

## 32<sup>nd</sup> Annual Sebastian K. Littmann Research Day

Friday March 1, 2019

### Abstract Booklet

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### Oral Presentations

Session 1A - Chair: Dr. Andrew Bulloch

#### 1. **A Feasibility Study Adapting the Film Therapy Model to an Adolescent Acute Inpatient Setting**

Author(s): Dr. Alexandra Di Ninno, Dr. Blair Ritchie, Dr. Taryn Bemister

**Background:** Over 1000 youth are admitted to Calgary inpatient mental health units each year for stabilization, assessment, and treatment, many of which are involuntarily admitted due to safety concerns (Calgary Health Region Statistics, 2016-2018). Not surprisingly, there is a strong need to find ways to engage youth in their treatment on inpatient units in order to enhance the efficacy of their care. Film Group endeavors to engage youth creatively around themes integral to adolescence and mental illness with the intended purpose of increasing self-esteem, confidence, socialization, and self-efficacy for illness management, as well as reducing feelings of isolation. This group has been previously implemented with adolescent outpatients by the Hamilton Family Health Team, and it has been shown to improve perceptions of illness and self-esteem, as measured by the State Self Esteem Scale and Mental Health Inventory (MHI-38).

**Methods:** A feasibility study was conducted in order to examine the ability to adapt Film Group to an adolescent inpatient setting. In collaboration with Dr. Akhtar (Hamilton Family Health Team), Film Group was implemented on a weekly basis during July and August, 2018 on two adolescent inpatient mental health units at Foothills Medical Centre. Each inpatient unit (Unit 26 and Unit 23) participated in six sessions, each of which featured a unique short film which was then discussed in detail with the aid of trained facilitators. Outcome was measured using the Session Rating Scale (SRS; Duncan & Miller, 2007) at the conclusion of each session to analyze the degree to which the participants felt understood, respected and accepted, the relevancy of the topic, the degree the participants felt they belonged, and the perceived overall fit of the group and facilitators. A MANOVA was used to analyze whether the outcomes varied depending on the unit, film, and participant variables (i.e., number of sessions attended, age, and gender). Qualitative feedback was also gathered after every session from the participants, facilitators, and observers.

**Results:** In total, data was gathered from 33 participants between the ages of 13 and 18 years (Unit 26: n = 14; Unit 23: n = 19). Participants attended between 1 to 6 sessions dependent upon their availability, appropriateness for group, and admission status ( $M = 2.78$ ,  $SD = 1.70$ ). The results of the MANOVA suggest there was no significant difference in ratings based on the film, unit, number of groups attended, participant age, or participant gender ( $p$ -value  $> 0.05$  for all variables). The mean rating on the SRS for each item ranged from 8.09 to 8.64 on a scale of 0 to 10, suggesting participant satisfaction with the group. Qualitative feedback revealed that the group was enjoyed by the youth who participated; they described it as unique and engaging. The participants particularly enjoyed the environment and the open nature of the group, which allowed them to voice concerns they felt were important. Observers and facilitators often remarked about the high levels of participation by the youth, high level of interaction that occurred between participants as well as the insight the youth gained into their own lives and circumstances.

**Conclusions:** The results of this feasibility study suggest that Film Group may be successfully adapted to adolescent inpatient settings. The data was overwhelming positive for Film Group on Units 23 and 26, suggesting that it is a valued program and a valuable addition to the existing groups and programs offered on these units. Film Group appears to engage youth on a creative level and then allows them to, in a monitored setting, critically analyze first the films and then themselves. However, future research is needed in order to quantify the impact on the participants' psychological well-being.

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#### 2. **Assessing Fidelity to Coordinated Specialty Care for First Episode Psychosis in the US Federal Block Program Grant with the First Episode Psychosis Fidelity Scale**

Author(s): Addington D., Bond G, Noel V.

**Background:** The United States Federal Government allocated funding to State Mental Health Services for the implementation of First Episode Psychosis Services through the US Department of Health and Human Services, Substance Abuse and Mental Health Services Administration (SAMHSA).

**Methods:** A longitudinal study of 38 sites, selected to represent 32 states in ten regions of the US including, rural, urban, and mixed areas. The study employs a mixed method design using qualitative and quantitative data. Adherence to the CSC model is being assessed with the First Episode Psychosis Fidelity Scale (FEPA-FS). Individual client outcomes will be assessed with symptom ratings scales and global measures of functioning and quality of life. The First Episode Psychosis Fidelity Scale is 31-item scale which assesses access, quality of psychosocial and pharmacological interventions, and team functioning. It covers the six components of care identified in the CSC care model, tested in the Recovery after an Initial Schizophrenia Episode study. To establish fidelity ratings, data is collected by review of program administrative data, audit of selected health records, and semi-structured telephone interviews with key program health care providers. The scale will be administered at baseline and one year.

**Results:** In the first year 36 programs were assessed. The FEPS-FS showed good inter rater reliability. Most programs showed adequate fidelity. The study is now in its final years.

**Conclusions.** The study has demonstrated the feasibility and reliability of the FEPS-FS. The results will be support the establishment of standards and norms for the first episode psychosis program fidelity.

#### 3. **Exploring the mental healthcare needs of children in Alberta**

Author(s): Brenda Leung, Maria Santana, Tamara Pringsheim

**Background:** For families of children with mental disorders, they face many challenges in the search for resources and navigating the healthcare system to find options for their children. The current standard practice leaves parents and their children with limited options for treatment. In Alberta, little is known about the experience of patients and their mental healthcare needs or identified avenues to access evidence-based treatment options. The objective of this study was to explore the experience of parents and patients (i.e., children with mental healthcare needs) in the pathway to accessing healthcare services, adherence to treatment plans, and finding treatment options (including medical, allied health, and complementary therapies).

**Methods:** This qualitative study involved semi-structured interviews with parents of children diagnosed with depression and/or anxiety. The interviews were conducted face-to-face, by in-person, phone or video link, and audio recorded. The recordings were transcribed verbatim and analyzed by two researchers independently. Themes and subthemes were identified. Differences with respect to emerged categories or themes were resolved by group discussion and consensus.

**Results:** Twelve parents from across Alberta were interviewed. The children, aged four to 17, eight male and four female, were diagnosed with complex mental disorder comorbidities (e.g. OCD, ODD, ADHD) concurrent with anxiety and/or depression. The main themes derived from the data were: 1) the need for informed treatment so parents have sufficient information on sides effects of medications and on other treatment options (e.g. psychotherapy); 2) insufficient support to parents searching for continuity of care and guidance to acquiring services as child's condition and needs evolved; 3) parents were self-advocates for child's care and many were left traumatized by the experience of navigating the gaps and barriers to obtaining proper care for their child. Parents struggled with the financial burden of obtaining services, the stigma of parental failings because of child's illness, and having to find help on their own because service providers were unable to provide information or referrals to resources.

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**Conclusion:** Parents of children with mental healthcare needs required fortitude to find appropriate care for their children who often had multiple mental health comorbidities. Families were grateful when proper services were obtained but many found it to be an exhaustive process. Effective communication and collaboration among service providers across medical, allied health, and private health services would help to alleviate these burdens on parents.

#### 4. **Is caregiver-detected delirium associated with symptoms of depression and anxiety in caregivers of the critically ill?**

Author(s): Brianna Rosgen, Karla D. Krewulak PhD, Henry T. Stelfox MD, PhD, E. Wesley Ely, MD MPH, Judy E. Davidson DNP, RN, and Kirsten M. Fiest, PhD

**Background:** Many caregivers of critically ill patients are troubled when witnessing delirium in their loved ones. This study aims to evaluate associations between caregivers witnessing patient delirium and their own development of symptoms of depression and anxiety.

**Methods:** Consecutive adult patients with a caregiver (i.e. family or friend) present were enrolled in a prospective cohort study at Foothills Medical Centre medical-surgical intensive care unit (ICU). Patient delirium was evaluated once daily by the reference standard study nurses using the DSM-5 criteria. Caregivers also evaluated patient delirium once daily using the Sour Seven and the Family Confusion Assessment Method (FAM-CAM). Caregivers also completed the Patient Health Questionnaire 9 (PHQ-9) and the General Anxiety Disorder 7 (GAD-7) to assess their own symptoms of depression and anxiety. Descriptive statistics and regression analyses were calculated. All models were adjusted for patient and caregiver age and sex.

**Results:** 147 dyads were enrolled and completed self-report questionnaires. Caregivers were 74.0% female, with a mean age of 54.8±16.3 years. 26.7% (95%CI 19.1-34.2%) of patients had delirium at least once during their ICU stay according to the reference standard, whereas 64.6% (95%CI 56.2-71.5%) of caregivers identified delirium using the Sour Seven, and 59.2% (95%CI 50.9-66.6%) using the FAM-CAM. 25.2% (95%CI 18.3-32.1%) and 34.9% (95%CI 27.2-42.4%) of caregivers demonstrated clinically significant symptoms of depression or anxiety, respectively. Caregivers of critically ill patients who witnessed delirium using the Sour Seven had increased odds of experiencing clinically significant depressive symptoms (OR 2.90, 95%CI 1.21-6.93), and with each increased point on the Sour Seven questionnaire, PHQ-9 and GAD-7 scores increased 0.23 and 0.27 points, respectively. Neither the DSM-5 reference standard nor FAM-CAM delirium was associated with depression or anxiety symptoms.

**Conclusions:** Patient delirium detected by caregivers was associated with increased depression and anxiety in our sample. Caregivers detected more delirium than the reference standard, which may be due to their knowledge of the patients' baseline and presence throughout the patients' ICU stay. Further analyses must be conducted to evaluate which delirium symptoms may be most distressing for caregivers in order to develop strategies to reduce the burden of patient delirium on caregiver psychiatric outcomes.

#### 5. **Linking community children's mental health data to population health data in Ontario to understand mental health service use from childhood to adulthood**

Author(s): Kyleigh Schraeder, PhD; M. Barwick, J. Cairney, P. Kurdyak, G. Reid

**Background:** Of the 15-18% of children and youth in Canada with a mental health condition, some will receive community mental health services and require additional treatment as young adults. The proportion of those who require additional mental health care as young adults is unknown. Longitudinal studies on mental health service utilization, from childhood to adulthood, are limited. This is due in part to the lack of a shared population database on mental health service provision, which spans across multiple sectors of care (e.g., community mental health, outpatient mental health).

**Methods:** A cohort of youth (N = 2,822) living in Ontario who received community mental health services was used for this study. This cohort was created using administrative data collected from five children's mental health agencies, funded by the Ministry of Children and Youth Services (MCYS) in Ontario. Youth were 7-14 years old at the time of their first mental health visit (between 2006-2008) to a community agency. Community

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mental health data were probabilistically linked to patient-level medical records in population health datasets held at the Institute for Clinical Evaluative Sciences. Using physician claims data, the proportion who had an outpatient mental health visit (to a family physician, pediatrician, or psychiatrist) after age 18 was compared between youth who had received community children's mental health services and a matched control sample of youth from the general population, matched by age, sex, and region (N = 8,466). The study window spanned a maximum of 8 years (i.e., 18 to 26 years old).

**Results:** Youth who received community mental health services in childhood or adolescence were twice as likely as matched controls to have at least one outpatient mental health visit in adulthood (after age 18). The median time (when 50% had a visit) to first outpatient mental health visit as a young adult was 3.3 years. The possible added effect of having an outpatient mental health visit before age 18 on the outcome was assessed in an adjusted Cox regression model. Outpatient mental health involvement before age 18 made a greater contribution in the adjusted model than the main exposure variable, or community mental health involvement before age 18.

**Conclusions:** This study represents one of the first longitudinal, case-control, cohort study in Canada to examine mental health service utilization in the medical system (outpatient mental health) by youth treated within publicly-funded community children's mental health agencies. The linkage of information from multiple datasets allowed for a broader understanding of mental health service utilization across sectors of care, and over time, specific to children and youth.

#### Session 1B - Chair: Dr. Scott Patten

##### 1. **The association of electronic cigarette use and mental health: A Canadian population-based study**

Author(s): Tram Pham, Jeanne V.A Williams, [Asmita Bhattarai](#), Ashley K Dores, Leah Isherwood, Scott B Patten

**Background:** A consistent and strong association exists between smoking and adverse mental health. However, little is known of the potential harmful effects of tobacco alternatives, such as electronic cigarettes (e-cigarettes). Moreover, there is no study to date examining the association of e-cigarettes and mental health outcomes in the general Canadian population.

**Methods:** A cross-sectional analysis was conducted using data from the 2015/2016 Canadian Community Health Surveys (n=53,050). Sampling weights and associated bootstrap procedures were used to account for survey design effects. Multivariable logistic regression was employed to examine the association of e-cigarette use and the following mental health outcomes: mood disorder, perceived mental health, depression, anxiety, suicidal thoughts/ attempts and binge drinking.

**Results:** The overall prevalence of e-cigarette use was 2.9% (2.6-3.1). 11.5% (10.4-12.7) of participants reported concurrent use of e-cigarettes and conventional cigarettes. Dual users reported the highest prevalence of adverse mental health. Overall, females had a higher prevalence of mental health disorders compared to males. In the crude analysis, elevated odds of adverse mental health were seen in association with e-cigarette use. While the effect was not always statistically significant, the association of e-cigarettes and mental health was found to be modified by smoking status and sex in most of the logistic models. E-cigarettes had less than multiplicative effects among smokers, suggesting a saturation effect. In the final multivariable model, e-cigarette use was associated with poor mental health among non-smokers and females, a finding that persisted after adjustment for additional covariates.

**Conclusions:** These results indicate that e-cigarette use is associated with negative mental health status, similar to what has been reported with cigarette smoking. This association was generally stronger in women than in men. Dual users represented a large proportion of e-cigarette users and this group was characterized by negative mental health, although the effects of dual use were less than the multiplicative effects of the individual exposures.

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#### 2. **Evolution of Algorithms: From Population-Based Health Indices based on Mental Disorder to Clinical Pathways. (Ethics ID-REB15-1057)**

Author/Presenter: David Cawthorpe, PhD

##### **Background**

Data reduction that results in useful information is one goal of “Big data” analysis. This paper describes the developmental trajectory of the algorithm structures underpinning an understanding of temporal hyper-morbidity.

##### **Methods**

The presentation describes the standardized approaches to analysis that permit the group comparisons underpinning the results presented in two recent publications.

##### **Results**

The resulting organization of reduced data is presented together the underlying algorithm structure in relation to the utility of the information.

##### **Conclusions**

“Big data” analysis has highly practical implications for clinical practice and basic research in addition to broader implications for pedagogy and program development. The implications and limitations of findings related to temporal hyper-morbidity are discussed.

#### 3. **Seasonal Variation in Symptoms of Depression: A Canadian Population Based Cross Sectional Study**

Author(s): Aysha Lukmanji, Jeanne V.A Williams, Andrew G.M Bulloch, Asmita Bhattarai, Scott B. Patten

**Background:** There is no consensus as to whether depressive symptoms vary by season. Using data from the Canadian Community Health Survey (CCHS), the purpose of this study was to evaluate seasonal variation in depressive symptoms in the Canadian household population.

**Methods:** The study used a cross-sectional analysis of data from the CCHS in 2015 and 2016. The sample included respondents from 8 provinces and territories that selected the Patient Health Questionnaire – Brief (PHQ-9). All analyses were conducted using 1000 replicate bootstrap weights to address design effects. Mean PHQ-9 scores, and categories defined by 5+ or 10+ cut-points were used in the analysis. Seasonal effects were assessed using quadratic terms in regression models, generalized linear models were used for this purpose.

**Results:** Significant seasonal variation was observed in mean PHQ-9 scores and proportion with scores of 5+. There was evidence of effect modification by age. The youth (12-24) age group had a stronger seasonal effect compared to respondents aged 25 and above, with an age by day of the year<sup>2</sup> interaction term of 0.000024. Among youth, seasonal effect was highly significant for mean PHQ-9 scores and 5+ but not for 10+. None of these measures had significant seasonal variation in the older (25+) age group.

**Conclusions:** Seasonal variation in depressive symptoms is evident in the Canadian population, with the highest levels of symptoms occurring in the winter months and the lowest levels in the summer months. The seasonal trend is most pronounced in youth and evident in a large proportion of youth reporting at least mild depressive symptoms (PHQ-9 score 5+), but not in those reporting moderate to severe symptoms.



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#### 4. **Communication and Self-awareness are core to Clinician Educators' Professional competence**

Author(s): Janet de Groot, MD, FRCPC, Sayeeda (Amber) Sayed, PhD candidate, Aliya Kassam, PhD, Maureen Topps, MD, FRCPC

**Background:** The widely used CanMEDS Framework from the Royal College of Physicians and Surgeons of Canada (RCPSC) has been revised to include developmental milestones that reflect increasing expertise throughout physician's career stages. Learning opportunities to enhance expertise in conveying and educating for the Professional role are beginning to emerge for clinician educators. Appreciative inquiry (AI) has been used to discover when physicians are at their best and supports aspirational professionalism. We explored how clinician educators identify and convey professionalism in challenging clinical circumstances to better understand experiences and resources that support the development of enhanced expertise in the Professional role.

**Methods:** Clinician-educators (n=21; 12 men, 9 women) within psychiatry (n=3), internal medicine (n=11), surgery (n=4) and pediatrics (n=3) consented to participate. They included six early career (< 10 years), six mid-career (10-25 years) and nine late career (25+ years) clinicians. Following a description of the CanMEDS 2015 Professional role, participants were invited to describe a clinical situation in which they resolved a professionalism challenge. Subsequently, they engaged in appreciative Inquiry (AI) informed semi-structured interviews that asked about: 1) further context details; 2) factors that supported addressing the professional challenge; 3) how the challenge could be better managed; and 4) education they would recommend for professionalism. Framework analyses was used to categorize the stories and associated interview material into the four Professional Role concepts of commitment to patients, society, the profession and the self. Two researchers (SS and JdG) independently categorized the narratives. Categorization disagreements were discussed with a third member (MT) until mutual agreement was reached. The narratives were further independently coded and recurring themes identified that provided a rich description of professionalism.

**Results:** Most clinician educators' stories about professional challenges in patient care and commitment to the profession. Clinician educators emphasized how repeated experience supported their self-awareness, particularly emotional regulation and the value of wellness to support professionalism. Many had gained communication strategies to remain professional in challenging clinical encounters. Psychiatrists in our study conveyed high self-awareness in relation to challenging family meetings, knowledge limits and providing leadership in teams. Clinician educators also consciously referenced guiding principles and values, including honesty, and integrity to ensure excellence in patient care and support the profession. Early career clinicians were more likely to seek explicit mentoring, further education and most continued to learn from observing peer or senior clinician educators. Many participants encouraged that trainees engaged in small group discussions of difficulties in being professional

**Discussion and Conclusions:** Mid- and senior career clinician educators tended convey more confidence in addressing professionalism lapses than residents and early career clinicians. This fits with the greater expertise expected of practicing clinicians in conveying the CanMEDs Professional role. In contrast to our study of postgraduate trainees, only one core narrative focused on commitment to the self, although self-awareness and a commitment to well-being supported addressing professionalism. Mentors and role models continued to be important particularly among early career clinicians. Expertise in communication and listening was an overarching theme. The narratives with discussion of communication strategies and self-regulation strategies may support the development of academic half day sessions or informal discussions of professional challenges for trainees.

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#### 5. **Emotional and educational keys to being professional among postgraduate residents**

Author(s): Janet de Groot, MD, FRCPC, Aliya Kassam, PhD, Maureen Topps MD, FRCPC

**Background:** The CanMEDS 2015 Professional role competencies are described in relation to the concepts of commitment to patients, society, the profession and self. However, postgraduate curricula for professionalism is limited, with role modelling, the most commonly cited educational strategy. Appreciative Inquiry (AI) has been used to uncover how clinical educators describe excellence in professionalism that is meaningful to students and peers. Our objective was to discover how residents across specialties identify Professional role competence, within challenging contexts and perceived educational needs for professionalism.

**Methods:** Twenty-five postgraduate residents across specialties at one Canadian academic health centre were recruited through emails to postgraduate coordinators. Following a description of the 2015 CanMEDS Professional Role, semi-structured AI informed interviews were used to ask residents 1) to describe a clinical situation when they were at their best to resolve a professional challenge; 2) what factors supported their success; 3) evidence of success; and 4) what could go better. Framework analysis was used to categorize the professionalism stories into commitment to patients, society, profession and self. Categorization disagreements were reconciled through discussion between the researchers and comparison of narratives with CanMEDS Professional role descriptions. Deductive and inductive codes were developed into descriptive themes regarding how professional competencies are and could be supported.

**Results:** Resident narratives of professionalism were highly evocative and conveyed emotions of frustration, and anger prior to resolution of challenges. Excellence in patient care required addressing colleagues or patients differing perceptions of necessary wait-times, or personal values, often within the context of high acuity, evening and weekend care. Evidence of becoming a member of a self-regulating profession required provision of carefully planned feedback to peers regarding call duties, patient and family or social media communication. Enhanced self-awareness, with an acceptance that emotions are not unprofessional was poignantly described by one resident after initiating a discussion with a preceptor about a patient's suicide as: "an epiphany ...so we together share this emotion, ...the burden and we now have understanding and I feel one hundred times better". Social responsibility was rarely the focus of a professionalism challenge. Residents described pausing to reflect prior to responding to challenges, perseverance, actions guided by values of integrity and excellence and gaining effective communication strategies to ensure understanding and agreement by colleagues. Education that supported professionalism included learning communication strategies, identifying and regulating emotions and engaging in planned actions. Outcomes included better patient care; more engaged, competent peers and personal growth as a physician.

**Discussion and Conclusions:** Overall, addressing professional challenges in clinical settings contributed to professional identity growth: moving from a student role to accepting greater responsibility for patient care, and within teams, feeling like a role model, and gaining a sense of competence. Recognition that emotions are part of being human and a physician, and can be utilized as internal cues to guide behavior was important to professional growth for some. A relational focus both in the workplace and through sustaining personal relationships supported well-being. Consciously holding to professional values and guiding principles were thought to support excellence in patient outcomes, peer professional development and embracing the physician role. Although the study took place in one medical school, the narratives clearly fit within the CanMEDS role and provide insight into how residents might gain competence in the Professional role.

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#### Session 2A - Chair: Dr. David Cawthorpe

1. **TI: The Legacy File – Elements of Performance III: Clinical Pathways across the Lifespan and the Impact of Morbidity. Ethics ID-21695/REB15-1057**

Author/Presenter: David Cawthorpe, PhD

**Background:** This paper presents the history and consequences of a research program evolving from a single a priori hypothesis based on the Adverse Childhood Experiences Study. The research plan developed in 2008 and the resulting research program that has led in 2018 to the development of an international World Psychiatric Association (WPA) committee dedicated to the development of a permanent WPA Morbidity Section.

**Methods:** The information presented in this paper was based on compilation of the research results of the legacy file in relation to the timeline of events.

**Results:** A timeline of events is presented highlighting the salient findings and their associated milestones.

**Conclusions:** The example illustrates the developments resulting from testing a simple hypothesis. For example, the clinical and research utility of the published population study findings are described. Current opportunities are remunerated (e.g., participation in the WPA Morbidity Section development committee and beyond).

\*A formal term defining research protocols preceding the automated online Institutional Research Information Services (IRIS) system of the Calgary Human Research Ethics Board.

2. **The Essence of Trauma Informed Care: Back to Basics: The Clinical Perspective**

Author(s): Jennifer Kuntz, Sandra Cheung, Brian Marriott, David Cawthrope, Avril Deegan, Andrea Perri

**Background:** The original CDC-Kaiser Permanente Adverse Childhood Experiences (ACEs) study in 1997 uncovered a dose-response relationship between ACEs and negative physical and mental health outcomes; highlighting the importance of trauma-informed clinical care. In 2016, Alberta Health Services' Child and Adolescent Addiction and Mental Health and Psychiatry Program (CAAMHPP) began collecting ACEs across its continuum of care. As of September 2018, 7,730 unique clients have shared their ACEs with CAAMHPP clinicians. Through this, we learned 33% of CAAMHPP clients (aged of 0-18) have experienced four or more ACEs and 10% reported seven and above. The high prevalence of ACEs in CAAMHPP lead us to wonder, is there a difference with service/intervention delivery for clients who have experienced ACEs compared to those who have no or low ACEs? This study explores the clinical experience of providing treatment to children and adolescents with high ACE scores of 8-10.

**Methods:** Administrative data from the Regional Access and Information System (RAIS) was used to identify a cohort of CAAMHPP clinicians that have worked with children/adolescents with ACE scores of 8-10. A sample of clinicians from a variety of clinical settings and associated experiences were invited to participate in a 60 to 150 minute interview. Interviews were semi-structured in format which allowed for standardization across interviews but also have flexibility within each interview to allow for fluid conversation. Interview questions were based on a prior interview guide developed by the CAAMHPP Research Coordinator and was adapted by the ACE project facilitator and members of the Decision Support Evaluation team to focus on various aspects of working with children/adolescents who had experienced childhood trauma. Interviewees were also asked about their clinical backgrounds, impressions of the ACE survey, and their experiences with vicarious trauma.

**Results:** Nineteen clinicians from inpatient, day treatment, specialized services, and general community outpatient were interviewed. Interviewees included Psychologists, Social Workers, or Family Counselors, all with a range of experiences in the mental health field (1-34 years) and various self-identified clinical expertise and training (e.g. Eye Movement Desensitization and Reprocessing, Trauma Focused Cognitive Behavioral Therapy, Prolonged Exposure, etc.). Overall, all clinicians described the need to approach/deliver services differently for clients with significant childhood trauma. Specifically, challenges identified included: working

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within a disease driven system, a philosophical shift with regards to what constitutes as treatment “success” or treatment “completed”, allowing for a different “pace” of treatment, continuity of care across programs and systems, and provision of supports (e.g. basic needs, mental health care) to caregivers. Generally, clinicians observed many clients with childhood trauma frequently come from adverse toxic environments with unmet basic needs; all of which contributes to clients feeling physically and emotionally unsafe. Consequently, their clinical approaches have required them to go back to the basics to focus on establishing trust and maintaining a client’s sense of safety.

### 3. **A proposal on exploring nutrition, gut health, and inflammation in anorexia nervosa and obsessive-compulsive disorder.**

Author(s): Macphail, E., Reimer R., Paul, A.

**Background:** Anorexia nervosa (AN) and obsessive-compulsive disorder (OCD) are illnesses that are associated with cognitive rigidity and often begin in adolescence and negatively impact long-term health and quality of life. Young females have an increased risk of developing these illnesses, which have also been associated with autoimmune conditions. With their similarly increased zinc deficiency risk, the overlap amongst these conditions’ risk factors and symptoms becomes interested. Zinc deficient animals have altered gut microbiota, and both zinc deficiency and gut dysbiosis are associated with systemic inflammation. Neural zinc levels affect neuroplasticity (and hence, cognitive flexibility), and zinc supplementation can improve both mental health and immune system function.

**Purpose:** To investigate, in young women with AN/OCD, compared to healthy controls, associations amongst zinc status, gut microbiota, inflammation, cognitive flexibility, and mental illness symptoms.

**Hypothesis:** It is expected that individuals with AN or OCD will be more likely to be zinc deficient than healthy control peers, and that lower zinc levels will be associated with reduced gut microbiota diversity and greater inflammation, and subsequently with increased cognitive rigidity/symptom severity.

**Key Methods:** Mental illness symptoms will be assessed using interview and self-report symptom measures, and cognitive flexibility via Berg’s Card-Sorting Test, Trail-Making Tests A&B, and the Haptic Illusion Task. Zinc status will be analyzed via intake (three-day food record), serum, and hair. Inflammatory markers will include calprotectin, zonulin, and TNF-alpha, and stool sample analysis will assess gut microbial diversity.

### 4. **Systematic review and meta-analysis of associations between pregnancy-related anxiety and child development**

Author(s): Stephana J. Cherak, Jenna C. Thomas, Tyler Williamson, Gerald F. Giesbrecht

**Background:** Anxiety during pregnancy is common and a serious health concern. Pregnant women experience the same variety of anxiety symptoms and disorders that are present in non-pregnant women (e.g., generalized anxiety, social anxiety), but they may also experience pregnancy-related anxiety (PrA) which is characterized by pregnancy specific fears and worries. Considerable evidence suggests PrA is more strongly related to maternal and child outcomes than are general anxiety and depression, suggesting PrA constitutes a useful clinical construct. However, studies examining relations between PrA and child outcomes have reported on various child outcomes and used different psychometric instruments, thus the overall meaning of findings is unclear. Here we present a systematic review and meta-analysis of studies linking PrA to child developmental outcomes to distill and clarify extant findings in this growing body of literature.

**Methods:** Relevant studies published until May 2018 were identified through database searches in MEDLINE, CINAHL, EMBASE, and PsycINFO. We included data from human observational studies designed or intending to measure PrA using a PrA specific assessment tool and any child development outcome. For each included study a correlation between maternal PrA and a measure of child development was recorded. Owing to heterogeneity of child development outcomes and a wide variety of measurement scales and subscales, a meta-analysis was performed only for temperamental negative affectivity.

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**Results and Conclusions:** We identify 12 studies that attempt to establish associations between PrA during pregnancy and child developmental outcomes. The most consistent evidence from methodologically sophisticated prospective longitudinal studies lead to conclusion that PrA experienced during pregnancy has negative consequences on child development including evidence regarding internalizing/externalizing behaviours and temperamental outcomes. Meta-analysis on temperamental negative affectivity shows positive association with PrA, and negligible between-study heterogeneity ( $r = 0.27$ , 95% CI 0.19 to 0.34,  $p < 0.001$ ,  $I^2 = 0.0\%$ ). Increased PrA also associates with increased risk for poor neurocognitive development, however, these results are not replicated consistently across studies since we located several papers reporting null effects. Additional longitudinal cohort studies using measures already employed in literature are required to conduct necessary meta-analysis and fully elucidate effects of PrA on child development. Through discussion, we provide suggestions for future research to carefully consider selection of PrA instrument and offer several recommendations enable greater comparability across studies investigating developmental programming consequences.

#### 5. **Automated, continuous home-cage monitoring of sucrose preference in mice**

Author(s): Govind Peringod, Corin Kuang, & Alexander McGirr

**Background:** Sucrose preference is widely used for the study of anhedonia. This test involves a two-bottle choice and determining a ratio between consumed sucrose and control solution. Yet, to identify which animal has consumed the solution, animals must be individually housed for the test, which is itself a stressful manipulation that can impact the validity of the test, and a complex behaviour is collapsed into a single time point due to the lack of temporal resolution. Here we report a fully-automated ‘lickometer’ for continuous monitoring of fluid consumption from two or more ports in the home-cage setting.

**Methods & Results:** We designed a system using low-cost, commercially-available sensors and actuators integrated on a custom-designed printed circuit board (PCB) that interfaces with an open-source prototyping platform (Arduino). This system uses: a custom 3D-printed cage-attached chamber; a Sparkfun RFID (SEN-09963) and infrared break-beam sensor to detect animal location; a 12-port capacitance-sensor (Adafruit MPR121) to detect animal licks; two high-switching-frequency, liquid-delivery solenoids (GEMS MB202) to dispense small volumes of liquid; and an Adafruit SD-card reader (Adafruit MicroSD). We developed control software in the Arduino Integrated Development Environment (IDE) that can be readily modified by a user with limited technical training and access to a Windows/Mac device.

**Conclusions:** We have developed an open-source ‘lickometer’ for continuous, experimenter-independent measurements of drinking activity of mice in a naturalistic setting. This permits longitudinal monitoring of sucrose preference, and provides temporal resolution for this complex behaviour.

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#### Session 2B - Chair: Dr. Gina Dimitropoulos

##### 1. **School Mental Health: Perceptions of Stigma and the Role of Educators**

Author(s): Emma Cullen, Andrew Luceno, Olivia Cullen, Gina Dimitropoulos

Stigma surrounding mental health is a common experience for Canadians (Patten et al., 2016). Perceived stigma or self-stigmatizing views about mental health is the top barrier to young people seeking help (Gulliver, Griffiths, & Christensen, 2010). In one Canadian survey, over two-thirds of respondents agreed that stigma was a barrier to students' accessing mental health services and 21% indicated that they "frequently" or "very frequently" saw students being bullied or unfairly treated due to mental health problems (Froese-Germain & Riel, 2012). Schools are an important site of mental health and stigma prevention and intervention as well as a site of collaboration between teachers, school personnel, counsellors, families and students. Based on results from a school-based mental health research project being carried out in two high schools in Alberta, this presentation will share findings from qualitative interviews with teachers and school staff. Educators frequently responded that stigma was not a problem in their schools, or that it was less of an issue than it used to be. However, they were also able to describe situations or experiences that could be understood as stigmatizing. Educators often believed that they had an important role in addressing mental health and stigma in schools, though others indicated they did not believe it should be there role. Results from this research show that stigma is a complex topic and addressed in many different ways by educators within schools. Understanding the perceptions of teachers and school personnel provides important information about how schools address mental health and stigma, and support students.

##### 2. **More than simply "letting go": Stakeholder Perspectives on Parental Roles in Health Care Transition**

Author(s): Brooke Allemang, Gina Dimitropoulos, Susan Samuel, Elizabeth Morgan-Maver, Andrew Mackie, Jorge Pinzon

**Background:** Multiple life transitions, psychosocial stressors and developmental considerations make the transfer to adult care for some youth with special health care needs (YSHCN) a particularly vulnerable period. Parents play a pivotal role in supporting youth to prepare for the transition from pediatric to adult services, however, this shift in responsibility can be challenging. Little is known about the specific ways parents may support YSHCN in developing the skills needed to negotiate the transition to adult services and to adulthood more broadly. The purpose of this qualitative study was to elicit recommendations from key stakeholders about parents' roles in supporting this transition for YSHCN.

**Methods:** Semi-structured interviews and focus groups were conducted with 34 key stakeholders. Purposive sampling was used to recruit health care providers, policy makers and administrators with experience working with youth and young adults with special health needs in both the pediatric and adult health care systems in Alberta, Canada. Interviews and focus groups were recorded, transcribed verbatim and thematic analysis was used to develop codes and themes from the data.

**Results:** Four themes arose from the interviews and focus groups regarding parents' roles in health care transition: 1) Parents play an important role in preparing youth for transfer to adult care, 2) Parents require support with changing their role from "doer" to "advisor", 3) "Interdependence rather than independence", 4) Health care transition is one of many life transitions. Themes and clinical implications will be elaborated upon in this presentation.

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**Conclusion:** The process of transitioning from adolescence to young adulthood may be complicated for some YSHCN. Findings highlight the value of parental support in the transition process and concrete, developmental tasks that providers can support families in working towards. Participants underscore the importance of taking unique familial features into account and being flexible when implementing transition interventions. This is the first study of its kind to collate recommendations from transition experts outlining ways of promoting successful transitions to adulthood for YSHCN while incorporating parental support. Results may inform health care transition practices for health care providers working with YSHCN.

### 3. **Providing hope and support: The role of peer support across the lifespan in the mental health and addictions system**

Authors(s): Nigel Mayers, Illana Huckell, Canadian Mental Health Association Peer Support Workers, Linda Anderson, Laureen MacNeil, Dr. Michael Stubbs, Dr. Gina Dimitropoulos

Peer support services offer individuals an opportunity to engage with those who have common lived experiences. Utilizing peer support within emergency departments would support youth and families to navigate the complex mental health and addictions system. A family peer support service would provide information about what to expect in the emergency department and how to access mental health and addictions services after discharge. The aim of this presentation is to describe and summarize the initial findings about the role of peer support from the perspective of peer support workers whose use of knowledge and lived experience informs their work with clients/peers with mental health and addiction concerns. Qualitative interviews were conducted with peer support workers within the healthcare system and community based mental health programs in Southern Alberta. Using an inductive approach, thematic analysis has identified emerging themes from the qualitative interviews. These initial findings will be presented here.

Emerging themes from qualitative interviews with peer support workers include 1) the unique and valuable role peer support workers play in providing hope and support to those in recovery, 2) equity and collaboration among peer support workers and other professionals, and 3) barriers and facilitators for integration of peer support within interdisciplinary healthcare teams.

Findings from this research will be utilized to inform the integration of a family peer support service with the Child & Adolescent Addiction, Mental Health & Psychiatry Program in the Emergency Department at Alberta Children's Hospital.

### 4. **“Give young people more power”: What youth have to say about transitioning to adulthood**

Author(s): Natalie Dawes, Sheliza Ladhani, Olivia Cullen, Gina Dimitropoulos

For youth engaged with multiple systems of care who experience mental health and/or addictions challenges, navigating the transition to adulthood can be more complex. These young people are at risk of adverse outcomes because of deficits in systems/sectors due to limited information sharing and decision-making, collaboration and communication. The aims of this province wide study are to: identify best practices and policies for enhancing coordination and collaboration across systems, and to improve transition and service experiences for young people as they move into adulthood. This study is being carried out in two-phases. Phase one includes qualitative interviews with young people ages 18-24, parents/caregivers, and service providers to understand their experiences with systems and perceptions of barriers, facilitators and challenges to systems collaboration. This presentation will focus on the results from youth interviews. 38 young people who were involved in various systems including justice, child welfare, mental health and education, participated in in-depth semi-structured qualitative interviews and focus groups. An inductive approach to thematic analysis was undertaken to identify themes. There are four main resulting themes: transitions to adulthood, systems experiences, youth contradictions, and recommendations. Categories within transition experiences include: ideas about adulting, relationships, and personal well-being. Categories within system experiences include: service experiences, and systems and societal discourses. Understanding the lived experiences of young people

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and engaging them in meaningful research participation can support systems improvement that will have positive impacts for youth transitioning to adulthood.

#### 5. **Perspectives from primary care providers on caring for adolescents and young adults with physical health and/or mental health conditions transitioning to adult-oriented care**

Author(s): Kyleigh Schraeder, PhD (R. Psych).; Susan Samuel, MD, MSc; Kerry McBrien, MD, MPH; Jessica Li, Renee Farrell, MD; Gina Dimitropoulos, PhD.

**Background:** Transitioning from pediatric to adult care is a challenging process for adolescents and young adults with chronic conditions, including mental health issues. Although having a regular source of primary care is recommended, there is little evidence or policy on the role of family physicians for adolescents transitioning from pediatric care. Perspectives from primary care providers are needed to better understand how to optimally engage primary care during the transition period.

**Methods:** A generic qualitative inquiry was conducted. Primary care providers, including family physicians and other members of the primary care team (e.g., nurses, social workers), with experience caring for adolescents/young adults with chronic conditions were recruited across the Primary Care Networks in Calgary, Alberta. Participants were asked about their role during the transition period, and existing barriers and/or facilitators to providing primary care for this population. A total of 18 individual interviews were completed. Data were analyzed using thematic analysis and the Framework Method.

**Results:** All participating family physicians described themselves as “comfortable” and “willing” to accept or take on responsibility of care for adolescents and young adults with chronic physical health and/or mental health conditions. At the same time, participants acknowledged potential barriers faced by their colleagues in primary care to do the same. Participants perceived unique “advantages” in their role as a primary care provider for adolescents and young adults with chronic conditions. The opportunity to establish longitudinal, “consistent” and “trusting” patient-provider relationships with their young patients (and caregivers/family members) emerged as a major theme. Yet, numerous barriers to establishing these continuous patient-provider relationships in a primary care setting were reported. These included a lack of integration of primary care and specialist care services, and a limited awareness of appropriate (and available) resources and supports for young adults, especially those with ongoing mental health concerns.

**Conclusions:** For adolescents transitioning from specialist pediatric care to adult-oriented care, opportunities to improve care exist in the primary care system. This study provides valuable perspectives on how primary care providers can be optimally involved before, and after, their patients turn 18 years old. Suggestions for overcoming perceived barriers will be discussed.



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### Poster Presentations

1. **Saphenous nerve ligation elicits widespread alterations in cortical dynamics**

Author(s): Donovan M Ashby, Jeffrey LeDue, Timothy H Murphy, Alexander McGirr.

**Background:** Chronic neuropathic pain is accompanied by cortical functional reorganization that may contribute to hyperalgesia and dyesthesia. Saphenous nerve ligation in mouse is a well-validated animal model of neuropathic pain that produces hyperalgesia circumscribed to the hindlimb. While cortical alterations have been observed in specific regions in various models of neuropathic pain, widespread alterations have been difficult to capture due to limitations in recording activity across a broad cortical expanse. Mesoscale cortical imaging leverages optical sensors of neuronal activity to image across a wide expanse of cortex simultaneously, permitting large-scale network characterization and its impact on sensory processing.

**Methods:** Saphenous nerve ligation, or sham, was performed in mice and after 10 days we performed voltage sensitive dye (VSD) imaging using a large bilateral craniotomy. Under light isoflurane anesthesia, we performed sensory mapping of the affected limb and unaffected locations at multiple stimulus intensities, and acquired spontaneous activity to characterize large-scale network reorganization.

**Results and Conclusion:** While the hindlimb primary sensory-evoked response was unaffected, the propagating wave of activity was markedly reduced in ligated mice. We observed widespread alterations in spontaneous cortical dynamics were observed, including power spectra alterations and functional connectivity changes. These results reveal widespread cortical changes in response to a localized peripheral insult, with implications for novel circuit level interventions in neuropathic pain and other diseases.

2. **Clonidine in the treatment of behavioural disturbances in patients diagnosed with autism spectrum disorder: a systematic literature review**

Author(s): Krystyna Banas, Brett Sawchuk

**Background:** Agitation and aggression are commonly cited reasons for psychiatry consultation for individuals of all ages diagnosed with autism spectrum disorder (ASD). While risperidone and aripiprazole have FDA-approved indication for management of ASD-associated irritability, they are not universally effective and carry substantial risk of adverse effects. This often necessitates use of medications off-label to assist in management of behavioral dysregulation. Clonidine, an alpha-2 receptor agonist, is indicated for treatment of hypertension, ADHD in children, and tics in Tourette's disorder; however, it is also utilized in management of behavioral challenges in the context of ASD. This review focuses on examining the literature supporting clonidine's use as treatment of challenging behaviours in the ASD population.

**Methods:** Systematic search of MEDLINE, EMBASE, and PsycINFO databases resulted in 540 unique records. Ten publications were relevant to this review.

**Results:** Two cross-over studies, one open-label retrospective study, and seven case reports were identified. Overall, the controlled studies suggested benefit from clonidine versus placebo. Caregivers typically noted improvement in patient behaviour with clonidine versus baseline. Clonidine was generally well-tolerated, with temporary sedation as the most consistently reported adverse effect. Despite being an anti-hypertensive medication, few discontinued clonidine due to hypotension or bradycardia.

**Conclusion:** Clonidine has a limited evidence base for use in the management of behavioural problems in patients with ASD, with most evidence originating from case reports. Given the paucity of pharmacological options for addressing challenging behaviours in ASD patients, trialing clonidine off-label may be an appropriate and relatively cost-effective pharmaceutical option for this population.

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#### 3. **Prenatal Glucocorticoids and Child Neuroimaging: A Systematic Review**

Author(s): Stephana J. Cherak, Raha Bahador, Dmitrii Paniukov, Gabriela C. Lopez, Tyler Williamson, Catherine Lebel, Gerald F. Giesbrecht

**Background:** The fetal programming hypothesis suggests adverse maternal prenatal experiences alter the intrauterine environment, thereby influencing offspring health and disease outcomes. There is growing interest in role of adverse maternal glucocorticoids on offspring neurodevelopment and subsequent vulnerability to mental illness. Evidence suggests both elevated endogenous glucocorticoid, cortisol, and exposure to synthetic glucocorticoids during pregnancy have specific effects on child outcomes and associate with long-term child development. Recent advances in neuroimaging techniques provide anatomical and functional images to link child brain with behavioral, cognitive and neurological outcomes. A review of association between maternal prenatal cortisol or synthetic glucocorticoid intervention and child brain outcome is lacking. Here we distill and clarify extant findings in this growing body of literature.

**Methods:** Relevant studies were identified through database searches in MEDLINE, EMBASE, and PsycINFO. We included data from observational studies designed to associate maternal prenatal cortisol or administration of glucocorticoid with child neuroimaging outcomes.

**Results:** 13 studies were identified after applying inclusion/exclusion criteria. Studies were grouped according to maternal predictor variable and neuroimaging technique. Owing to heterogeneity of child brain outcomes meta-analysis was not performed.

**Conclusions:** Prenatal exposure to maternal and synthetic glucocorticoids likely exerts programming effects on fetal neurodevelopment with persisting consequences into childhood. However, significant gaps and confusions in literature on specific relationship of maternal endogenous cortisol or exposure to synthetic glucocorticoid with child brain outcome are evident. This is likely because different brain regions do not develop in synchrony but rather result of multitude of developmental processes in distinct regions each with individual development rates and timings. Therefore seemingly subtle differences in study design could lead to markedly different associations. Careful consideration must be given to the research question addressed before deciding which brain imaging technique to use; suggestions are given. Several recommendations to enable greater comparability across studies investigating programming on child neurodevelopment are discussed.

#### 4. **Anti-Neuronal Cell Surface Antibodies in Treatment Resistant Schizophrenia**

Author(s): Mark Colijn MSc, MD; Zahinoor Ismail MD, FRCPC

Schizophrenia is a phenotypically heterogenous, and poorly understood disorder. While its aetiology is likely multifactorial, immune system dysfunction has increasingly been implicated in its development. As psychotic symptoms occur frequently and prominently in autoimmune encephalitis (AE), and given that psychosis may be the first clinical manifestation of the illness, concerns exist that AE may be misdiagnosed as schizophrenia in a small subset of individuals. Although there is some evidence to suggest that misdiagnosis may occur in rare cases, the majority of existing studies have primarily included a first episode sample, and have relied exclusively on serum testing, rather than on CSF testing (which is both more sensitive and specific), making interpretation of the results difficult.

This pilot study is designed to cross sectionally determine the prevalence of anti-neuronal cell surface antibodies commonly implicated in AE, in both the serum and CSF of 75 treatment resistant schizophrenia patients; a likely enriched population with respect to the presence of such antibodies. A neurological control group is included for comparison. This study has significant clinical implications, as positive results should alert psychiatrists to the possibility that a small subset of patients with treatment resistant schizophrenia may actually have AE. Moreover, phenotypic characterization of positive cases may allow for improved identification of such patients. This is clinically important as it may allow such individuals to receive more appropriate/effective immune related treatments, such as steroids, IVIG, or plasmapheresis, and prevent them from continually being unnecessarily exposed to the adverse effects of antipsychotic medications.

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#### 5. **The Impact of Persistent Negative Symptoms on Functioning and Defeatist Beliefs in Youth at Clinical High Risk for Psychosis**

Authors: Daniel Devoe, Lu Liu, Kristen Cadenhead, Tyrone Cannon, Barbara Cornblatt, Tom McGlashan, Diana Perkins, Larry J. Seidman, Ming Tsuang, Elaine Walker, Scott Woods, Carrie Bearden, Daniel Mathalon, and Jean Addington

**Background:** Persistent negative symptoms (PNS) are defined as enduring moderate negative symptoms while controlling for principal sources of secondary negative symptoms. PNS symptoms have been associated with poor functional outcomes in schizophrenia. Furthermore, in schizophrenia negative symptoms and poor functioning have been reportedly associated with defeatist beliefs (e.g., “I always fail”). Youth at clinical high risk (CHR) for developing psychosis often demonstrate negative symptoms, poor functioning, and defeatist beliefs. The goal of this study was to determine if negative symptoms were associated with poor functioning and defeatist beliefs in a CHR longitudinal cohort.

**Method:** CHR (N=764) participants were recruited for the North American Prodrome Longitudinal Study (NAPLS 2) at 8-sites across North America. Negative symptoms were rated on the Scale of Prodromal Symptoms (SOPS) at baseline, 6, 12, 18, and 24 months. For this study negative symptoms were restricted to social anhedonia (N1), avolition (N2), and expression of emotion (N3) based on recommendations from the NIMH-MATRICES consensus statement on negative symptoms. PNS were defined as having one of these three negative symptoms scored  $\geq 4$  (i.e., moderately severe to extreme) for a period of one year. Depressive symptoms were assessed with the Calgary Depression Scale for Schizophrenia (CDSS). To assess defeatist beliefs the Brief Core Schema Scale (BCSS) was utilized as a proxy to evaluate negative self-beliefs (e.g., “I am worthless”) and positive self-beliefs (e.g., “I am valuable”). Generalized linear mixed models for repeated measures were used to examine changes over time between and within groups to accommodate for missing data and account for intra-participant correlations.

**Results:** Sixty-seven CHR individuals had PNS. Mixed-effect models demonstrated that the PNS group had significant global, social, and role functioning deficits at baseline, 6, 12, 18, and 24 months compared to CHR individuals without PNS (n=673). Moreover, functioning did not improve in the PNS group while functioning in the group without PNS significantly improved over time. There were no significant differences between the groups on depressive symptoms with the CDSS. The PNS group had significantly higher BCSS self-negative beliefs at 12 and 24 months compared to the group without PNS. Individuals without PNS had significantly higher positive self-beliefs (e.g., “I am valuable”) at baseline, 6 months, 12 months and 24 months compared to the PNS group.

**Conclusions:** The results indicate that in the NAPLS cohort 10% of CHR individuals have PNS. Moreover, the PNS group demonstrated significant and persistent global, social, and role functioning deficits compared to those without PNS. The group without PNS had higher levels of positive beliefs (e.g., “I am successful”), which may indicate a protective factor against developing PNS.

#### 6. **Treatment and Global Functioning in Youth at Clinical High Risk for Psychosis: A Systematic Review and Meta-Analysis**

Author(s): Daniel Devoe, Jean Addington

**Background:** Poor global functioning in youth at clinical high risk (CHR) for psychosis has been associated with sleep disturbances, neurocognitive impairments, and transition to psychosis. A recent meta-analysis demonstrated that the CHR state is characterized by large functional impairments similar to those with psychotic disorders and thus require treatment. However, the impact of different treatment types on global functioning remains unknown. Thus, the goal of this systematic review and meta-analysis was to determine the impact of interventions on global functioning in those at CHR for psychosis.

**Methods:** We systematically searched the electronic databases PsycINFO, Embase, CINAHL, EBM, and MEDLINE with no date, geographical, or language restrictions. Studies were selected if they conducted a

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randomized control trial (RCT) in CHR for psychosis samples and reported changes in global functioning using either the Global Assessment of Functioning (GAF) or Social and Occupational Functioning Assessment Scale (SOFAS). Data were evaluated using random effects pairwise meta-analyses, separated by treatment type, and stratified by time. Effect sizes were reported as the standardized mean difference (SMD) and 95% CIs for the comparison between control and experimental conditions. Heterogeneity was assessed using Tau<sup>2</sup> and the I<sup>2</sup> index.

**Results:** Fourteen studies met our inclusion criteria. Interventions included antipsychotics (k=2), cognitive behavioural therapy (CBT, k=6), cognitive remediation (k=1), family therapy (k=1), integrative psychosocial therapy (k=1), and omega-3 (k=3). Meta-analyses could only be performed for CBT and omega-3 trials. CBT did not significantly improve global functioning at 6-months (SMD = -0.08; 95% CI = -0.35, 0.19, I<sup>2</sup>= 48%; P=.58, 5 studies, N= 506), 12-months (SMD = 0.07; 95% CI = -0.10, 0.25, I<sup>2</sup>= 0%; P=.43, 6 studies, N= 501), 18-months (SMD = 0.09; 95% CI = -0.21, 0.39, I<sup>2</sup>= 0%; P=.56, 2 studies, N= 168), and long-term (24-48 months) follow-up (SMD = 0.01; 95% CI = -0.28, 0.29, I<sup>2</sup>= 0%; P=.96, 3 studies, N= 190). Omega-3 did not significantly improve global functioning at 6-months (SMD = 0.35; 95% CI = -0.40, 1.09, I<sup>2</sup>= 91%; P=.36, 3 studies, N= 390) and 12-months (SMD = 0.52; 95% CI = -0.53, 1.56, I<sup>2</sup>= 94%; P=.33, 3 studies, N= 330).

**Conclusions:** This systematic review and meta-analysis established that neither CBT nor omega-3 significantly impacted global functioning versus controls in those at CHR for psychosis. The majority of trials utilized the GAF which is greatly influenced by impairment in psychiatric symptoms. Additionally, RCTs using the Comprehensive Assessment of At-Risk Mental States (CAARMS) criteria for CHR included functioning on the SOFAS as a diagnostic criterion. Future treatment studies may wish to use scales that specifically address social and role functioning to further elucidate the impact of treatment on functioning.

#### 7. **The efficacy of music therapy in the management of autism spectrum disorders (ASD) in children and adolescents**

Author(s): Qasim Hirani, Andrew Bulloch (supervisor)

**Background:** Music therapy has seen increasing prominence as an adjunct in the management of children and adolescents with various psychiatric conditions especially that of autism spectrum disorder (ASD). However, evidence supporting the efficacy of music therapy has been scarce until recently. With an increasing number of randomized clinical trials (RCTs) and related studies augmenting previous case reports suggesting the utility of music therapy, this review will explore recent literature addressing the efficacy of music therapy in ameliorating the various symptoms and overall functioning of children and adolescents with ASD.

**Methods:** Databases including Medline (OVID), PubMed, and EBSCO were searched for articles related to “music therapy” and “autis\*”. Articles were reviewed and included with the primary intervention being music therapy (or related protocols) and outcomes including various symptom and/or behaviour parameters of ASD. Music therapy protocols mainly included improvisational music therapy and/or active music therapy (involving the subjects actively making music), though some resources addressed passive music therapy (involving the subjects passively listening to music). Further articles were explored based on bibliographies of articles found through database searches. Articles were excluded if the subjects were over 18 years of age (beyond the scope of Child & Adolescent Psychiatry).

**Results:** Articles were found that explored the utility and/or efficacy of music therapy on various symptoms and behaviours of ASD, including social interaction and communication skills (predominantly), social affect, language, joint attention, cognitive skill, and challenging behaviours (including aggression and self-injurious behaviours), among others. The efficacy of music therapy was suggested in some studies but considered not significantly different from treatment as usual in others (including the recent TIME-A RCT study of the effect of improvisational music therapy on ASD symptom severity).

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#### 8. Correlation between smartphone addiction and symptoms of depression, anxiety, and attention-deficit/hyperactivity disorder in South Korean adolescents

Author(s): Seunggon Kim, Jong Park, Huntae Kim, Zihang Pan, Yena Lee, Roger McIntyre

**Background:** Excessive smartphone use has been associated with numerous psychiatric disorders. This study aimed to investigate the prevalence of smartphone addiction and its association with depression, anxiety, and Attention-Deficit Hyperactivity Disorder (ADHD) symptoms in a large sample of Korean adolescents.

**Methods:** A total of 4512 (2034 males and 2478 females) middle and high school students in South Korea were included in this study. Subjects were asked to complete a self-reported questionnaire, including measures of the Korean Smartphone Addiction Scale (SAS), Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), and Conners-Wells' Adolescent Self-Report Scale (CASS). Smartphone addiction and non-addiction groups were defined using SAS score of 42 as a cutoff. The data was analyzed using multivariate logistic regression analyses.

**Results:** 338 subjects (7.5%) were categorized to the addiction group. Total SAS score was positively correlated with total CASS score, BDI score, BAI score, female sex, smoking, and alcohol use. Using multivariate logistic regression analyses, the odds ratio of ADHD group compared to the non-ADHD group for smartphone addiction was 6.43, the highest among all variables (95% CI: 4.60-9.00).

**Conclusions:** Our findings indicate that ADHD may be a significant risk factor for developing smartphone addiction. The neurobiological substrates underlying smartphone addiction may provide insights on to both shared and discrete mechanisms with other brain-based disorders.

#### 9. Mental Health and School Success: Preliminary results from a longitudinal cohort study of an adolescent population

Authors: Emilie Magaud, Asmita Bhattarai, Scott Patten, Andrew Bulloch, Paul Arnold

**[Background]** It is estimated that 20% of children and adolescents in Canada suffer from a mental illness, and many more experience "sub-threshold" symptoms, falling short of diagnostic criteria but associated with significant distress. There is substantial evidence that having a mental illness is associated with a higher rate of drop-out from high school. However, few studies have studied the impact of psychiatric symptoms on key school outcomes other than drop-out, such as academic performance and absenteeism. Furthermore, nothing is known about the extent to which parent, family and school factors modify the association between mental health and school success despite the relevance of this knowledge for planning preventative and early interventions.

As part of the presented study, our goals are to 1/ determine the nature of association between indicators of mental health and school success (including school achievement and attendance) in early to mid-adolescence, and 2/ determine which factors modify adverse influences of psychiatric symptoms on school success.

**[Methods]** This study was conducted over a 15-month period (April 2017 – December 2019) and involved surveying grade 9 students attending 2 local High Schools. Voluntary students, who received parental consent, were surveyed during 1 school period, at the same time, in their regular classroom. This online survey comprises self-report questionnaires examining common mental symptoms and risk and protective factors (including stigmatizing attitudes). The School Board also provided baseline data from already collected information such as percentage of attendance, grades, school engagement, etc.

**[Results]** At baseline, 215 grade 9 students participated. Using the Fisher's exact test of independence and attendance rate as outcome measure, preliminary analysis showed that depression, both at clinical levels ( $p=0.034$ ) and depressive symptoms present only ( $p=0.028$ ), are strong indicators of a risk of lower attendance. Students with one or several disabilities coded by the school, such as emotional, learning or medical disabilities, also show significant lower attendance. This is the case when this variable is categorized as presence or absence of any disability ( $p<0.001$ ) and when physical and emotional disabilities are separate ( $p<0.001$ ). Suffering from anxiety, ADHD, experiencing life events do not seem to significantly impact attendance.

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**[Conclusions]** These preliminary analyses highlight the issue of students suffering from potentially undiagnosed clinical depression, but equally the impact of suffering from some symptoms only, as well as having a disability that impairs functioning enough to be assessed, coded and reported to the school. Further analyses may reveal that these variables are associated, or whether they are connected to students or parental stigmatizing attitudes toward mental health (including disabilities such as reading). Next analyses will look at grades and potential association with mental health and psychological risk factors.

#### 10. **Detecting Apathy in Individuals with Parkinson's Disease: A Systematic Review**

Author(s): Bria Mele, MSc; Daria Merrikk; Zahinoor Ismail, MD; Zahra Goodarzi, MD, MSc

**Background:** Individuals experiencing apathy in Parkinson's disease (PD) have a lack of emotion, passion, and motivation. It is reported 40% of individual's with PD experience apathy. Apathy often overlaps with other comorbidities such as depression, and is sometimes difficult to detect or distinguish. To examine diagnostic accuracy of apathy detection tools compared with a gold standard (clinician diagnosis) among adult outpatients with PD.

**Methods:** Six research databases were searched. All abstracts and full-texts were screened in duplicate. Studies were included if they reported diagnostic accuracy measurements including sensitivity and specificity of tools for detecting apathy in outpatient PD populations. Data extraction was completed by one study author and verified by a second. Risk of bias assessments were completed in duplicate using the QUADAS-2 tool for all included studies.

**Results:** A total of 1,007 full-text articles were reviewed with eight full-text articles included for synthesis. The gold standard was considered a clinician diagnosis since apathy is not currently defined in the DSM or ICD. Pooled prevalence of apathy was 28% (95% CI 21.1 – 35). There were 18 screening tools identified throughout the literature, seven of which were validated. The Apathy Evaluation Scale had the best-reported sensitivity of 0.90 and specificity of 0.90. The Apathy Scale had a sensitivity of 0.66 and the highest specificity of 1.

**Conclusions:** Eight tools are validated against clinician diagnosis for apathy screening in PD populations. The Apathy Evaluation Scale provides the highest sensitivity and specificity values, is brief, and has self, informant, and clinician rated scales. The Apathy Scale was designed for use within PD populations, is brief and easy to use, but with lower sensitivity. It is important for health care practitioners to be aware of these tools, to improve recognition of apathy in PD populations.

#### 11. **Neurocircuitry of impulsivity across different psychiatric disorders**

Author(s): Camilia Thieba, Frank P. MacMaster, Paul Arnold

**Background:** Impulsiveness is the tendency to act with little forethought, reflection, or assessment of consequences. It's a feature of personality in healthy individuals, and a construct that underlies many psychiatric disorders such as attention deficit hyperactivity disorder (ADHD) and Bipolar disorder. Impulsivity is a complex construct that involves trait impulsivity, impulsive action, and impulsive choice. Identifying the neural underpinnings of impulsive behavior and impulsivity-related traits in healthy individuals and clinical populations has been the focus of recent research. These have shown the involvement of brain networks involved in impulse control, reward anticipation and decision making. However, the core deficits associated with impulsivity in different clinical populations remains elusive.

**Methods:** Using neuroimaging data from the UCLA Consortium for Neuropsychiatric Phenomics, we explored the differences and similarities in functional connectivity of 203 patients diagnosed with ADHD, Bipolar Disorder and Schizophrenia, and healthy control individuals. Independent component analysis (ICA) was performed on the entire dataset using FSL (V5.0.9) Melodic (V3.14). Representative masks of the default mode network (DMN), ventral striatum (VS), orbital frontal (OF) and anterior cingulate gyrus (ACC) networks were generated using Neurosynth. Dual-regression was applied to identify the corresponding subject-level ICA maps. Pearson's correlation coefficients were computed between the seed's time course and the time course of all other voxels and converted to z-scores using the Fisher transformation. Independent samples t-tests were

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performed to compare the connectivity differences for each network. Age, sex and substance use were included as covariates.

**Results and Conclusion:** Compared to control, Schizophrenic patients displayed increased functional connectivity to networks associated with the DMN, VS, ACC and reduced connectivity to the OF. Bipolar patients had increased connectivity to the DMN and reduced connectivity to the OF. Interestingly ADHD patients had decreased functional connectivity to the VS related network compared to control, but no differences for the DMN, OF and ACC were detected. These preliminary results suggest that the neural basis for impulsivity are different for these psychiatric disorders and provide additional insights into the neurobiological basis of these disorders.

#### 12. **A Case of Clinically Significant Reduction of Tardive Dyskinesia with Adjunctive Aripiprazole Extended Release Injectable Suspension with Zuclopenthixol Decanoate in a Complex patient with Schizoaffective Disorder**

Authors: Lindsey Ward, David Tano, Zahinoor Ismail

**Background:** The same barriers that prevent persistently and severely psychiatrically ill patients from adhering to oral psychotropic medication regimens (ie. cognitive symptoms of schizophrenia, residual positive symptoms, anosognosia, cultural factors, marginalized living conditions) also prevent adherence to many available treatments for extrapyramidal symptoms (EPS) and tardive dyskinesia (TD). For patients who require long acting injectable antipsychotic formulations, resulting EPS and TD can lead patients to disengage from treatment, and few options exist to ameliorate these side effects.

**Clinical case:** A 46 year old man with schizoaffective disorder, bipolar type, complicated by poor insight and sexual assault charges in the context of a manic episode, was stabilized on zuclopenthixol decanoate 200 mg IM every 14 days and managed on a community treatment order. He developed distressing extrapyramidal symptoms (EPS), however, including tardive dyskinesia (TD) characterized by large, visible movements of the head and neck. A switch to aripiprazole extended release injectable suspension did improve the EPS but was not an effective monotherapy for this man, even at doses of 700 mg every 28 days. Aripiprazole extended release injectable suspension 300 mg every 28 days was therefore added as an adjunct to zuclopenthixol decanoate resulting in longterm psychiatric stability without any further hospitalizations or legal charges, and his involuntary movements were reduced to only mild tremors of the arms and neck that were subjectively acceptable to the patient.

**Conclusion:** Although there are prior case reports of EPS improving with oral administration of aripiprazole, this case demonstrates a potential benefit of aripiprazole extended release injectable suspension for EPS including TD. Possible mechanisms for this clinical effect include partial agonism at D2 receptors resulting in dopamine stabilization, and partial agonism of 5-HT1A receptors leading to the activation of 5-HT1A autoreceptors and dopamine release.