjects and 6 cocaine users underwent PET scanning following [11C]-(+)-PHNO and for comparison, following the administration of the mix D2/3 receptor ligand [11C]raclopride

A summary of the results, presented in sufficient detail to support the conclusions: Cocaine use was associated with increased [11C]-(+)-PHNO binding in the substantia nigra (46%) an area where [11C]-(+)-PHNO binds exclusively to D3 receptors. In the D2 rich dorsal striatum lower [11C]-(+)-PHNO and [11C]raclopride binding occurred in cocaine users and years of use predicated greater decreases ($r = -0.7$; $p = 0.03$)

A statement of the conclusions reached: Adding to the current PET/[11C]raclopride literature suggesting lower D2/3 receptor density in addiction, these preliminary [11C]-(+)-PHNO data suggest that the D3 receptor might be selectively up-regulated by repeated cocaine use. This finding supports our previous finding of increased D3 receptor binding in methamphetamine users (unpublished) and suggests that greater D3 activity might play a role in addiction.

**A RANDOMIZED SHAM-CONTROLLED TRIAL OF OPTIMIZED BILATERAL AND UNILATERAL
RTMS FOR TREATMENT RESISTANT MAJOR DEPRESSION**

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Arun Ravindran, CAMH, Department of Psychiatry, University of Toronto;

Tarek Rajji, CAMH, Department of Psychiatry, University of Toronto;

Andrea Levinson, CAMH, Department of Psychiatry, University of Toronto;

Jeff Daskalakis, CAMH, Department of Psychiatry, University of Toronto.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: This study was designed to evaluate efficacy of sequential bilateral and high frequency left-sided (HFL) rTMS for TRD under optimized conditions.

A statement of the methods: Subjects between the ages of 18 and 85 were recruited from a tertiary care university hospital. Eighty-five subjects with TRD and a 17-item Hamilton Depression Rating Scale (HDRS) greater than 20 were randomized to receive HFL, bilateral, or sham rTMS. Three measures were taken to optimize the delivery of rTMS: patients underwent MRI co-registration to more accurately target the DLPFC, a coil-to-cortex distance calculation was conducted to adjust intensity to account for the degree of prefrontal atrophy and the treatment duration was extended to 6 weeks. The rates of remission were compared among the three treatment groups.

A summary of the results, presented in sufficient detail to support the conclusions: The remission and response rates differed significantly among the three treatment groups using an intention to treat analysis. The remission and response rates were significantly higher in the bilateral (17.2% and 20.7%) group than the sham (0% and 2.9%) group. The remission and response rates were also significantly higher in the HFL group (13.6% and 22.7%) than the sham group (0% and 2.9%). The remission and response rates did not differ between the bilateral and HFL groups.

A statement of the conclusions reached: These findings demonstrate that both sequential bilateral and HFL rTMS are effective in treatment resistant major depression. The remission and response rates are consistent with other augmentation strategies that have been studied in TRD. In order to clarify the utility of rTMS in clinical practice, future studies that examine the durability and maintenance of clinical improvement from an acute course are needed.

METACOGNITIVE STRATEGIES AND THE REDUCTION OF POST-EVENT PROCESSING IN SOCIAL PHOBIA: AN EXPERIMENTAL INVESTIGATION

Stephanie Cassin, Sunnybrook Health Sciences Centre and the University of Toronto;
Neil Rector, Sunnybrook Research Institute, University of Toronto.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: The present experimental study examined the ability of metacognitive strategies to reduce the distress associated with post-event processing.

A statement of the methods: Individuals with DSM-IV Social Phobia (N = 57) were randomly allocated to receive brief training in: 1) mindfulness, 2) distraction, or 3) no training (control group). Next, they underwent an experimental post-event processing induction. Following the induction, they were instructed to apply the metacognitive strategy (mindfulness or distraction) they were taught or to continue thinking about the social event the way they typically would following such an event (control). Participants rated their distress on a visual analogue scale prior to the post-event processing induction, and then every 60 seconds for five minutes while applying the metacognitive strategy. They also rated their positive and negative affect immediately after applying the metacognitive strategy.

A summary of the results, presented in sufficient detail to support the conclusions: Results suggest that distraction performs comparable to receiving no training and it does not reduce distress over the post-event period. In contrast, mindfulness reduces distress significantly over the post-event period and results in more positive affect and less negative affect compared to receiving no training. Group differences were not accounted for by participants' ratings of the credibility of the metacognitive strategy or by their self-reported success in using the strategy.

A statement of the conclusions reached: The results of this experimental investigation suggest that mindfulness has the potential to reduce distress associated with post-event processing, and provide further support for the clinical utility of mindfulness in the treatment of social phobia.

ATTENTION IN APATHETIC ALZHEIMER'S PATIENTS TREATED WITH METHYLPHENIDATE: A RANDOMIZED CONTROLLED TRIAL

Sarah Chau, Sunnybrook Health Sciences Centre; Dept of Pharmacology and Toxicology, Univ of Toronto;
Krista Lanctôt, Sunnybrook Health Sciences Centre;
Nathan Herrmann, Sunnybrook Health Sciences Centre;
Sandra Black, Sunnybrook Health Sciences Centre.

Classification: Geriatric Psychiatry

A statement of the purpose of the study: To determine if restoring functioning levels of dopamine through methylphenidate, a dopamine agonist, will mitigate apathy in Alzheimer's disease (AD) patients by modulating their attention.

A statement of the methods: We will use patients enrolled in the Apathy in Dementia Methylphenidate Trial (ADMET), a randomized, double-blind placebo controlled 6 week study to examine the safety and efficacy of methylphenidate in apathetic AD patients. We will assess apathy using the Apathy Evaluation Scale (AES) and attention using the Wechsler Adult Intelligence Scale - Digit Span subtest for 20 patients. Tests will be conducted prior to randomization (baseline), at week 2, week 4 and week 6. We will utilize correlation analyses to evaluate associations between Digit Span and AES scores to assess whether initial inattention levels can predict later drug response measured by the AES. Repeated-measures mixed-models regression ($p < 0.05$) to detect differences between treatment groups and across time will also be performed.

A summary of the results, presented in sufficient detail to support the conclusions: To date, 6 subjects have been randomized and completed the double-blind protocol. We anticipate that improved attention due to methylphenidate should correlate strongly with improved apathy. Methylphenidate-treated patients are expected to have improved scores on the AES and Digit Span across time and significantly better scores compared with placebo patients.

A statement of the conclusions reached: Strong correlations will suggest that increased attention mediates the response to methylphenidate and baseline attention scores may predict response to medication. The results of this study will elucidate apathy's relationship with attention in AD and increase understanding of the role of dopamine in its manifestation.

ASSESSING DEATH-RELATED ANXIETIES IN PATIENTS WITH ADVANCED CANCER

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Anne Rydall, Princess Margaret Hospital, Psychosocial Oncology & Palliative Care;
Sarah Hales, Princess Margaret Hospital, Psychosocial Oncology & Palliative Care;
Gary Rodin, Princess Margaret Hospital, Psychosocial Oncology & Palliative Care;
Christopher Lo, Princess Margaret Hospital, Psychosocial Oncology & Palliative Care.

Classification: Psychiatry, Health & Disease

A statement of the purpose of the study: Fear of death and dying may be common in patients with life-limiting disease. However, the assessment of death anxieties has been hampered by the lack of instruments specifically designed for medically ill populations approaching the end of life. In this presentation, we discuss the concept of death-related distress and its manifestations in advanced cancer, and offer some preliminary data on a new scale that we have developed for its measurement.

A statement of the methods: Recruitment is ongoing and at present includes thirty-three adult patients with advanced or metastatic gastrointestinal, genitourinary, gynecologic, breast, lung, melanoma, sarcoma, or endocrine cancer. Patients were recruited at Princess Margaret Hospital as part of a pilot study for a new psychological

intervention. Patients completed our 14-item Death and Dying Distress Scale as well as measures of depression, quality of life, and psychological growth.

A summary of the results, presented in sufficient detail to support the conclusions: Forty-five percent of individuals were identified as having moderate to severe levels of death distress. Correlations indicated that death distress was positively related to depressive symptoms ($r=0.56$, $p=0.0007$) and inversely related to spiritual ($r=-0.44$, $p=0.01$) and emotional well-being ($r=-0.55$, $p=0.001$). There was no relation to social well-being and psychological growth.

A statement of the conclusions reached: Death-related anxieties may be a relevant clinical outcome in patients with advanced disease. These findings suggest that death distress is a construct distinct from other measures of psychological well-being. Based on early results, the Death and Dying Distress Scale shows promising psychometric properties and further validation work is currently underway.

CLINICAL CORRELATES OF DRUG RESPONSE IN OBSESSIVE COMPULSIVE DISORDER (OCD)

Margaret Richter, Sunnybrook Health Sciences Centre, Univ of Toronto.

Jasna Deluce, Sunnybrook Health Sciences Centre;

Eliza Burroughs, Sunnybrook Health Sciences Centre;

Stephanie Cassin, Sunnybrook Health Sciences Centre;

Xing-Ci Zhou, Sunnybrook Health Sciences Centre;

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: OCD is a severe generally chronic neuropsychiatric condition. Pharmacological treatment helps only 40-70% of patients achieve a modest reduction in symptom severity of 25-35%. Little is known regarding correlates of treatment response; we therefore examined clinical characteristics hypothesized to be associated with response including age of onset and severity.

A statement of the methods: Participants were assessed with the Structured Clinical Interview for DSM-IV (SCID), the Yale-Brown Obsessive Compulsive Scale, and a retrospective medication history questionnaire (including Clinical Global Improvement Scale). Exploratory analyses investigated the relationship between clinical/demographic variables and treatment response.

A summary of the results, presented in sufficient detail to support the conclusions: Participants ($N=125$) included 75 women and 50 men with primary OCD. Analysis comparing participants with a robust medication response (much improved/ very much improved on CGI) (SRI responders) to participants who had tried at least two antidepressants without significant benefit (SRI non-responders) identified females were more likely to be responders than males ($\chi^2 = 5.515$, $p = 0.016$). Non-responders tended to have a later age of onset (16.19 years) than responders (13.47 years) ($F=3.656$, $p = 0.058$). Participants with comorbid grooming disorders were less likely to respond to an SSRI ($\chi^2 = 4.941$, $p = 0.033$). Clomipramine non-response was associated with higher lifetime symptom severity ($F=6.163$, $p=0.035$).

A statement of the conclusions reached: Consistent with previous reports, we found responders were more likely to be female, and have less severe illness. We did not identify a clear relationship with age of onset, however comorbid grooming disorders were more common in non responders. Further studies are needed to examine these variables in a larger sample.

MENTAL HEALTH TELEMETRY FOR LONGITUDINAL MOOD MONITORING IN TEENS: EARLY RESULTS

David M Kreindler, Sunnybrook Health Sciences Centre; University of Toronto;
Charles J Lumsden, University of Toronto;
Anthony J Levitt, Sunnybrook Health Sciences Centre; University of Toronto;
Nicholas Woolridge, University of Toronto Mississauga;
Jasna Deluce, Sunnybrook Health Sciences Centre.

Classification: Child & Adolescent Psychiatry

A statement of the purpose of the study: Teens' compliance with long-term paper-and-pencil symptom monitoring is generally poor. We have developed electronic diary software for self-report symptom tracking that runs on cell phones; we are conducting a pilot study exploring whether this "Mental Health Telemetry" (MHT) system is acceptable and tolerable for long-term mood monitoring in teens with affective illness.

A statement of the methods: We adapted our existing MHT software for a mass-market cell phone, and augmented it with 'Life Event Browser' (LEB) software for reporting on significant life events. We will recruit (n=36) subjects, ages 14-20, to investigate tolerability and acceptability of MHT, split 2:1 between subjects with self-reported severe mood swings and self-reported healthy subjects. Subjects will be screened using standard clinical rating instruments. Over nine months each, subjects will complete one scheduled self-report mood symptom questionnaire each day, plus one additional questionnaire whenever something important happens in their life that affects their mood. To-date, we have recruited eleven subjects with mood swings and four healthy subjects.

A summary of the results, presented in sufficient detail to support the conclusions: Mean enrolment length has been 95 ± 78 days (n=15); 2/15 have dropped out. Of 1420 participant-days, participants' protocol adherence rate has been ~67%; more than one questionnaire per day was submitted on ~20% of days. The mean rate of LEBs per questionnaire has been $32\% \pm 40\%$. Key obstacles to recruiting have included pre-existing cell phone ownership and concerns about fully meeting study responsibilities.

A statement of the conclusions reached: Results to-date suggests that MHT is potentially acceptable and tolerable for long-term mood monitoring in a subgroup of teens.

DEVELOPMENT OF NUTRITIONAL SUPPLEMENTS TO PREVENT POSTPARTUM DEPRESSION

Yekta Dowlati, University of Toronto, Centre for Addiction and Mental Health;
Arun Ravindran, University of Toronto, Centre for Addiction and Mental Health;
Meir Steiner, McMaster University, University of Toronto;
Jeffrey Meyer, University of Toronto, Centre for Addiction and Mental Health.

Classification: Women's Mental Health

A statement of the purpose of the study: Postpartum depression is the most common complication of childbearing with a prevalence rate of 13%. After delivery, estrogen levels decline tremendously followed by considerable rise in Monoamine Oxidase-A (MAO-A) levels. Greater MAO-A binding occurs in affect modulating regions during major depressive episodes and prior to recurrence. We view greater MAO-A levels as an excessive monoamine lowering process. To compensate for excess monoamine metabolism, supplements of monoamine precursors might be helpful. Prior to studying the effect of monoamine precursors on preventing postpartum depression we are first studying their effects upon amino acid levels in breast milk. We hypothesize that changes in amino acid contents in breast milk will be minimal in women who receive monoamine precursors.

A statement of the methods: 20 healthy women have been recruited; of which 6 received one single dose of 2 grams, 6 received 5 grams, 4 received 10 grams of tyrosine and 4 as controls. We are still recruiting subjects to receive different doses of tryptophan supplements. Tryptophan and tyrosine levels will be measured in breast milk and plasma at few time points during that day.

A summary of the results, presented in sufficient detail to support the conclusions: Amino acid contents of breast milk and plasma will be compared before and after supplement intake.

A statement of the conclusions reached: Changes in amino acid contents of breast milk is expected to be minimal upon using supplements. If the results show a minimal effect upon amino acid content of breast milk, we would then study the effects of these supplements upon preventing postpartum depression.

PSYCHOSOCIAL DETERMINANTS OF LIFESTYLE CHANGE IN AN E-COUNSELING INTERVENTION FOR HYPERTENSION

Samir Durrani, York University;

Jane Irvine, York University;

Robert Nolan, University Health Network; Dept. of Psychiatry Univ. of Toronto.

Classification: Psychiatry, Health & Disease

A statement of the purpose of the study: The purpose of this study was to evaluate the efficacy of an email-based lifestyle counseling intervention that was designed to increase motivation to initiate therapeutic lifestyle change (diet and exercise), as well as to address psychosocial determinants (depression and stress) of readiness to change lifestyle behaviours.

A statement of the methods: Enrollment included 387 patients diagnosed with hypertension. Baseline assessments included an evaluation of symptoms of depression (BDI-II) and psychological stress (PSS), as well as their stage of readiness to change diet and exercise behaviour. Subjects were randomized into an e-counseling group, (email support messages sent bi-weekly for 2 months, then monthly for the next 2 months) or a wait-list control group which received standard educational information on heart health. Post-intervention assessment was conducted after 4 months, in which all of the baseline assessment protocols were repeated.

A summary of the results, presented in sufficient detail to support the conclusions: Per-protocol analysis indicated that increased exposure to e-counseling for lifestyle change was significantly and independently associated with increased readiness to change diet ($b = .11, P = .05$) and exercise ($b = .14, P = .04$). Changes in symptoms of depression and stress were inversely associated with changes in exercise ($b = -.02, P = .02$, and $b = -.02, P = .002$, respectively). A similar statistical trend was observed for depression and diet ($b = -.009, P = .08$) but not for stress.

A statement of the conclusions reached: E-counseling for therapeutic lifestyle change among patients with hypertension is independently associated with improvement in exercise and diet. Further, reduction in symptoms of depression and stress may facilitate therapeutic change in exercise, and to a lesser extent, dietary behaviour.

RELATIONSHIP BETWEEN CLINICAL SEVERITY AND EXECUTIVE DYSFUNCTION IN OLDER ADULTS WITH MAJOR DEPRESSIVE DISORDER

Kiannaz Kiani, Kunin-Lunenfeld Applied Research Unit, Rotman Research Institute, Baycrest;

Rita Vitorino, Kunin-Lunenfeld Applied Research Unit, Rotman Research Institute, Baycrest;

Lynne Williams, Kunin-Lunenfeld Applied Research Unit, Rotman Research Institute, Baycrest;

Rachel Leung, Kunin-Lunenfeld Applied Research Unit, Rotman Research Institute, Baycrest;

Stefanie Fréel, Kunin-Lunenfeld Applied Research Unit, Rotman Research Institute, Baycrest;

Dr. Bruce G. Pollock, Department of Psychiatry, University of Toronto, Centre for Addiction and Mental Health;

Dr. Linda Mah, Dept of Psychiatry, Univ of Toronto, Kunin-Lunenfeld Applied Research Unit, Rotman Research.

NOTE: This Poster will be presented by
**Gagan Fervaha, Kunin-Lunenfeld Applied Research Unit,
Rotman Research Institute, Baycrest;**

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: Individuals with late-life depression (LLD) frequently exhibit executive dysfunction. Further, executive impairment in LLD is associated with poorer outcome. We explored the relationship between clinical severity of LLD and deficits in executive function.

A statement of the methods: Twelve unmedicated individuals with LLD (11F, 68 +/- 5.9 years, 15.5 +/- 3.6 years education, MMSE = 28.8 +/- 1.5), who were free of neurological disorders including dementia, were administered measures of memory and executive function. Clinical severity was rated using the Hamilton Depression Scale (HAM-D = 20.1 +/- 2.47). We examined associations between depression severity and performance on the Delis Kaplan Executive Function Scale (DKEFS) and the California Verbal Learning Test using (CVLT) using Spearman's rho due to non-normal distributions of the data.

A summary of the results, presented in sufficient detail to support the conclusions: Mean score on the CVLT was 51.9 +/- 14.4. Performance on the DKEFS Card Sorting task (analogous to Wisconsin Card Sorting Test) was 32.7 +/- 9.2. Clinical severity was positively associated with frequency of perseverative errors on the CVLT (mean = 7.7 +/- 11.7; $r = 0.68$, $p < 0.05$), but not with overall memory recall or frequency of intrusion errors. Depressive severity was moderately and inversely correlated with performance on the Card Sorting task ($r = -0.57$, $p = 0.052$), but not on the Verbal Fluency or Trail Making subscales of the DKEFS.

A statement of the conclusions reached: These preliminary results show an association between clinical severity of LLD and impairment in mental flexibility, but not memory. These findings are consistent with studies showing poorer prognosis in patients presenting with LLD and comorbid executive dysfunction.

ADULT ATTACHMENT STYLE IN CLIENTS WITH MAJOR DEPRESSIVE DISORDER COMORBID WITH SOCIAL ANXIETY DISORDER

Camelia Garofeanu, University of Toronto;

Kevin Chopra, University of Toronto;

Arun Ravindran, University of Toronto;

Zindel Segal, University of Toronto;

Robert Levitan, University of Toronto.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: When major depressive disorder (MDD) and social anxiety disorder (SAD) are comorbid, this leads to increased morbidity. Prior research suggests that insecure attachment may contribute to this. We investigated if patients with comorbid SAD and MDD have a different pattern of attachment while depressed when compared to patients with MDD only.

A statement of the methods: 175 patients who presented to a tertiary care center with symptoms of depression entered the study. They were administered the Structured Clinical Interview for DSM-IV Axis-I Disorders as well as a self-report adult attachment questionnaire to assess the dimensions of secure, anxious-ambivalent and avoidant attachment.

A summary of the results, presented in sufficient detail to support the conclusions: While depressed, the degree of avoidant attachment style is increased in individuals suffering from comorbid SAD and MDD when compared with MDD only. Interestingly, following resolution of depression, individuals with comorbid SAD-MDD continue to have significantly higher scores of anxious and avoidant attachment when compared with the MDD-only group.

A statement of the conclusions reached: Despite successful treatment of depression, individuals with MDD comorbid with SAD continue to have high scores of insecure attachment. This observation might be partially responsible for the increased severity present in this patient population and the likelihood of relapse.

MORNING AWAKENING CORTISOL LEVELS ARE BLUNTED IN MDD WITH COMORBID SOCIAL ANXIETY DISORDER

Camelia Garofeanu, University of Toronto;

Kevin Chopra, University of Toronto;

Arun Ravindran, University of Toronto;

Zindel Segal, University of Toronto;

Robert Levitan, University of Toronto.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: Major depressive disorder (MDD) comorbid with social anxiety disorder (SAD) leads to increased clinical severity and functional impairment. Given prior associations of greater depressive morbidity with hyper-cortisolemia, we hypothesized that MDD patients with SAD would exhibit higher morning awakening cortisol and higher diurnal cortisol levels than MDD patients without SAD.

A statement of the methods: For two consecutive days, 25 MDD subjects (7 with co-morbid SAD) provided salivary cortisol samples at awakening, 30 and 60 minutes post awakening and at 12, 4 and 8 pm. A repeated measures ANCOVA was done to compare cortisol levels over time in the MDD and MDD/SAD groups, using gender and HAM-D depression scores as co-variables.

A summary of the results, presented in sufficient detail to support the conclusions: There was a significant group X time interaction for salivary cortisol levels ($F=7.88$, $df= 1, 21$; $p=.011$). Contrary to our hypothesis, MDD co-morbid with SAD was associated with a blunted pattern of cortisol secretion relative to MDD alone. This was largely attributable to a blunted AUC of the cortisol awakening response in the MDD-SAD group relative to the MDD group ($1.21 \pm .61$ vs $1.89 \pm .69$ respectively, $t= 2.28$, $p=.032$). This blunting was not attributable to high initial cortisol levels, as the first a.m. measurement was significantly lower rather than higher in the MDD-SAD group.

A statement of the conclusions reached: In patients with MDD, having co-morbid SAD appears to be associated with a blunted cortisol awakening response. Further research is needed to clarify the role that SAD or avoidance might have in this finding

EARLY SHIFTS IN ATTENTION AWAY FROM DYSPHORIC VISUAL IMAGES PREDICT ANTIDEPRESSANT RESPONSE TO DULOXETINE MONOTHERAPY

Peter Giacobbe, Dept of Psychiatry, Univ of Toronto; Dept of Psychiatry, University Health Network;

Kai-Ho Fok, Department of Electrical and Computer Engineering, University of Toronto;

Wei Tang, Department of Psychiatry, University Health Network;

William Sanh, Department of Psychiatry, University Health Network;

Larry Grupp, Department of Pharmacology, University of Toronto;

Moshe Eizenman, Dept of Electrical and Computer Engineering, University of Toronto.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: Although it has been generally accepted that at least 6 weeks is needed for antidepressant medication to exert its clinical effects, there is evidence that antidepressants produce acute changes in how people process emotional stimuli. However, the role of these early changes in affective processing in predicting clinical response to antidepressant medication is unknown.

A statement of the methods: Eighteen patients with Major Depressive Disorder received a six-week course of open-label duloxetine antidepressant monotherapy. At baseline and at each weekly visit, images from the International Affective Picture System were displayed on a computer. The amount of time viewing images with dysphoric and social thematic content were calculated from gaze estimates recorded from an infrared eye-tracking device.

A summary of the results, presented in sufficient detail to support the conclusions: 10 of the 18 patients achieved an antidepressant response [$>50\%$ reduction in the 17-item Hamilton Depression Rating Scale compared to baseline] at the end of 6 week trial of duloxetine. After one week of medication, responders demonstrated an early change in eye tracking behavior to dysphoric visual images. At week 1, 9/10 responders to duloxetine demonstrated decreased visual attention to dysphoric images, compared to 3/8 non-responders. The Positive Predictive Value of early improvements in attentional bias at week 1 on antidepressant response status at week 6 was 90%, with a sensitivity of 75% and specificity of 83.3%.

A statement of the conclusions reached: The finding that responders show an immediate and sustained shift in attentional bias away from dysphoric images is supportive of the idea that changes in emotional processing may be an integral component of the antidepressant effects of duloxetine.

DOPAMINE D2 RECEPTOR OCCUPANCY BY ZIPRASIDONE OVER 24 HOURS

David Mamo, University of Toronto;

Takefumi Suzuki, Keio University, Japan;

Ariel Graff, University of Toronto; Centre for Addiction & Mental Health;

Gary Remington, University of Toronto; Centre for Addiction & Mental Health;

Bruce Pollock, University of Toronto; Centre for Addiction & Mental Health;

Hiroyoki Uchida, Keio University, Japan;

Robert Bies, Indiana University School of Medicine;

Vincenzo DeLuca, University of Toronto; Centre for Addiction & Mental Health;

Benoit Mulsant, University of Toronto; Centre for Addiction & Mental Health;

Zahinoor Ismail, University of Toronto; Centre for Addiction & Mental Health.

Classification: Schizophrenia Research

A statement of the purpose of the study: Using a within subject design, we examined the striatal dopamine D2 occupancy of ziprasidone at three time points while patients were treated at 60mg twice daily.

A statement of the methods: Positron Emission Tomography (PET) scans with [^{11}C]-Raclopride were performed in 12 adult patients with schizophrenia. Each subject completed a [^{11}C]-Raclopride PET scan at 5-, 13- and 23-hour after the last dose of ziprasidone 60mg. Regions-of-interest (ROIs) were the caudate, putamen and ventral striatum and D2 receptor occupancy was estimated in relation with the binding potential data from 44 healthy controls.

A summary of the results, presented in sufficient detail to support the conclusions: Eleven scans were available for analysis at each time point. The mean occupancies 5 hours after the last dose of ziprasidone 60mg were 66% in the putamen, 62% in the caudate, and 68% in the ventral striatum, respectively. At 13 hours after the last dose, they decreased to 39%, 35%, and 47%, respectively. Further, almost no occupancy was noted in 23 hours (2%, -6% and 11% occupancy in the respective ROIs). The time-course across the ROIs indicated an occupancy half-life of 8.3 hours. The serum level of ziprasidone associated with a 50% D2 occupancy was estimated to be 204nmol/L (84ng/ml).

A statement of the conclusions reached: The absence of ziprasidone's striatal D2 receptor occupancy at 23 hours after a last oral dosage of 60mg under steady state conditions is consistent with its peripheral half-life. The findings support our earlier report suggesting that ziprasidone 60mg taken twice daily is the minimal dose expected to achieve therapeutic central D2 receptor occupancy in adult patients with schizophrenia.

CAROTID: CAD RANDOMIZED OMEGA-3 TRIAL IN DEPRESSION - TRIAL DESCRIPTION AND HYPOTHESES.

Graham Mazereeuw, Neuropsychopharmacology Research Group, Sunnybrook Research Institute;
Nathan Herrmann, Neuropsychopharmacology Research Group, Sunnybrook Research Institute;
Walter Swardfager, Neuropsychopharmacology Research Group, Sunnybrook Research Institute;
Karen Levy, Neuropsychopharmacology Research Group, Sunnybrook Research Institute;
Alex Kiss, Institute for Clinical Evaluative Sciences;
C.T. Wang, Trillium Health Centre;
David Ma, College of Biological Sciences, University of Guelph;
Paul Oh, Toronto Rehabilitation Institute;
Krista Lancôt, Neuropsychopharmacology Research Group, Sunnybrook Research Institute.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: CAROTID: CAD Randomized Omega-3 Trial in Depression is a 12-week multi-centre placebo-controlled RCT evaluating ω -3 FAs as a treatment for depression in 254 CAD patients aged 50-80 participating in standardized cardiac rehabilitation.

A statement of the methods: The primary outcome will be measured by the 24-Item HAM-D and secondary outcomes (clinical impact) measured by the BDI-II and SF-36. Exploratory cognitive evaluations will also be performed using the NINDS-CSN 30-minute cognitive battery.

A summary of the results, presented in sufficient detail to support the conclusions: Depression has a clinically important association with Coronary Artery Disease (CAD). Within the first year following an Acute Coronary Syndrome (ACS) approximately 20% of patients will experience major depression, while another 27% experience minor depression. CAD patients often respond poorly to anti-depressant therapy and depression predicts poor adherence to cardiac rehabilitation as well as increasing the risk of subsequent ACS and resultant mortality independently of traditional risk factors.

Both CAD and depression patients show deficiencies in plasma and membrane omega-3 FAs as well as elevated markers of inflammation. Indeed, ω -3 FA supplementation reduces pro-inflammatory markers and restores the ω -3/ ω -6 ratio in cell membranes and plasma. These changes signify a potential mechanism behind the purported anti-depressant properties of ω -3 FAs; however clinical trial results have been disappointing, largely due to population heterogeneity.

A statement of the conclusions reached: We hypothesize that baseline concentrations of ω -3 FAs in plasma and membranes will predict response to treatment (primary) and that the change in concentrations will correlate with the response to treatment (secondary). These findings may help define a subgroup of patients with depression and CAD who may benefit from treatment with ω -3 FAs.

OBSESSIVE-COMPULSIVE TRAITS IN CHILDREN AND ADOLESCENT FROM THE GENERAL POPULATION HAVE NO EFFECT ON STOP-SIGNAL TASK PERFORMANCE

Laura S. Park, University of Toronto, Hospital for Sick Children;
Jennifer Crosbie, Hospital for Sick Children;
Janet Shan, Hospital for Sick Children;
Annie Dupuis, Hospital for Sick Children;
Russell Schachar, University of Toronto, Hospital for Sick Children,;
Paul D. Arnold, University of Toronto, Hospital for Sick Children.

Classification: Child & Adolescent Psychiatry

A statement of the purpose of the study: Obsessive compulsive disorder (OCD), a heritable disorder, represents the extreme manifestation of obsessive compulsive (OC) traits which are found to varying degrees in the general population. While OCD has been associated with impaired performance on the Stop Signal Task (SST), a motor

response inhibition task, nothing is known about the relationship between OC traits and SST performance in the general population.

A statement of the methods: The sample consisted of 11,558 children and adolescents (ages 7-17). We examined correlations between the severity of OC traits, measured by the Child Behaviour Checklist Obsessive Compulsive Scale (CBCL-OCS) and Toronto Population-based Obsessive Compulsive Scale (TPOCS), and SST performance. Three scores – CBCL-OCS total score, CBCL-OCS weighted score, and TPOCS total score – from the parent-reported questionnaires were calculated. Linear regression was performed for the effect of each of these scores on four SST measures: stop signal reaction time (SSRT), post error slowing (PES), Go reaction time (GoRT), and the standard deviations for Go reaction time (GoRTSD).

A summary of the results, presented in sufficient detail to support the conclusions: The effect of CBCL-OCS total and weighted scores on SSRT and GoRTSD were statistically significant ($p < 0.05$), but the effect size was very small ($r = 0.001$ for each). These two scores had no significant effect ($p > 0.1$) on PES and GoRT. Similarly, TPOCS total score showed no significant effect on any of the SST measures ($p > 0.1$).

A statement of the conclusions reached: Our results did not support a relationship between total OC traits and SST measures in children from the general population. We are currently conducting analyses to determine if SST scores are related to specific OC subtypes.

POPULATION-BASED ASSOCIATION STUDY OF GLUTAMATERGIC CANDIDATE GENES IN OBSESSIVE COMPULSIVE DISORDER (OCD) AND RESPONSE INHIBITION

S-M Shaheen, The Hospital for Sick Children;

Ke Wu, The Hospital for Sick Children;

Jennifer Crosbie, The Hospital for Sick Children;

Andrew Paterson, The Hospital for Sick Children;

Russell Schachar, The Hospital for Sick Children;

Gregory Hanna, University of Michigan;

David Rosenberg, Wayne State University;

Paul Arnold, The Hospital for Sick Children.

Classification: Child & Adolescent Psychiatry

A statement of the purpose of the study: The aim of this study was to explore seven glutamatergic candidate genes' s previously reported to be associated with OCD, for association with response inhibition using a population based design

A statement of the methods: This study was to Genotype data for GRIN2B, GRIK2, GRIK3, DLGAP3, SLC1A1, SLITRK1 and SLITRK5 were obtained from an ongoing genome-wide association study (GWAS). In this study, participants age 7 to 17 are evaluated using a computerized version of the Stop -Signal Reaction Time (SSRT). We included 177 subjects at high and low extremes of the SSRT spectrum and performed basic association tests and haplotype block analysis on a total of 524 SNPs.

A summary of the results, presented in sufficient detail to support the conclusions: Our preliminary findings showed a nominal association with OCD ($P < 0.05$). Specifically one SNP in the intronic region of DLGAP3 remained significant after correcting for multiple comparisons.

A statement of the conclusions reached: These results add to evidence from our group and others regarding the role of the glutamate systems in the pathogenesis of OCD and the putative endophenotype of response inhibition measured using SSRT.

DETECTING DEPRESSION IN HEPATITIS C: A COMPARISON OF CLINICIAN-RATED AND SELF-REPORT MEASURES

Sanjeev Sockalingam, University of Toronto;
Diana Blank, Department of Psychiatry, University of Toronto;
Abdulqader Al Jarad, King Saud University;
Fahad Alosaimi, King Saud University;
Gideon Hirschfield, Liver Centre, University Health Network;
Susan Abbey, Department of Psychiatry, University Health Network.

Classification: Psychiatry, Health & Disease

A statement of the purpose of the study: Pegylated interferon-alpha (IFN α) will remain a mainstay of treatment for hepatitis C (HCV), however, treatment associated psychiatric symptoms are a significant barrier to effective care. We aimed to confirm previous studies demonstrating an association between depression and physical symptoms in patients with HCV, and in particular studied the accuracy of a clinically simple and brief office rating scale for depression, the 7-item Hamilton Depression Rating Scale (HAM-7).

A statement of the methods: We compared the performance of one self-report (Patient Health Questionnaire-9 [PHQ-9]) and 2 clinician administered depression screening scales (Hamilton Depression Rating Scales 7 and 17), and looked at the possible associations between depression and increased somatic and fatigue symptoms in 116 individuals with chronic HCV (CHC) assessed in an ambulatory office setting.

A summary of the results, presented in sufficient detail to support the conclusions: Currently depressed CHC patients had significantly higher scores on all the scales compared to non-depressed patients. HAM-17 and HAM-7 scores were highly correlated, and both had greater accuracy than PHQ-9 in predicting a current depressive episode. Both HAM-17 and HAM-7 were significantly correlated with physical symptoms and fatigue. The optimal dichotomization cut-off point for the HAM-7 was ≥ 5 on the HAM-7 (sensitivity 74%, specificity 87%) and the PHQ-9 was ≥ 10 (sensitivity 73%, specificity 70%).

A statement of the conclusions reached: In patients with CHC, we confirm an association between depression and fatigue and physical symptoms, and support efforts aimed at early diagnosis and treatment of depressive symptoms in this patient population. We provide validation of a simple, easy and quick office tool, the HAM-7, in screening for depression in HCV, and demonstrate that it provides greater accuracy than self-reported scales, such as the PHQ-9.

Poster Theme: Health Systems and Social Policy

TURNING THE KEY: ASSESSING HOUSING AND RELATED SUPPORTS FOR PERSONS LIVING WITH MENTAL HEALTH PROBLEMS AND ILLNESSES

John Trainor, University of Toronto;
Peggy Taillon, Canadian Council on Social Development;
Natasha Poushinsky, Canadian Council on Social Development;
Nick Kerman, Centre for Addiction and Mental Health.

Classification: Culture, Community & Health Studies

A statement of the purpose of the study: This project was undertaken to inform the Mental Health Commission of Canada on current housing and community support needs for people living with mental illness in Canada. It provides a comprehensive national environmental scan to support planning and policy work in housing and related supports.

A statement of the methods: The project involved multiple approaches to reach out to various stakeholder groups across Canada. The main methods included: (1) the development of provincial/territorial and national reference groups to engage leaders in the housing and mental health sectors from across the country; (2) interviews with key stakeholders from across the country; (3) interviews with international key informants; (4) webinar consultations with people living with mental illness; (5) the development of surveys for people living with mental illness, family members, mental health service providers, housing providers, and hospital administrators; and (6) a comprehensive search and review of literature.

A summary of the results, presented in sufficient detail to support the conclusions: Our study has found that as many as 299,400 people living with mental illness are homeless or inadequately housed in Canada. The greatest challenges faced by people living with mental illness were: affordability, quality, and safety concerns. Inadequate housing can be the result of not having the necessary supports available; the basket of services needs to go beyond traditional conceptualizations to include supports such as life skills training, income supports, and peer support.

A statement of the conclusions reached: There is a definite need for a national housing strategy, especially among people living with mental illness. Planning must focus on the key housing outcomes: affordability and quality, as well as housing and supports that work and fit for individuals.

Poster Theme: Imaging Neuroscience

MAO-A INHIBITION BY MOCLOBEMIDE DURING TREATMENT OF DEPRESSIVE EPISODES: A [C-11] HARMINE PET STUDY

Lina Chiuccariello, Centre for Addiction and Mental Health, University of Toronto;

Sylvain Houle, Centre for Addiction and Mental Health;

Laura Miler, Centre for Addiction and Mental Health;

Robert Cooke, Centre for Addiction and Mental Health, University of Toronto;

Robert Levitan, Centre for Addiction and Mental Health, University of Toronto;

Stephen Kish, Centre for Addiction and Mental Health, University of Toronto;

Alan Wilson, Centre for Addiction and Mental Health, University of Toronto;

Pablo Rusjan, Centre for Addiction and Mental Health;

Jeffrey Meyer, Centre for Addiction and Mental Health, University of Toronto.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: MAO-A levels are increased during major depressive episodes (MDE) yet MAO-A inhibitors are under-prescribed and under-developed. This research aimed to examine the dose-occupancy relationship of moclobemide (a well-tolerated, reversible MAO-A inhibitor). It was hypothesized that MAO-A binding will be decreased after six weeks of treatment with moclobemide and that these reductions will be dose-dependent.

A statement of the methods: MAO-A total distribution volume (MAO-A VT), an index of MAO-A levels, was measured using [C-11] harmine Positron Emission Tomography (PET). Six healthy volunteers were assessed to obtain test-retest reliability and 7 individuals suffering from a MDE were assessed before and after 6 weeks of moclobemide treatment.

A summary of the results, presented in sufficient detail to support the conclusions: There was a marked reduction (mean occupancy: 81% at 900mg dose, 79% at 300 and 600mg dose) in MAO-A VT throughout all analyzed brain regions (prefrontal, anterior cingulate cortex, thalamus, putamen, caudate, midbrain and hippocampus). Mean MAO-A VT changed from 23.68 to 9.54 ($F(1,6) = 118.56, p < 0.001$) in the treated group whereas mean MAO-A VT changed from 21.11 to 20.15 ($F(1,5) = 2.87, p = 0.15$) in the test-retest group. The measurement of MAO-A VT using [C-11] harmine PET was shown to be highly reliable (mean absolute difference: 5-9%).

A statement of the conclusions reached: A tremendous effect of moclobemide upon MAO-A binding was observed post-treatment compared to pre-treatment. Further data collection over a wider range of doses is necessary to understand the dose-occupancy relationship of moclobemide. Establishing the MAO-A occupancy at which therapeutic effects occur will optimize dosing of existing MAO-A inhibitors and improve development of future MAO-A inhibitors.

THE IMPACT OF THE RIGHT INSULA ON BEHAVIOR AND COGNITION IN FRONTOTEMPORAL DEMENTIA

Tiffany Chow, Baycrest;

Norman Farb, Rotman Research Institute;

Cheryl Grady, Rotman Research Institute;

Stephen Strother, Rotman Research Institute;

David Tang-Wai, UHN - Toronto Western Hospital;

Mario Masellis, Sunnybrook Health Sci Ctr;

Bruce Pollock, CAMH;

Tiffany Chow, Rotman Research Institute, Baycrest, CAMH.

Classification: Neuroscience

A statement of the purpose of the study: Explore the resting connectivity in frontotemporal dementia (FTD), possibly replicating Seeley et al.'s observation of a salience network highly susceptible to FTD.

A statement of the methods: BOLD data were collected during resting state runs of less than 6 minutes from 17 FTD patients and 17 age-matched, healthy controls. Both independent component analysis and partial least squares analysis techniques were used to identify connectivity networks for each group.

A summary of the results, presented in sufficient detail to support the conclusions: In FTD compared against controls, there was greater connectivity in the posterior default network and reduced connectivity in the limbic aspect of the salience network despite greater connectivity in a frontal aspect of the same network. Right anterior insula signal predicted FTD status and FTD subtype (Semantic vs. Behavioral). Sensitivity to FTD diagnostic group using grey matter atrophy and salience was 100% / 94%.

A statement of the conclusions reached: We have found novel evidence of increased 'executive' (prefrontal) connectivity within the salience network in FTD, which may represent a conflation of normally separated networks. Rehab efforts and other interventions might attempt to rebuild connections to the right insula or to recruit salience network functions, e.g., articulating and noticing emotions or bodily sensations.

REDUCED GRAY MATTER IN THE ANTERIOR CINGULATE GYRUS IN FAMILIAL SCHIZOPHRENIA

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Classification: Schizophrenia Research

A statement of the purpose of the study: To undertake a structural magnetic resonance imaging (MRI) study of schizophrenia involving samples with enhanced genetic homogeneity.

A statement of the methods: We compared MRI volumetric data between individuals with 1q21–q23 linked familial schizophrenia and their first and second degree unaffected relatives. A GE Signa 1.5 Tesla MR scanner was used to obtain all images, and both voxel based morphometry (VBM) and standard region-of-interest (ROI) methods were used in the analyses. Group comparisons for gray matter (GM) measurements derived from VBM and ROI were tested using an analysis of covariance model and IQ, sex, age, and total intracranial volume as covariates

A summary of the results, presented in sufficient detail to support the conclusions: The VBM finding of largest cluster size and greatest significance was located in the right anterior cingulate (AC) gyrus ($p=0.026$). Pairwise comparisons demonstrated significantly lower GM volume in the right AC gyrus in the schizophrenia group compared with their unaffected second degree relatives ($p=0.001$). There were similar but attenuated right AC gyrus differences between the groups of unaffected first and second degree relatives ($p=0.004$). ROI analyses confirmed the VBM volumetric results and showed significant GM AC volume deficits bilaterally.

A statement of the conclusions reached: These results suggest that the GM volumetric deficits in the AC gyrus are primarily due to genetic risk and not illness effects, and may represent an intermediate phenotype.

STIMULATION DEPENDENT INCREASE IN EEG POWER IN THE FRONTAL CORTEX WITH SUBGENUAL CINGULATE GYRUS DEEP BRAIN STIMULATION: A QUANTITATIVE EEG STUDY

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Zafiris Daskalakis, Department of Psychiatry, University of Toronto; Department of Psychiatry, CAMH.

Classification: Mood & Anxiety Disorders

A statement of the purpose of the study: Deep Brain Stimulation (DBS) is a putative interventional strategy for treatment-resistant depression (TRD) which may work by “jamming” pathological oscillatory activity in the brain. Since working memory, known to be impaired in depression, has been associated with high frequency oscillations in the human electroencephalogram (EEG), the goal of this study is to investigate to what extent EEG activity is affected by DBS in TRD patients.

A statement of the methods: Twenty TRD patients with bilateral DBS electrodes in the subgenual cingulate gyrus (SCG) were recruited. Quantitative EEG was recorded at 1000 Hz with a 64-electrode cap while subjects performed N-back working memory tasks, during which DBS was either set to be on or off. Recordings taken immediately after switching off were compared to those collected 90 minutes later. The mean evoked power of the signals was compared overall and in different bands (delta (1-3.5 Hz), theta (4-7 Hz), alpha (8-12 Hz), beta (12.5-28 Hz), and gamma (30-50 Hz)).

A summary of the results, presented in sufficient detail to support the conclusions: Frontal electrode recordings during the 3-back task showed that the overall power for correct response trials was significantly higher immediately after the DBS was turned off (n=11) versus when it had been off for 90 minutes (n=9). Spectral decomposition of the signal showed that lower frequency bands contributed the most to this difference. Patients who were in a state of remission from their depression at the time of the QEEG recordings demonstrated greater differences in low frequency and overall power with the DBS stimulation.

A statement of the conclusions reached: SCG DBS may serve to facilitate neural processes in the frontal cortex that are required during tasks with higher working memory load. Further exploration of this result may help to elucidate the mechanism of DBS for TRD.

MONOAMINE OXIDASE A LEVELS DURING ACUTE ALCOHOL WITHDRAWAL: A [11C] HARMINE PET STUDY

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Classification: Addiction Psychiatry

A statement of the purpose of the study: Alcohol dependence is a highly impactful disease, as the World Health Organization attributes 4% of global death and 5% of the global burden of disease to alcohol use disorders. MAO-A levels are increased during major depressive episodes and other low mood states, such as recurrence to depression and cigarette withdrawal. Dysphoric mood is reported during acute alcohol withdrawal, and is highly predictive of relapse. The aim of the current study is to investigate a biological mechanism that may contribute to mood lowering during alcohol withdrawal, with the hypothesis that MAO-A will be elevated during this state.

A statement of the methods: MAO-A total distribution volume (VT), an index of MAO-A levels, was measured using [11C] harmine Positron Emission Tomography. Six alcohol dependent patients were scanned following 12 hours of withdrawal, along with six healthy controls not in withdrawal.

A summary of the results, presented in sufficient detail to support the conclusions: There was a significant elevation in MAO-A VT in affect modulating brain regions in alcohol dependent patients during withdrawal compared to controls. A 33% difference was detected in the anterior cingulate cortex (independent samples t-test, $p=0.05$), and a 36% difference in the prefrontal cortex ($p=0.05$). A similar magnitude of change was detected in most other brain regions (dorsal putamen, ventral striatum, thalamus, midbrain, hippocampus; $p=0.07$ to 0.34). Additional subjects are being recruited to meet sufficient power.

A statement of the conclusions reached: This data argues in support for a role of elevated MAO-A during withdrawal from alcoholic beverages. Should this finding remain with a larger sample, it would suggest that therapeutics should be developed to counter this withdrawal effect.

STRESS-INDUCED DOPAMINE (DA) RELEASE IN CANNABIS USERS

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Alan Wilson, CAMH, U of T;

Sylvain Houle, Camh, U of T.

Classification: Neuroscience

A statement of the purpose of the study: Little is known about the DA transmission in cannabis use. The aim of the present study was to assess with PET / [11C]-(+)-PHNO, D2/3 availability in the control condition and DA release in response to a laboratory stress task (Pruessner 2004) in cannabis users.

A statement of the methods: 10 medically and psychiatrically healthy cannabis users (CU) and 11 healthy volunteers (HV) matched for age and sex were included. Subjects were scanned during a sensorimotor control task (SMCT) and under the stress condition using the validated Montreal Imaging Stress task (MIST). Stress-induced DA release (indexed as a percent reduction in [11C]-(+)-PHNO BP ND) between CU and HV was tested with ANOVA.

A summary of the results, presented in sufficient detail to support the conclusions: SMCT BPND was significantly different between groups in the AST ($F=4.98$ $p=0.03$) with HV having lower BPND as compared to CU, trend level in the SMST ($F=3.55$ $p=0.075$) and not significant in the LST ($F=2.03$ $p=0.17$). Percent displacement was not significantly different across groups in any brain region. However a weak trend was found ($F=1.76$ $p=0.19$) at the level of the AST, with CU having greater stress-induced changes (CU 1.99%) relative to controls (HV -2.58%). Years of cannabis use was significantly associated with full-striatum displacement ($r=0.69$ $p=0.04$), and trend level in the LST ($r=0.53$ $p=0.14$), with no effect in any other brain region.

A statement of the conclusions reached: Our preliminary results do not seem to suggest a blunted DA release in cannabis users. We observed alterations in the AST rather than VST, which may indicate milder but topographically different dopaminergic involvement in CU as opposed to other drugs, but similar to the alterations reported in psychosis.

NEUROINFLAMMATION AND COGNITION IN SCHIZOPHRENIA

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Classification: Schizophrenia Research

A statement of the purpose of the study: In addition to experiencing positive and negative symptoms, patients with Schizophrenia (SCZ) often present with cognitive deficits across a variety of domains (Tandon, Keshavan, & Nasrallah, 2008). Neuroinflammation and cytokines (peripheral inflammation markers) are suggested to be involved in the etiology of SCZ (Monji, Kato, & Kanba, 2009; Potvin et al., 2008) and are believed to be associated with cognitive decline in healthy aging (Ownby, 2010), the cognitive deficits in Alzheimer's disease (Reichenberg et al., 2001) and in postoperative cognitive decline (Cibelli et al., 2010). A recent study in SCZ reported an association between levels of C-reactive protein (peripheral marker of inflammation) and cognitive test scores (Dickerson et al., 2007). However, little is known about the association between neuroinflammation in-vivo and cognition in SCZ. This study aims to examine this relationship by imaging a marker of neuroinflammation, translocator protein 18kDa (TSPO), using the PET radiotracer [18F]-FEPPA.

A statement of the methods: Thirteen SCZ patients completed the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) (Randolph, 1998; Wilk et al., 2004), one [18F]-FEPPA PET scan with arterial sampling for image quantification, and one MRI scan for image co-registration. Total distribution volumes (VT), a validated [18F]-FEPPA outcome measure, were obtained using a 2-tissue compartment model for several Regions of Interest (ROI) in the brain. The correlations between RBANS subtest scores and [18F]-FEPPA VTs will be examined.

A summary of the results, presented in sufficient detail to support the conclusions: The correlations will be presented in the poster.

A statement of the conclusions reached: The findings of this study could provide a better understanding of the relationship between neuroinflammation and cognition in SCZ patients.

ACUTE EFFECTS OF STRESS UPON PREFRONTAL AND LIMBIC MAO-A BINDING IN HEALTHY HUMANS: A [11C]HARMINE PET STUDY

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Classification: Psychiatry, Health & Disease

A statement of the purpose of the study: To examine the effects of acute psychosocial stress upon MAO-A binding/density in healthy humans.

A statement of the methods: 12 healthy, non-smoking participants aged 18-50 underwent [11C]-harmine positron emission tomography, an MAO-A-selective ligand measuring MAO-A binding, on two days, with each day

separated by 4-weeks. One scanning day was under acute stress condition and one was under a non-stress condition. The acute stress condition was composed of the Trier Social Stress and Montreal Imaging Stress Tasks. Brain MAO-A binding was evaluated in (prefrontal, orbitofrontal, dorsolateral prefrontal, temporal, occipital, and anterior cingulate cortices, striatum, amygdala, hippocampus, thalamus, midbrain). Salivary cortisol and state stress/anxiety measures illustrated stress-responses; NEO-PI-R measured personality.

A summary of the results, presented in sufficient detail to support the conclusions: Repeated-measures MANOVA showed a main-effect in whole brain (twelve regions) ($F(1,11)=5654, p=0.010$). Reduction in MAO-A binding was 9% in prefrontal cortex and 10% on average in the other brain regions.

A statement of the conclusions reached: In the laboratory environment acute psychological stress is associated with a reduction in MAO-A binding in most regions, notably prefrontal and limbic regions. The MAO-A binding change in response to acute stress is highly dynamic, much more so than previously realized.

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TRACKING THE RESPONSE INHIBITION NETWORK IN ADHD: A JOINT F-MRI-DTI ANALYSIS

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Classification: Child & Adolescent Psychiatry

A statement of the purpose of the study: Functional MRI (F-MRI) was combined with Diffusion Tensor Imaging (DTI) to explore the integrity of the response inhibition network in ADHD from a functional and structural standpoint. Response inhibition represents a key and well-studied cognitive deficit in this patient population, and an appropriate focal point in terms of elucidating the neurobiology of this complex disorder.

A statement of the methods: DTI scans were acquired within an ongoing F-MRI study, collecting data from child ADHD and control subjects performing the Stop Signal Task (SST). The SST is a reliable measure of response inhibition, probing one's ability to stop an ongoing response. Resulting F-MRI activations where ADHD differed from controls represent the network's nodes (a.k.a. seeds) for subsequent DTI analysis of the potential white matter tracts connecting these, a method termed probabilistic tractography. The resulting tracts represent potential structural links between these network nodes. To do this, F-MRI data (i.e. brain activity maps) previously analyzed in AFNI are coregistered with each subject's DTI space, to be subsequently analyzed using the FSL software tool.

A summary of the results, presented in sufficient detail to support the conclusions: Imaging data of 8 controls and 8 ADHD subjects have been acquired. While the F-MRI component has been analyzed in a separate study, establishing that ADHD and controls differentially activate specific brain regions including the inferior frontal gyrus and anterior cingulate cortex, the DTI analysis is currently in progress. A method of co-registration of F-MRI functional data with DTI brain space has been established and is currently being tested.

A statement of the conclusions reached: The results of this combined structure-function study will help characterize the integrity and architecture of an important and complex cognitive network relevant in ADHD.

NEURAL CORRELATES OF EMOTIONAL PROCESSING IN LATE-LIFE DEPRESSION

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Classification: Geriatric Psychiatry

A statement of the purpose of the study: Behavioural studies suggest distinct patterns of emotional processing in late-life depression (LLD). However, the functional neuroanatomy of emotion regulation in LLD is unknown. We used functional magnetic resonance imaging to investigate neural correlates of emotional processing in LLD.

A statement of the methods: LLD (n=5; 4F; mean age=67±6.2 years, 17±4.4 years of education, MMSE=29.5±0.6, HAM-D=19.4±3.1) and healthy older participants (HC; n=8; 5F; mean age=69±5.1 years, 16±2.0 education years, MMSE=29.8±0.5) were scanned at 3Tesla while completing a task during which they rated physical aspects of faces with happy, sad, fearful, or neutral emotional expressions. Data were analyzed using Partial Least Squares (PLS), a data-driven approach which identifies functionally-connected patterns of brain activity.

A summary of the results, presented in sufficient detail to support the conclusions: PLS identified a set of brain regions whose activity covaried with emotional valence and diagnosis ($p<.001$). LLDs and HCs differed specifically in their neural responses to happy and sad expressions. HCs showed activation of left amygdala (Talairach coordinates: -20, -4, -12) and dorsolateral prefrontal cortex (BA 9; Talairach coordinates: -32, 36, 28; BA 46; -44, 36, 16) in response to happy faces, whereas LLDs activated these regions in response to sad expressions ($p<.001$).

A statement of the conclusions reached: These findings suggest that limbic and prefrontal cortex regions underlying emotion regulation are differentially modulated in LLD and HC: LLD is associated with modulation of these regions by negatively-valenced emotion stimuli, while HC show greater modulation of the same neural network by positively-valenced stimuli. This double dissociation is consistent with behavioural data supporting a mood-congruent negative bias in major depressive disorder, and the positivity bias associated with healthy aging.

Poster Theme: Quality Improvement and Education Research

EFFECTIVE TRAINING IN THE NORTHWEST

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Chi Cheng, CMHA-Thunder Bay Branch, CAMH, St. Joseph's Care Group-Thunder Bay;
Carole Lem, CMHA - Thunder Bay Branch.

Classification: Health Systems

A statement of the purpose of the study: A mixed methods evaluation project to develop effective training for early intervention in psychosis in Northwestern Ontario.

A statement of the methods: Qualitative evaluation of training intervention looking at both educational and clinical outcomes.

Quantitative evaluation based on Grounded Theory to explore the factors that may facilitate and interfere with effective learning in the North.

A summary of the results, presented in sufficient detail to support the conclusions: The poster illustrates the logic model and how results will be translated into informing practice. This study is in progress. The intervention took place on March 24-25 and results will be collected in stages over the next 9-months. Post-intervention educational outcomes are currently being organized.

A statement of the conclusions reached: It is expected that the results will help shape the training model for providing mental health care professionals adequate training in early intervention for psychosis.

EXTENDED LEAVE DURING RESIDENCY: NEEDS ASSESSMENT AND POLICY DEVELOPMENT

Vivian Sapirman, Department of Psychiatry, University of Toronto;
Angelo Wijeyesinghe, Department of Psychiatry, University of Toronto.

Classification: Education Psychiatry

A statement of the purpose of the study: The purpose of this Quality Improvement Project is twofold: To identify salient needs and concerns that result from extended leave and to develop a policy paper addressing those needs and identifying measures that should be in place to mitigate any detrimental impact on training.

A statement of the methods: The needs assessment will be carried out in two ways: 1) Through a survey distributed via listserv to all residents in Department of Psychiatry, including those currently on leave; 2) Through an interview with the Program Director.

A summary of the results, presented in sufficient detail to support the conclusions: TBD

A statement of the conclusions reached: TBD

EXAMINING PSYCHIATRY RESIDENCY PROGRAM RESPONSES TO PATIENT SUICIDE

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Upasana Krishnadev, Department of Psychiatry, University of Toronto;

Marissa Leong, Department of Psychiatry, University of Toronto.

Classification: Education Psychiatry

A statement of the purpose of the study: To assess the implementation and effectiveness of the protocols in place to support residents who have experienced patient suicide.

A statement of the methods: An anonymous survey was sent to residents in the psychiatry program at the University of Toronto. The survey data will then be analyzed for trends.

A summary of the results, presented in sufficient detail to support the conclusions: Pending

A statement of the conclusions reached: Pending

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