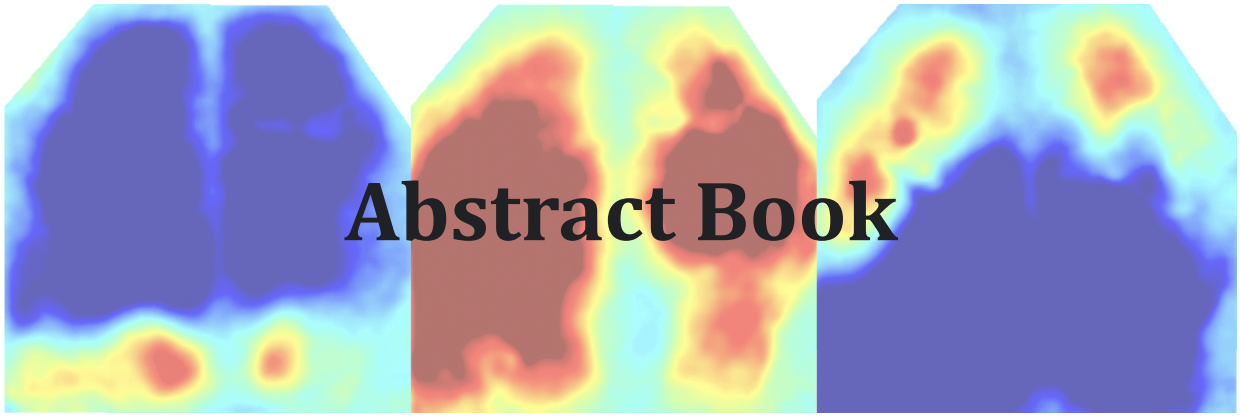
UNIVERSITY OF ALBERTA
Faculty of Medicine & Dentistry

20th Annual Department of Psychiatry Research Day



Abstract Book

Keynote Address: Dr. Ross Mitchell

AI in Precision Health

Wednesday, June 15, 2022

Photo Credit: 19th Annual Department of Psychiatry Research Day Photo Contest Winner- Zijia Yu

UNIVERSITY OF ALBERTA

College of Health Sciences
Faculty of Medicine & Dentistry
Department of Psychiatry

3-107 Research Transition Facility (RTF)
Edmonton AB Canada T6G 2V2
T 780.492.2487
F 780.248-5694
ualberta.ca

June 15th, 2022

20th Annual Research Day of the Department of Psychiatry.

Welcome,

Psychiatry Research Day 2022 showcases the hard work and successful innovation of many members of our Department. It celebrates recent findings from our basic and translational research programs including developments in neurochemistry, genetics, imaging, neuropsychiatry, and psychotherapy. Many of these programs involve collaborative research with colleagues from other departments and institutions locally, nationally, and internationally. Over the years, the Department of Psychiatry has developed very strong MSc and PhD programs to complement our residency program, such that some of our residents are enrolled in the MSc program. Our trainees represent our department exceedingly well through various ways, including disseminating their research work at scientific conferences throughout the world. The quality of their efforts further supports their success at the faculty, university, provincial, and national levels for scholarships and awards.

To allow everyone a brief understanding of the depth and range of the endeavors of our trainees, we will be having more than 20 summary talks, each lasting three minutes. These will be from our graduate students and residents, including Medard K. Adu, Belinda Agyapong, Huda Al-Shamali, Raman Dhaliwal, Ethan Hagen, Jonathan Jin, Domina Laurent, Jessica Li, Wanying Mao, Robert Mcweeny, Setayesh Mondanloo, Gloria Obuobi-Donko, Medard Owusu, Jaqueline Paquet, Derek Pierce, Lei Qian, Matthew Reeson, Jeffery Sawalha, Chelsea Stellick, Fernanda Talarico, Tarek Turk, Zitong Wang, Anna Wilson, Lujie Xu, Sidney Yap, Zijia Yu, and Natalia Zinchuk. The top presentations by research trainees will be acknowledged with awards.

This year's Research Day program aims to highlight the significant role Artificial Intelligence plays in Psychiatry. Our keynote speaker, Dr. Ross Mitchell, is a distinguished guest who holds a PhD in medical biophysics from Western University and is a professor in the Department of Medicine at the University of Alberta. Furthermore, Dr. Mitchell is a Fellow with the Alberta Machine Intelligence Institute, and the Senior Program Director of AI Adoption with Alberta Health Services. He is also the inaugural AHS Chair in AI in Health at the University of Alberta. Previously, Dr. Mitchell was the inaugural AI Officer at the Moffitt Cancer Center in Tampa, Florida from 2019 to 2021; a Professor of Radiology at Mayo Clinic in Arizona from 2011 to 2019; and a Professor of Biomedical Engineering, Radiology, and Clinical Neurosciences at the University of Calgary from 2000 to 2011. Dr. Mitchell is clearly well positioned to offer a vision for the future of our field.

We are grateful to all our research trainees and their supervisors for their contribution to the vital research in our department. Special thanks to our organizing committee: Domina Laurent, Sidney Yap, Lujie Xu, Robert McWeeny, Huda Al-Shamali, Fernanda Talarico (our graduate student representatives); Tara Checknita (heart & soul of Research Day); and Dr. Allen Chan (Grad Supervisor) for their tireless efforts in organizing this year's Research Day.

Thank you for joining us in celebrating our research accomplishments from the past year.

Best Wishes,

David Ross, MD, PhD
Professor and Chair, Department of Psychiatry
Faculty of Medicine and Dentistry, University of Alberta

DR/lh

ACKNOWLEDGEMENTS

The Department of Psychiatry is grateful to the following for their financial support:

DEPARTMENT OF PSYCHIATRY, UNIVERSITY OF ALBERTA

UNIVERSITY OF ALBERTA
Faculty of Medicine & Dentistry

20th Annual Psychiatry Research Day

Wednesday, June 15th, 2022

10:30 am – 10:40 am — **Announcements & Opening Remarks** – *Dr. Ian Winship* Professor, Department of Psychiatry, University of Alberta

10:40 am – 11:15 am — **3-Minute Thesis Talks** by Psychiatry Students (Part I)

1. *Dr. Bohan Yang*
2. *Belinda Agyapong*
3. *Zijia Yu*
4. *Domina Laurent*
5. *Lei Qian*
6. *Robert Mcweeny*

11:15 am – 11:25 am — **Quick Break**

11:25 am – 12:00 pm — **3-Minute Thesis Talks** by Psychiatry Students (Part II)

7. *Derek Pierce*
8. *Yutong (Jessica) Li*
9. *Sidney Yap*
10. *Wanying Mao*
11. *Dr. Tyler Halverson*
12. *Medard K. Adu*

12:00 pm – 12:10 pm — **Quick Break**

12:10 pm – 1:15 pm — ***Dr. Ross Mitchell* – Keynote Speaker**
Professor, Department of Medicine, University of Alberta
"AI in Precision Health"

1:15 pm - 1:25 pm — **Quick Break**

1:25 pm – 2:00 pm — **3-Minute Thesis Talks** by Psychiatry Students (Part III)

13. *Huda Al-Shamali*
14. *Lujie Xu*
15. Dr. *Tarek Turk*
16. *Gloria Obuobi-Donkor*
17. *Fernanda Talarico*
18. *Jonathan Jin*

2:00 pm – 2:10 pm — **Quick Break**

2:10 pm – 2:40 pm — **3-Minute Thesis Talks** by Psychiatry Students (Part IV)

19. *Dr. Jacquelyn Paquet*
20. *Matthew Reeson*
21. *Ethan Hagen*
22. *Anna Wilson*
23. *Ernest Owusu*

2:40 pm – 3:00 pm — **Judging Break**

3:00 pm – 3:10 pm — **Student Awards Presentation and Closing Remarks** – *Dr. Allen Chan,* Graduate Program Director

3-Minute Thesis Talks by Psychiatry Students (Part I)

10:40 am – 11:15 am

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Keynote Speaker Biography

Dr. Ross Mitchell is a professor in the Department of Medicine, a Fellow with the Alberta Machine Intelligence Institute and the Senior Program Director of AI Adoption with Alberta Health Services. He is the inaugural AHS Chair in AI in Health at the University of Alberta. Dr. Mitchell was the inaugural AI Officer at the Moffitt Cancer Center in Tampa, Florida from 2019 to 2021. He was also a Professor of Radiology at Mayo Clinic in Arizona from 2011 to 2019 and Professor of Biomedical Engineering, Radiology, and Clinical Neurosciences at the University of Calgary from 2000 to 2011.

Neuroinflammation in Obsessive Compulsive Disorder

Dr. Bohan Yang (Department of Psychiatry, University of Alberta); Serdar Dursun (Department of Psychiatry, University of Alberta); Glen Baker (Department of Psychiatry, University of Alberta)

The idea of exploring neuroinflammatory mechanisms underlying OCD is motivated by the limitations of current available treatment modalities for OCD, the observation of OCD being highly associated with autoimmune disorders, the well-known syndromes of PANS/PANDAS which validate an autoimmune and inflammatory hypothesis, and also accruing evidence in recent literature demonstrating neuroinflammation underlying other mental disorders including depression and schizophrenia. We conducted an exploratory literature review which summarized markers of inflammation in OCD, highlighted associations between OCD and heightened inflammatory conditions, and reviewed OCD response to anti-inflammatory therapeutics. Our review consolidates the proof for neuroinflammation in OCD and informs future directions in research with anti-inflammatory therapeutics and inflammatory markers with the intention of translating this into routine clinical practice.

Burnout and Associated Psychological Problems among Teachers in Alberta and Nova Scotia, and the impact of a Supportive Text Messaging Program (Wellness4Teachers)

Belinda Agyapong (Department of Psychiatry, University of Alberta); Yifeng Wei (Department of Psychiatry, University of Alberta)

Background: Stress, burnout, anxiety, and depression continue to be a problem among teachers worldwide. It is unknown if an evidenced-based supportive text message program (Wellness4Teachers) can help reduce these psychological problems.
Objective: To evaluate the prevalence and correlates of stress, burnout, symptoms of anxiety, depression and low resilience among teachers in Alberta and Nova Scotia, Canada; and to determine if daily supportive text messages can help reduce the prevalence of these psychological problems.
Methods: This is a cross-sessional study with data collected from subscribers of Wellness4Teachers at baseline, six weeks, three months and endpoint six months. Teachers can subscribe to Wellness4Teachers program by texting "TeachWell" to a designated number. Outcome measures for depression and anxiety symptoms and levels of stress and burnout will be assessed using standardized rating scales. Data will be analyzed with descriptive and inferential statistics using SPSS version 25.
Results: It is expected that the prevalence of stress, burnout, anxiety, depression and low resilience among teachers in Alberta and Nova Scotia would be comparable to those reported in other jurisdictions. Factors such as gender, sex, number of years teaching or grade teaching will have an association with burnout and other psychological disorders. Wellness4Teachers program is expected to reduce the prevalence and severity of psychological problems in teachers.
Conclusions: Wellness4Teachers program will provide key information regarding demographic correlates and prevalence of burnout, stress, anxiety, and depressive symptoms among teachers. This information will be useful for informing policy and decision making concerning psychological interventions for school teachers.

Investigating the intrinsic noisiness of cortical sensory processing

Zijia Yu (Department of Psychiatry, University of Alberta); Ryan Zahacy (Department of Psychiatry, University of Alberta); Allen Chan (Department of Psychiatry, University of Alberta); Ian Winship (Department of Psychiatry, University of Alberta); Yonglie Ma (Department of Psychiatry, University of Alberta)

Persistent spontaneous activity interacts with task-evoked activity to provide a net neuronal response. These rest-stimulus interactions are observed in primary sensory cortices and modulate processing of elicited sensory input. The nature in which spontaneous cortical activity interacts with sensory-evoked responses is complex and is demonstrated to play significant role in observed trial-to-trial variability, or 'noisiness'. We used C57BL/6J-Tg GP4.3Dkim/J transgenic mice expressing the calcium indicator, GCaMP6s, in cortical pyramidal neurons to explore the intrinsic noisiness of elicited cortical responses induced by different sensory stimuli under the anesthetized and awake states, including visual, auditory, and somatosensory stimulation using a transcranial, mesoscale, neuroimaging paradigm. We investigated the input-output and signal-to-noise ratio (SNR) relationships of sensory-evoked responses in primary sensory cortices. Differences were observed in the duration of sensory-evoked responses among different sensory domains under anaesthesia and wakefulness. Despite not exhibiting appreciable differences in mean response amplitude, different sensory domains showed different signal-to-noise ratios with the relation to sensory input under anaesthetized and awake states. Elucidating rest-stimulus interactions are essential to our understanding of sensory processing and may have implications to our understanding sensory abnormalities described in neuropsychiatric disease contexts.

Risks and Benefits of Medical and Recreational Cannabis Use In The Veteran Population: A Scoping Review

Katherine S. Bright (Faculty of Rehabilitation Medicine, University of Alberta); Rachel S. Dunleavy (Faculty of Rehabilitation Medicine, University of Alberta; Department of Psychotherapy and Spirituality (Art Therapy Specialization), St Stephens College); Laura-lee Innes (Faculty of Rehabilitation Medicine, University of Alberta); Danae Strelau (Faculty of Education, University of Alberta), Cinthia Mikolas (Faculty of Rehabilitation Medicine, University of Alberta); **Domina Laurent** (Department of Psychiatry, University of Alberta); Nataliia Zinchuk (Department of Psychiatry, University of Alberta); Matthew Brown (Faculty of Science, University of Alberta); Yanbo Zhang (Department of Psychiatry, University of Alberta)

Introduction: Medical cannabis for Canadian Veterans has been supported by Veterans Affairs Canada (VAC) through reimbursement plans since 2016 (Hehr, 2016). Reimbursement costs have since risen exponentially. Very little is known about medical cannabis use by Canadian Veterans. This knowledge gap is significant. This scoping review aims to understand perceived benefits, harms, and knowledge gaps for cannabis use by Veterans through:

1. The potential harms, risks or benefits associated with cannabis use by Canadian Veterans.
2. How do gender/GBA Analysis inform findings?

Methods: Studies were extracted from MEDLINE (Ovid), EMBASE, APA, PsycINFO, CINAHL PLUS, Web Of Science, SCOPUS, and Google Scholar.

Results: Of 1571 identified articles, 109 met inclusion criteria.

Preliminary conclusion: Canadian studies exploring risks and benefits of cannabis use among Veterans are sparse. Among the predominantly American studies, focus on risks/harms with limited focus on benefits was present. This bias was evidenced by the abundance of articles focusing on substance use disorder (SUD) and cannabis use disorder (CUD) – harm is inherent in the term *disorder*. Most articles provided negative or neutral cannabis use connotations, with little to no discussion of benefits. When positively presenting cannabis, it was in the context of Veterans listing reasons for use. Several studies focused on impact of cannabis on medical conditions, but not overall well-being. Another focus was cannabis and PTSD treatment, with some praising therapeutic effects and others warning of risks. Balanced longitudinal research is needed to explore short and long-term impacts of cannabis use on multiple Veteran well-being domains.

Altered Default Mode Network Activity in Patients with Schizophrenia: Evidence from Neuroimaging

Lei Qian (Department of Psychiatry, University of Alberta)

Schizophrenia is a severe and complex mental disorder characterized by brain disturbances with symptoms such as hallucinations, delusions, and disorganized communication. Schizophrenia substantially impacts the social and occupational functions of patients, resulting in a substantial medical and social burden. Evidence of neuroimaging studies suggests that patients with schizophrenia exhibit disconnectivity and abnormal functional integration of brain processes. The default mode network (DMN) was proposed to interpret the brain's intrinsic functionality in resting state wherein subjects are not performing cognitive tasks. The current review shows that the structural and functional connectivity of the DMN in patients with schizophrenia are overall altered compared to healthy controls. Structural connectivity is mostly reduced and not necessarily congruent with the changes of functional connectivity. The abnormal activation seems more likely to occur in the MPFC and PCC while its abnormal deactivation occurs both inter- and intra- subsystems. The functional connectivity alterations demonstrate differently in chronic and first-episode schizophrenia. The altered DMN is related to the severity of both positive and negative symptoms in schizophrenia.

Applying the 'Mental Health Literacy Approach' Beyond Schools; Municipal Contexts

Rob Mcweeny (Department of Psychiatry, University of Alberta); John B. Fletcher (ASD-N); Dr. Andy Greenshaw (Department of Psychiatry, University of Alberta); Dr. Adam Abba-Aji (Department of Psychiatry, University of Alberta); Andrew Baxter - MSW (Alberta Health Services); Dr. Stan Kucher (Department of Psychiatry, Dalhousie University); Dr. Yifeng Wei (Department of Psychiatry, University of Alberta)

The 'Mental Health Literacy Approach' is application of mental health literacy (MHL) principles, tools, and knowledge to bolster provision of knowledge, stigma reduction, early identification, and help-seeking behaviors in contexts of mental illness. School staff regularly work with students experiencing mental illness despite scant training in mental health disclosure response, early detection of child & adolescent mental illness, and facilitating referral. This context exists broadly in public service contexts where staff vocationally interact with youth.

The Mental Health Literacy in schools project facilitated interventions in school-settings to provide MHL training and resources for school communities. Teachers received MHL training from the Go-to Educator Training resource (GTET). Recently, GTET was adapted for municipal staff working with youth outside of school settings.

The Community Mental Health Literacy training (CMHL) will be utilized to train municipal staff in the cities of Miramichi and Bathurst NB. The initiative 'Community Mental Health Literacy Project: Closing the Gap' (Psychiatry, University of Alberta) aims to: investigate the effectiveness of CMHL in improving mental health literacy among municipal staff and create a model for CMHL to be utilized in other municipal communities. This quasi-experimental study will compare outcomes among 80 municipal employees in experimental and control groups. The experimental group will be evaluated at 4 time points using pre, post, 3 & 6 month follow up surveys to measure knowledge, stigma, attitudes toward help-seeking, and perceived stress. Study findings will inform decision makers to adopt CMHL in other community settings.

Postal Codes over Genetic Codes in Precision Mental Health

Derek Pierce (Department of Psychiatry, University of Alberta)

Precision mental health puts a lot of emphasis on biological measures, like genetics, because these types of features are relatively stable quantitively, especially when compared against other data like self-reports or clinical notes. These quantitative measures can be ideal for machine learning for uncovering variances in groups and making predictions in health outcomes. Biological measures are likely preferred as lab and administrative data may be the most readily available data in the health care system. However, this type of data isn't publicly available and can be difficult to access or share because of privacy laws. This type of data often has a high financial cost to collect and process at scale.
Counter-intuitively focusing attention on geographically mappable factors that the individual experiences in their daily life may be a more efficient way to provide customization of healthcare for individuals. Environmental factors have been known to be strong predictors in mental health, addictions, cardiovascular disease, diabetes, cancer, etc. (Krausz & Jang, 2015; R. J. de Souza, et al., 2018). We also know that an individual's genetics can have a bearing on the environmental niches that the individual selects (Sara R Jaffee, 2008). This can cause a feedback loop as the environment can cause changes in how genes work (CDC, 2022). When combined with the fact that free geographically referenceable information and public statistical data is available in many countries throughout the world, making it cheap, scalable, and available, postal codes may be more valuable than genetics in precision mental health.

Predicting anxiety onset with machine learning using Canadian Longitudinal Study on Aging (CLSA)

Yutong (Jessica) Li (Department of Psychiatry, University of Alberta); Yipeng Song (Department of Psychiatry, University of Alberta); Yang Liu (Department of Psychiatry, University of Alberta); Bo Cao (Department of Psychiatry, University of Alberta)

Anxiety disorders, one of the most frequent and costly mental illnesses among the ageing population, are defined by the persistent presence of excessive fear or anxiety in the face of both immediate and prospective threats. Currently, anxiety poses a significant burden globally, as it accounts for ~8 Disability Adjusted Life-Years (DALYs) in the adult population in comparison to ~17 DALYs in the ageing population (45 years and up). Because of the burden anxiety poses on the ageing population, we must develop tools to identify the risk factors behind anxiety onset. One such tool is machine learning, an artificial intelligence tool that can learn patterns within the data to form a prediction. To form our prediction, we will use the Canadian Longitudinal Study of Ageing (CLSA) data set, a study with individuals ranging from 45 to 85 years old. To define future anxiety onset, we identified 714 individuals that did not have anxiety at baseline in 2015, but developed anxiety in 2018. We inputted the baseline data into an imbalanced random forest algorithm. We were able to achieve an area under the curve (AUC) of 81.9% using our model, which meant our model was able to distinguish between 81.9% of the anxiety onset versus non-anxiety onset individuals. Following the formation of our prediction, we identified frailty, past mental health diagnosis, anxious personality traits, and nutrition as predictors of future anxiety onset for the Canadian ageing population with the Boruta SHAP algorithm.

Covid-19 Pandemic Transition to Digital Delivery of Trauma Therapy with Trauma-Affected Populations

Sidney Yap (Department of Psychiatry, University of Alberta; Heroes in Mind, Advocacy, and Research Consortium, University of Alberta); Rashell Wozniak (School of Clinical Child Psychology, University of Alberta); Rachel S. Dunleavy (Heroes in Mind, Advocacy, and Research Consortium, University of Alberta; Department of Psychotherapy and Spirituality (Art Therapy Specialization), St Stephens College); Katherine Bright (Heroes in Mind, Advocacy, and Research Consortium, University of Alberta); Matthew Brown (Department of Computing Science, University of Alberta); Lisa Burback (Department of Psychiatry, University of Alberta); Suzette Bremault-Phillips (Heroes in Mind, Advocacy, and Research Consortium, University of Alberta)

The COVID-19 pandemic has, and continues to, significantly impact the mental health of individuals and communities globally. The pandemic incited rapid changes in society and health care; this includes the shift from in-person mental health services to digital delivery (e.g., teletherapy, telemedicine, eHealth, and mobile health) of mental health services. Trauma-affected populations (TAPs), including public safety personnel (PSP), military members (MMs), and veterans, with Post-Traumatic Stress Injuries (PTSIs) and other mental health (MH) concerns may have been particularly affected by this shift. In general, many TAPs are routinely exposed to high-risk situations that can negatively impact their mental health, ability to work, relationships, and daily life, which are further compounded by COVID-19. Trauma affected populations require timely and secure access to effective trauma therapies to facilitate their recovery and return to service.

Through this ongoing mixed methods study, we aim to clarify "what works, for whom, in what respects, to what extent, in what contexts, and why?" with regards to the digital service delivery of trauma-therapies to TAPs. This will be accomplished through:

1. Surveys of TAPs, MH Clinicians, Stakeholders and Policy Makers, and Family Members of TAPs
2. Focus Groups of TAPs, MH Clinicians, Stakeholders and Policy Makers, and Family Members of TAPs

By exploring the perspectives of those who receive and deliver digital trauma therapies, we strive to inform future policy and practice to ensure TAPs are receiving beneficial care.

One Year after the Flood: Prevalence and Correlates of Post-Traumatic Stress Disorder Among Residents in Fort McMurray

Wanying Mao (Department of Psychiatry, University of Alberta); Ejemai Eboreime (Department of Psychiatry, University of Alberta); Reham Shalaby (Department of Psychiatry, University of Alberta); Nnamdi Nkire (Department of Psychiatry, University of Alberta); Belinda Agyapong (Department of Psychiatry, University of Alberta); Hannah Pazderka (Department of Psychiatry, University of Alberta); Gloria Obuobi-Donkor (Department of Psychiatry, University of Alberta); Medard Adu (Department of Psychiatry, University of Alberta); Ernest Owusu (Department of Psychiatry, University of Alberta); Folajinmi Oluwashina (Department of Psychiatry, University of Alberta); Yanbo Zhang (Department of Psychiatry, University of Alberta); Vincent I. O. Agyapong (Department of Psychiatry, Dalhousie University)

Background: The 2020 Fort McMurray (FMM) and area flood caused more than $228 million in insured damage, affected over 1200 structures, and more than 13,000 people were evacuated. Objective: This study sought to determine the prevalence of post-traumatic stress disorder (PTSD)-like symptoms and the risk predictors among the population of FMM one year after the 2020 flooding. Methods: An online quantitative cross-sectional survey was distributed to residents of FMM via REDCap between 24 April to 2 June 2021 to collect sociodemographic, clinical, and flood-related information. The PTSD checklist for DSM-5 (PCL-C) was used to assess likely PTSD among respondents. Results: 186 of 249 respondents completed all essential self-assessment questionnaires in the analysis, yielding a response rate of 74.7%. The prevalence of likely PTSD was 39.6% (65). Respondents with a history of depression were more likely to develop PTSD symptoms (OR = 5.71; 95% CI: 1.68–19.36). Similarly, responders with limited and no family support after the disaster were more prone to report PTSD symptoms ((OR = 2.87; 95% CI: 1.02–8.05) and (OR = 2.87; 95% CI: 1.06–7.74), respectively). Conclusion: Our research indicated that history of depression and the need for mental health counseling significantly increased the risk of developing PTSD symptoms following flooding; family support is protective. Further studies are needed to explore the relations between the need to receive counseling and presenting with likely PTSD symptoms.

Keywords: PTSD; trauma; flood; natural disaster; mental health; support; Fort McMurray

Gut Microbiome Management in Mental Health Disorders

Dr. Tyler Halverson (Department of Psychiatry, University of Alberta); Kannayiram Alagiakrishnan (Department of Medicine, Division of Geriatric Medicine, University of Alberta)

Both psychiatric and neurocognitive disorders contribute to mental health-related disease burden. To date, current medications do not fully address the complexity needed for patient treatment. As well, many of the psychotropic medications have undesirable side-effects, that can even increase the safety risks to the patient. There is an increasing body of evidence suggesting that the human gut microbiome (GM) may play a role in various mental health and neurocognitive disorders. Changes in the gut microbiome, through the process of dysbiosis, have been seen in patients with depression, anxiety, and even major neurocognitive disorders. Communication between the host and the GM is mediated through the microbiome-gut-brain axis, and multiple mechanisms have been proposed on how each can influence the other. It may be important to consider the use of microbial therapeutics, such as gut biotics and fecal transplantation, as an adjunct treatment along with conventional modalities in the treatment of patients with these conditions. The ultimate goal with these types of treatment is to reverse the changes in the GM and decrease gut permeability and inflammation, through the reintroduction of beneficial microorganisms. There have been recent studies with human subjects that the use of prebiotics, probiotics, and synbiotics, can provide some benefit to patient with mental health disorders. Current research remains limited and more robust studies, such as randomized-controlled trials, are still needed. However, in the future, the use of microbial management may be an important aspect in the treatment of patients with mental health illnesses.

Repetitive Transcranial Magnetic Stimulation with and without Internet-Delivered Cognitive Behavior Therapy for the Treatment of Resistant Depression: Patient-centered Randomized Controlled Pilot Trial

Medard K. Adu (Department of Psychiatry, University of Alberta)

Background: Treatment-resistant depression (TRD) is considered one of the major clinical challenges in the field of psychiatry. An estimated 44% of patients with major depressive disorder (MDD) do not respond to two consecutive antidepressant therapies. At least 15% of all patients with MDD remain refractory to any treatment intervention. rTMS is considered a treatment option for patients with TRD. Likewise, iCBT is evidence-based, psychotherapy for TRD.
Objective: This study aims to evaluate the initial comparative clinical effectiveness of rTMS treatment with and without iCBT as an innovative intervention for TRD.
Methods: This study is a randomized controlled trial. Participants diagnosed with TRD were randomized to one of two interventions; rTMS alone and rTMS+iCBT. Each group completed evaluation measures at baseline, and 6 weeks. Primary outcome measure was mean change in Hamilton depression rating scale(HAMD-17) from baseline to six weeks.
Results: After adjusting for the baseline scores, the study failed to find a significant difference in the changes in mean scores for participants from baseline to six weeks between the two interventions groups on HAMD-17 scale; $F(1, 53) = 0.15$, $p = 0.70$, partial eta square = 0.003,
Conclusion: This study did not find combined treatment of TRD with rTMS + iCBT(unguided) superior to treatment with rTMS alone. Our findings do not support the use of combined treatment of rTMS + iCBT for the management of TRD.

Treating maternal depression: Barriers toward receiving rTMS

Huda Al-Shamali (Department of Psychiatry, University of Alberta); Setayesh Modanloo (Department of Psychiatry, University of Alberta); Nataliia Zinchuk (Department of Psychiatry, University of Alberta); Margot Jackson (Department of Psychiatry, University of Alberta); Gina Wong (Athabasca University); Bo Cao (Department of Psychiatry, University of Alberta); Lisa Burback (Department of Psychiatry, University of Alberta); Andrew Greenshaw (Department of Psychiatry, University of Alberta); Yanbo Zhang (Department of Psychiatry, University of Alberta)

Peripartum depression is a debilitating disorder that impacts a mother and her child's mental and physical health. Suicide is a leading cause of maternal death, with 14-30% of maternal death being caused by suicide or overdose. Medication is considered the first-line treatment for peripartum depression, but many mothers are reluctant to receive medication due to side effects and potential negative impacts on their children. Repetitive transcranial magnetic stimulation (rTMS) is a non-pharmacological treatment that is safe and effective for peripartum depression. However, few patients with peripartum depression have received rTMS treatment in Alberta. In this study, we will use a mixed-method study to identify barriers preventing women with peripartum depression from receiving rTMS treatment. We will conduct an anonymous, self-administered, 5-minute online survey shared through REDCap. The survey will assess participants' experiences with and barriers to rTMS treatment through a mix of multiple-choice questions and rating scales. We expect a response rate of 20% and aim to collect a minimum of 385 responses. Our survey will be translated into several languages to increase its accessibility and allow us to explore culture-linked barriers to treatment from an equity, diversity, and inclusion (EDI) perspective. Additionally, three 60-minute focus groups consisting of 8-10 participants will be conducted over ZOOM. One focus group will be with psychiatrists who conduct rTMS treatment, the second with peripartum depression patients, and the third with general practitioners. A descriptive interpretative approach will be employed. Understanding barriers to rTMS treatment is the first step toward ensuring women are well informed and can access safe and effective treatments.

Effects of comorbid depression on memory functions in persons with HIV

Lujie Xu (Department of Psychiatry, University of Alberta); John Gill (Department of Medicine, University of Alberta; Department of Medicine, University of Calgary; Southern Alberta HIV Clinic, Calgary, Alberta); Christopher Power (Department of Psychiatry, University of Alberta; Department of Medicine, University of Alberta; Department of Medicine, University of Calgary); Esther Fujiwara (Department of Psychiatry, University of Alberta)

Objective: Cognitive impairment remains prevalent in treated HIV, affecting higher-order executive functions and memory. Whether memory impairment in PWH is due to viral factors or comorbid depression is unclear based on evidence from published cohorts. We aimed to compare memory functions in PWH with or without current depressive symptoms (DS) and their correlates.
Methods: A Canadian cohort of 359 PWH (age: 48.5 years, 89.7% males) was recruited from the Southern Alberta Clinic, Calgary. Memory was assessed with the Hopkins Verbal Learning Test (HVLT-R), depressive symptoms were measured with the PHQ-9, along with clinical/demographic correlates in the total sample, DS-, and non-DS groups.
Results: We identified 254 non-DS and 105 DS participants (PHQ-9 cut-off 10). Groups differed in immediate ($p=0.01$), but not in delayed memory ($p=0.12$), retention ($p=0.41$), or recognition ($p=0.41$). In the total sample, memory was related to being employed, quality of life, adhering to antiretroviral therapy (ART), and HIV-viral suppression. In the non-DS group only, psychopharmacological prescription drugs ($ps \leq 0.01$) related to lower memory, whereas in the DS-group, suicidality related to lower memory ($ps \leq 0.04$).
Discussion: Current DS in ART-treated PWH may affect initial learning but less so storage of memory, suggesting frontal rather than temporal lobe pathology. Findings in the non-DS group pointed to potentially non-reported depressive symptoms (PHQ-9), whereas in the DS-group, additional suicidality related to memory deterioration. Our findings suggest parallel effects of HIV and depression which require parallel assessment and treatment in order to improve ART-medication adherence/viral suppression and quality of life in PWH.
Conclusion: These findings suggest that current DS has significant effects on learning but not memory function in PWH. In PWH with depression, may require a dual assessment of depressive symptoms and memory function.

Improving Healthcare Delivery to Patients with Psychodermatological Conditions

Dr. Tarek Turk (Department of Psychiatry, University of Alberta); Adam Abba-Aji (Department of Psychiatry, University of Alberta); Pamela Mathura (Department of Medicine, University of Alberta); Marlene Dytoc (Department of Dermatology, University of Alberta); Esther Fujiwara (Department of Psychiatry, University of Alberta)

Introduction: Psychodermatology encompasses the interaction between the cutaneous and neuropsychiatric systems. Psychodermatological conditions are commonly encountered in medical practice. However, these are frequently underreported, misdiagnosed or undertreated.
Methods: We have started a quality improvement project using different methodologies: 1) a review of Alberta Health Services (AHS) data to identify patients with potential psychodermatological conditions, estimate the burden of the issue and the expected demand on services; 2) a national online survey to dermatologists in Canada to assess their psychodermatology knowledge, practice patterns and challenges.
Results: Of 243,963 dermatologic patients identified through AHS data, 28.6% had received at least one psychotropic medication. Rates of concurrent psychotropic medications were highest for pruritus and related conditions. In the survey, of the 78 dermatologists, >75% reported treating patients with psychodermatological conditions at least occasionally (1 patient/month). However, practitioners' comfort to approach these patients was intermediate-to-low (median=3). The confidence in prescribing psychotropic medication was markedly low (median=2), and 50% reported that a "multidisciplinary approach" would be the best approach. Poor access to psychiatry was the most reported (26.9%) challenge.
Conclusions: Several interventions were proposed to bridge the identified gaps. We plan to establish a multidisciplinary psychodermatology clinic, which will increase accessibility to care, decrease referral system complications and potentially address patient-related concerns such as denied referral and compliance issues. Also, we plan to publish our results to increase medical evidence on psychodermatology in Canada, collaborate with several partners to facilitate training sessions and create resources for patients.

Mental health and addiction-related impacts on subscribers after three months of receiving daily supportive text messages: Results of Text4Hope-Addiction Support program evaluation

Gloria Obuobi-Donkor (Department of Psychiatry, University of Alberta); Reham Shalaby (Department of Psychiatry, University of Alberta); Wesley Vuong (Alberta Health Services, Edmonton); Marianne Hrabok (University of Calgary); Vincent Israel Opoku Agyapong (Department of Psychiatry, Dalhousie University)

Background: Drug addiction has become complex, and various treatment modalities are emerging. Anxiety and depression co-exist with substance use and usually go undiagnosed. Providing text-based interventions to individuals with drug addiction has the prospect of improving symptoms of drug use and other comorbidities.
Objective: This study aims to evaluate the impact of Text4Hope-Addiction program in mitigating craving, anxiety, and depression symptoms in subscribers.
Methods: Individuals self-subscribe to Text4Hope Addiction program by texting "Open2Change" to 393939 to receive daily addiction-related text messages for three months. Subscribers are invited via text message to complete online questionnaires which assess cravings, anxiety, and depressive symptoms using the Brief Substance Craving Scale, Generalized Anxiety Disorder-7 Scale, and Patient Health Questionnaire-9 on subscription (baseline), six weeks and three months. Satisfaction responses were used to assess various aspects of the Text4Hope- Addiction program. Data was analyzed using SPSS version 26 with descriptive and inferential statistics.
Results: There was a significant difference in the mean baseline and three-month BSCS scores (-2.17, 95% CI of -0.62 to -3.72), PHQ-9 scores (-5.08, 95% CI of -1.65 to -8.51), and the GAD-7 scores (-2.93, 95% CI of -0.48 to -5.56). Participants agreed that the supportive text messages helped them cope with addiction-related stress (89%); anxiety (81%) and depression (69%).
Conclusion: TheText4Hope-Addiction program was effective in reducing cravings, anxiety, and depression among subscribers, with high satisfaction rates for the program. Healthcare practitioners and policy makers should consider implementing supportive text-based strategies to complement conventional treatments for addiction.

Adolescents present higher than expected mental health-related utilization after the COVID-19 pandemic

Fernanda Talarico (Department of Psychiatry, University of Alberta); Yipeng Song (Department of Psychiatry, University of Alberta); Derek Pierce (Department of Psychiatry, University of Alberta); Dan Metes (Government of Alberta, Ministry of Health); Mengzhe Wang (Government of Alberta, Ministry of Health); Yang Liu (Department of Psychiatry, University of Alberta); Rong-Cai Yang (Government of Alberta, Ministry of Health); Lawrence Kiyang (Government of Alberta, Ministry of Health); Jake Hayward (Department of Emergency Medicine, University of Alberta); Yanbo Zhang (Department of Psychiatry, University of Alberta); Andrew Greenshaw (Department of Psychiatry, University of Alberta); Bo Cao (Department of Psychiatry, University of Alberta)

Recent studies point to a rise in mental heal problems during the COVID-19 pandemic, especially in the young populations. The prevalence of major depressive disorder and anxiety disorders increased globally during 2020, especially in children, adolescents, and youth. Therefore, it is essential to study the mental health outcomes of young individuals during the pandemic, because it can be a stress-inducing situation that may cause long-term negative effects on overall psychological well-being. The main goal of this project is to analyze mental health-related utilization patterns in Alberta between pre (2016-2019) and during (2020-2021) the COVID-19 pandemic in children, adolescents, and young adults. We also aim to understand the factors that might have led to the change in mental health utilization in Alberta to work alongside policymakers at the Government of Alberta, the Ministry of Health, to plan and develop programs specifically for each group. Individuals included in this study are Alberta residents of all sex aged between six to 34 years old who have administrative health records between 2016 and 2021. We used aggregated data to calculate the “overall counts” by summing up all utilization in a particular year for each studied condition and the “individual counts” to determine how many people utilized the health services for the selected diseases. Our preliminary results showed that compared to elementary-aged children and adults, adolescents presented the most increase in mental health-related utilization in 2020 and 2021 compared to previous years. Anxiety, mood disorders, ADHD, and self-harm are the leading diseases causing this rise.

Early mental health foundations: a scoping review of reflective functioning in caregiver-child dyads

Jonathan Jin (Department of Psychiatry, University of Alberta); Rachel Goud (Temerty Faculty of Medicine, University of Toronto); Huda Al-Shamali (Department of Psychiatry, University of Alberta); Anja Dzunic (School of Public Health, University of Alberta); Tirzah Lyons (School and Clinical Child Psychology, University of Alberta); Matthew Reeson (Department of Psychiatry, University of Alberta); Hannah Pazderka (Department of Psychiatry, University of Alberta); Liz Dennett (JW Scott Health Sciences Library, University of Alberta); Wanda Polzin (Little Warriors, Be Brave Ranch); Yifeng Wei (Department of Psychiatry, University of Alberta); Peter H. Silverstone (Department of Psychiatry, University of Alberta); Andrew J. Greenshaw (Department of Psychiatry, University of Alberta)

Rationale: Reflective functioning (RF) is the capacity to understand one's own and others' behaviour in terms of mental states (Fonagy & Target, 1997). RF is an important determinant of later life outcomes and meta-analyses were done recently looking at targeting RF in caregiver-child dyads (Barlow et al., 2021; Lo et al., 2022). However, the RF literature has not been fully mapped out in the literature systematically.
Purpose: The aim of the current scoping review is designed to answer one question: 1) What evidence is there for the value of RF assessment tools and interventions in caregiver-child dyads?
Methods: A scoping review of electronic databases was conducted from database inception till September 2021. No limits were placed on language or country. Databases included Medline, PsycINFO, CINAHL, ERIC, Scopus, Web of Science and Embase. Studies were selected if they included data on children 36 months of age or younger.
Results: From the initially identified 5,162, full texts of 608 included papers were then screened and yielded 181 papers. At least one ethnicity other than the dominant ethnicity of the study country was included in 69 studies (from 181 total). No studies were conducted in low to middle income countries (LMIC) and no studies included measures of gender identity.
Conclusion: RF has links to several dyadic health outcomes based on several studies on RF measurement tools and RF interventions. Future RF work incorporating gender-identity and LMICs is warranted. More studies in this area will also need to assess adverse childhood experience scores.

Interest in rural training experiences in a Canadian psychiatry residency training program

Dr. Jacquelyn Paquet (Department of Psychiatry, University of Alberta); Dr. Pamela Brett-MacLean (Department of Psychiatry, University of Alberta); Dr. Vincent Agyapong (Department of Psychiatry, Dalhousie University); Dr. Katharine Hibbard (Department of Psychiatry, University of Alberta)

Background: With the large majority of mental health professionals concentrated in urban settings, people living in rural and remote areas face significant barriers to accessing mental health care. Recognizing that early exposure is associated with practice in rural and remote locations, we sought to obtain baseline data regarding interest in expanded rural residency training opportunities.

Methods: In March 2021, all psychiatry residents at the University of Alberta (UofA) were invited to complete a 19-question survey that included both closed-ended (age, gender, year of study, rural experience, interest in rural training, etc.) and open-ended questions (challenges, etc.).

Results: 36 residents completed the survey (response rate, 75%). Significant associations were identified between previous rural training experience and interest in rural psychiatry training and practice. Female residents and junior residents were significantly more interested in rural training experiences than their counterparts. Various concerns about rural training and ideas for enhancing rural psychiatry training were described.

Conclusions: These findings have provided us with directions for developing training opportunities and introducing formal academic teaching focused on rural psychiatry at the UofA. This effort is being undertaken to support our responsiveness and accountability to the rural and northern communities we are committed to serving.

Child sexual abuse survivors: Differential complex multimodal outcomes for pre-COVID and COVID era cohorts

Matthew Reeson (Department of Psychiatry, University of Alberta); Dr. Wanda Polzin Homan (Little Warriors Be Brave Ranch); Dr. Hannah Pazderka (Department of Psychiatry, University of Alberta); Dr. Vincent Agyapong (Department of Psychiatry, Dalhousie University); Dr. Andrew Greenshaw (Department of Psychiatry, University of Alberta); Dr. Yifeng Wei (Department of Psychiatry, University of Alberta); Jonathan Jin (Department of Psychiatry, University of Alberta); Dr. Peter Silverstone (Department of Psychiatry, University of Alberta)

Background: Early-life trauma can have widespread psychological impacts on the survivor. Child sexual abuse (CSA) is a form of early-life trauma that impacts youth worldwide. In the midst of the current COVID-19 pandemic, it is imperative to investigate the potential impact of added stress on already vulnerable populations.

Objective: The aim of this study was to evaluate the effectiveness of a multimodal treatment program on treatment outcomes for youth CSA survivors aged 8-16. Secondary to this, we explored the impact of the COVID-19 pandemic on clinical presentations of youth.

Methods: Participants were asked to complete self-report surveys at initial admission and at the end of their first two treatment rounds. The surveys consisted of validated self-report measures pertaining to: (1) PTSD, (2) depression, (3) anxiety, (4) quality of life, and (5) self-esteem. Participants were differentiated as either pre-COVID-19 (completing treatment prior to February, 2020) or COVID-19-impacted (starting treatment after May, 2020). Changes in median outcome measure scores were analyzed for statistical significance.

Results: A total of 151 participants were included in this study. The median scores improved for all groups at all timepoints for all five domains. In almost every domain, the improvements of the pre-COVID group were greater than those of the COVID-I group.

Conclusion: A multimodal treatment program specifically designed for youth CSA survivors has the capacity to improve a number of essential determinants of mental health. The COVID-19 pandemic appears to have increased the youth's initial presenting clinical concerns and decreased the effectiveness of the program.

A world of colour: How Ethanol and Psychedelics Alter Colour preference in Zebrafish

Ethan Hagen (Department of Psychiatry, University of Alberta); Trevor Hamilton (Macewan University); Yanbo Zhang (Department of Psychiatry, University of Alberta)

Addiction is a massive issue that is detrimental to the lives of many individuals. The resurgence of psychedelics has raised the question of how psychedelics might be helpful for addiction treatment. This leads to the use of animal models and psychedelics in which it can be challenging to understand the effects of psychedelics in animals. That is why behavioural measures must be used. The aspect of addiction that will be focused on is seeking behaviour. Before establishing a treatment procedure, the seeking model must be verified. Seeking via colour preference will be tested using zebrafish (Danio rerio). Fish will be dosed in 0.8% ethanol solution for 8 days. During these 8 days, the fish will be in a red tank. After the dosing period, the fish will go through a 48-hour withdrawal period. After withdrawal, the zebrafish will be tested in a coloured-plus maze to see if there are changes to their innate colour preference. The desired effect will show changes in seeking behaviour by increasing time spent in the red zone of the arena. As this behavioural method is further developed, it will allow for progress in testing seeking behaviour in zebrafish efficient and cost-effective. Once this paradigm is established, the following steps will be testing psychedelics for addiction recovery and prevention. Further work will focus on using Lysergic acid diethylamide (LSD) and psilocybin to treat alcohol addiction in zebrafish, with the desired effects of returning the post-alcohol treatment fish preference back to the pre-alcohol exposure/innate colour preferences.

Learning from Place to Learn my Place

Anna Wilson (Department of Psychiatry, University of Alberta)

The tragedies of unmarked graves in Canada's residential school sites and fatal Indigenous mental health checks amplify the fact that systemic racism in healthcare and education against Indigenous people in Canada is a nationwide crisis persisting for decades. These injustices urge us to decolonize our thinking systems through Indigenous knowledge. Decolonization can be defined as, "[Restoring essential] cultural traditions, thinking, and beliefs, and values that [colonizers have usurped] which increase Indigenous Peoples' health" (Yellow Bird, 2013, p. 284). Neuro-decolonization is a healing concept that meditative thoughts can transform brain neuropathways by removing learning barriers (Yellow Bird, 2013).

First, Blackfoot Knowledge Holder and Scholar the late Narcisse Blood's (2015) research will be discussed through his references to the mountain (Cajete, 1994). Second, Narcisse Blood's (2015) research will be woven into the theoretical framework of Indigenous research methodologies (IRM). Third, I will synthesize a sharing place for Western and Indigenous knowledge systems to inspire professionals to learn the Blackfoot First Nations origins of human basic needs that informed Abraham Maslow's Hierarchy of basic human needs. Fourth, I will locate myself as a participant researcher engaging in Indigenous research methodologies intersecting my path with the Blackfoot People's path in my search to find my place in a Western society where I have struggled to conform. Fifth, I will synthesize our place on the mountaintop where Indigenous and Western knowledge systems can find a common ground to mediate healing, neuro-decolonization and ethical Indigenous research through sharing our place.

Readmission of Patients to Acute Psychiatric Hospitals: Influential Factors and Interventions to Reduce Psychiatric Readmission Rates

Ernest Owusu (Department of Psychiatry, University of Alberta); Folajinmi Oluwasina (Department of Psychiatry, University of Alberta); Nnamdi Nkire (Department of Psychiatry, University of Alberta); Mobolaji A. Lawal (Department of Psychiatry, University of Alberta); Vincent I.O. Agyapong (Department of Psychiatry, Dalhousie University)

Background: Appropriate and adequate treatment of psychiatric conditions in the community or at first presentation to the hospital may prevent rehospitalization. Information about hospital readmission factors may help to reduce readmission rates. This scoping review sought to examine the readmission of patients to acute psychiatric hospitals to determine predictors and interventions to reduce psychiatric readmission rates.
Method: A scoping review was conducted in eleven bibliographic databases to identify relevant peer-reviewed studies. Two reviewers independently assessed full-text articles, and a screening process was undertaken to identify studies for inclusion in the review. PRISMA checklist was adopted, and with the Covidence software, 75 articles were eligible for review. Data extraction was conducted, collated, summarized, and findings reported.
Result: 75 articles were analyzed. The review shows that learning disabilities, developmental delays, alcohol, drug, and substance abuse, were crucial factors that increased the risk of readmission. Greater access to mental health services in residential treatment and improved crisis intervention in congregate care settings were indicated as factors that reduce the risk of readmission.
Conclusion: High rates of readmission may adversely impact healthcare spending. This study suggests a need for focused health policies to address readmission factors and improve community-based care.