Department of Pediatrics
University of Saskatchewan
Presents

2026 Child Health Research Trainee Day

Thursday March 26, 2026
12:00 pm - 4:00 pm

UNIVERSITY OF SASKATCHEWAN
College of Medicine
MEDICINE.USASK.CA

SASKKIDS
PEDIATRICS

JIM PATTISON
CHILDREN'S HOSPITAL
FOUNDATION

spring
SASKATCHEWAN
PEDIATRIC RESEARCH AND
INNOVATION GROUP

Child Health Research Trainee Day
Thursday, March 26, 2026
12:00 pm - 4:00 pm

12:00 - 1:00 pm Lunch

12:25 - 12:30 pm Welcome **(Dr. Darryl Adamko)** & Opening Remarks **(Mr. Troy Davis)**

12:30 - 1:15 pm **Dr. Veronica McKinney** (Keynote Speaker)

1:30 - 3:15 pm Long Presentations

Dr. Brooke Fedrau (Resident - Pediatrics)
Dr. Devon Christoffel (Resident – Pediatrics)
Dr. Dilpreet Bajwa (Resident – Pediatrics)
Dr. Matthew Chapelski (Post Doc Fellow – Kinesiology)
Dr. Thomas Jurrissen (Post Doc Fellow – Kinesiology)
Emma Finch (PhD-Health Sciences)
Jessica N. Jungwirth (Masters- Western College of Veterinary Medicine)
Natalia Alaniz-Salinas (PhD- Community Health and Epidemiology)
Omar Tohamy Abdalmotaleb (Masters – Kinesiology)
Robyn Klassen (Masters – Nursing)

11:00am – 12:00pm Poster Presentations (Category 3 - Graduate & Postgraduate)

Anya Jackson (Masters-College of Kinesiology)
Asfa Nazir (Masters- Western College of Veterinary Medicine)
Fatima Ali (PhD-School of Public Health)
Karlee Schoff (Masters – College of Pharmacy and Nutrition)
Samantha Hall (Resident – Pediatrics)

11:00am – 12:00pm Poster Presentations (Category 4 – Graduate)

Adrienne Nagy (Masters – College of Pharmacy and Nutrition)
Austin Gallant (Masters-College of Kinesiology)
Brooke Gessner (Masters – College of Pharmacy and Nutrition)
Kayla Harder (Masters-College of Kinesiology)
Maria Janser (Masters- Western College of Veterinary Medicine)
Rafique Khan (PhD-College of Kinesiology)
Zahra Ghafouri (PhD-College of Kinesiology)

11:00am – 12:00pm Poster Presentations (Category 5 - Undergraduate)

Brayden Lockinger (Undergraduate-Medicine)
Dawson Holt (Undergraduate-Medicine)
Dominic Ong (Undergraduate-Medicine)
Grace Braaten and Muhammad Awan (Undergraduate-Medicine)
Iris Yang (Undergraduate- College of Pharmacy and Nutrition)
Kate Korchinski (Undergraduate-Medicine)
Marina Liu (Undergraduate-Medicine)
Sierra Leonard (Undergraduate-Medicine)

11:00am – 12:00pm Poster Presentations (Category 6 – Undergraduates)

Aidan Doleman (Undergraduate- College of Kinesiology)
Andreea Ababei (Undergraduate- College of Medicine)
Emara Nada (Undergraduate- College of Medicine)
Georgia Heilman (Undergraduate - College of Arts and Science)
Hasnain Ali (Undergraduate - College of Arts and Science)
Ibrahim Al-Azem (Undergraduate- College of Medicine)
Lorynn Labbie (Undergraduate- College of Medicine)

3:15-3:45 pm Poster Presentations (Category 7 – Residents)

Dr. Erinna McMurtry (Resident - Pediatrics)
Dr. Jovana Miladinovic (Resident - Pediatrics)
Dr. Sarah Morin (Resident - Pediatrics)
Dr. Nikhail Mainra (Resident - Pediatrics)

4:00 pm Closing Remarks (Dr. Darryl Adamko)

Dr. Veronica McKinney

Presents,

Mino-ayâwin awâsisak: Good health and wellness for Northern Indigenous Children

Tansi. Nehiyaw niya. Dr. McKinney is a Cree woman whose family originates from northwest Saskatchewan. She was brought up in her traditional culture, and is the Director of Northern Medical Services, a Division in the College of Medicine, USask, which provides medical care to northern primarily Indigenous communities and municipalities. Dr. McKinney has a keen interest in research, innovation and education as well as a passion for improving health outcomes. Her knowledge and understanding of nehiyaw approaches, vast experience, ability to collaborate and ever present curiousity provide strong insight into challenges along with strengths and opportunities for improved health for all.

Long PRESENTATIONS
Category 1 PDF & PGME
1:30 - 3:15 pm

Early Diagnosis of Autosomal Recessive Agammaglobulinemia (IGLL1) via Kappa-Deleting Recombination Excision Circle (KREC) Newborn Screening in Saskatchewan, Canada

Brooke Fedrau, Karan S. Purewal, Darryl Adamko, Gina Martin, Candace Rypien, Nick Antonishyn, Luis Murguia-Favela

Introduction: Newborn screening for severe combined immunodeficiency (SCID) relies on T-cell receptor excision circles (TREC) as a biomarker for newly formed T cells[1]. This method, introduced in 2005, identifies SCID by detecting low or absent TREC levels, indicating T-cell lymphopenia[2,1]. Saskatchewan implemented SCID newborn screening in February 2022[2].

In addition to TREC-based SCID screening, Saskatchewan is the only province in Canada that has integrated Kappa-deleting Recombination Excision Circles (KREC) screening into its newborn screening program. KREC is a biomarker of newly formed B cells and has been proposed as a screening tool for primary B-cell immunodeficiencies such as X-linked agammaglobulinemia[3,2]. However, KREC screening is still being validated and has shown a high false-positive rate[3].

Methods: A retrospective chart review of all newborns who screened positive for low TREC or KREC levels in Saskatchewan since February 2022. Screening data were obtained from the Roy Romanow Provincial Laboratory, and clinical data were accessed via electronic medical records. A KREC Ct greater than 40 is flagged as abnormal (low or undetectable) and requires repeat testing. If KREC Ct remains greater than 40 on repeat testing after three weeks of age, the result is confirmed as abnormal and reported as screen-positive.

Results: A female patient was identified with absent KRECs on two newborn screens, with normal TRECs, excluding SCID but indicating profound B-cell lymphopenia. At eight weeks, she was clinically well. Immunologic evaluation demonstrated absent B cells (0.009 × 10^9/L), normal T cells, and normal BTK expression. Genetic testing revealed compound heterozygous IGLL1 variants: a paternally inherited missense mutation (c.425C>T) and a novel frameshift mutation (c.421del), likely de novo, both deemed likely pathogenic.

Addressing body image concerns for AYA oncology/HSCT patients: a national survey of Canadian HCP perceptions and practices

Devon D. Christoffel, Paul R. D'Alessandro

Introduction: Adolescent and young adult oncology/hematopoietic stem cell transplant (HSCT) patients, aged 15-39 (AYAs), represent a population with unique needs. Body image (BI) is a multi-dimensional construct involving thoughts and behaviours relating to appearance and function.1,2 AYAs endorse treatment-related BI concerns and desire healthcare provider (HCP)-initiated pre-treatment anticipatory counselling. AYAs report this is lacking, representing an unmet need.2 To address this, a survey of HCP perceptions and practices is required.

Purpose: Our cross-sectional study's primary aim describes Canadian HCP perceptions of BI concerns in AYA oncology/HSCT patients during distinct phases of care: diagnosis/treatment; early follow-up (<5 years from treatment); and survivorship (>5 years from treatment.) Our secondary aim describes HCP-reported interventions addressing BI concerns. Our exploratory aim describes patient characteristics associated with unmet/under-represented BI concerns.

Methods: A REDCap survey was distributed to Canadian HCPs via emails targeting national consortia. HCPs working with AYA oncology/HSCT patients in clinical settings were eligible to participate. HCPs provided demographic information; identified and rank-ordered BI concerns through different phases of care; and identified BI-targeted interventions they utilize. Listed concerns and interventions were determined a priori via literature review. Additional open-ended questions concerned specific demographics and/or treatment characteristics associated with greater concerns or higher/unmet needs. Descriptive statistics were utilized. Responses to open-ended questions will be analyzed using inductive thematic analysis.

Results: Fifty-six HCPs from 8 provinces responded (78.5% female, 39.3% pediatric hematologists/oncologists, 30.4% in practice 5-10yrs, 41.1% seeing 11-50 AYA patients yearly, 50% with no specific practice focus). A majority reported no formal training in addressing AYA BI concerns (50, 89.2%) and only a minority endorsed comfort in counselling on BI concerns (24, 42.9%). The most important changes (by mean ranking) at diagnosis/treatment included hair loss/changes (3.11), iatrogenic changes (4.23) and weight gain (4.64); at early follow-up included fatigue/endurance (2.87), iatrogenic changes (3.4), and physical attractiveness (3.67); and in survivorship included physical attractiveness (2.75), fatigue/endurance (2.96), and hair loss/changes (3.29). The most utilized interventions included psychology/psychiatry referral (40, 71.4%), nutrition-focused interventions (38, 67.9%), and physical/exercise-based therapies (37, 66.1%).

Discussion: HCP-reported BI concerns such as hair loss/changes and physical attractiveness largely matched patient-endorsed concerns.2,3 However, many providers identified a lack of comfort and training in addressing these needs, relying primarily on referral-based interventions to other allied HCPs. These data highlight potential discordance between the HCPs expected to provide anticipatory BI counselling and the HCPs who provide BI-targeted interventions. Future steps include additional participant recruitment and inductive thematic analysis for exploratory aims.

Early Outcomes of a Clinic-supported Open-source Artificial Pancreas System Program

Julia M. Zdybal, **Dilpreet Bajwa**, Munier Nour, Daphne Yau, Carrie Olynick, Krista Loessl & Mark Inman

Introduction: Diabetes care has benefitted from advancements in insulin pump systems, some of which have been developed by end-users and bypass regulatory body approval. In collaboration with BCDiabetes, our Pediatric Diabetes Clinic (Jim Pattinson Children's Hospital, Saskatoon SK) offers a clinic-supported open-source artificial pancreas system (OSAPS) program to their patients, in addition to offering three Health Canada approved insulin pump systems (Omnipod DASH®, Tandem t:slim® X2, and Medtronic MiniMed™ 780G).

Purpose: To assess the effect of the introduction of an OSAPS on CGM derived indices of glycemic control in a pediatric cohort.

Methods: We conducted a mixed retrospective and prospective observational cohort study of parameters of glucose control immediately pre- and post-OSAPS initiation (TIR, TAR, TBR, GMI, glucose variability, and mean glucose at 14, 30, and 90 days in addition to any adverse outcomes). Demographic data was obtained from patient EMR profiles and CGM parameters from Dexcom Clarity. Basis descriptive analysis and paired one-sided t-tests were employed.

Results: Seventy-eight participants (46 females, 59%), with a mean age of 12.7 years (+/- 3.6) and diabetes duration of 5.3 years (+/- 3.0), were enrolled and analyzed in the study. There were no reported episodes of severe hypoglycemia or DKA during the study period. TIR significantly increased by 16.14% (+/- 12.06), 14.50% (+/- 9.14), and 13.12% (+/- 9.00) at 14, 30 and 90 days ($p<0.0001$). At intervals of 14, 30 and 90 days, TBR significantly decreased by 0.64%, 0.72%, and 0.58%; average glucose decreased by 1.58 mmol/L, 1.33 mmol/L, and 1.19 mmol/L; and GMI decreased by 0.67%, 0.58%, and 0.51% (all $p < 0.001$). Stratified by age (<6, 6-<13, and ≥13), the most significant TIR improvement was seen in those ≥ 13 (14-day TIR +20.35% and 90-day TIR +15.06%, $p<0.0001$) compared to 6-<13 (12.59% and 10.42%, $p < 0.0001$); there were only 5 participants of age < 6 years.

Discussion: Across all measures of glucose control, there was a significant and sustained improvement across the study period, without any reported adverse outcomes. This study demonstrates that introduction of a clinic-endorsed OSAPS was safe and beneficial in a pediatric cohort.

Perceptions of Opportunities and Barriers to Physical Literacy from Children with Congenital Heart Disease

Matthew S. Chapelski, Leah J. Ferguson, Amanda Froehlich Chow, Charissa Pockett, Kristi D. Wright, Corey R. Tomczak, Marta C. Erlandson Introduction: Previous research has found that children with congenital heart disease (CHD) have lesion specific short- and long-term health risks that can be mitigated by engagement in physical activity and physical literacy development. By focusing on physical literacy instead of physical activity, we will get insights into what children with CHD believe facilitate or impede their competence, confidence, motivation, and understanding to be physically active. This project employed photovoice and focus groups to better understand the opportunities and barriers children with CHD face to developing physical literacy.

Methods: Our qualitative description study recruited eleven children with CHD from 7- to 16-years-of-age. First, children with CHD attended an information session to familiarize themselves with physical literacy and their photography task. Next children had four weeks to take photos of what they perceived as opportunities or barriers to their physical literacy development. After, children took part in an age and sex stratified focus group. Transcripts were analyzed using Reflexive Thematic Analysis.

Results: Eleven children were divided into three focus groups: (1) four males 7- to 11-years-of-age, (2) four males 12- to 16-years-of-age, and (3) three females 15- to 16-years-of-age. Four themes were created from the data: (1) Personalized Roadblocks, (2) Weather acts as a Gatekeeper, (3) Social Connectedness, and (4) Physical Literacy is a Diverse Pathway. The focus groups indicated that children with CHD's perception of barriers can be diverse including screen time and fatigue. In other words, there are no definitive barriers that restrict physical literacy development for all children with CHD. Weather can influence the environment to shift between barrier and opportunity based on the child's preferences. Finally, physical literacy is complex, diverse and influenced by many social connections and activities.

Conclusion: We found that barriers and opportunities for physical literacy development are similar to those that have been reported to impede children with CHD's physical activity engagement. Future researchers should collaborate with children with CHD to ensure physical literacy programs meet their individual needs.

Cerebral blood velocity kinetics to dynamic handgrip exercise remain intact in patients with Fontan circulation

Thomas J Jurrissen, M Rafique Khan, Adam MS Luchkanych, Kayla B Harder, Austin J Gallant, Enoch Yang, Marta Erlandson, Kristi D Wright, Charissa Pockett, Corey R Tomczak, T Dylan Olver

Patients with Fontan circulation (FTN) display cerebrovascular dysfunction. In addition, FTN is associated with impaired peripheral vascular responses to exercise, which contributes to their exercise intolerance. Given these characteristics, we tested the hypothesis that the middle cerebral artery blood velocity (MCA_{Vmean}) kinetic response to small muscle mass exercise using dynamic handgrip will be impaired in patients with FTN. Patients with FTN (2F/4M, 18 ± 3 years of age) and similarly-aged healthy controls (3F/7M, 16 ± 3 years of age, P=0.247) were instrumented to measure contralateral MCA_{Vmean} during handgrip exercise. Participants completed three maximal voluntary contractions (MVC). Following the determination of MVC, participants completed three bouts of five minutes of dynamic handgrip exercise at 40% MVC with a 1:1 duty cycle, with a three-minute recovery between bouts. The MCA_{Vmean} responses to dynamic handgrip were averaged for each participant. A mono-exponential model with time delay was used to evaluate the averaged MCA_{Vmean} responses to dynamic handgrip. Analyses were made using unpaired t-test, with significance set at P<0.05. Patients with FTN had lower handgrip strength than controls (9 ± 4 kg vs 17 ± 7 kg, P=0.018). The MCA_{Vmean} in patients with FTN and controls had similar resting (59 ± 16 cm/s vs 71 ± 11 cm/s, P=0.104) and increases in amplitudes (4 ± 2 cm/s vs 2 ± 1 cm/s, P=0.307) during dynamic handgrip exercise. Further, during dynamic handgrip exercise, patients with FTN and controls exhibited similar time delays (33 ± 16 s vs 47 ± 25 s, P=0.247) and time constants (τ, 20 ± 3 s vs 24 ± 12 s, P=0.466). These findings suggest that the kinetic cerebrovascular responses to small muscle mass dynamic exercise remain intact in patients with FTN.

Long PRESENTATIONS
Category 2 Graduate
1:30 - 3:15 pm

The Effect of Normalization on Urine Analysis for Asthma Diagnosis in Children

Emma Finch, Maryam Alayri, Dr. Anas El-Aneed, Dr. Darryl Adamko

Introduction: Asthma is one of the most prominent reasons children visit the emergency room. Clinical diagnosis is difficult in children, as those under 6 years of age cannot perform spirometry tests. Alternative methods to diagnose asthma in children will improve patient care and reduce health care costs. One alternative to traditional spirometry is using metabolite biomarkers. Metabolites can be quantified using liquid chromatography- tandem mass spectrometry (LC-MS/MS) and used to create diagnostic models. Urine is an ideal one to use in biomarker discovery because it is metabolite rich and non-invasive to collect. However, diagnostically relevant metabolite concentrations can be obscured by the hydration status of patients and thus LC-MS/MS data requires normalization. Creatinine is traditionally used to normalize. However, it can be impacted by muscle mass and height and affect the diagnostic power of metabolites. Two alternative strategies to normalize data were tested in this study. Creatinine-to-height was used to account for creatinine variation in children across ages. Total metabolome was also explored as an alternative that ratios each individual metabolite concentration to the total metabolite concentration in urine.

Methods: N=152 urine samples from healthy and asthmatic children ages 3-14 were collected. These samples were quantified using targeted LC-MS/MS to quantify thirty-nine potentially diagnostic metabolites. These LC-MS/MS values were then normalized three times using creatinine, creatinine-to-height and total metabolome. Models were then created using each set of normalized biomarkers and compared for their diagnostic accuracy and variation between models. We evaluated age as a confounder in pediatric metabolomic data analysis.

Results: Creatinine was found to differ between ages unlike creatinine-to-height and total metabolome values. The selected normalization technique did impact the resultant model for patient versus healthy separation. The creatinine-based model showed the lowest capacity to diagnose children. Accuracy of creatinine-to-height and total metabolome models were improved compared to traditional creatinine. The metabolite composition between models also varied depending on the normalization method used. However, a total of 10 metabolites were shared between all refined models.

Discussion: We determined that using creatinine alone to normalize LC-MS/MS data among children is a concern due to the variations seen between ages and should be avoided in urine-based pediatric metabolomics studies.

Branching Out: A Role for HSPB1 in Human Placental Vascular Development?

Jessica N. Jungwirth, Daniel J. MacPhee

SDG3 – good health and well-being, SDG10 – reduced inequalities

Introduction: The human placenta is an essential and multifunctional organ that maintains pregnancy and protects fetal-maternal health. If placental vascular development goes awry, detrimental pregnancy pathologies like preeclampsia can occur, with the potential to cause long-term complications for the mother and fetus. Small heat shock protein B-1 (HSPB1) functions in maintaining homeostasis and has client-specific roles dependent on post-translational modifications known as the chaperone code. When triggered by physiological stressors, human HSPB1 is phosphorylated at three sites: Ser15, Ser78, and Ser82. However, phospho-HSPB1 (pHSPB1) detection patterns in the developing human placenta have not yet been elucidated. Such a deficit in knowledge highlights how female reproduction is one of the least studied areas of biomedical research in Canada. Therefore, it is necessary to map pHSPB1 detection patterns in the placenta to improve the knowledge base on human pregnancy and provide information that could potentially improve maternal-fetal health outcomes.

Purpose: To assess the spatiotemporal distribution of pHSPB1 in the human placenta over gestation to better understand its role in placental development.

Methods: Immunofluorescence analysis was conducted using placental tissue samples from weeks 7-14 and deliveries from weeks 37-41 of gestation to identify the spatiotemporal detection patterns of pHSPB1. Additionally, a human trophoblast cell line was also used to develop an

endothelial-like tubule model to identify detection patterns of pHSPB1 at 6h (early) and 24h (mature) of tubule development via immunofluorescence.
Results: Immunofluorescence analysis of human placenta tissues revealed detection of pSer15-, pSer78-, and pSer82-HSPB1 in fetal chorionic villi blood vessels and mesenchyme cells at each trimester, cytotrophoblast cells in the first and second trimesters only, and some non-invasive extravillous trophoblast cells at each trimester. Immunofluorescence analysis of endothelial-like tubules revealed pSer15- and pSer78-HSPB1 detection in tubes and tube branching points at 6h and 24h of development, while pSer82-HSPB1 detection was present in the endothelial cells of tubes only at 6h and in both the tubes and tube branching points at 24h.
Discussion: These findings provide further evidence that phosphorylated HSPB1 may be involved in normal placental blood vessel development, thereby adding to the existing knowledge base of female reproduction. Additionally, these findings align with previous research where placental HPSB1 phosphorylation is elevated in response to oxidative stress during preeclampsia. Therefore, HPSB1 may play a role in establishing a healthy placental vascular network during pregnancy that would prevent pregnancy pathologies like preeclampsia to protect fetal-maternal health.

Impact of a universal, curriculum-integrated school lunch program in Canada on lunch energy, nutrient intake, and nutrient density: a Difference-in-Differences study

Natalia Alaniz Salinas – Supervisors: Dr. Rachel Engler-Stringer and Dr. Hassan Vatanparast

This study estimated the impact of a universal, curriculum-integrated school lunch program on lunch energy intake, nutrients of public health relevance, and lunch nutrient density among elementary school students in Canada. The Good Food for Learning Population Health Intervention Research program provided a free, daily school lunch to all students and staff in two public elementary schools in Saskatoon, Saskatchewan. Two comparison schools continued their usual practice without a universal lunch program.
We conducted a non-blinded, quasi-experimental, repeated cross-sectional Difference-in-Differences evaluation across the four schools (two intervention and two control). Lunch intake was measured at baseline and follow-up over a two-year implementation period using a digital photography-assisted weighed plate-waste method. Due to high student turnover, analyses focused on population level changes rather than within student trajectories. Program impacts were estimated using an intent-to-treat approach. Outcomes included lunch energy intake, selected nutrient intakes, and lunch nutrient density using an adapted Nutrient Rich Food Index (NRF 9.3). Statistical inference was conducted using exact randomization inference.
A total of 980 students contributed lunch observations (379 at baseline, 601 at follow-up). Energy and nutrient intakes declined in both intervention and control schools. However, intervention schools experienced a smaller reduction in energy intake compared with controls (Difference-in-Differences [DiD] +91.1 kcal; p = 0.021). Similar patterns were observed for total fat (DiD +6.22 g; p = 0.049), saturated fat (DiD +2.61 g; p = 0.037), and sodium (DiD +161.35 mg; p = 0.014), reflecting larger reductions in control schools. Lunch contributions to Dietary Reference Intakes decreased for most nutrients, with a significantly smaller decrease for sodium in intervention schools (DiD +9.39 percentage points; p = 0.025). No statistically significant program effect was observed for overall lunch nutrient density.
Overall, the results suggest that universal school meal programs can affect lunch intake, but these effects alone do not guarantee improvements in lunch quality. Real gains in nutritional outcomes require deliberate attention to the nutritional composition of the meals offered. Results are directly relevant to the roll-out and evaluation of Canada's National School Food Program.

Evaluating HR pQCT as a Tool for Pediatric Body Composition: Associations with DXA Measures

Omar Tohamy, Ali Rezaei, Munier A. Nour, James D. Johnston, Saija A. Kontulainen

Goal 3 (good health and well-being)

Introduction: High-resolution peripheral quantitative CT (HR-pQCT) provides detailed assessments of bone microarchitecture, density, and strength, and can also quantify muscle size and composition in children. Dual-energy X-ray absorptiometry (DXA) is the most widely used instrument for assessing body composition. It is unknown whether these HR-pQCT soft-tissue measures reflect body composition assessed by DXA, which could reduce additional radiation exposure, assessment time and cost in pediatric studies.
Purpose: To examine the associations between HR-pQCT and DXA-derived soft-tissue outcomes to evaluate HR-pQCT as a potential tool for pediatric body-composition assessment.
Methods: We obtained forearm and lower-leg muscle area, muscle density, fat density and intermuscular fat percentage (IMF%) from HR-pQCT scans, and total lean mass (TLM), lean mass index (LMI), appendicular lean mass index (ALMI), total fat mass (TFM) and total body fat percentage (TBF%) from DXA scans in 41 children (mean age 10.9 ± 0.91 years). We assessed associations using Spearman correlation ($\rho < .05$ considered significant).
Results: At the forearm, muscle area was associated with DXA-derived ALMI ($\rho = .82$, $p < .001$), LMI ($\rho = .73$, $p < .001$) and TLM ($\rho = .67$, $p < .001$). Muscle density was associated with ALMI ($\rho = .33$, $p = .034$), LMI ($\rho = .36$, $p = .021$) but not TLM ($\rho = .29$, $p = .068$). Fat density was negatively associated with TBF% ($\rho = -.75$, $p < .001$) and TFM ($\rho = -.47$, $p = .002$). IMF% was associated with DXA-derived TBF% ($\rho = .86$, $p < .001$) and TFM ($\rho = .62$, $p < .001$). At the lower leg, muscle area was associated with ALMI ($\rho = .69$, $p < .001$), LMI ($\rho = .63$, $p < .001$) and TLM ($\rho = .60$, $p < .001$). Muscle density was associated with TLM ($\rho = .32$, $p = .042$) but not ALMI ($\rho = .27$, $p = .089$) and LMI ($\rho = .18$, $p = .252$). Fat density was negatively associated with TBF% ($\rho = -.53$, $p < .001$) but not with TFM ($\rho = -.15$, $p = .362$). IMF% was associated with TBF% ($\rho = .53$, $p < .001$) and TFM ($\rho = .41$, $p = .007$).
Conclusion: HR-pQCT-derived muscle and fat parameters were associated with DXA-derived body composition measures, with stronger associations at the forearm than the lower leg. These findings support HR-pQCT as a potential tool for pediatric body composition assessment, complementing its established bone evaluation capabilities.

Experiences of Indigenous youth after participating in type 2 diabetes educational lessons and physical activity: A multi-site case study

Robyn Klassen

The specific objective of this study was to explore the understandings and experiences of Indigenous youth in grades nine to twelve (ages 11 to 19) who have participated in T2D educational lessons and weekly physical activity (PA) at schools in two Indigenous communities in Saskatchewan.
This research was the qualitative component of Phase Three of a multi-phase study. The research was grounded in the principles of Ownership, Control, Access, and Possession (OCAP®), and was informed by trauma and resilience-informed methods and the Two-Eyed Seeing approach. Semi-structured interviews and symbol-based data collection were utilized. Reflexive thematic analysis, as outlined by Braun and Clarke, was employed.

Poster PRESENTATIONS
11:00 am – 12:00 pm
Category 3 - Graduate & Post Graduate

SENSE-ational Schools: Physical literacy enriched movement opportunities for students with neurodiversity

Anya E. M. Jackson & Natalie E. Houser

Introduction. Children with different sensory capacities due to neurodevelopmental disorders often do not have the same experiences and opportunities for being successful in school and movement. Within physical education contexts, physical activity offers many benefits for students, including the development of physical literacy. As stated in Canada's physical literacy consensus statement, physical literacy can be defined as "the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life." Canada's consensus statement provides an overview of the importance of physical literacy and has been identified by the Public Health Agency of Canada as a key principle underlying the creation of a movement rich opportunities for all in many spaces including the school environment. The concept of physical literacy can be used to tailor and enrich movement opportunities within various contexts including physical education by informing the construction of developmentally appropriate movement experiences leading to the development of psychological, social, creative, and physical abilities. However, aspects of physical education can sometimes be

overstimulating for students with neurodiversity, often resulting in these students being excluded from meaningful movement experiences. This exclusion limits students' opportunity to experience the physical, psychological, and social benefits that physical education and physical literacy provide.
Purpose. The purpose of this study is to explore how changes in instructional strategies and equipment influence school staff roles in supporting inclusive movement opportunities for students with neurodiversity.
Methods. A Participatory Action Research (PAR) design will be used to examine physical education practices from a collective and self-reflective inquiry approach. Participants will include 8-10 school staff (physical education teachers, educational assistants, resource teachers) from two elementary schools who interact directly and frequently with students with neurodiverse needs. The impact of the SENSE-ational schools program will be explored over the course of one school year, through participant observation, semi-structured interviews, and reflective journalling occurring at baseline, midpoint, and endpoint. Analysis will be guided by using Braun and Clarke's (2022) reflexive thematic analysis.
Significance. The SENSE-ational schools study will provide the opportunity to explore the optimal strategies and equipment needed to create an inclusive movement experience for students with neurodiversity. Enhancing inclusion has potential to empower all students to fully participate and thrive in movement. Additionally, this study has the potential to inform future practices and programming decisions that support a more inclusive movement experience for all.

Cracking the Code: Small Heat Shock Protein (HSP) B1 is a novel focal adhesion protein in uterine smooth muscle cells

Asfa B. Nazir, Donna M. Slater, Daniel J. MacPhee

Introduction: Preterm birth is defined as birth before 37 completed weeks of gestation. In Canada, preterm birth rates have increased from 7.1% in 2013 to 8.3% in 2023. Preterm birth is a traumatic experience for the mother and infant, emphasized by the higher rates of hospitalization of preterm infants. It can also have lifelong impacts on these newborns such as cognitive development impairments, social behavioral problems, and learning difficulties. To understand preterm birth, it is necessary to better understand normal birth. One protein of interest is Heat Shock Protein Beta-1 (HSPB1) which is highly expressed in uterine smooth muscle and is phosphorylated at three sites: Ser15, Ser78, and Ser82. These sites can confer specific functional roles with clients referred to as the chaperone code.
Purpose: Determine the location and role of pS78-HSPB1 in uterine smooth muscle cells in vitro and human myometrial tissue in situ.
Methods: Immunofluorescence analysis was conducted with a human myometrium cell line (hTERTHM) and term labouring and non-labouring human myometrium to assess the location of pS78-HSPB1 relative to focal adhesion markers Paxillin and Zyxin. To better understand the role of pS78-HSPB1, actin polymerization was also disrupted in hTERT-HM cells with the drug Cytochalasin D followed by immunofluorescence analysis of changes to pS78-HSPB1 location.
Results: pS78-HSPB1 was localized at membrane-associated focal adhesions in hTERT-HM cells. Colocalization analysis revealed that there was more prominent colocalization of pS78-HSPB1 with Paxillin-positive regions, compared to Zyxin-positive regions. In correlation with these findings, investigation of pS78-HSPB1 in human term non-labour and term labour myometrium, demonstrated that pS78-HSPB1 was highly detectable in focal adhesions within the more contractile fundal region of the uterus compared to lower uterine segments. Upon loss of filamentous actin in hTERT-HM cells following Cytochalasin D treatment, pS78-HSPB1 lagged at focal adhesion-like structures, co-localized with actin fragments, and was still detectable at low levels in cortical regions of cells compared to paxillin and zyxin which became perinuclear in location.
Discussion: pS78-HSPB1 was consistently detected at focal adhesions of hTERT-HM cells and in pregnant human myometrium. Following Cytochalasin treatment, a delay was observed in pS78 HSPB1's retreat from focal adhesions, compared to actin and paxillin. The data indicate that pS78 HSPB1 is a novel focal adhesion protein that may be involved in regulating the actin cytoskeleton as part of its chaperone code. Understanding the regulation of the myometrial cell cytoskeleton could potentially aid the development of strategies to prevent preterm labour contractions.

A Journey of Co-Creation: Fostering Wholistic Wellness, Movement, and Land Connectedness for Early Years Children in Saskatchewan

Fatima Ali, Amanda Froehlich Chow, Louise Humbert, Marta Erlandson and Natalie Houser

3 Good health and wellbeing

The early years (0-5 years) are a critical window for fostering healthy behaviours that can last a lifetime. Therefore, it is vital to provide early years children with ample opportunities for engaging in healthy behaviours such as physical activity, cultural connectedness, and socialization. Many early years children spend a significant portion of their day in an early learning center (ELC). This doctoral project examines the role ELCs play in cultivating culturally rooted movement opportunities and wholistic wellness for early years children. Grounded in Etuaptmumk (Two-Eyed Seeing), this project aims to collaboratively revitalize the indoor and outdoor play spaces of four ELCs across Saskatchewan, strengthen land, art and culture-based movement opportunities, and co-creating tools that reflect diverse First Nations and Métis ways of knowing, being and doing associated with child wellness.
Embedded within Nature's Way-Our-Way initiative, which seeks to promote wholistic wellness through movement and culturally rooted approaches, three-studies are proposed.

Antenatal and postnatal milk maturation percentages in individuals practicing antenatal colostrum expression: insights into lactogenesis II

Karlee Schoff, Naida Hawkins, Kyly C Whitfield, and Kelsey M Cochrane

Goal 3 Good health and well-being

Colostrum is the first milk produced by the mammary glands and may be expressed before birth. Early removal of colostrum may facilitate the movement of water and lactose into milk-producing cells, potentially promoting early milk maturation (lactogenesis II). Despite growing clinical interest in antenatal colostrum expression, its effect on postnatal milk maturation remains unclear. This prospective observational pilot study aims to compare milk maturation percentage in paired antenatal and postnatal colostrum. Seventeen low-risk pregnant participants in Saskatoon provided paired antenatal (≥36 weeks' gestation) and postnatal (within 24-hours postpartum) colostrum specimens (0.5–1.0mL) using colostrum collector kits distributed during prenatal care or from our research team. Milk maturation was quantified using the MyLee Breastfeeding Tracker (MyMilk Laboratories, Israel). Pearson's correlation and linear regression were used to evaluate the association between antenatal and postnatal milk maturation percentages and to assess whether other characteristics predict milk maturation percentage, including age, parity, gestational age at delivery, and mode of delivery. The mean ±SD age of participants was 33 ±3 years. Most participants delivered vaginally (n=16,94%) and were multiparous (n=12,71%). The mean ±SD gestational age at antenatal collection was 37 ±1 weeks. All participants delivered full term (≥37 weeks), with n=5 (29%) delivering at >40 weeks. The mean ±SD milk maturation in antenatal and postnatal specimens was 42.9 ±24.1% and 42.0 ±19.3%, respectively. Antenatal and postnatal milk maturation percentages were strongly positively correlated (r=0.833), with higher antenatal milk maturation percentage resulting in higher postnatal milk maturation percentage (β-coefficient=0.67; 95% CI:0.42-0.91). Parity was the only characteristic associated with milk maturation percentage (antenatal only), with higher percentages observed among individuals with a previous pregnancy (β-coefficient=29.7; 95% CI:6.6-52.7). These pilot data indicate that antenatal colostrum expression may predict early lactation outcomes and is strongly associated with postnatal milk maturation.

Previous pregnancy, and thus previous onset of lactogenesis II, was associated with earlier milk maturation. This research is part of an ongoing study which aims to re-evaluate the above findings in a larger sample size and further clarify the role of antenatal colostrum expression in supporting the onset of lactogenesis II.

End-Organ Perfusion and Point-of-care doppler ultrasound parameters in preterm neonates with patent ductus arteriosus: An Observational Study

Samantha E. Hall, Sibasis Daspal

Patent ductus arteriosus (PDA) is a prevalent complication in premature infants, but there remains a lack of consensus regarding the definition of a hemodynamically significant PDA. Bedside ultrasound may be a valuable tool for early detection and assessment of hemodynamic significance.
Objective: This study aims to observe end-organ perfusion in cerebral, superior mesenteric and renal doppler parameters in premature infants ≤ 30 weeks gestational age with and without patent ductus arteriosus.
Methods: Using targeted neonatal echocardiography (TNE) and doppler imaging, we assessed cardiac hemodynamics and the resistance indices (RI) of the anterior cerebral, middle cerebral, superior mesenteric and renal arteries within the initial 3-14 days of life in preterm infants born • 30 weeks gestational age at Jim Pattison Children' s Hospital admitted to the NICU. Infants with major cardiac defects or brain malformations were excluded.
Results: Participants with small or no PDA exhibited forward end-diastolic flow in all arteries assessed, whereas in participants with large PDAs, end-diastolic flow was absent in 50% of the ACA and reversed in 50% of the renal arteries ($p = 0.044$). The SMA RI was also found to be higher in participants with a large PDA (0.82 vs. 0.70, $p=0.011$).
Conclusion: Bedside ultrasound detected hemodynamic differences, including absent and reversed end-diastolic flow in the anterior cerebral and renal arteries, and elevated resistance indices in the SMA and renal arteries for neonates with large PDAs, suggesting increased vascular resistance and ductal steal phenomenon. Further research is needed to evaluate long-term outcomes and support the integration of these methods into clinical practice for the early identification of PDAs requiring treatment.

Poster PRESENTATIONS
11:00 am – 12:00 pm
Category 4 – Graduate

What Youth with Chronic Pain Want to Know about Medication for Pain Management

Adrienne Nagy, Jane Alcorn, Andrea Tang

Youth living with chronic pain often use medication as part of a multi-modal approach to chronic pain management. Medications used in this context may be associated with adverse events such as dizziness, sedation, organ damage, ulcers, over-dose or death. Tailored medication education for youth may foster responsible use and mitigate inherent risk. The objective of this study is to identify and describe what youth living with chronic pain want to know about their medications for pain management. This study will identify knowledge gaps that will inform personalized, patient-focused education resources to improve medication efficacy and safety. One-on-one semi-structured interviews were conducted with youth ages 14-24 years living with chronic pain, who had used medication for pain management in the past three months. A qualitative descriptive approach was used to describe participants' subjective and unique experiences.
Interview transcripts underwent inductive thematic analysis and common themes were identified. Seven participants were recruited ranging in age from 15-24 years, and most were female. Several themes were identified describing information youth want to know about their pain medications. Youth wanted to know details about the medication regimen, how their medications may influence their quality of life, and the risks and long-term implications of medication use. Medication-specific questions about drug mechanism, dosing and titration were common. Youth also inquired into the impact of their medication on day-to-day life and were generally concerned about drowsiness as a side effect. Participants also inquired into long-term implications of medication use like addiction potential, long-term organ damage, and impact on fertility. This study identified questions youth living with chronic pain have about their pain medications: youth want to know general facts about medication regimen, impacts on quality of life and safety risks. The information gathered from this study will guide the development of patient-centered educational resources to empower youth to make informed decisions about the safe and effective use of medications for pain management.

Control of blood flow in patients with a Fontan circulation during high-intensity dynamic handgrip exercise

Austin J Gallant, Kayla B Harder, M Rafique Khan, Thomas J Jurrissen, Adam M S Luchkanych, Enoch Yang, Cameron J Morse Kristi D Wright, Charissa Pockett, Marta Erlandson, T Dylan Olver and Corey R Tomczak

Patients with a Fontan (FTN) circulation exhibit vascular dysfunction characterized by reduced nitric oxide bioavailability, impaired endothelium-dependent vasodilation, and abnormal vascular reactivity. However, the kinetics of forearm blood flow during exercise in FTN remains unknown. We tested the hypothesis that forearm blood flow kinetics during the transition from rest to high-intensity (40% maximum voluntary contraction) dynamic handgrip exercise would be slower in FTN compared to healthy control (CTL) participants. Patients with FTN (9M/9F, mean(SD), 16(4) yrs) and similar age- and sex-matched CTL (7M/6F, 17(4) yrs, $P = 0.614$) performed 3 bouts of exercise lasting 5 min with a 2:2-s contraction:relaxation duty-cycle. Brachial artery diameter and velocity were recorded using a linear array Doppler ultrasound to determine mean forearm blood flow. Beat-by-beat blood flow from each trial for each subject was interpolated to 1-s time bins, time-aligned, and averaged to yield a single response profile, then binned into 5-s averages. Blood flow kinetics were determined using a mono-exponential model with time delay fit to the first 3 min of exercise. Data were compared using two-tailed unpaired t-tests. Baseline forearm blood flow was similar between groups (FTN: 28(15) mL/min vs. CTL: 34(12) mL/min, $P = 0.184$). Patients with FTN and CTL had a similar time delay (FTN: 5(13) s vs. CTL: 2(6) s, $P = 0.441$), time constant (τ, FTN: 28(15) s vs. CTL: 30(12) s, $P = 0.652$), and mean response time (τ + time delay, FTN: 32(24) s vs. CTL: 32(12) s, $P = 0.939$). The amplitude of change in forearm blood flow (FTN: 29(10) mL/min vs. CTL: 45(25) mL/min, $P = 0.030$) and steady-state blood flow (FTN: 56(22) mL/min vs. CTL: 79(31) mL/min, $P = 0.028$) were lower in FTN compared to CTL, owing to differences in absolute grip strength. Within the exercise transient, FTN had a 19% smaller increase in blood velocity and a 79% smaller reduction in artery diameter compared to CTL. These findings suggest that while forearm blood flow kinetics are preserved in FTN, the underlying determinants of blood flow differ.

Characterizing Clozapine use in Pediatric Psychiatry: A Retrospective Review of Clinical Practice

Brooke Gessner, Lloyd Balbuena, Dave Blackburn, Jenna Pylypow, Anna Felstrom, Andrea Tang, Katelyn Halpape

Background: Pediatric patients with schizophrenia and related psychotic disorders often experience severe, treatment-resistant illness associated with chronic impairment and recurrent hospitalization. Fewer than half respond adequately to first- or second-generation antipsychotics. While clozapine is the gold-standard treatment for treatment-resistant schizophrenia in adults, evidence guiding its use in pediatric populations remains limited. Clozapine is also prescribed off label for severe aggression, mood lability, and impulse dysregulation in youth with autism spectrum disorder (ASD), oppositional defiant disorder (ODD), and other complex behavioral presentations.

Objective: To describe patterns of clozapine use, clinical characteristics, and treatment outcomes among pediatric patients (<18 years) prescribed clozapine within the Saskatoon and Prince Albert Child and Adolescent Psychiatry programs between January 2015 and 2026.
Methods: A retrospective chart review was conducted using outpatient and inpatient electronic medical records to extract demographic, diagnostic, medication, and hospitalization data. Charts were systematically identified, and data were collected using a standardized abstraction tool. Interrater reliability was assessed using Cohen's kappa. Descriptive statistics summarized patient characteristics, indications, dosing patterns, and clinical outcomes.
Results: Seventy-two patients were identified. The cohort included 47% Indigenous youth; 72% resided in urban areas and 28% in rural settings. The mean age at clozapine initiation was 14 years. The most common indications were psychotic disorders (31%), ODD (30%), ASD (17%), and chronic suicidal ideation (11%). Maintenance doses ranged from 25 to 500 mg/day, reflecting substantial variability in prescribing patterns.
Conclusions: Clozapine is used in pediatric psychiatric practice for both treatment-resistant psychosis and complex behavioral presentations, often in socially and clinically high-risk populations. These findings provide naturalistic evidence to inform evidence-based prescribing and highlight the need for further research on safety and long-term outcomes in youth.

Brachial artery blood flow kinetics during low-intensity dynamic handgrip exercise in patients with a Fontan circulation

Kayla B Harder, Austin J Gallant, M Rafique Khan, Thomas J Jurrissen, Adam M S Luchkanych, Enoch Yang, Cameron J Morse, Kristi D Wright, Charissa Pockett, Marta Erlandson, T Dylan Olver, and Corey R Tomczak

Fontan circulation (FTN) is associated with exercise intolerance, but the contribution of peripheral blood flow to this limitation is unclear. This study aimed to determine whether peripheral blood flow kinetics are altered in response to low-intensity dynamic handgrip exercise. It was hypothesized that patients with FTN would exhibit slowed blood flow kinetics. To test this hypothesis, FTN (9M/9F, 16 ± 4 years of age) and similar age- and sex-matched healthy controls (CTL, 7M/6F, 17 ± 4 years of age, P=0.614) completed three bouts of dynamic handgrip exercise for 5 min at 20% of maximal voluntary contraction (FTN: 10 ± 4 kg vs CTL: 18 ± 7 kg, P<0.001). Brachial artery diameter and blood flow velocity were continuously recorded using Doppler ultrasound (Vivid i, GE Medical Systems), analyzed offline (Cardiovascular Suite 4.3.0, Quipu, Italy), and used to calculate blood flow. Second-by-second blood flow from each bout were time-aligned and averaged to obtain a single response profile for each participant. Subsequently, blood flow data was further averaged into 5-s bins and the first 3 min of the exercise were modelled using monoexponential curve fitting (OriginLab, OriginPro 2024b). FTN and CTL had similar baseline blood flow (FTN: 24 ± 11 mL/min vs CTL: 27 ± 14 mL/min, P=0.553). The amplitude increase in blood flow was lower in FTN (14 ± 7 mL/min) vs CTL (25 ± 16 mL/min, P=0.014), owing to the lower absolute exercise intensity. Accordingly, steady-state exercise blood flow was also lower in FTN (38 ± 11 mL/min) vs CTL (53 ± 25 mL/min, P=0.031). The time delay for the increase in blood flow was comparable between FTN (0.03 ± 0.36 s) and CTL (-0.05 ± 0.26 s, P=0.507). The blood flow time constant, tau, was also comparable between FTN (22 ± 8 s) and CTL (23 ± 11 s, P=0.702), as was the mean response time (time delay + tau, FTN: 22 ± 8 s vs CTL: 24 ± 10 s, P=0.560). During the exercise transient, FTN showed a 7% smaller reduction in vessel diameter and a 33% lower increase in blood velocity than CTL. These data indicate that the kinetics of blood flow are comparable between FTN and CTL, but that the control of blood flow differs.

Honey Bees as a Social Model for Fetal Alcohol Spectrum Disorder

Maria Janser, M. Bezerra da Silva, Y. Wickramasinghe, T. Edirithilake, M.S. Jose, O. Obshta B. Bilton, B. Lopes Neto, A. De la Mora Pena, S. Kondratiuk, J. Tregobov, R. Enadeghe, V. Katrii, I. Moshynskyy, R. Merkl, E. Simko, S.C. Wood

Fetal Alcohol Spectrum Disorder (FASD) is a neurodevelopmental disorder affecting 4% of Canadians, resulting in physical abnormalities, behavioral differences, and social difficulties. No animal model currently exhibits all aspects of FASD, with particular difficulties modeling social effects. Honey bees have extremely well-characterized, complex social behaviors and are feasible to rear in-vitro, making them promising for FASD modeling. Additionally, some autism-associated genes are conserved and associated with behavioral differences in honey bees. This provides further evidence of behavioral and social similarity between humans and honey bees. Our lab previously demonstrated delayed development and decreased survival of in-vitro reared honey bees due to larval ethanol exposure. Expanding on this, we now focus on social aspects of honey bees as a FASD model. Social behavior in a field colony and histological evaluation of brain region size will be measured in in-vitro reared bees exposed to ethanol during larval development. We hypothesize that in-vitro larval ethanol exposure will result in decreased social behaviors and decreased area of behavior-associated brain regions in ethanol exposed bees compared to non-exposed bees. Honey bees were reared in-vitro and exposed to increasing concentrations of ethanol (0%, 1.5%, 3%, 6%) in larval diet from days 0-5 of development. Following larval exposure, adult bees were introduced into a 3-frame observation hive to monitor social behavior. Each bee was monitored twice daily for 1 minute, noting location and behaviors. Brains of control (0%) and high dose ethanol (6%) bees were preserved for histological analysis, and sectioned and stained on a coronal plane. Area of optic lobes, which have been shown to activate preceding behaviors in honey bees, were compared across groups, standardized to head width. Results reaffirm developmental effects of larval ethanol exposure, with decreased survival until emergence, decreased weight, and delayed pupation compared to non-exposed bees. Sporadic morphological changes (curled antennae, deformed thorax) were observed in the 6% ethanol group. For social behaviors, ethanol-exposed bees exhibited a 27% decrease in antennation frequency (4.90 antennations/min vs 3.60 antennations/min) and spent 11% less time on brood frames (84.6% vs 73.6%) compared to control bees. Histologic analysis is currently being conducted, with results pending. Developmental and behavioral results parallel physical and changes seen in individuals with FASD, indicating promise of honey bees as a social insect model for this condition. This project highlights the versatility and interdisciplinary nature of apiculture research, and the strong potential for honey bees as pre-clinical models of human disease.

Attenuated exercise-induced vasodilation during rhythmic forearm handgrip exercise in individuals with Fontan circulation

M. Rafique Khan, Austin J. Gallant Kayla B. Harder, Thomas J. Jurrissen, Adam M. S. Luchkanych, Enoch Yang, Cameron J. Morse, Charissa Pockett, Marta Erlandson, Kristi D. Wright, T. Dylan Olver, and Corey R. Tomczak

Background: Reactive hyperemia-induced brachial artery flow-mediated dilation (FMD) is attenuated in individuals with Fontan circulation. However, it is unknown whether exercise-induced FMD is attenuated in this population. Hypothesis: It was hypothesized that individuals with Fontan circulation exhibit attenuated brachial artery endothelium-dependent vasodilation during steady-state acute exercise. Methods: Individuals with Fontan circulation (n=18, 9 F; 16±4 yrs; 23±5 kg/m2) and similar age and sex healthy control participants (n=13, 7 F; 17±4 yrs; 22±5 kg/m2) performed 3 bouts of acute exercise that each involved a 1 minute rest period followed by 5 minutes of rhythmic handgrip exercise (2:2 duty cycle) at 20% of maximum voluntary contraction. Participants performed handgrip exercise using a dynamometer and the brachial artery diameter and velocity were recorded using high resolution duplex ultrasonography while blood pressure was measured using finger photoplethysmography. Diameter, velocity, and blood pressure were used to compute antegrade shear rate, retrograde shear rate, mean shear rate, and oscillatory shear index as well as forearm vascular conductance. Data from the 3 bouts of handgrip were averaged to yield a single profile. Furthermore, data during the final 30 seconds of rest and steady-state exercise were each averaged and analyzed using a 2 × 2 ANOVA (group; Fontan and control × condition; rest and exercise).

Results: The data revealed brachial artery diameter increased significantly in healthy controls, but not in individuals with Fontan circulation (control: 3.25±0.47 to 3.34±0.43 mm vs. Fontan: 3.08±0.35 to 3.10±0.35 mm, interaction, p=0.012). Antegrade (controls: 161±53 to 280±115 s-1 vs. Fontan: 210±68 to 283±85 s-1, condition, p<0.001) and mean shear rate (controls: 71±30 to 132±54 s-1 vs. Fontan: 79±39 to 122±48 s-1, condition, p<0.001) increased from rest to exercise, but did not differ between groups (group, p=0.363). Retrograde shear rate (controls: -19±16 to -16±13 s-1 vs. Fontan: -51±29 to -40±24 s-1 condition, p=0.002) and oscillatory shear index (controls: 0.11±0.09 to 0.05±0.04 a.u. vs. Fontan: 0.20±0.10 to 0.13±0.09 a.u. condition, p<0.001) decreased from rest to exercise, and was greater in individuals with Fontan circulation than healthy control participants (group, p=0.008). Forearm vascular conductance increased from rest to exercise in both groups (controls: 0.4±0.2 to 0.8±0.3 vs. Fontan: 0.3±0.1 to 0.5±0.1, interaction, p=0.004); however, it was greater in controls than individuals with Fontan circulation during exercise (p<0.001). Conclusion: Exercise-induced FMD and vasodilation of the forearm vasculature is attenuated in individuals with Fontan circulation, implicating both conduit artery and microvascular dysfunction in the pathophysiology of disease.

Agreement Between Predicted and Longitudinally Observed Maturity Offsets in Children and Youth with Type 1 Diabetes

Zahra Ghafouri, James J.D. Johnston, Munier Nour, and Saija Kontulainen

Goal 3 Good health and well-being

Objective: Accurate assessment of pubertal and skeletal maturation is fundamental to pediatric research and clinical care, particularly in chronic conditions affecting growth, such as Type 1 diabetes (T1D). As sex-specific maturity offset prediction equations offer a practical, non-invasive approach for estimating somatic maturity, this study aimed to assess their prediction accuracy for the first time in youth with T1D.

Study Design: We used clinical records of 31 participants with T1D (17 males), 5-18 years (283 total observations). We compared predicted maturity offsets, derived from sex-specific Moore equations, against maturity offsets calculated from longitudinal height velocity curves generated using cubic splines. We restricted comparisons within ±4 years of age at peak height velocity (APHV) and evaluated agreement using linear regression, Bland–Altman analysis, and subgroup comparisons relative to APHV.

Results: Predicted maturity offsets were aligned with observed data in females ($R^2 = 0.79$) and males ($R^2 = 0.82$). In males, proportional bias was evident, with the Moore equation underestimating maturity offsets (mean difference: -0.42 years; 95% CI: -0.57 to -0.27). Subgroup analyses indicated closer agreement near APHV with larger discrepancies (>0.5 years) further from APHV in both sexes, especially in males.

Conclusions: The sex-specific Moore maturity offset predictions provide a practical approximation of maturational timing in youth with T1D using routinely collected clinical data. However, estimates should be interpreted cautiously the farther they are from APHV, particularly in males. When precise estimation of somatic maturity is required and sufficient longitudinal growth data are available, growth-based methods remain preferable.

Poster PRESENTATIONS
11:00 am – 12:00 pm
Category 5 – Undergraduates

Pediatric Rehabilitation Needs in Northern Communities: Integrating Healthcare Provider and Family Perspectives

Katie Crockett, **Brayden Lockinger**, Hailey Dunn, Rosalie Dostie, Kat Bear, Sally Sewap, Carlene Custer, Stacey Lovo

Goal 3 Good health and well-being

Introduction: A community needs assessment for rehabilitation needs was conducted with healthcare providers and families who require pediatric rehabilitation services in a remote Cree community in Saskatchewan. This work was based on a community identified need and request from Elders and community health leaders. With a purpose of integrating both healthcare provider and family perspectives, we aimed to understand the current context, needs and strengths, and potential solutions.

Methods: Guided by Elder Willie Ermine's Ethical Space Framework and Ownership, Control, Access and Possession principles, qualitative interviews and sharing circles were conducted with 14 healthcare providers across a variety of disciplines, and with families to capture experiences and needs of 14 children and their families. Audio recordings were transcribed and analyzed using iterative thematic analysis. Themes were validated with Elders and community partners to ensure cultural accuracy and relevance.

Results: Five themes were identified that captured the lens of both healthcare providers and families including: 1) Access is a Journey not a Point in Time; 2) Complexity of Needs Met with Siloed Service Design; 3) Family Resilience is Essential but Also a Cost; 4) Cultural Safety and Community Context: Relational Continuity as a Prerequisite for Cultural Safety; 5) Building Continuity of Care through Virtual Hybrid Models.

Conclusion: Across perspectives, access to pediatric rehabilitation in the remote north is structurally constrained and challenging to navigate, with fragmented and unstable service systems. Cumulative burden on families was identified, with a strong need to build culturally safe, accessible, and effective care. A hybrid model of care has potential to provide continuity of care in community, with enhanced access to interprofessional teams.

Caregiver attitudes toward testicular tissue cryopreservation in prepubertal male cancer/hematopoietic stem cell transplant patients: a non-metropolitan Canadian cohort

Dawson Holt, Paul D'Alessandro, Greg Guilcher

Purpose: Prepubertal males who undergo cancer treatment or stem cell transplant are at risk of infertility in the future. While post-pubertal males can undergo sperm banking for fertility preservation (FP), there are no current clinical options for FP for pre-pubertal males. In animal models, immature testicular tissue cryopreservation (TTC) has been utilized to generate sperm used for in vitro fertilization, pregnancies, and live births. Human TTC options exist outside Canada for experimental biobanking, and there is potential to expand TTC options within Canada. In order to build an equitable national strategy, attitudes of caregivers toward TTC from less densely populated provinces need to be documented. The aims of this study were to describe attitudes of caregivers of pre-pubertal male cancer/HSCT patients diagnosed in Saskatchewan within the last five years towards TTC, and to determine willingness thresholds to potential consent to TTC.

Materials and Methods: We conducted a single centre study with caregivers of prepubertal boys with cancer or requiring stem cell transplant. A questionnaire with demographic information, a rank-order list regarding perceived barriers to TTC, and an open-ended question was administered. An additional theoretical threshold setting exercise was conducted. Results: Fifty-two caregivers participated (response rate 85.2%; 75% female; age 36.9y; 75% White; 15.4% Indigenous; 15.4% Asian; all five income quintiles represented.) On average, caregivers endorsed willingness to accept TTC in the setting of: minimum 26% chance of infertility from underlying treatment; 29% chance of testicular biopsy complications; 18% chance of future FP use; maximum $616 annual storage cost; and maximum 7.4 hour driving time. Rank-order list of perceived barriers and responses to open-ended question suggested that caregiver attitudes were child-focused (ie: risk/benefit of procedure) rather than parentfocused (ie: travel, logistics, cost.) Conclusions: Caregivers across Saskatchewan demonstrated interest in TTC. These results can inform efforts to expand TTC options for pre-pubertal cancer/HSCT patients locally and nationally.

Evaluating caregiver-reported barriers and facilitators to accessing autism diagnostic and support services in Saskatchewan

Dominic Ong; Dr Natalie Houser; Dr Daniel Adeyinka; Dr Ghita Wiebe

BACKGROUND

Current data suggests that pediatric autism prevalence may approach 1 in 25 children in some Canadian provinces, placing increasing pressure on already strained diagnostic and support systems of care. Access to timely and coordinated services varies substantially by region, with families outside major urban centers often facing disproportionate barriers.

PURPOSE AND OBJECTIVES

The purpose of this study was to examine caregiver-described barriers and facilitators to accessing autism diagnostics and support services in Saskatchewan. Findings aim to inform the development of more coordinated and responsive models of autism care across the province.

METHODS

A province-wide cross-sectional caregiver survey was conducted with caregivers to children with autism aged 0-18 years residing in Saskatchewan. Recruitment occurred through community networks and provincial health communications. The survey included closed and open-ended questions capturing experiences of accessing autism diagnostic and support services across the province.

Descriptive statistics summarized respondent demographics and service access to contextualize qualitative findings. Multinomial regression examined factors influencing accessing no supports compared with separate, public, or combined services. Reflexive thematic analysis (Braun & Clarke) with qualitative data was conducted to identify caregiver-reported barriers and facilitators across communities.

RESULTS

The survey was completed by 191 participants. About 40% reported their child waited 12 months or longer for an autism diagnosis. A majority of respondents (76%) shared that they are in need of additional supports. Multivariable analysis using multinominal regression demonstrated that a child's age significantly influenced access to supports. Children aged 12 years and older were 87% less likely to access either private or public support compared to younger children aged 2-5 years (RRR = 0.13, p = 0.012).

Repeat Neuroimaging in Children with Epilepsy, Autism Spectrum Disorder, Global Developmental Delay, and Cerebral Palsy Under General Anesthesia: A Study to Investigate Rate of New Significant Neuroimaging Abnormalities, Adverse Anesthesia Events, and Family Experience

Grace Braaten BSc, **Muhammad Awan MPH**, Mary Ellen Walker PhD, Jennifer O'Brien PhD, Sheldon Wiebe MD, Jonathan Gamble MD

Introduction: Magnetic resonance neuroimaging (nMRI) is frequently repeated in children with autism spectrum disorder (ASD), global developmental delay (GDD), epilepsy, and cerebral palsy (CP), despite a low probability of identifying new abnormalities and guidelines that discourage repeat imaging. These studies strain both MRI and anesthesia resources, and the diagnostic yield of repeat nMRIs in Saskatchewan is unknown. This study evaluates the diagnostic yield, risks, and family impact of repeat nMRI under general anesthesia in these populations.

Methods: We conducted a mixed-methods study including a 10-year retrospective review of all children in Saskatchewan with repeat nMRIs for ASD, GDD, epilepsy, or CP who underwent at least one anesthetized scan. There were 152 total patients included in the review. Prospective interviews are ongoing to explore caregiver expectations and burdens such as travel time and distance, missed days of work, and out of pocket expenses.

Results: The retrospective analysis demonstrated that 69.1% of repeat nMRIs did not reveal new relevant findings and that 32.4% of repeat nMRIs were ordered against guideline recommendations. On initial scans, patients with a study indication of CP were more likely to have significant findings (N=7, 100.0%) than patients without a study indication of CP (N=83, p=57.2%, p=0.042). In subsequent scans, patients with s study indication of CP were more likely to have a repeat scan against guidelines (N=6, 66.7%) compared to patients without a study indication of CP (N=39, 27.3%, p=0.020). In addition, patients undergoing a second scan with a study indication of GDD were more likely to have significant findings on nMRI scans (N=24, 40.7%) compared to patients without a study indication of GDD (N=33, 24.7%, p=0.048). Additionally, adverse anesthesia events were uncommon, with emergence delirium (7.6%) and nausea/vomiting (0.9%) being most frequent.

Discussion: Repeat nMRIs in children with neurodevelopmental conditions are often ordered against guideline recommendations and frequently yield no new clinically relevant findings, demonstrating its limited clinical utility. Enhancing physician education and improving adherence to imaging guidelines when ordering and approving these nMRIs is essential to optimize resource allocation, reduce family burden, and avoid unnecessary risk for patients. nMRI requests for ASD, GDD, epilepsy and CP should be preceded by careful evaluation of the diagnostic value and potential impact on management. Sole reliance on radiologists during protocoling is insufficient, especially when requests provide minimal indication. Preliminary prospective data suggest that rural travel requirements and missed work time contribute to family burden associated with repeat nMRI.

Successful treatment of chronic Hepatitis C Virus in a pediatric patient with glecaprevir/pibrentasvir despite inadvertent non-adherence: a case report

Iris Yang, Athena McConnell, Andrea Tang

Introduction: Early treatment of chronic hepatitis C virus (HCV) in children can prevent further progression of liver damage and reduce potential complications. Glecaprevir/pibrentasvir (GLE/PIB) sachet formulation has only recently become available in Canada allowing care to be extended to the pediatric population. Treatment adherence is a key consideration in viral clearance due to concerns of treatment-resistant viruses.

Case: A nine-year-old female with chronic HCV was treated with sachet GLE/PIB. She was initiated on a weight-appropriate treatment regimen but at follow-up, it was discovered that her caregiver was only providing 25% of the prescribed dose to the patient. Despite presumed subtherapeutic drug concentration for four weeks, the patient achieved sustained virologic response.

Discussion: This case highlights the minimal clinical implication of GLE/PIB non-adherence in a pediatric patient which is consistent with both adult and limited pediatric-focused literature. This report demonstrates the importance of providing clear caregiver education and consistent follow-up to minimize medication administration errors at home. With limited published literature on GLE/PIB use in the pediatric population, this case aims to increase the availability of real-world data.

Access to Primary Care for Children with Neurodevelopmental Differences

Kate Korchinski, Lorynn Labbie, Susan Bobbitt

SDG 3 and SDG 10

Background: Neurodevelopmental disorders (NDDs) are a group of childhood-onset conditions that can cause clinically significant difficulties in cognitive, emotional, behavioral, language, motor, and/or social abilities.1 Included under the umbrella of NDDs are conditions including intellectual developmental disorder, global developmental delay, autism spectrum disorder, cerebral palsy, fetal alcohol spectrum disorder, and genetic syndromes.2 NDDs are estimated to affect 7-14% of all children in developed countries, contributing to a significant population with complex health needs.3 Given these complex needs, children with NDD often have higher healthcare service utilization rates than those without.4 However, the current primary care practitioner (PCP) shortage can make receiving required care challenging, with the 2024 Canadian Health Survey on Children and Youth estimating that only approximately 32% of children with NDDs were able to consult a PCP the same or next day, which can lead to poorer care experiences and health outcomes.5

This project aims to understand the barriers to accessing primary care and compare health related outcomes of patients with NDDs who have a PCP to those that do not in Saskatchewan.
Methods: Caregivers of children with NDDS between the ages of 0-18 completed one survey (n=107). Participants were recruited through PAWS announcements, social media, and posters. The survey assessed several factors related to PCP access and demographics. For those with PCPs, wait times for PCP appointments and perceived efficacy of PCP care were measured. For those without PCPs, barriers to PCP access and perceived efficacy of non-PCP healthcare were evaluated.
Results: 90.4% of participants had a PCP (95% CI: 83.0–95.3%). Amongst those with a PCP, 47.9% of participants reported waiting >1 month and 37.2% reported waiting >1 week for a PCP appointment. Despite this, 50% of those with PCPs reported their PCP care as effective or very effective. Of the 9.6% of participants who cited that they did not have a PCP, identified barriers to access included lack of parental PCP, waitlists, and wait times. A combined efficacy comparison revealed that having a PCP is associated with higher perceived effectiveness of PCP care (p = 0.0006).
Conclusion: While the majority of children with NDDs in Saskatchewan have access to a PCP, delays in accessing care are common and may affect health outcomes. Future investigations will aim to specify the effects of barriers and wait times through qualitative interviews.

Verbatim theatre in pediatric oncology: integration into residency and continuing inter-professional education

Marina Liu, Shauna Flavelle, Paul R. D'Alessandro

Hybrid (in-person and virtual) sessions, including those involving medical humanities, are increasingly ubiquitous in health professional education since the COVID-19 pandemic. Theatre is frequently used in health care professional (HCP) education and has the unique ability to convey strong emotional experiences and generate empathy. Ed's Story, a verbatim play written from the journal of an adolescent/young adult (AYA) osteosarcoma patient, has been utilized in medical education at Canadian institutions for over a decade and has previously been recognized for its ability to increase empathy among trainees. However, we have never integrated Ed's Story into sessions for pediatric resident physicians (PRPs) or pediatric oncology healthcare professionals (HCPs).
In this study, we explored how hybrid sessions using Ed's Story, combining both passive viewing of a recording of the play followed by a participatory reader's theatre (RT) activity of the script, impacted PRPs and HCPs working in the provincial pediatric oncology program at our tertiary children's hospital. Participants completed online pre- and post-session surveys assessing empathy and gathering open-ended narrative responses.
Results revealed that participants, including those who joined virtually, provided positive feedback. Participant empathy increased post-session in 78% of individuals, and overall mean cohort scores increased from medium-high to high empathy. The majority of participants preferred watching the recording over RT, though many still acknowledged the value of RT. Inductive thematic analysis of narrative feedback identified five themes: new or broadened understanding of interdisciplinary pediatric oncology care and patient/family illness experiences; recognition of AYA care needs; appreciation for nuances of advanced communication; acknowledgement of new skills gained; and session/logistic feedback. These results may demonstrate that engagement with Ed's Story is an effective intervention to prevent potential regression of empathy and will inform future iterations of Ed's Story to optimize content delivery and session structure.
Future directions include following sustained empathy changes in PRPs throughout their training, updating audio-video formatting to align with current technology, and developing a new iteration of theatrical work(s) with local patients and their stories.

Oncofertility needs assessment of adolescent/young adult cancer survivors in Saskatchewan, Canada

Sierra Leonard, Huyen Vu, Saima Alvi, Trustin Domes, Laura Hopkins, Paul R. D'Alessandro

Introduction: Infertility is a major concern for pediatric and adolescent/young adult (AYA) cancer patients due to gonadotoxic treatments. Timely onco-fertility counselling and referral to fertility preservation (FP) specialists are now standards of care. In Saskatchewan, there is only one fertility clinic serving 1.2 million residents across 651,900 km², and there is currently no standardized algorithm to guide oncofertility care.
Purpose: To describe oncofertility experiences of a cohort of AYA cancer survivors (aged 15-39 years at study, >5 years off treatment for a childhood or AYA cancer.) Exploratory aim was to determine if clinical variables or distance between home residence and centralized fertility clinic were predictive of rates of counselling or referral.
Methods: We conducted a cross-sectional needs assessment through recruitment of AYA cancer survivors from the long term pediatric/AYA cancer clinic at the Jim Pattison Children's Hospital in Saskatoon. Self-reported demographics, experiences, and perceived barriers were collected via survey. Clinical and patient variables were extracted from medical records. Descriptive statistics were reported, and univariate analyses examined associations between demographic, treatment, and geographic distance variables and documented fertility counselling or referral.
Results: Thirty-two participants (mean age 21.5 years, 56% male; 96% cis-gendered; 68% White; 32% Indigenous/First Nations/Metis) were included. Fourteen (46%) participants recalled a discussion about fertility at some point during their cancer care; 9 (30%) recalled discussions prior to starting treatment. Discussions were documented in the medical records of eleven participants (35.5%), while 7 (22.6%) had documented FP referrals. Self-reported barriers to FP included undergoing additional procedures (56%), being too ill at diagnosis (48%), lack of available procedures (44%), and cost (44%). Survivors diagnosed at ≤12 years old were significantly less likely to have a documented FP referral (p=0.03) and showed a trend toward fewer documented oncofertility discussions (p=0.067). Sex, high-infertility-risk treatment, and distance to the fertility clinic were not associated with odds of documented counselling or referral (p>0.05).
Discussion: Our diverse cohort included 56% male and 32% Indigenous patients. Historic rates of counselling and FP referrals were low, with patients diagnosed at ≤12 years of age less likely to have documented referrals or discussions. This finding may reflect limited FP options for prepubertal individuals in Saskatchewan and/or provider hesitancy to initiate discussions when referral is not anticipated. Patients did not endorse travel as a barrier, and distance to centralized resources was not predictive of discussions or FP referrals. These findings establish a baseline to measure practice changes after implementation of our provincial oncofertility algorithm.

Poster PRESENTATIONS
11:00 am – 12:00 pm
Category 6 – Undergraduates

Sex Specific Patterns of Bone Development in Pediatric Congenital Heart Disease: An HRpQCT Study

Aidan Doleman, Matthew Chapelski, Charissa Pocket, Kristi Wright, Corey R. Tomczak, Marta C. Erlandson

Background: Congenital Heart Disease (CHD) is one of the most common birth defects globally, affecting approximately 1 in 100 children. With advances in surgical and diagnostic techniques, approximately 85% of children born with CHD are now expected to reach adulthood. This increase in life expectancy is accompanied by a high prevalence of comorbidities in adulthood, such as obesity, diabetes mellitus, and cardiovascular disease. These have been associated with greater bone fragility and damage to bone structure; therefore, it is imperative to understand bone development in children with CHD. To date no studies have examined bone health or osteoporosis risk in children with CHD using high-resolution peripheral quantitative computed tomography (HRpQCT). Therefore, the purpose of this study is to measure bone parameters in children with CHD.

Methods: Seventeen males and thirteen females with CHD, between the ages of 10-17 were recruited from the Department of Pediatric Cardiology at Jim Pattison Children's Hospital. HRpQCT scans at the non-dominant distal radius and tibia were conducted to access bone microarchitecture and volumetric bone mineral density. Participants with CHD were split by CHD lesion diagnosis (simple vs complex) and HRpQCT bone parameters were compared to age, sex, and ethnicity specific reference curves (Gabel et al., 2018).
Results: The male participants were, on average, 12.22±2.29 years of age, with a mean height of 153.93±19.05 cm and body mass of 53.89±21.28 kilograms. The mean BMI percentile was 69.96±33.54, and the average physical activity score was 2.64±0.85. Female participants had a mean age of 13.79±1.97 years, height of 163.12±10.00 cm, and body mass of 54.96±8.93 kg. Their mean BMI percentile was 58.30±26.41, with an average physical activity score of 2.64±0.50.
In our preliminary analysis it was found that females follow a normal distribution at both the radius and tibia for bone parameters. It was found that males may have impaired cortical thickness at both the radius and tibia with 77% of males falling below the 50th centile at the tibia, and 88% falling below the 50th centile at the radius. Other bone parameters for males followed a normal distribution. Further results will be available at the time of presentation.
Discussion: Our results suggest that deficits in bone development in children with CHD may be sex, site, and bone compartment specific. Bone parameters don't appear to be influenced by the complexity of defect. Further investigation is warranted to find a definitive conclusion.

Well-Appearing Febrile Young Infants Aged ≤90 Days, a Retrospective Analysis of Our Clinical Practice in Regina

Andreea Ababei, Dr. Basmah Ishteiwi, Sabiha Sultana

Fever in infants ≤90 days represents one of the most common yet challenging presentations in pediatric emergency care. While most infants appear well, a small proportion may have serious bacterial infections (SBIs) or invasive bacterial infections (IBIs) such as bacteremia or meningitis. In the absence of local data, practice variation can lead to frequent invasive testing and hospital admissions. Recent Canadian guidelines highlight the need for evidence-based, risk-stratified management to balance safety and resource use.
The objective of this study is to describe local patterns of investigation, diagnosis, management, and outcomes among well-appearing febrile infants ≤90 days presenting to a community-based hospital. Additionally, the study aims to identify laboratory marker associations with SBIs and IBIs. A retrospective chart review was conducted for infants aged ≤90 days who presented to the emergency department in Regina, Saskatchewan, between July 2021 and December 2024 with fever (≥38°C). Data were extracted from electronic health records, including demographics, vital signs, laboratory testing (CRP, urinalysis, urine, blood, and CSF cultures), management, and outcomes. Descriptive statistics summarized patient characteristics and investigations. Associations between categorical variables were assessed using chi-square or Fisher's exact tests, with significance defined as $p < 0.05$. Among 115 eligible infants, 55.7% were male. Hospital admission occurred in 80.0% of infants. Most infants (42.1%) were diagnosed with isolated fever, 37.5% with viral infection, 12.5% with SBI, and 4.6% with IBI. Laboratory results showed that 18.6% had elevated CRP (≥ 20 mg/L), 27.9% had positive urinalysis, 18.8% had positive urine cultures (predominantly Enterobacterales), 2.7% had positive blood cultures, 12.5% had CSF pleocytosis, and 5.6% had positive CSF cultures. Elevated CRP ($p < 0.001$), positive urinalysis ($p = 0.001$), and positive urine cultures ($p < 0.001$), were significantly associated with SBI and IBI diagnoses. Pharmacologic management was provided to 71.9% of infants, most commonly with antipyretics (64.4%) and antibiotics (55.9%). Complications occurred in 8.0% of infants, primarily respiratory distress. Over half (53.5%) of infants were discharged within 24 hours, and nearly all were discharged in stable condition.
This study provides insight into current management patterns for well-appearing febrile infants within a community-based hospital setting. The findings emphasize the importance of refining evaluation strategies and promoting greater consistency in diagnostic approaches. Future research incorporating decision-making support tools and biomarkers such as procalcitonin may further improve bacterial infection risk assessment and guide more focused approaches to care.

Exploring the Effect of Postnatal Maternal Fiber Restriction or Enrichment on Offspring Development and Stress Circuitry in Wistar Rats

Nada Emara, Dr. Wendie Marks, Fabi Funes

SDG3

Maternal nutrition during early life shapes offspring neurodevelopment and stress circuitry. While protein and soluble fiber have been studied extensively, the role of postnatal maternal insoluble fiber, such as cellulose, is poorly understood. Using a Wistar rat model, this project examines how altering the maternal diet during lactation through cellulose restriction or enrichment affects offspring neurodevelopment, behavior, stress circuitry, and gut microbiota. Lactating Wistar rat dams were assigned to fiber-restricted (0.4% cellulose), fiber-enriched (30% cellulose), or control (5% cellulose) diets. Offspring were assessed for somatic growth, sensory and neurodevelopment, and stress-related behaviors from postnatal day 1–21. Additionally, molecular analyses of the hippocampus and prefrontal cortex glucocorticoid receptor density will be performed to examine stress circuitry. Fecal 16S rRNA sequencing will be used to evaluate microbial communities. We hypothesize that maternal fiber restriction disrupts microbial colonization, increasing stress reactivity and impairing neurodevelopment. Preliminary data show fiber enrichment accelerated sensory maturation, with earlier ear opening and eye opening compared to restriction and control. Males were more sensitive in auditory maturation, whereas females were more affected in visual maturation. For motor performance, restriction impaired righting reflex but improved grip strength, whereas enrichment improved righting reflex but reduced grip strength. For somatic growth, enrichment produced the greatest overall weight gain compared to restriction. Overall, preliminary findings suggest that maternal dietary fiber shapes early-life somatic, sensory, and motor development, with some effects differing by sex.

Effect of Prenatal, Gestational, and Postnatal Vitamin D Deficiency on mTOR Expression and Physical and Behavioural Development in a Wistar Rat Model

Georgia A. Heilman, Cassandra M. Snider, Quinn R.L. Smith, M. Afzal Javed, Andrew J. Reobuck, Wendie N. Marks

Introduction: Developmental vitamin D deficiency (VDD) through the prenatal, gestational, and postnatal periods is a concern due to its sustained impact on offspring. The hippocampus is particularly susceptible to environmental influence and can be altered by vitamin D fluctuation. Vitamin D also influences the mechanistic target of rapamycin (mTOR) pathway, which is critical for growth and neurodevelopment. Purpose: To explore the effect of developmental VDD on hippocampal mTOR complex 1 (mTORC1) and complex 2 (mTORC2) expression and physical and behavioural development. Methods: Wistar rat dams were assigned to a vitamin D deficient or control diet from six-weeks preconception until sacrifice on postnatal day 21. Pup hippocampal mTORC1 and mTORC2 were quantified by ELISA. Physical and behavioural development were assessed through body weight, the righting reflex, negative geotaxis, grip strength, open field testing, and developmental milestones of fur development, ear and eye opening, and incisor eruption. Results: Significant differences were observed in body weight, incisor eruption, and mTORC1 expression among sexes. VDD pups had lower body weight potentially resulting from reduced muscle mass and impaired bone development. Control pups achieved incisor eruption earlier than VDD pups and had differing exploration patterns during open field testing. Male VDD pups had elevated hippocampal mTORC1, whereas female VDD pups had reduced hippocampal mTORC1. Discussion: These findings reinforce the role of vitamin D on development and its influence on mTOR signaling. Future work will examine mTOR pathway signaling molecules.

Attenuated peak tissue oxygenation responses to reactive hyperemia in patients with Fontan circulation

Hasnain Ali , Adam M.S. Luchkanych, M. Rafique Khan, Thomas J. Jurrisen, Marta Erlandson, Kristi D Wright, Charissa Pockett, T. Dylan Olver, Corey R. Tomczak

Fontan (FTN) circulaYon is a surgical palliaYon for single ventricle physiology resulYng in venous circulaYon directed to the pulmonary system in the absence of a subpulmonary (right) ventricle. PaYents with FTN may exhibit impaired vascular reacYvity and commonly display exercise intolerance, possibly related to an uncoupling of blood flow to oxygen demand. We tested the hypothesis that paYents with FTN would exhibit impaired upper limb reacYve hyperemia (near infrared spectroscopy, NIRS) compared to age-matched controls (CTL). Twelve paYents with FTN (6 females, 6 males, 17±3 yrs) and 9 CTL (6 females, 3 males, 18±4 yrs) were instrumented with NIRS probe on the belly of the flexor digitorum profundus. The hyperemic response was determined over 6 min following rapid deflaYon of the brachial cuff (6 min circulatory occlusion), Results from repeat tesYng were averaged and comparisons were made between groups with two-tailed unpaired t-tests. Baseline Yssue oxygenaYon index (TOI) prior to occlusion was not different between FTN (75±5%) and CTL (77±7%, P = 0.2853). TOI desaturaYon rate during cuff occlusion was also similar between FTN (-0.16 ± 0.08%/s) versus CTL (-0.20 ± 0.07%/s, P = 0.2368). The nadir of TOI during cuff occlusion was also similar between FTN (36±20%) and CTL (31±11%, P = 0.4679). Following cuff release, the rate of TOI recovery was also similar between FTN (2.1±1%/s) and CTL (2.5±0.8%/s, P = 0.4134). Notably, peak TOI following cuff release was acenuated in FTN (83±3%) compared to CTL (88±2%, P = 0.0004). Together, these data illustrate that although resYng TOI and rates of TOI reducYon and restoraYon were similar, peak TOI following circulatory cuff occlusion release was blunted in FTN. Thus, young paYents with FTN may demonstrate a reducYon in peak microvascular reperfusion.

Genetic Cardiovascular Disease in Saskatchewan: A Retrospective Clinical and Demographic Chart Review

Ibrahim Al-Mouaiad Al-Azem, Emma Eger, Brandon Chalazan, Bita Hashemi, Heather Szabo-Rogers, Michelle Collins

Background: Genetic testing for cardiovascular conditions has become increasingly integrated into clinical practice, yet comprehensive data on testing patterns and diagnostic yields across diverse cardiac phenotypes remain limited. Understanding the distribution of genetic findings in Saskatchewan across different heart diseases is essential for optimizing testing strategies, variant interpretation, and patient counselling. By linking clinical and genetic data, this study aims to provide a clearer picture of the genetic landscape underlying heart disease, inform diagnostic practice, and support future translational research.

Methods: We performed a retrospective chart review of patients referred from cardiologists to the Saskatchewan Health Authority (SHA) Medical Genetics service between 2014 and 2024 for a cardiovascular diagnosis. We extracted demographic and clinical information from medical records, identified and classified cardiovascular diagnoses, and collected results of genetic testing including single-gene testing, panels, exome, or genome sequencing. We then assessed the diagnostic yield of genetic testing by condition type.

Results: Of 880 patients reviewed (458 males, 422 females), 320 were pediatric cases (aged ≤17 years; 166 males, 154 females). Diagnoses included cardiomyopathies (e.g., dilated, hypertrophic), structural heart defects (e.g., septal defects, transposition of the great arteries, hypoplastic left heart), arrhythmias (e.g., long QT syndrome), valve-related defects, and syndromic conditions (e.g., Noonan, Marfan, CHARGE). Overall, 326 patients carried pathogenic or likely pathogenic variants, 155 had one or more variants of uncertain significance (VUS), and 334 received uninformative or inconclusive results. In the pediatric subset, the genetic diagnostic yield was 39.4% (n=126/320), with 5.9% returning VUS (n=19/320). Cardiomyopathy yielded the highest number of pathogenic findings, while congenital heart disease and arrhythmias showed more frequent VUS and inconclusive outcomes. Variant pathogenicity was also re-evaluated across the cohort, resulting in the reclassification of eight variants.

Conclusions: Genetic testing across cardiovascular phenotypes revealed a mix of pathogenic findings, VUS, and inconclusive results, underscoring the complexity of interpreting cardiovascular genetics. While confirmatory results provide important clinical value, many cases remain unresolved. Continued efforts in variant interpretation and periodic reclassification will be essential to gain further insight into the genetic underpinnings of heart disease and to enhance the clinical impact of testing in pediatric populations.

Determining the Impact of Remoteness of Residence and Lower Socioeconomic Status on Access to Fetal Echocardiography in Saskatchewan

Lorynn Labbie, Jagmeet Bagwa, Katarina Nikel, Glennie Lane, Lara Wesson, Kristine Mytopher, Eman Ramadan, Ernesto Figueiro, Adewumi Adenlawo, Gitanjali Mansukhani, Ashok Kakadekar, Timothy J Bradley.

Introduction: Congenital heart disease (CHD) is the leading cause of infant mortality due to birth defects. Prenatal diagnosis by fetal echocardiography (FE), can improve survival rates, decrease morbidity, and reduce healthcare costs. The aim of this study was to identify the impact of remoteness of residence (ROR) and lower socioeconomic status (SES) on access to FE in Saskatchewan.

Methods: Data collected included indications for FE, maternal place of residence, postal code, age, gravidity and parity, and fetal gestational age at first FE and CHD diagnoses. Maternal ROR and SES were calculated using postal code, geocoding, and Chan SES index quintiles.

Results: From 1Jan2020 to 30Jun2025, 488 first FE were performed in Saskatoon and 313 in Regina. Indications for FE were mostly suspected CHD on obstetric ultrasound (48.4%), previous family history of CHD (30.2%), abnormal prenatal maternal screening (7.6%), fetal extracardiac diagnoses (5.6%), fetal arrhythmia (3.2%) and poorly controlled maternal diabetes (2.7%). Mean maternal age at first FE was 31±6 years and median gravidity was 3 (IQR 2-4) and parity was 1 (IQR 0-2). Median gestational age in completed weeks was 27 (IQR 24-30) for all first FEs, 27 (IQR 24-31) for the 354 with CHD diagnoses, and 25 (IQR 23-28) for the 134 with complex CHD diagnoses. ROR assessed as distance of ≥100km of the maternal place of residence from the tertiary referral centres in Saskatoon and Regina was 41.1% for all FEs, 43.8% for all CHD diagnoses, and 50.7% for complex CHD diagnoses. Multivariate regression analysis of predictors of gestational age at first FE, showed lower SEC quintile was a statistically significant predictor of later gestational age at first diagnosis of complex CHD (F-value 2.66, p-value 0.026), whereas ROR (<100km vs. ≥100km), maternal age, gravidity and parity were not found significant.

Conclusions: Many women in Saskatchewan live remotely from the tertiary referral centres where fetal echocardiography is performed. Lower SEC quintile was found to predict later gestational age at first diagnosis of complex CHD suggesting SEC negatively impacts access to fetal echocardiography.

Poster PRESENTATIONS
3:15 – 3:45 pm
Category 7 – Pediatric Residents
Non-Judged

Evaluation of nirsevimab implementation in Saskatchewan
Erinna McMurtry

.

Diazoxide use in infants with hyperinsulinemic hypoglycemia: an observational study
Jovana Miladinovic

Intersectional Social Determinants and Health Outcomes in Pediatric Inflammatory Bowel Disease in Saskatchewan
Sarah Morin

Implementation of a Bronchiolitis PPO in Regina General Hospital (RGH) ED: A Quality Improvement Initiative
Nikhail Mainra

Thank you

Our Presenters

Our Judges

The Department of Pediatrics, Research Office

The College of Medicine, University of Saskatchewan

The Jim Pattison Children's Hospital Foundation of Saskatchewan

UNIVERSITY OF SASKATCHEWAN
College of Medicine
MEDICINE.USASK.CA

SASK KIDS
PEDIATRICS

JIM PATTISON
CHILDREN'S HOSPITAL
FOUNDATION