Abstract Guide

HEALTH RESEARCH CONFERENCE

A forum to showcase, connect, and strengthen health research excellence.

November 4th, 2023

Caesars Windsor, Windsor, ON

#YQGHealthResearchConference

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WELCOME

Thank you for joining us for the **2023 Health Research Conference**. Guest speakers and presenters include a diverse group of researchers, clinicians, students, and community partners representing a wide range of health research areas. We are thrilled that you are here with us to showcase, connect, and strengthen local health research excellence. Welcome!

About WE-SPARK Health Institute

WE-SPARK Health Institute is an innovative partnership supported by Hôtel-Dieu Grace Healthcare, St. Clair College, Erie Shores HealthCare, University of Windsor, and Windsor Regional Hospital that brings together health research strengths, expertise, and infrastructure from across the Windsor-Essex region of Ontario, Canada. We are establishing research pipelines to address pressing health issues, advancing discovery, innovation and technology, training and promoting excellence among our health professionals, and engaging our community.

Mission: Enhance the health, wellbeing, and care of people through transformative research and knowledge translation.

Vision: A thriving and engaged research community driving advancements in health.

Our strategic priorities can be found on our website.

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SCHEDULE OVERVIEW

8:00 AM	Registration & Light Breakfast	**LOBBY**
9:00 AM	Good Way Opening & Opening Remarks - **Carrie-Anne Peters & Dr. Lisa Porter**	**AUGUSTUS I**
9:20 AM	A Lived-Experience Perspective**: Clementa Stan**	**AUGUSTUS I**
9:30 AM	Plenary Session **Moderator:** Dr. Trevor Shepherd, Schulich School of Medicine & Dentistry	**AUGUSTUS I**
11:15 AM	Rapid Fire Session	**AUGUSTUS I**
11:45 AM	Poster Session A / Lunch	**AUGUSTUS II**
12:45 PM	Poster Session B / Lunch	**AUGUSTUS II**
2:00 PM	Concurrent session A-1 | **Moderator:** Dr. Andrew Hubberstey, University of Windsor	**SATURNI**
	Concurrent session A-2 | **Moderator:** Dr. Ingrid Qemo, University of Windsor	**MARTIS**
	Concurrent session A-3 | **Moderator:** Dr. Peter Wawrow, St. Clair College	**MERCURY**
	Concurrent session A-4 | **Moderator:** Sophini Subramaniam, McMaster University	**LUNA**
3:15 PM	Break (refreshments available)	**LOBBY**
3:30 PM	Concurrent Session B-1 | **Moderator:** Dr. Andrew Hubberstey, University of Windsor	**SATURNI**
	Concurrent Session B-2 | **Moderator:** Dr. Ingrid Qemo, University of Windsor	**MARTIS**
	Concurrent Session B-3 | **Moderator:** Dr. Peter Wawrow, St. Clair College	**MERCURY**
	Concurrent Session B-4 | **Moderator:** Meimei Peng, McMaster University	**LUNA**
4:45 PM	Panel: **"Engaging People with Lived-Experience in Research Projects"** **Moderator:** Dr. Paula van Wyk, University of Windsor	**AUGUSTUS I**
5:15 PM	Awards	**AUGUSTUS I**
5:20 PM	Closing Remarks & Good Way Closing	**AUGUSTUS I**
6:00 PM	Offsite mixer: Eastwoods Grill & Lounge	

ABSTRACTS

RAPID-FIRE ORAL PRESENTATIONS

ABSTRACT O01

IDENTIFYING AND DEVELOPING YOUTH HOMELESSNESS PREVENTION STRATEGIES THROUGH RESPONDENT-DRIVEN SAMPLING AND INTERSECTIONALITY

Evan Brown[1]**,** Kyle Jackson[1], Colleen Mitchell[1], Amy Peirone[1], Lindsey Welch[1], Mikayla Stocks[1], Sarah Wilkins[1]

[1]St. Clair College

Category: Social, Cultural, Environmental and/or Population Health Research

Youth homelessness is an ongoing and growing issue throughout Canada (Gaetz et al., 2016). Identifying and Developing Youth Homelessness Prevention Strategies through Respondent-Driven Sampling and Intersectionality aims to offset and potentially learn how to remedy this issue in Windsor-Essex County. By interviewing youth who have suffered or are suffering from homelessness, key themes and gaps in the current support system for youths can be identified and then repaired to ensure a system that is more in tune with the needs of modern youths. Due to the nature of youth homelessness, Respondent-Driven Sampling will be used to recruit interviewees. This means that our first wave of respondents, referred to the research team by Family Services Windsor Essex (FSWE), will be given the option to be compensated for referring individuals from their own social circle who qualify for the research interviews. The literature review of youth homelessness in North America was created to contextualize the future findings of the study. The study is based on intersectionality, focusing on different identities held by individuals, how each plays into different systems of oppression, and how that may have influenced the individual's experiences leading to homelessness. The literature showed that particularly vulnerable groups when regarding youth homelessness included LGBTQ2 (Lesbian, Gay, Bisexual, Transgender, Queer, and 2-Spirit), Indigenous youth and youth experiencing mental health issues.

ABSTRACT O02

MONITORING INFLUENZA A USING WASTEWATER SURVEILLANCE ACROSS A MAJOR NORTH AMERICAN LAND BORDER

R**yland Corchis-Scott**[1], Mackenzie Beach[1], Quidi Geng[1], Ana Podadera[2], Owen Corchis-Scott[1], Kenneth K.S. Ng[2], R. Michael McKay[1]

[1]Great Lakes Institute for Environmental Research, University of Windsor

[2]Department of Chemistry and Biochemistry, University of Windsor

Category: Social, Cultural, Environmental and/or Population Health Research

Laboratory based clinical assessment of respiratory infections is slow and often inaccurate since testing is limited to vulnerable patients and those who seek treatment. Wastewater surveillance is a rapid and non-biased method of determining the prevalence of a disease within a community with great promise for tracking underreported infectious diseases. Influenza A (IAV) is a serious and underreported respiratory illness which typically causes approximately 3500 deaths and 12,200 hospitalizations in Canada per annum. Wastewater surveillance was used to track the 2022-2023 IAV seasons in Windsor-Essex, ON, and Detroit, MI: a contiguous metropolitan area separated by an international border. RT-qPCR yielded mean IAV RNA concentrations for each of the epidemiological weeks within the study period (n=31). A strong positive relationship was observed between IAV cases, and the population weighted mean IAV M1 gene concentration in Windsor-Essex (Pearson's R = 0.95, p = 0.001). Similarly, a robust association was observed between new IAV hospitalizations in Michigan, and the population weighted mean IAV M1 gene concentration for metro Detroit (Pearson's R = 0.96, p = 0.001). Application of time-lagged cross correlation and qualitative examination of the wastewater signals shows the peak of the IAV season in Detroit was delayed in comparison to Windsor by four weeks. The delay may be attributed to differences in COVID-19 mitigations strategies and/or earlier IAV vaccine distributions in Michigan compared to Ontario. We show that wastewater surveillance for IAV reflects regional differences in infections dynamics and speculate that timing of vaccine administration can influence the onset and severity of a respiratory season.

ABSTRACT O03

IMPLEMENTING PATIENT NAVIGATOR SUPPORT TO ADDRESS BARRIERS IN RETINAL CARE: A MIXED METHODS STUDY

Charmaine Gaoiran[1], Omer Elkhidir[1], Mahmoud Hossami[1], Jeff Park[2], Pradeepa Yoganathan[3,4]

[1]University of Windsor
[2]University of Toronto
[3]Windsor Eye Associates
[4]Wayne State University

Category: Health Service Research; Social, Cultural, Environmental and/or Population Health Research; Clinical Research

Background: Patient navigators guide patients through the healthcare system to improve resource accessibility. While effective in various healthcare domains, their utility in retinal care remains unexplored. Retinal disorders, such as diabetic retinopathy or retinal detachment exposed to face barriers like low health literacy, financial issues, emotional distress, limited family support, and a lack of logistical support prevents them from accessing high-quality eye care. These populations are considered vulnerable and experience higher rates of vision impairment. Objectives: The study aims to identify barriers faced by retinal clinic patients and develop a patient navigator program by first identifying community resources, then implementing the program, and evaluating its impact on patient well-being. Proposed Methods: A mixed-method approach will be adopted. Qualitatively, participants will be interviewed to identify barriers to care. Quantitatively, a patient navigator intervention and surveys will assess the program's effectiveness. Key surveys include VFQ-25, IVI, GAD7, and PHQ9. Data, both before and after intervention, will be analyzed to gauge the program's impact. Future directions: Emerging themes from interviews highlight the community's unmet retinal care needs. Patient navigators can potentially address mental health challenges and service access limitations, improving patient quality of life. Results/ Implications: A community retina practice study unveiled various key barriers. Out of 100 approached, 49 showed program interest. Challenges included contacting primary care (10 patients), transportation (14), diabetes management (9 out of 40 diabetics), understanding eye conditions (10), and anxiety from retinal diseases (37). Implementing the patient navigator support system is anticipated to enhance clinic satisfaction and disease perspective.

ABSTRACT O04

FITBIT AND FOUCAULT: NAVIGATING DISORDERED EATING AND UBIQUITOUS SELF-SURVEILLANCE

Kathryn Huckson[1]

[1]McMaster University

Category: Social, Cultural, Environmental and/or Population Health Research

Wearable fitness tracking devices have steadily gained popularity in recent years. These self-surveillance technologies are a constant reminder of social and medical pressures to maintain specific standards for health and wellbeing. Such normative standards may confuse boundaries between health-consciousness and health-obsessiveness, or normal versus disordered attitudes towards physical fitness and body image. This paper explores how Fitbit, as one of the most pervasive wearable fitness technologies (WFTs), may function as an extension of disciplinary and surveillant sociomedical disclosures. In particular, I consider the implications of Fitbit for people with eating disorders, as lines between healthy and obsessive concern for measuring one's body become blurred. How does Fitbit extent medical prescriptions for a universal health ideal and micro-practices targeted at the body? Who is left out of such narrow definitions of health? How does the ubiquitous Fitbit impact the eating disordered subject? Using a Foucauldian lens expanded on through feminist post-structuralist theory, feminist technology studies, and critical disability studies, I will account for the ways in which eating disorder behaviours are discursively coded through cultural institutions such as the clinic and social media. I will expand this discussion to situate Fitbit as a tangible technology for biopower.

ABSTRACT O05

COLLABORATIVELY ADDRESSING FOOD INSECURITY: CO-DEVELOPING A SUSTAINABLE AND EQUITABLE SCHOOL NUTRITION PROGRAM

Sarah Julius[1], **Cayla Wood**[1], Kathryn Markham-Petro[1], Beckie Berlasty[1], Vivian Hawe[1], Michaela Reid[1], Annamaria Lopez[1], Alexandra Frabotta[1], Justine Van Herk[1]

[1]St. Clair College

Category: Social, Cultural, Environmental and/or Population Health Research

Within Windsor-Essex, Ontario, 1 in 4 low-income households experience moderate or severe food insecurity, impacting 15% of individuals aged 0-17. Food insecurity can have a detrimental impact on the physical and mental health of school-aged children. School Nutrition Programs (SNPs) provide children with access to healthy meals in an educational setting and help address food insecurity. This project is exploring the logistics and feasibility of a sustainable, collaborative school nutrition program. The project is funded through NSERC's College and Community Social Innovation Fund and is working in partnership with the Ontario Student Nutrition Program (OSNP), ProsperUs, and AgScape. Community-based formative research will be utilized to design a multi-sector supported School Lunch Program (SLP) with a food literacy component. More specifically, focus groups and surveys will be conducted with stakeholders (e.g., parents and SNP school coordinators). The designed SLP will then be implemented for 8-months in an elementary school located within a priority neighborhood in Windsor-Essex to determine the feasibility of the intervention. Opportunities and challenges of the intervention will be determined through observation and feedback from stakeholders (e.g., the meal provider, teachers) to further refine the delivery of the SLP to address food insecurity in Windsor-Essex. The anticipated outcomes of the overall project will see a collaboratively designed and enhanced student nutrition program for the region, with the potential for replicability in other Canadian communities. This research will also inform the design of a randomized controlled trial to determine the impact of the intervention on student health and educational outcomes.

ABSTRACT O06

DISSECTING TUBERIN LOCALIZATION AND FUNCTION DURING THE CELL CYCLE

Ali Nadi[1], **Kole Polkinghorne**[1], Elizabeth Fidalgo da Silva[1], Lisa A. Porter[1]

[1]Department of Biomedical Sciences, University of Windsor

Category: Biomedical Research

Cells control their physiology and cell cycle processes by having an intricate coordination of thousands of signalling pathways. In cells, Tuberin (gene - TSC2) is a key tumour suppressor protein that forms the Tuberous Sclerosis Complex (TSC) with its main binding partner Hamartin (gene – TSC1). TSC is a key regulator of cellular growth, size, and division and the perturbation of this complex has been implicated in driving many diseases such as the TSC disease and certain cancers. In a non-canonical manner, Tuberin regulates mitotic entry of cells at the G2/M checkpoint by binding to and cytoplasmically retaining Cyclin B1 (gene – CCNB1) using a putative binding region that stretches from 600 to 746 aa. This amino acid region in Tuberin has been established to be a mutational hotspot with clinically poorer prognosis in diseased states. Using fluorescent imaging techniques, protein-protein interaction assays and flow cytometry, a series of Tuberin point mutations within the Cyclin B1 binding domain have been shown to be disruptive to the spatiotemporal localization of the TSC, binding of Cyclin B1 to Tuberin, and cell cycle timing. To further understand the physiological implications of the mutants, CRISPR mediated genomic editing has been used to insert the single point mutations into endogenous Tuberin of human cell lines. The development of these cell lines yields new methods to study the intricate workings of the cell cycle and will broaden our understanding of the basic biology behind proliferative disease like TSC and cancers.

ABSTRACT O07

RETROSPECTIVE ANALYSIS OF MULTIPLE MYELOMA PATIENTS PRESENTING TO ER AT OR IN 2 YEARS PRIOR TO DIAGNOSIS

Moutasem Seifi[1], Sahar Khan[2], Pravillika Baka[1]

[1]Windsor Regional Hospital

[2]Department of Oncology, Windsor Regional Hospital

Category: Health Service Research; Social, Cultural, Environmental and/or Population Health Research; Clinical Research

Diagnostic delay is a common issue in multiple myeloma which is known to have an adverse impact on patient outcomes, including preventable deterioration in bone health, quality of life, and possibly survival. Despite primary care being the usual first port of presentation, available research suggests that for a high proportion of patients, a multiple myeloma diagnoses follow varied routes, and that a high proportion of patients are ultimately diagnosed in the acute care/ ER setting. Our study aims to determine the proportion of MM patients presenting to the ER at or before the initial diagnosis. This will be done through a retrospective chart review of all multiple myeloma patients with a histopathological diagnosis received between Jan 2020 and August 2023, at the Windsor Regional Cancer Center. We will aim to include a minimum of 30 patients with single or multiple ER visits, presenting with disease related symptomatology at or in 2 years prior to diagnosis. For patients presenting to the ER, we will review demographic data, symptomatology and reason for presentation, as well as proportion of patients requiring immediate hospitalization and intervention. Through this study we hope to identify the nature of emergent presentations in newly diagnosed multiple myeloma patients and identify demographic and disease-related characteristics that are potential associated risk factors, and hence facilitate strategies for earlier and more timely diagnosis.

ABSTRACT O08

A CROSS-SECTIONAL STUDY TO IDENTIFY BASELINE DATA AND REFERRAL RATES TO ADDICTION MEDICINE SERVICES IN PATIENTS WHO PRESENT WITH SUBSTANCE ABUSE

Nainika Venugopal[1], Andrew Nguyen[1], Mahtab Malekian Naeini[1], Zayya Zendo[1], Emma Mineau[2], Caroline Hamm[3], Robert McKay[3]

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[2]University of Windsor
[3]Windsor Regional Hospital

Category: Health Service Research, Clinical Research

Background: Opioid substitution therapy (OST) has gained recognition for its effectiveness in the management of opioid use disorders (OUD) and associated harm reduction. Despite expansion of OST programs across Canada, the opioid crisis continues to persist, emphasizing the need to evaluate its effectiveness and identify barriers in its implementation and accessibility. Methods: A cross-sectional review was performed at a community hospital in Southwestern Ontario on patients who presented to the emergency department (ED) with features suggestive of an OUD or were admitted through ED with ICD-codes related to OUD between January 1, 2019, and December 31, 2022. Patient charts will be analyzed for data, including but not limited to demographics, frequency of ED visits, length of hospitalization, reasons for admission, and referral rates to the addiction medicine services (AMS). Results: Data from our previous study which only included patients presenting to the ED with features suggestive of OUD, had shown a total of 511 ED visits among 32 participants. Of these visits, 70 admissions were made of which 18.5% were referred to AMS, indicating barriers in the referral process. We will be expanding on this study to include relevant ICD-10 codes and will have results ready by the presentation deadline. Conclusion: We expect to see results similar to data collected from our previous smaller study, indicating a need for improved facilitation between hospital physicians and AMS through education on OST benefits and available AMS services, and implementation of AMS referral guidelines within hospitals.

ABSTRACT O09

LOSS OF ULK1 IMPAIRS AUTOPHAGY ACTIVATION, SPHEROID VIABILITY, AND TUMOUR PROGRESSION IN EPITHELIAL OVARIAN CANCER

Jack D. Webb[1,2]**,** Lauren Viola[1], Adrian Buensuceso[1], Matthew J. Borrelli[1,2], Yudith Ramos Valdes[1], Bipradeb Singha[1,2], Trevor G. Shepherd[1,2,3,4]

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Category: Biomedical Research

Epithelial ovarian cancer (EOC) remains a leading cause of gynecological cancer-related deaths due its late diagnosis and absence of effective treatments for chemo-resistant disease. EOC metastasizes through peritoneal dissemination, often forming multicellular spheroids, in which autophagy—a cell survival mechanism—is induced, requiring ULK1 (Unc-51-like kinase 1) activity. Our study aims to further understand the role of ULK1 in EOC tumor growth and metastasis. Using CRISPR/Cas9 technology, we ablated the ULK1 gene in EOC cell lines and fallopian tube derived control line. Western blotting confirmed ULK1 loss and key autophagy markers. Autophagic flux was assessed using fluorescence microscopy and cell viability by Trypan Blue, Cell Titer-Glo, and Caspase-Glo assays. Bioluminescent imaging monitored tumor progression of ULK1KO xenografts, while immunohistochemistry (IHC) assessed Ki67 for cell proliferation and cleaved caspase-3 for apoptosis. ULK1 loss leads to impaired autophagy in EOC spheroids, with reduced LC3 processing and elevated p62 levels. All ULK1KO cells had reduced spheroid cell viability and integrity. ULK1 deficiency reduced tumor burden in xenografted mice, although differences were observed in tumor growth and extent of metastasis between EOC cells. Ki67 and cleaved caspase-3 staining revealed reduced cell proliferation and increased apoptosis respectively in tumors derived from ULK1KO cells. ULK1 is required for EOC spheroid formation and cell survival likely through its regulation of autophagy. ULK1 deficiency does not increase EOC cell sensitivity to standard-of-care chemotherapy, indicating that other therapeutic strategies might synergize with autophagy inhibition for EOC treatment. Altogether, ULK1 may have a multifaceted role in EOC beyond autophagy regulation.

ABSTRACT O10

BARRIERS TO EQUITABLE HEALTHCARE FOR CRITICALLY ILL TEMPORARY FOREIGN WORKERS

Chelsea Ymana[1], **Kailyn St. Pierre**[1], Dhuvaraha Srikrishnaraj[2], Genesis Flores[3], Kanza Mirza[2], Manahel Elias[2], Ryan Palazzolo[1], Farwa Zaib[2], Aya El-Hashemi[1], Retage Al-Bader[2], Abdelhady Osman[2], Alex Zhou[2], Maureen Muldoon[4], Indryas Woldie[1,5], Jayashree Mohanty[6], Amy Llancari[7], Corrin Primeau[8], Janet E. McLaughlin[9], Jood Issa[10], Juliana Wiggins[4], Nicole Sbrocca[5], Tanya Basok[4], Caroline Hamm[1,2,5]

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[3]WE-SPARK Health Institute
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[5]Windsor Regional Hospital Cancer Program
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[8]Interim Patient Representative, Windsor Regional Hospital
[9]Human and Social Sciences, Laurier University
[10]University of Guelph

Category: Health Service Research; Social, Cultural, Environmental and/or Population Health Research; Clinical Research

Temporary foreign workers (TFW) are pivotal contributors to Canada's agricultural industry. Annually, over 50,000 TFW, constituting a quarter of all agricultural laborers, are integrated into Canada's farming industry to bridge labour gaps. Predominantly residing in the Windsor-Essex region, these migrant workers are hired through Seasonal Agricultural Workers Program (SAWP) using temporary contracts will no direct route to permanent residency. However, despite their vital role in this high-risk industry and financial contributions to our healthcare system, treatment of TFW with critical illnesses are often interrupted by the end of their contracts, with the majority unable to access the same quality of healthcare in their country of origin. Moreover, healthcare services are often mediated through employers. This increased dependence creates additional barriers, causing TFW to become hesitant when seeking primary care due to fear of job termination and repatriation. Ultimately, the lack of federal policies surrounding critically ill TFW creates moral distress for healthcare providers who are unable to ensure uninterrupted care. The objective of our research is to understand this injustice through retrospective case analysis and interviews with critically ill TFW. Our research also aims to survey healthcare professionals in the Windsor-Essex region to discover barriers faced by healthcare practitioners and potential avenues of policy change to better support their care. The overarching goal is to reform Canada's policy to allow the continuity of care of critically ill TFW and fulfil the ethical obligation to support TFW who play a critical role in our society.

POSTER SESSION

Research Focus: Biomedical Research

ABSTRACT P01

THE USE OF NEUROGLOBIN AS A FUSION TAG FOR SOLUBILITY ENHANCEMENT AND QUANTIFICATION OF DIFFICULT-TO-EXPRESS PROTEINS

Farid Alashkar[1], Cody Caba[1], Farinaz Ziaee[1], Yufeng Tong[1]

[1]Department of Chemistry and Biochemistry, University of Windsor

Fusion tags are critical tools for the characterization, detection, and purification of proteins. In biotechnology and protein engineering, many different fusion tags have been developed to enhance the solubility of the target proteins or facilitate purification. Currently, no fusion tag serves the purpose of quantification of proteins for purification. We propose that neuroglobin (NGB), a small, 18 kDa monomeric, heme-containing, and chromogenic protein can be utilized as a fusion tag to track the purification of target proteins it is fused to. NGB is a highly soluble and thermostable protein structurally homologous to other heme-containing proteins such as hemoglobin, myoglobin, and peroxidases. The prosthetic group further allows the conversion of this oxygen binding protein into a peroxidase that enables chemiluminescence-based detection. In this study, we designed constructed with a His6-NGB tag on the N-terminus. Using BirA and USP8 as the target proteins of interest we tested the ability of NGB to enhance solubility and to facilitate detection of expressed protein using US-Vis spectroscopy. We compared the His6-NGB tag to His6-SUMO, and MBP tags for their effect on the expression and purification of the target proteins in E. coli. We have successfully demonstrated that NGB can be fused to a target protein of interest and enable the tracking of the target protein during purification. Further experimentation and quantification with UV-Vis spectroscopy in comparison with other methods will give rise to a procedure for the measurement expressed proteins. We expect the NGB will be a new fusion tag finds its application in biotechnology.

ABSTRACT P02

MOLECULAR BIOMARKERS FOR THE PROGRESSION OF MUSCLE INVASIVE BLADDER CANCER

Danya Al-Hassani[1], **Jocelyne Cyrenne**[1], Abedalrhman Alkhateeb[1,2], Bre-Anne Fifield[1], Benita Rangira[3], Julianna Orlando[4], Tiamin Zhang[2], Osama Hamzeh[2], Joshua Mathews[1], Asma Ghafoor[5,6], Tom Deklaj[7], Raj Goel[7], Ronald Sorenson[8], Bassel Al-Farra[7], Hussein M Kalaff Abourawi[7], Yasser El-Gohary[9], Dora Cavallo-Medved[3], Luis Rueda[2], Lisa A. Porter[1,10], Govindaraja Atikukke[4], Sindu Mary Kanjeekal[1,8,11]

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[9]Department of Pathology, Windsor Regional Hospital
[10]WE-SPARK Health Institute
[11]Department of Oncology, Schulich School of Medicine and Dentistry

Additional Research Focus: Clinical Research

Bladder cancer is Canada's fifth most common cancer, with two distinct types: non-muscle invasive (NMIBC) and muscle-invasive bladder cancer (MIBC). MIBC develops from high-grade NMIBC. The objectives of this study are to find molecular biomarkers that lead to the progression of MIBC from NMIBC to provide a targeted treatment approach therefore, also using early detection to decrease cases of MIBC and to predict the biomarkers which aid in the transition of high-grade NMIBC to MIBC. The hypothesis is that if molecular biomarkers are identified and predict the progression of MIBC from NMIBC, they can be implemented in clinical use. Approximately 25 bladder cancer patients from the Windsor Regional Hospital were divided into two cohorts. The first cohort included NMIBC samples; the second included MIBC samples. Three STAR patient samples began with NMIBC diagnosis and progressed to MIBC during this study. Data sequencing and analysis were conducted to identify sequencing depth, allele frequency and non-synonymous mutations. The results indicated a higher allele frequency and mutational change in MIBC samples. Cell line studies were also conducted, showing increased proliferation rates. Retrospective data was collected from patients' charts, indicating

that 100% of MIBC patients' deaths were related to bladder cancer. This ongoing study brings significant value to the field of oncology and translational health, from identifying the molecular biomarkers that lead to MIBC to using that information in a clinical setting as a prevention method and treatment of bladder cancer; the next steps of this research will strengthen the results of this study.

ABSTRACT P03

THE ROLE OF NKR-P1B RECEPTOR IN REGULATING NK CELL RESPONSES IN BREAST CANCER

Karla Alnajm[1], Mohamad B. Alkassab[1], Mir Munir A. Rahim[1]

[1]Department of Biomedical Sciences, University of Windsor

Natural killer (NK) cells are innate lymphocytes that respond to diseased cells via two effector functions: direct cytotoxicity; and release of immunomodulatory cytokines. Target cell recognition is mediated by an overall signaling balance of activating and inhibitor receptors, which recognize ligands on target cells. The inhibitory NKR-P1B receptor, expressed on mouse NK cells, recognizes C-type lectin-related protein-b (Clr-b) ligand and mediates a 'missing-self' response against cells lacking Clr-b. Here, we describe the role of NKR-P1B:Clr-b interaction in immunoevasion and NK cell homeostasis in breast cancer. Injection of E0771 mammary adenocarcinoma cells into the mammary fat pad of female C57BL/6 mice gives rise to Clr-b+ mammary tumours. Clr-b is also expressed in tumour-infiltrating leukocytes (TIL). Using E0771 and Clr-b-deficient E0771, generated by CRISPR-Cas9 mutagenesis, we have induced mammary tumours in WT, Nkrp1b--/--, and Clr-b--/-- mice to study cancer immunoevasion via NKR-P1B:Clr-b interactions. E0771 tumours grew slower, and fewer Nkrp1b--/-- mice developed mammary tumours compared to WT mice. Flow cytometric analysis revealed higher frequencies of PD-1+ effector EOMES+CD49a+ NK cells in mammary tumors from Nkrp1b--/-- compared to WT mice, possibly due to their higher activity. In in vitro co-culture assays, E0771 cells induce proliferation and activation more in Nkrp1b--/-- NK cells than WT NK cells. These experiments indicate that Clr-b expression in both tumour cells and TILs can contribute to immunoevasion via NKR-P1B. In vivo and in vitro experiments using Clr-b-deficient E0771 cells will further highlight the contribution of tumour cells and TIL in immunoevasion via NKR-P1B:Clr-b axis in breast cancer.

ABSTRACT P04

THE HISTONE METHYLTRANSFERASE G9A REGULATES EXPRESSION OF FORAGING AND NOCICEPTION IN DROSOPHILA MELANOGASTER

Dunya Assaf[1], Jeffrey Dason[1]

[1]Department of Biomedical Sciences, University of Windsor

The Drosophila melanogaster foraging gene encodes a cyclic GMP-dependent protein kinase (PKG) that regulates nociception. Furthermore, PKG expression is increased in nerve injury-induced nociceptive hypersensitivity mouse models. It is unknown if foraging expression changes in response to injury in Drosophila. Additionally, the mechanisms by which PKG expression are regulated in response to injury remains unknown. The histone methyltransferase G9a has previously been shown to regulate foraging mRNA expression, and we previously found higher foraging levels resulted in nociceptive hypersensitivity, whereas loss of foraging reduced nociceptive sensitivity. However, a direct link between for and G9a with respect to nociception has not been established. We used a thermal nociception assay and found that G9a null mutants displayed nociceptive hypersensitivity in comparison to their genetic control. Next, we examined FORAGING protein levels using Western blots and an antibody that recognizes all FORAGING isoforms. We found that G9a null mutants had a higher amount of FORAGING protein in comparison to the control. We then used an antibody specific for the FORAGING P1 isoform, which was previously shown to be important for nociception, and found that FORAGING P1 expression was upregulated in G9a null mutants. Current experiments involve examining the G9a foraging null double mutants to determine if this increase in FORAGING expression is required for the nociceptive hypersensitivity seen in G9a null mutants. Collectively, our data demonstrates that G9a negatively regulates nociception and FORAGING P1 protein expression.

ABSTRACT P05

TARGETED GENE SEQUENCING OF SPORADIC YOUNG-ONSET COLON CANCER SAMPLES USING AMPLISEQ FOCUS PANEL IDENTIFIES RECURRENT MUTATIONS IN DDR2 ONCOGENE

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Young-onset sporadic CRC is an important yet understudied heterogenous group of aggressive cancers with distinct clinical and histopathological features. There is a steady increase in the incidence of cancer in this group of patients and currently, there are no screening guidelines to identify these patients due to a lack of understanding of the molecular mechanisms driving this cancer. Using the AmpliSeq Focus gene panel from Illumina, we performed targeted resequencing assay for biomarker analysis on 30 young colorectal cancer patients admitted to the Windsor Regional Hospital Cancer Program. The AmpliSeq Focus gene panel targets 52 genes that are implicated in solid tumours. The mean age of the patients in this study was 44 years-old and only focused on patients without any personal or family history of colon cancer/other malignancies or IBD. The results from our study can be used to understand the potential molecular mechanisms responsible for distinct clinical and pathological nature of cancer development and progression in the subgroup of colorectal cancer patients.

ABSTRACT P06

DEVELOPING FLUORESCENT TOOLS TO STUDY THE ROLE OF TUBERIN-CYCLIN B1 COMPLEX IN THE CELL CYCLE REGULATION

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Tuberin is a tumour suppressor protein that forms a complex with the G2/M Cyclin, Cyclin B1, to regulate cell proliferation, cellular growth, and size. It is part of the Tuberous Sclerosis Complex (TSC), and mutations to the TSC can cause cancer and tuberous sclerosis. We have demonstrated a mitotic onset delay due to the formation of the Tuberin-Cyclin B1 complex at the G2/M transition that can affect the cell cycle and its ability to proliferate. We are developing fluorescent tools to study protein-protein interactions (PPI) during the cell cycle. We have developed a biomolecular fluorescence complementation system (BiFC); however, the complex formation is irreversible, which impacts the cell cycle progression. Recently, a new protein-protein interactions tool has been developed by The Twinkly Factory called splitFAST which can bind and reversibly disassemble allowing for real-time monitoring in live cells. This new system allows us to visualize PPI in large and complex proteins fluorescently. We are tagging Tuberin and Cyclin B1 with splitFAST proteins to study the complex in mammalian cell lines. To aid in the spatiotemporal study of Tuberin under physiological conditions of the cell, we are using CRISPR/Cas9 technology to insert a near-infrared tag within Tuberin in an effort to create human cell lines that express a fluorescent version of the protein. These new fluorescent tools will clarify important steps of cell proliferation and cell growth in both normal and tumour cells. The fluorescent tools will shed light in the progression of certain diseases as Tuberous Sclerosis Complex and cancers.

ABSTRACT P07

MULTI-FREQUENCY PIEZOELECTRIC MICROMACHINES ULTRASONIC TRANSDUCERS FOR EARLY SKIN CANCER DETECTION

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Canada ranks among the top 20 countries in the world with a high prevalence of skin cancer. The early detection and diagnosis of skin cancers are vital for the likelihood of successful treatment. Traditional methods of skin cancer detection, such as dermatoscopy, heavily rely on the expertise of a dermatologist, requires incremental monitoring, and may lead to invasive intervention. These conventional methods can compromise the vital early diagnosis needed for successful treatment. Conversely, high resolution non-invasive diagnosis through imaging, such as ultrasonography, can have a large clinical impact with early detection, potentially minimize skin biopsies, and provide treatment planning in a routine clinical setting. Transducers are used in ultrasound systems to generate the sound waves for imaging. Innovative piezoelectric micromachined transducers are potential candidates to address the challenges associated with high-resolution imaging for dermatology applications. The choice of transducer operating frequency in medical imaging is critical for balancing imaging resolution and depth, as higher frequencies yield shorter wavelengths for improved resolution but are more susceptible to attenuation and scattering, thus constraining imaging depth and range. In this research, piezoelectric micromachined ultrasonic transducers (PMUT) are designed, fabricated, and tested for their multifrequency operation and their potential for high-resolution sub-surface imaging through tumor detection and determining the depth of tumor extent.

ABSTRACT P08

EXTREME ENVIRONMENT SHAPING OF GENOMIC SIGNATURES AS A PARADIGM FOR TUMOUR MICROENVIRONMENT IMPRINTS TO PERMIT RAPID CANCER CLASSIFICATION

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Tumour microenvironments (TME) impose extreme selection pressures on cells such as hypoxia, acidity, nutrient deprivation and reactive oxygen species. These environments induce tumorigenesis and mutational signatures specific to cell type and cancer type. Using machine learning tools, we discovered that extreme macroenvironments, namely those characterized by extreme environmental temperature or pH ranges, impose such strong selective pressures on microbial species adapted to them that there are pervasive environmental imprints on their genome composition, shaping their genomic signature in an environment-associated manner. Genomic signatures are species-specific pervasive patterns of oligonucleotides (k-mers) shaped by mutagenesis, population dynamics, and natural selection. Genomic signatures with environmental imprints are accessible to supervised learning such that accurate classification of microbial genomic signatures by their adapted environment was achieved. Our computational experiments classified/clustered genomic signatures extracted from a curated dataset of ~700 extremophile (temperature, pH) bacteria and archaea genomes, at multiple scales of analysis, $1 \leq k \leq 6$. Organisms of different domains of the Tree of Life shared genomic signatures associated with native environment. This macroenvironment paradigm is predicted to be mimicked at the microenvironment level in the case of the extreme conditions of the tumour cell microenvironment. The characteristic markers of microenvironmental selection pervasive across the genomic signature of tumour cells are predicted to be valuable in accurate and ultra-fast cancer type classification. Applications of these findings include assisting in characterizing TME features using sequencing data obtained from tumour samples, potentially enabling the tracking of the progression of cancer development and classifying TME-associated cancer subtypes.

ABSTRACT P09

DEVELOPMENT OF AN ANTIVIRAL COMPOUND SCREENING PLATFORM TARGETING THE SARS-COV-2 POLYMERASE

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The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has been confirmed as the cause of death in nearly seven million people worldwide and continues to be a major public health threat. Despite highly effective vaccination campaigns and the rapid development of antiviral medications, there is a need for novel antiviral therapeutics to counter the limitations of current vaccines and medications. Because the SARS-CoV-2 RNA-dependent RNA polymerase plays a central and essential role in viral genome replication, it is a primary target for antiviral drug development. The minimal core polymerase complex in coronaviruses consists of three virally encoded protein subunits: one copy of nsp12, two copies of nsp8 and one copy of nsp7. To further investigate the mechanisms involved in viral replication and to characterize the effects of small molecule inhibitors on the SARS-CoV-2 polymerase complex, we have developed and validated a robust and efficient compound screening platform. Milligram amounts of the polymerase complex can be efficiently expressed and purified from recombinant bacterial and insect cell expression systems. A sensitive and robust fluorescence-based strand-displacement assay has also been developed and validated to measure RNA synthesis activity in vitro. This assay provides an efficient screening tool to evaluate novel polymerase inhibitors that are being designed and synthesized following a structure-guided approach. Recent progress with the use of this inhibitor discovery platform in combination with structure-function studies of polymerase-inhibitor complexes indicates that novel types of inhibitors have the potential to serve as lead compounds for developing more effective antiviral therapeutics in the future.

ABSTRACT P10

EXPLORING PRINCIPLES OF THE INTERPLAY BETWEEN TUMOUR-INITIATING CELLS AND THE ENDOTHELIAL COMPONENT IN GLIOBLASTOMA

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Efficient targeting of multiple components of a tumour might be a successful strategy in aggressive types of cancer such as glioblastoma (GBM), which remains the most common and malignant primary brain tumour with an extremely poor patient survival of less than 15 months. The significant therapeutic challenge posed by GBM stems from its genetic and phenotypic heterogeneity fueled by characteristics such as aggressive and treatment-resistant populations of Tumour Initiating Cells (TICs) and high levels of angiogenesis contributing to tumour evolution. TICs, which are responsible for GBM patient relapse, thrive in niches close to blood vessels where they interact with endothelial cells (ECs), exit the cell cycle, and evade therapies. Targeted anti-angiogenic drugs, preventing GBM cells from recruiting new blood vessels are only temporarily effective in 50% of patients, resulting in acquired secondary resistance by the tumour. This project explores the TIC-EC interplay and its role in propagating tumour aggressiveness and therapy resistance. This project investigates the impact of ECs on the aggressive characteristics of individual, specific

populations of TICs using GBM patient-derived systems, including 3D organoid models and zebrafish patient-derived xenografts (PDXs). Considering that NOTCH1 signaling regulates both TIC and EC populations in GBM, this project dissects the role of NOTCH pathway in TIC-EC interaction. Elucidating the details of cell cycle signaling and specific populations of aggressive TICs with dependence on the EC component will contribute to the identification of new and better therapeutic targets and personalized appraoches to treatment of patients with GBM in the future.

ABSTRACT P11

PURIFICATION AND ELUTION OF BIOTINYLATED LIGANDS FROM A STREPTAVIDIN MUTANT WITH SWITCHABLE BINDING PROPERTIES

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The extremely high affinity and specificity of the interaction between streptavidin and biotin has been widely exploited throughout medicine and biotechnology. We recently developed the streptavidin mutant M88 by engineering a disulfide bone into a critical loop to create a redox-dependent switch in which the oxidized state shows higher binding affinity than wild-type streptavidin, and where the reduced state shows ~10,000-fold faster rates of dissociation than the oxidized state. Using M88 coupled to magnetic beads, we show how biotinylated peptides, proteins, and nucleic acids can be efficiently bound at high affinity and then eluted under conditions useful for a variety of practical applications. By exploring the combined effects of temperature, cosolvents, and pH on the rates of dissociation of different types of biotinylated ligands, we have uncovered new opportunities to exploit M88 and other engineered forms of streptavidin for a wide range of practical applications in biotechnology and medicine where the tight and specific binding of biotinylated ligands can be greatly weakened through the addition of a mild reducing agent and the introduction of specific solution conditions facilitating efficient ligand release.

ABSTRACT P12

INVESTIGATING THE ROLE OF SPY1 IN MEDIATING SENESCENCE IN GLIOBLASTOMA

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Glioblastoma (GBM) is a highly aggressive malignant brain tumour characterized by rapid and uncontrolled growth. The heterogeneity of GBM renders it resistant to standard-of-care treatment and contributed to the exceptionally high rate of tumour recurrence. An emerging area of research in the study of GBM explores cellular senescence, a prolonged state of cell cycle arrest triggered by various intrinsic and extrinsic stimuli. Senescence can be studied using diverse markers, including factors secreted by senescent cells, termed the senescence-associated secretory phenotype (SASP). Although the SASP can promote tumour suppression by inducing immune-mediated clearance of precancerous cells, evidence has shown that under certain conditions, the SASP can create a remodeled microenvironment that actually fosters tumourigenesis. The cyclin-like protein SPY1 has been found to be elevated in glioblastomas. SPY1 activates CDKs and overrides cell-cycle checkpoints, even in the face of abnormal processes that would normally cause cell cycle arrest, contributing to increased, uncontrolled proliferation. Preliminary data in our lab has shown that when SPY1 is downregulated in GBM cell lines or GBM-cell-derived mouse tumours, there is an increased presence of senescent cells. We hypothesize that SPY1 plays a role in promoting tumorigenesis by altering the microenvironment of GBM and enabling precancerous senescent cells to re-enter the cell cycle. Using in vitro and in vivo models, I will explore SPY1's influence on senescence in GBM and assess whether SPY1 targeting can facilitate senescence-based therapies. This research will contribute to the advancement of personalized therapies aimed at preventing the onset and progression of GBM.

ABSTRACT P13

SPY1-MEDIATED CELL CYCLE EFFECTS ENHANCE ONCOGENIC TRANSFORMATION BY SELECTED DRIVERS IN HUMAN GLIOBLASTOMA

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Development of the central nervous system is an intricate process requiring cellular events to coordinate with one another to create a fully functional and adequately structured brain. A small population of adult neural stem cells (NSCs) resides in the mammalian brain and aids

neurogenesis throughout life. Cell cycle regulation plays a vital role in determining the fate of NSCs in the adult brain and maintaining a crucial balance between self-renewal and differentiation. Using an inducible, conditional transgenic mouse model, our group has demonstrated that driving the expression of the atypical cyclin-like protein Spy1 in the NSC population in the brain inhibits differentiation and promotes self-renewal. The current study investigates the role of Spy1-mediated effects in tumorigenesis in the face of aberration in selected tumour suppressors and oncogenes known to drive glioblastoma. Using the transgenic mouse model, we analyze the cooperation between Spy1 and the designated drivers p53, PTEN, c-Myc, and EZH2 with respect to their expression, localization, and role in self-renewal and stemness in NSCs. This study will elucidate whether Spy1-mediated cell cycle regulation can enhance potential aberrant regulation in NSCs. The results will contribute to the development of new therapeutics to target and treat GBM, improving patient outcomes and enhancing population well-being in future generations.

ABSTRACT P14

INVOLVEMENT OF LONG NON-CODING RNA IN CELLULAR STRESS RESPONSES IN TOXOPLASMA GONDII, A PATHOGENIC PARASITE

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Cellular stress responses are vital for survival of all organisms, including Toxoplasma gondii, an obligate intracellular pathogenic parasite causing toxoplasmosis in humans. It has been suggested that long non-coding RNAs, including natural antisense transcripts (NATs), play a role in adaptive responses to environmental and metabolic stressors. Here we investigate how a species of T. gondii NATs, named TgUlp1-NAT, takes part in cellular stress responses. The TgUlp1-NAT expression was previously shown to increase when T. gondii was electroporated. Although electroporation is not a natural condition that T. gondii encounters during its life cycle, it can alter membrane permeability, milieu temperature, and movement of various compounds in-and-out of cellular compartments. To investigate which stressors trigger TgUlp1-NAT expression, a transgenic receptor parasite strain was created to integrate a nanoluc reporter under the control of TgUlp1-NAT promoter. The transgenic parasites were subjected to different stress conditions, including raised temperature, alkaline pH, varied ionic and osmotic pressures. The nanoluc reporter assays showed that TgUlp1-NAT promoter becomes more active following electroporation, increased temperature, alkaline pH, and salinity stresses. Additionally, the TgUlp1-NAT promoter activity was peaked within the first 2 hours under nutrient limited conditions. The findings have confirmed that the TgUlp1-NAT expression is part of T. gondii's stress response and suggest that TgUlp1-NAT could play a vital role in regulating gene expression equilibrium. Since TgUlp1-NAT can be processed into microRNAs, we propose a stress response mechanism in which an increased TgUlp1-NAT level would lead to more microRNAs to regulate gene expression globally.

ABSTRACT P15

NORMAL TO ABNORMAL: SPY1 IN MAMMARY INVOLUTION AND CANCER DEVELOPMENT

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From puberty to menopause, factors attributed with breast cancer fluctuate with the natural mammary development. A period of increased breast cancer risk with increased metastasis and mortality occurs following childbirth – potentially linked to mammary involution: gland remodeling post lactation, which balances high rates of apoptosis and cell regeneration. Two processes controlled by the cell cycle and its regulators. The cyclin-like protein Spy1 can enable cell proliferation and override apoptosis. Spy1 levels have been found to be elevated breast cancer. Interestingly, levels of Spy1 are also elevated during involution. We hypothesized that Spy1 protects the cell population necessary for normal mammary gland reconstruction post involution. To address this, an in vitro mock involution model was deployed with the murine epithelial cell line (HC11) over a delivery and withdrawal of hormonal time course. This was paired with in vivo tissue collection of the mouse model overexpressing Spy1 in the mammary gland (MMTV-Spy1) over an involution time course. In vitro results suggest the ability of Spy1 of maintaining stemness post-differentiation, and in vivo data indicates failure of healthy epithelial clearing during involution. This research begins to articulate the role of Spy1 during normal mammary involution in maintaining the survival of epithelial cell populations, and how overexpression could potentially play a role in the predisposition of the breast to oncogenesis.

ABSTRACT P16

THERAPEUTIC TARGETING OF ULK1 AND AUTOPHAGY USIG MRT68921 IN EPITHELIAL OVARIAN CANCER

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Epithelial ovarian cancer (EOC) has the fifth-highest death-to-incidence ratio for all cancers in women due to late-stage detection and the emergence of chemoresistant disease. EOC metastasizes by cells disseminating into the peritoneal cavity and attaching to distant sites. Cells within the peritoneal fluid cluster together forming spheroids that undergo metabolic reprogramming adopting a dormant phenotype that contributes to chemoresistance. We identified that autophagy, an intracellular recycling process, is crucial for spheroid cell viability. Autophagy is initiated by unc51-like kinase 1 (ULK1) whose activity is also crucial to EOC spheroid viability. We investigate the therapeutic potential of targeting ULK1 and autophagy using MRT68921. We hypothesize that ULK1 inhibition via MRT68921 will reduce EOC cell viability and anticipate these effects will be amplified through synergistic combinations with anti-cancer agents. We assessed the sensitivity of EOC cell lines in adherent and spheroid cultures by generating dose-response curves. Via immunoblotting, we confirmed that MRT68921 inhibits ULK1 and autophagy in our cell culture models. We have shown that MRT68921 inhibits ULK1 at concentrations lower than established IC50 concentrations and in as little as 30 minutes in culture. Using SynergyFinder to analyze dose-response matrix data, we are assessing the efficacy of MRT68921 in combination with anticancer agents. We plan to perform spheroid reattachment assays to functionally evaluate the impact of combining MRT68921 with anticancer agents on cell viability. We will also investigate combination treatment in patient-derived organoids. These results support further investigation of ULK1 as a therapeutic target to prevent metastasis, disease progression, and chemoresistance.

ABSTRACT P17

SKP1-CYCLIN A INTERACTION IS NECESSARY FOR MITOTIC ENTRY AND MAINTENANCE OF DIPLOIDY

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In the cell cycle, the transition from one phase to another phase is highly controlled by the cooperation of a key group of regulatory proteins. Loss of normal cell cycle control leads to uncontrolled proliferation, which leads to polyploidy and genomic instability. Polyploidy is identified as a contributory cause of cancer development. In order to prevent cancer, it is important that we gain an understanding of how polyploidy occurs and how cells typically defend against this. In order to prevent polyploidy from occurring, a variety of regulatory proteins manage the cell cycle to maintain normal diploidy found in most complex multicellular life forms. An E3 ubiquitin ligase, SCFSkp2 is required for the transition from G1 to S phase by targeting p27/Dap for degradation. Due to this role, Skp2 appears to be an important oncogene. In addition, Skp2 is also necessary in order to maintain proper ploidy and genomic stability since lethal Skp2 null mutants exhibit polyploidy in mitotically dividing cells. The research done on Skp2 has focused on its role as an oncogene and not enough research has been done to see what other cell regulators Skp2 interacts with in order to prevent genetic instability and polyploidy in an organism. The focus of my research will be on the interaction between E3 ubiquitin ligase SCFSkp2, another ubiquitin ligase APC/CFzr/Cdhi1, and the cell cycle mitotic kinase Cyclin A/CDK1. This will involve looking at how these proteins collectively prevent incorrect replication of the genome and maintain diploidy.

ABSTRACT P18

CX31.1 IS DEFECTIVE IN ASSEMBLING INTO GAP JUNCTION CHANNELS IN KERATINOCYTES BUT CAN INTERMIX WITH CO-EXPRESSED CONNEXINS TO ALTER ITS FATE

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Additional Research Focus: Health Service Research

Gap junctions are specialized channels composed of connexin proteins that canonically function to facilitate the direct intercellular exchange of small molecules, ions, and metabolites through gap junctional intercellular communication. Past evidence has suggested that Cx31.1 is an atypical isoform that may have innate defects in its channel forming ability. Moreover, a previously published Cx31.1-deficient mouse model exhibited no overt phenotypic changes in the epidermal architecture of surviving mice, implying that other keratinocyte connexins may functionally compensate. However, we hypothesize that Cx31.1 has distinct canonical and non-canonical roles that non-redundantly contribute to the regulation and maintenance of epidermal homeostasis. Unlike Cx43 and other connexins expressed in keratinocytes, dual cell patch-clamp and dye transfer studies revealed that expressing Cx31.1 alone does not form functional gap junction channels in connexin-deficient cells. Rather

Cx31.1 transiently localizes to the anterograde pathway with a subpopulation reaching the cell surface. Intracellular retained Cx31.1 was subject to degradation as Cx31.1 accumulated in the presence of proteasomal inhibition, had a faster turnover when Cx43 was present, and ultimately reached lysosomes. While intracellularly retained Cx31.1 was found to interact with Cx43, this interaction did not rescue its delivery to the cell surface. Conversely, the co-expression of Cx31 dramatically rescued the assembly of Cx31.1 into gap junctions where fluorescent recovery of dye transfer after photobleaching was enhanced in comparison to controls. Our results indicate that the localization and functional status of Cx31.1 is altered through selective interplay with co-expressed connexins, perhaps contributing to the dynamic modulation of intercellular signalling in keratinocytes.

ABSTRACT P19

THE ROLE OF BIOLOGICAL SEX IN THE PROGRESSION OF METABOLIC DYSFUNCTION-ASSOCIATED STEATOTIC LIVER DISEASE IN MURINE MODELS

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Hepatocellular carcinoma (HCC) is the most prevalent primary cancer of the liver and one of the leading causes of cancer-related deaths worldwide. Men are almost 3x more likely to develop HCC; however, the exact mechanism for this remains undetermined. Metabolic dysfunction-associated steatotic liver disease (MASLD) is a major risk factor for HCC. Hepatocytes are typically held in a state of quiescence, however, in response to this chronic injury, they can rapidly reenter the cell cycle to respond to damage and restore functional mall in the liver. Quiescence and Reentry into the cell cycle is tightly controlled by the activity of cyclin-dependent kinases (CDK2). Sex-specific differences with respect to physiology have been suggested to play a major role in response to hepatic injury; however, they have yet to be explored in cell-cycle regulation and exit from quiescence. Spy1, an atypical cyclin-like protein, can bind and activate CDK1 and CDK2, and override cell-cycle checkpoints and quiescent barriers. Thus, Spy1 may be an important mediator of hepatocyte exit from quiescence in response to injury and may account for sex-specific differences in cell-cycle reentry. To better understand hepatic regenerative processes, the methionine choline-deficient (MCD) diet, an excellent inducer of NAFLD will be administered to wild-type male and female mice. Morphological and cell-cycle profile differences will be investigated to quantify the liver's regenerative state in wild-type mice. This project will uncover Spy1's role in sex-specific hepatic regeneration and will identify novel diagnostic markers and pathways of therapeutic iimportancein HCC.

ABSTRACT P20

INVESTIGATING THE ROLE OF THE CELL CYCLE REGULATOR SPY1 IN REFRACTORY NEUROBLASTOMA

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Neuroblastoma is the most common pediatric cancer in infants and its prognosis can vary greatly depending on its molecular profile. High-risk neuroblastoma, characterized by amplification of the MYCN oncogene, is extremely difficult to treat, leading to a 50% rate of relapse and a 50% 5-year survival rate. Regional proximity of the MYCN locus to the locus of the atypical cell cycle regulator gene Spy1, on chromosome 2, raises a question of potential co-amplification. Our lab has previously shown that Spy1 plays a role in the proliferation and self-renewal of the stem like populations of neuroblastoma tumour initiating cells (NTICs). In fact, NTICs decrease Spy1 levels after differentiation and the overexpression of Spy1 in these stem cells leads to blocked differentiation and upregulation of multipotency marker levels. Building off this work, our project aims to explore the role of Spy1, and its potential as a target, in the MYCN-amplified neuroblastomas and refractory disease. Using lentiviral and CRISPR/Cas9 systems we are manipulating MYCN-amplified neuroblastoma cell lines to downregulate and/or overexpress Spy1 and subject the cultures to clinically relevant treatments. We are then investigating changes to cell cycle signatures and profiles in the cell lines along Spy1 function before and after treatment. Overall, our work will help determine if Spy1 can be targeted in refractory neuroblastoma where there is currently no treatment.

ABSTRACT P21

THE ROLE OF SPY1 IN CELL CYCLE CHECKPOINT EVASION IN GLIOBLASTOMA

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Glioblastoma (GBM) is an extremely lethal type of a brain tumour evading all intricate attempts of modern therapies. Extensive genetic analyses of GBM have indicated a variety of deregulated molecular pathways involved in DNA repair, apoptosis, cell migrationadhesion and cell cycle regulation. Brain tumor initiating cells (BTICs) aid in the initiation, progression, and therapy resistance of heterogenous mass of glioblastoma and are responsible for post-therapy tumour recurrence. BTICs share properties with normal neural stem cells (NSCs), including ability to self-renew

and giving rise to differentiated progeny. Previously, our lab established that the levels of an atypical cell cycle protein, SPY1 (RINGO; gene SPDYA) are elevated in malignant human glioma and its upregulation correlates with poor prognosis of patients with GBM. SPY1 is responsible for the symmetric division of BTICs in subsets of high-grade glioma leading to aberrant expansion of those aggressive populations of cells. Spy1 activates Cyclin Dependent Kinases (CDK) and has been demonstrated to override protective cell cycle checkpoints. We hypothesize that select targeting of SPY1-CDKs will be an effective therapeutic intervention for subsets of GBM patients. My research project focuses on how targeting of SPY1 can contribute to better control over the growth and progression of GBM by eliminating BTIC populations. The objectives of my study will allow for evaluation of GBM biology in face of SPY1 depletion and functional assessment utilizing GBM patient-derived, three-dimensional spheroids and in vivo zebrafish Patient Derived Xenograft (PDX) screening platform.

ABSTRACT P22

DEVELOPMENT OF A DEUBIQUITINASE USP9X-SPECIFIC UBIQUITIN VARIANT INHIBITOR

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Ubiquitin-specific protease 9, X-linked (USP9X) is an evolutionary highly conserved deubiquitinase (DUB) that plays a pivotal role in embryonic development and tumorigenesis. Mutation of USP9X has been found to cause several developmental disorders including autism and intellectual disabilities based on genetic studies. Dysregulation of USP9X has also been linked to multiple cancers. Through collaboration, we have obtained a ubiquitin variant (UbV) inhibitor for USP9X generated using the phage display technique. UbVs are biological tool molecules for studying the functions of the cognate DUB in vivo. However, the UbV for USP9X lacks specificity and cross-reacts with multiple paralogs including USP5 and USP7. To improve the specificity and potency of the UbV, we used FoldX-based computational biology methods to identify mutations that could potentially make the UbV more specific. We then used site-directed mutagenesis to introduce these mutations in the UbV and characterized the interaction of the mutants with USP9X, USP5, and USP7 using biophysical methods and the inhibitory activity of the UbV using enzymology measurement. This project establishes a protocol to design UbV using in silico computational methods and validate their specificity using in vitro techniques and may apply to other deubiquitinases.

ABSTRACT P23

LOOKING BEFORE LEAPING: USING NONLINEAR REGRESSION ANALYSIS TO PREDICT IMMUNOTHERAPY TRIAL OUTCOMES

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For the past decade novel immunotherapy pharmaceuticals have significantly altered the systemic approach to managing a vast array of malignancies. Many trials have demonstrated that these medications can often extend the lives of patients with incurable disease several months to years. However, these studies often span several years, delaying the benefits that they can bring to the patient population. This project aims to shorten the course between the start of a new trial and the delivery of actionable data. This research builds on works such as Stewart et al. (2011) that uses exponential decay non-linear regression analysis (EDNRA) to analyze Overall Survival (OS) curves for the purpose of clarifying trends in the data. These methods have been used in oncologic trial analysis to pinpoint influential factors in determining outcomes and to understand how altering these factors might ultimately change trial endpoints. Our research uses this methodology to anticipate the significance of immunotherapy pharmaceutical trials. We first collected the OS and Progression-Free Survival curves of both the general population and various subgroups from 122 immunotherapy clinical trials in the PubMed database. Currently, EDNRA is being performed to define patterns in the data. Subsequently, these results will be used to create a predictive model that can estimate the ultimate significance of an immunotherapy agent using preliminary trial data (the first 25% of events). This tool will benefit clinicians and pharmaceutical companies by providing actionable insight far earlier in the clinical trial's timeline, allowing for improved decision-making long before the trial's natural end.

ABSTRACT P24

CIRCADIAN REGULATION OF THE PLASMINOGEN ACTIVATOR SYSTEM IN THE DEVELOPMENT OF SKELETAL MUSCLE FIBROSIS

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Purpose: Maintaining skeletal muscle mass is crucial for preserving quality of life, making skeletal muscle regeneration following injury critical. Skeletal muscle regeneration requires degradation of the extracellular matrix (ECM) by the plasminogen activator (PA) system. This degradation is performed by plasmin, which is converted from plasminogen by uPA and tPA. Plasmin formation by uPA and tPA is inhibited by plasminogen activator inhibitor-1 (PAI-1). An orchestrator of PAI-1 activity and skeletal muscle regeneration are circadian rhythms (24-hour cycles coordinated by the proteins Bmal1, Clock, Period, and Cryptochrome). Bmal1-/- mice demonstrate skeletal muscle fibrosis; however, these mechanisms are not well characterized. Therefore, this study will investigate the relationship between circadian rhythms and PA system-mediated skeletal muscle fibrosis. Methods: 18 Bmal1-/- mice and 18 wild type (WT) mice will be sacrificed at ZT0, ZT4, ZT8, ZT12, ZT16, and ZT20 (n = 3/group) to characterize the circadian cycle. Skeletal muscle samples will be homogenized and prepared for western blotting to assess Bmal1, PAI-1, and PAI-1:tPA protein levels. PCR analysis of the genes for Bmal1, Clock, Per1, Per2, Cry1, Cry2, Rev-erbα, PAI-1, uPA, and plasminogen will be completed. Results: Preliminary analysis of WT mice demonstrated circadian oscillations in PAI-1 and Bmal1 activity. No significant correlations were uncovered between analyzed proteins (all p > 0.05). Conclusion: This work will develop our understanding of the role of the PA system in the development of skeletal muscle fibrosis and determine if further examination of connections between skeletal muscle fibrosis, the PA system, and circadian rhythms is warranted.

ABSTRACT P25

INVESTIGATING THE ROLE OF THE TUMOUR SUPPRESSOR TUBERIN IN THE DNA DAMAGE RESPONSE

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Tuberin controls cell proliferation and growth by regulating the cell cycle at the G2/M transition and through negative regulation of mammalian target of rapamycin complex 1 (mTORC1). Mutations in Tuberin may lead to the autosomal dominant genetic disorder known as Tuberous Sclerosis Complex (TSC) and certain cancers, such as renal carcinoma. Tuberin regulates mitotic onset by retaining Cyclin B1 (the G2/M cyclin) in the cytoplasm depending on nutrient availability. My project focuses on the role of Tuberin at the G2/M transition during DNA damage repair. In this study, Crispr-Cas9 editing technology is being used to create Tuberin-null U2OS (p53 wildtype) and SaOS-2 (p53 null) human cell lines. Tuberin-delGAP lines will be constructed using U2OS, SaOS-2 and NIH3T3 (mouse) cell lines to clarify whether Tuberin's role at arrest is independent of mTORC1 activity. To induce double-stranded DNA damage, etoposide, a topoisomerase II drug is being used. Techniques such as flow cytometry, TUNEL assay and western blot are being used to analyze cell cycle profiles, apoptotic levels, and protein expression and function during DNA damage and DNA repair, both in the presence or absence of Tuberin. This project will provide further insight into the role of Tuberin in DNA repair at mitotic onset, consequently allowing a better understanding of the mechanisms of tumour formation after DNA damage.

ABSTRACT P26

THE ROLE OF SPY1 IN ADHESION AND METASTASIS OF TRIPLE NEGATIVE BREAST CANCER

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Additional Research Focus: Health Service Research

Breast cancer is the most prevalent malignancy and the second leading cause of death among Canadian women. Triple negative breast cancer (TNBC) is an aggressive form of breast cancer accounting for 10-20% of breast cancer diagnoses, affecting younger women, and has higher relapse rates than other forms of breast cancer. Disruptions in the extracellular matrix (ECM) and surrounding microenvironment plays a large role in breast tumour progression and metastasis. Although there is much known about the role of microenvironmental factors in the ECM, there is little known about cell cycle regulators that are key factors in driving this process. A cyclin-like protein, Spy1, can promote progression through cell cycle checkpoints by directly binding and activating CDKs and overriding CKIs in many TNBC subtypes. Preliminary data in our lab has found that elevation of Spy1 increases TNBC cell migration and invasion, key processes in metastasis. This leads to our investigation to determine if Spy1 is also capable of altering adhesion properties of TNBC cells, another critical component for cells that are in the process of establishing metastatic sites. In-vitro studies will use the TNBC cell lines (MDA-MB-231 and MDA-MB-468) to determine the role of Spy1 in mediating the adhesion of TNBC cells to different cellular substrates, including collagen I and fibronectin and also to investigate cell-cell adhesion properties. This work could aid in the development of better diagnostic markers for metastatic cancer and more personalized therapeutics to treat metastatic breast cancer.

ABSTRACT P27

SPHINGOLIPID PROFILES AFTER ECCENTRIC MUSCLE CONTRACTION IN ADULTS WITH TYPE 1 DIABETES MELLITUS

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Sphingolipids, a class of lipids that contribute to membrane structure and initiate cellular signalling events, play significant roles in myopathic diseases such as cancer, dystrophy, and diabetes. Some sphingolipid species also play key roles in maintaining skeletal muscle health by driving regeneration following injury and maintaining insulin sensitivity. For example, sphingosine-1-phosphate (S1P) has been identified as an essential signal for myoblasts during regeneration and if knocked out, regeneration is incomplete. Further, S1P-treated mice and rats have increased muscle fibre cross-sectional area after injury when compared to untreated counterparts. Thus, given the involvement of sphingolipids in disease pathophysiology and their role in skeletal muscle maintenance, studies investigating the role of sphingolipids in myopathic disease states are justified. Type 1 diabetes mellitus (T1DM) causes diabetic myopathy (DM) characterized by reduced capacity for injury regeneration, and loss of muscle mass and function. We set out to characterize the sphingolipid response to muscle injury in young people with T1DM and in a commonly used model of T1DM and DM, the Akita mouse. We found that there were numerous differences in sphingolipid profiles between Akita and non-diabetic C57Bl/6J mice. Notably, at 5 days post-injury, an increase in S1P occurs in C57Bl/6J muscle but is absent in Akita. Muscle samples have been collected from people (ages 18-30) with or without T1DM pre- and post-eccentric exercise and will be analyzed via LC-MS for the same sphingolipid panel including S1P. This study will reveal potential sphingolipid targets for therapeutic strategies to minimize the effects of DM.

ABSTRACT P28

ELUCIDATING THE ROLE OF THE SPY1 IN BCSC REGULATION AND RELAPSE IN TNBC PATIENTS

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Breast cancer is the most commonly diagnosed cancer in women, and treatment is often complicated by the tremendous heterogeneity of this disease. Triple Negative Breast Cancer (TNBC) occurs in 10-15% of diagnoses and typically has poorer outcomes than other subtypes of breast cancer. This is largely due to lack of targeted therapies and the existence of a greater proportion of cells known as breast cancer stem cells (BCSCs). BCSC are more resistant to conventional therapy and are capable of driving patient relapse. The BCSC population, characterized by a unique set of molecular markers, is further divided into subpopulations which have differential roles in disease progression and implications on clinical prognosis. Cell cycle mediators play a key role in driving expansion of this dangerous population of cells. Spy1, a cyclin-like protein, promotes cell cycle progression through the G1/S, and the G2/M phases of the cell cycle and has been shown to be elevated in TNBC patients. Using an models of TNBC, BCSC subpopulations can be assessed to determine if increased levels of Spy1 results in their expansion leading to more aggressive, invasive and fatal cancers. This work will further seek to determine if increased levels of Spy1 promotes resistance to treatment and a transition of cells to a phenotype more susceptible to relapse, in hopes of developing targeted therapeutic approaches for this unique protein.

ABSTRACT P29

EXPLORING CORE GENES ASSOCIATED WITH CIRRHOTIC AND NON-CIRRHOTIC IN HEPATOCELLULAR CARCINOMA

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Hepatocellular carcinoma (HCC) is one of the leading causes of cancer-related death worldwide. Metabolic dysfunction-associated steatotic liver disease (MASLD) is the most prevalent liver disease and can progress to steatohepatitis, cirrhosis, eventually leading to HCC. However, there is a poorly defined mechanism by which approximately 20% of HCC cases occur in the absence of cirrhosis directly arising from MASLD. It is of utmost importance to understand the differences driving disease progression in cirrhotic versus non-cirrhotic HCC. In the present study, we analyzed mRNA expression profile to identify differentially expressed gene (DEGs) between MASLD and normal liver as well as cirrhotic versus non-cirrhotic HCC. Next, we performed bioinformatics analysis to explore potential functions of DEGs and key pathways underlying HCC development. A protein-protein interaction network (PPI) was constructed using the STRING database. Gene Ontology (GO) analysis indicates that DEGs regulate a variety of pathways, including lipid metabolism, cell proliferation, adhesion, migration, and immune responses. Kyoto Encyclopedia of Genes and Genomes (KEGG) pathway analysis showed that DEGs were mainly enriched in the peroxisome proliferator-activated receptor (PPAR) pathway, and cytokine receptor interaction signaling pathway. The key hub nodes in PPI networks were also closely associated with the progression of HCC.

Taken together, our analysis revealed that these core genes appear to mediate the molecular mechanism underlying MASLD and may be promising biomarkers to indicate progression to non-cirrhotic HCC.

ABSTRACT P30

DISSECTING SPY1-PARTNER PROTEINS INTERACTION AS A THERAPEUTIC APPROACH

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The eukaryotic cell cycle is precisely regulated by CDK-cyclin complexes, and its dysregulation can lead to diseases, including cancer. Cell cycle checkpoints detect abnormalities, enabling repair or cell death, thereby preventing aberrant cell cycle progression. These checkpoints are regulated by CDK inhibitors (CKIs) such as p27, which inhibit CDK activation and halt cell cycle progression. Spy1 is a cyclin-like protein that can uniquely bind and activate CDK1/2 and can override checkpoints, promoting cell cycle progression even in the face of DNA damage. Importantly, Spy1 is insensitive to inhibition by CKIs and can form a trimeric complex with p27 and CDK2, leading to p27 degradation. Understanding CDK2, Spy1, and p27 dynamics is crucial for addressing disorders with irregular cell cycle control. This study aims to investigate Spy1's interactions with p27 and CDK1/2, as well as the effects of Spy1 mutations on cell cycle progression and drug-targeting approaches by co-immunoprecipitation, flow cytometry, and immunofluorescence assays. Drug stability of Spy1-CDK2 complexes and their impact on cell viability, proliferation, and apoptosis will be assessed. CETSA will provide insights into CKI engagement with Spy1-CDK1/2 complexes. This work aims to uncover novel insights into Spy1's protein interactions, offering potential strategies for cancer treatment that are both effective and less toxic. It contributes to a better understanding of Spy1's structure-function relationship, paving the way for future advancements in cancer therapy through the targeting of this unique cyclin-like protein.

ABSTRACT P31

THE ROLE OF PHOSPHATIDYLSERINE IN SYNAPTIC DEVELOPMENT AT THE DROSOPHILA MELANOGASTER NEUROMUSCULAR JUNCTION

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Numerous studies have focused on how various proteins regulate synaptic growth and synaptic plasticity. However, the roles of lipids, such as phosphatidylserine, have been less studied. Phosphatidylserine is a phospholipid synthesized by Phosphatidylserine synthase (Pss) and upon localization to cell and organelle membranes is transported from the outer to inner leaflet by dATP8B (ATP8B), a phospholipid flippase. Drosophila Pss loss-of-function mutants have previously been shown to have reduced synaptogenesis/axonal growth. The effects of loss of dATP8B on synaptic function have not been characterized. The objective of this study is to determine if phosphatidylserine is required for normal levels of synaptic growth and synaptic plasticity. We hypothesize that phosphatidylserine is required for proper synaptic growth as well as activity-dependent synaptic growth. We found that synaptic growth in ATP8B mutants were generally not significantly different in the number of boutons or active zones when compared to their controls aside from one ATP8B mutant showing a reduction in number of active zones. Due to this finding, along with findings from studies showing that activity-dependent synaptic growth can occur at Drosophila neuromuscular junctions, initial experiments have been conducted studying activity-dependent synaptic growth, as well as phosphatidylserine localization in bouton membranes using Lactadherin-C2-mCherry, a fluorescent probe specific to phosphatidylserine. Further experiments will continue to be focused on studying changes to phosphatidylserine localization in Pss and ATP8B mutants and if these changes in localization are important for activity-dependent synaptic growth, as well as studying changes in neurotransmission in Pss and ATP8B mutants.

ABSTRACT P32

A PRECLINICAL BNCT STUDY: TESTING, OPTIMIZING, AND VALIDATION OF IN-HOUSE SYNTHESIZED BORONOPHENYLALANINE COMPOUND IN NORMAL AND TUMOUR TISSUE

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Keywords: Life Sciences, Cancer

Background: Boron Neutron Capture Therapy (BNCT) is a non-invasive radiation therapy, which has been explored as a potential treatment for various cancers, including head and neck cancers like Glioblastoma Multiforme (GBM) which is the most aggressive and difficult to treat. Hypotheses/objectives: Validating BNCT through effectively treating head and neck cancers, specifically GBM within a mouse organism is the focus. Additionally, we will be evaluating the efficacy of a synthesized boronophenylalanine (BPA) compound produced by the Trant lab at the University of Windsor. The effects of the BPA on both normal and tumour tissues will also be assessed. Proposed methods: Mouse models have been previously used, and our research team is proposing their use to examine the safety and concentration of BPA in tumour tissue, normal tissue, and blood. The effectiveness of the BPA treatment will be assessed through the BPA concentration analysis of the blood and organs, including tumour resection and analysis. Future applications/directions: Exploration of BNCT as a potential treatment for other cancers is an area of future application for this project, with the end goal leading to evaluating human efficacy in clinical trials. The production and distribution of the alternate BPA compound made at the University of Windsor could benefit medical and academic centers worldwide, promoting BNCT research and treatment. Results/implications: Anticipated results include seeing significant tumour size reduction indicating treatment effectiveness, the efficacy of the in-house BPA is sufficient to match current studied BPA compounds, and minimal effects seen on normal tissue in response to treatment.

ABSTRACT P33

NATURAL KILLER CELL PLASTICITY AND DYSFUNCTION IN BREAST CANCER

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Cancer immunoevasion is a persisting problem in immunotherapy involving immunosuppression via effector cell exhaustion or trans-differentiation. Innate lymphoid cells (ILCs) are a heterogenous family of cells, which can have pro- or anti-tumour functions. ILCs comprise of cytotoxic Natural Killer (NK) cells, and regulatory ILC1, ILC2, and ILC3 cells. NK cells and ILCs possess substantial plasticity and tumours exploit this property to render NK cells non-cytotoxic, alongside inducing NK cell dysfunctions. NK cell functions are regulated by the overall signaling balance of activating and inhibitory receptors recognizing ligands on target cells, but their role in NK cell plasticity and dysfunction in tumours is not known. Moreover, whether NK cell and ILC plasticity and homeostasis is disrupted in the peripheral immune compartments during tumorigenesis is not known. To address these questions, we study the NK cell and ILC subsets in tumours and peripheral blood from breast cancer patients, as well as spleens from mammary tumour-bearing mice. Flow cytometric analysis of mouse splenocytes showed an increased frequency of NK cells lacking expression of EOMES transcription factor, which is required for its development and functions, in mammary tumour-bearing mice compared to healthy mice. Similarly, an EOMESlow NK cell/ILC subset was found in the peripheral blood from breast cancer patients, but not healthy donors, suggesting systemic perturbations in NK cell and ILC compartments. Future cellular, molecular, and functional characterizations of the ILC compartment in breast cancer patients and mouse models will further reveal the multifaceted nature of ILCs and their role in anti-cancer immune responses.

ABSTRACT P34

PARAMETRICALLY DESIGNED MICROFLUIDIC DEVICES FOR CANCER RESEARCH

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Cancer is projected to cost the global population $25.2 Trillion from 2020-2050. Strong efforts are being made around the world and within Windsor to streamline and develop translational research pipelines where cancer and tumour tissues from patients are used within a laboratory setting to provide a wealth of data about the patients' disease in real time, permitting more informed personalized medical approaches. Multiple biopsies are required from a patient to study different regions of the tumour, however, the amount of attainable tissues from a patient can be limited. Research in applications of microfluidic systems has allowed for speciality testing opportunities to be realized for cancer medical research. The overarching goal of the microfluidic device research is to optimize the use of the biopsy tissue by increasing the number of tests conducted per sample provided. Professionals in the medical field require a simplified tool to allow for quick and simple design changes, which can be made in a short timeframe, and effectively built using additive manufacturing processes. The specific goal of this research will be focusing on creating a tool to allow for quick modifications to the microfluidic device designs using a 'family of parts' strategy and a parametric design approach. This will enable individuals with minimal to limited design software knowledge to create new device designs quickly. Leveraging current manufacturing technique will allow for innovative solutions to be realized in the health sciences domain.

ABSTRACT P35

VALIDATION OF NOVEL STRATEGIES IN TREATMENT DELIVERY & ANTI-TUMOUR EFFECTS IN GLIOBLASTOMA

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Additional Research Focus: Health Service Research

Glioblastoma (GBM), is the most aggressive malignant primary brain tumour with a median survival rate of approximately 8 months. Efforts to find effective therapies encounter many obstacles such as poor blood brain barrier (BBB) penetration of available therapies, and tumour heterogeneity, fueled by populations of treatment resistant Tumour Initiating Cells (TICs) leading to the patient's relapse. Recognizing the desperate need for novel therapeutic strategies, we developed a TIC-selective, fluorescent nanoparticle system. Conjugated polymer nanoparticles (CPNs) functionalized with fluorescein-labeled hyaluronic acid (HA-CPNs) bind to CD44, a prominent TIC marker, which accepts HA as its primary ligand. Our results this far have shown anti-proliferative characteristics in vitro, successful BBB penetration and tumour burden-decreasing ability by HA-CPNs in patient derived zebrafish xenograft models (ZF-PDXs). The current project explores the application of HA-CPNs to optimize their CD44 receptor mediated effects and anti-tumour effects by exploring various methods of optimizing in vivo detection, exploring other receptors for HA such as the RHAMM receptor while characterizing the HA-CPN mechanism of action, and further studying the BBB penetration using in vitro and in vivo models. Careful validation of this advanced HA-CPN system will contribute to better understanding of the technology to improve its application moving forward and towards better therapies for GBM patients in the future.

ABSTRACT P36

FREQUENCIN NEGATIVELY REGULATES NOCICEPTOR DENDRITIC BRANCHIN AND NOCICEPTIVE HYPERSENSITIVITY

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Nociceptive hypersensitivity has been associated with alterations in intracellular calcium signaling. Drosophila calcium binding proteins Frequenin1 (Frq1) and Frequenin2 (Frq2), which have the human orthologue NCS-1, have been shown to regulate synaptic structure and function. We hypothesize that Frq1 and Frq2 are required for nociception and that changes in Frq levels influence the nociceptive response through dendritic branching and neurotransmission. To determine if Frq1 and Frq2 are required for nociception, we examined frqdel1 mutants, which lack both Frq1 and Frq2, and found that larvae displayed nociceptive hypersensitivity to thermal stimuli in comparison to their genetic control. To assess the individual roles in nociception of Frq1 and Frq2 independently, we examined single frq1 and frq2 mutants and found that nociceptive sensitivity was increased in both mutants compared to their genetic controls. These data indicate that both frq1 and frq2 negatively regulate nociception. Next, we used CRISPR-Cas9 to tag the endogenous frq1 and frq2 genes with a flag epitope. We found that Frq1 and Frq2 are widely expressed in the Drosophila central nervous system, and this localization overlaps with the nociceptive neural circuit. Finally, we found that loss of frq1 and frq2 together (frqdel1) and frq2 alone results in an increase in dendritic branching relative to their genetic control, an effect that was not seen with frq1 mutants. Overall, loss of frq1 and frq2 results in nociceptive hypersensitivity; furthermore, our data suggests this increased nociceptive hypersensitivity may be due to changes in dendritic branching of nociceptors.

ABSTRACT P37

THE ASSOCIATION OF INTERNALIZING PSYCHOPATHOLOGY WITH EMOTION DYNAMICS

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Background: Glioblastoma multiforme (GBM) is the most common primary brain tumor in adults and remains a fatal disease with a median survival of fewer than two years. An emerging therapeutic target for future GBM treatments is Pannexin 1 (PANX1), a pore-forming membrane protein facilitating the transport of ions and metabolites. Current literature identifies aberrant PANX1 upregulation associated with tumorigenesis in several cancer types. Objective: This study aims to elucidate the role of PANX1 in human primary GBM cells. We hypothesize that disrupting PANX1 function will reduce GBM cell tumorigenicity. Methods: Primary GBM cell lines were isolated and expanded from fresh operative specimens. PANX1-inhibiting pharmaceuticals (Probenecid, PBN, and Spironolactone, SPIR) were administered to GBM cells in monolayer and spheroid cell culture to assess effects on growth and migration. Immunofluorescence analysis and immunoblotting were used to examine PANX1, F-actin, and

β-catenin expression and localization. GBM tumor aggregates were xenografted onto chicken chorioallantoic membranes, topically treated with PBN, and evaluated for cell viability using bioluminescence imaging (BLI). PANX1, ACTB, CTNNB1, and CXCL8 expression were assessed with qPCR. Results: PANX1 knockout and PBN and SPIR treatments reduced cell growth and migration. PANX1 inhibition disrupted actin filament stability and altered β-catenin localization. PBN-treated GBM tumor aggregates exhibited reduced cell viability. SPIR and PBN treatments induced changes in CXCL8 and ACTB expression, with outcomes dependent on the model system. Ultimately, our research demonstrates that targeting PANX1 potentially reduces GBM tumorigenesis, offering a novel approach for GBM interventions that may enhance existing treatments and improve patient outcomes.

ABSTRACT P38

EXPLORING THE ROLE OF SPY1 IN DRIVING RESISTANCE TO CDK4/6 INHIBITORS IN ER+ BREAST CANCER

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Breast cancer is the second most common cancer worldwide and the most common cancer among women. The most common subtype of breast cancer is estrogen receptor-positive (ER+). Treatment for this subtype relies on the suppression of estrogen production or targeting ER directly through endocrine therapy. Although endocrine therapy remains the staple therapy for ER+ breast cancer, acquired resistance has remained a large challenge. Cyclin-dependent kinase (CDK) 4/6 inhibitors, which inhibit the proliferation of ER+ breast cancer, have emerged as a powerful therapy significantly increasing progression-free survival. However, resistance to CDK4/6 inhibitors remains a concern, and current research focuses on how patients develop this resistance. Data has emerged that demonstrates a role for late G1 and S cyclins and CDK2 in CDK4/6 inhibitor resistance; however, current CDK inhibitor therapies don't consider cyclin-like proteins such as Spy1. Spy1 can bind and activate CDK1/2 and promote proliferation even in the presence of DNA damage, overriding checkpoints and increasing cancer susceptibility. Spy1 has been shown to be significantly elevated in many cancers, including breast cancer, where data from our lab has shown that Spy1 overrides CDK4/6 inhibition. Using in vitro ER+ breast cancer models (MCF-7 cell line), this study aims to determine how Spy1 drives resistance to CDK4/6 inhibitors in ER+ breast cancer. These results could provide further guidance about how CDK4/6 inhibitor resistance is driven, ultimately leading to the development of new novel therapies for this patient population.

Research Focus: Clinical Research

ABSTRACT P39

CLINICAL TRIALS NAVIGATOR: HELPING PATIENTS FIND HOPE BY EXPLORING CLINICAL TRIAL OPPORTUNITIES

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Additional Research Focus: Health Service Research

Introduction: Only 5% of Canadian cancer patients enrol in clinical trials (CTs) due to limited accessibility. The Clinical Trials Navigators (CTN) program was established by Hamm (2022) to help patients in small communities navigate and enrol in CTs. This study provides updated results on the impact of the CTN program. Methods: Five Clinical Trials Navigators (CTNs) review medical information, search CT registries, and create a list of eligible CTs. The list is reviewed by physicians. Data collected includes: patient disease, stage, prior therapies, time from referral to death, number of potential trials, phase of potential trials, location of trials, and successful enrolment onto CTs. Patient information was inputted and analysed using REDCap. Results: Between March 2019 to September 2022, 241 patients were enrolled in the CTN program. 75.9% of patients were stage IV, and 51% had at least two prior lines of therapy. 61.4% of patients deceased at last follow-up, with a median of 5.9 months from CTN program referral to death. CTNs identified a median of three trials: a range of zero to 10 phase I trials and one to eight phase II / III / IV trials. 25.5% of patients referred to a CT were enrolled. The expanded CTN program resulted in CT enrolment of 8.1% of patients with follow-up information. Conclusion: One quarter of patients referred to a CT by the CTN program were successfully enrolled, highlighting the program as a successful tool to improve CT accrual. Initiatives to improve uptake of the CTN program are ongoing.

ABSTRACT P40

PROMOTING BREASTFEEDING AFTER DISCHARGE FROM THE NEONATAL INTENSIVE CARE UNIT

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Infants who are born premature benefit the most from maternal breast milk with decreased risk of sepsis and necrotizing enterocolitis; however, breastfeeding can be challenging in the Neonatal Intensive Care Unit (NICU) due to a number of factors such as parental stress and inconsistent breastfeeding support. A parental survey done at the Windsor Regional Hospital (WRH) found that 44% of parents discontinued breastfeeding and expressed breast milk (stored extracted milk from pumping) by the time of discharge and switched to alternative feeding methods such as using formula milk. To encourage parents to breastfeed their preterm infants, our team is developing an information pamphlet to address commonly asked questions about breastmilk feeding, its benefits, and the means to increase its production. This study aims to assess the impact of this information pamphlet on exclusive breastmilk feeding rates of infants, born less than 33 weeks, in the WRH NICU. A retrospective chart review will be used to determine the pre-intervention proportion of NICU infants discharged on exclusive breast milk feeding between January 1st, 2021, to December 31st, 2022. Exclusive breast milk trends over the course of the intervention will be displayed using a run chart. A mixed-methods semi-structured survey of participating parents will be used to assess parental knowledge and attitudes towards breastmilk feeding after implementation. This research will provide insight into the impact of educating parents of preterm infants on the importance of breastfeeding, leading to increased health benefits in these newborns.

ABSTRACT P41

A RETROSPECTIVE CHART REVIEW TO COMPARE THE EFFECTIVENESS OF DURVALUMAB FOLLOWING CONCURRENT CHEMORADIATION WITH CISPLATIN AND ETOPOSIDE VERSUS CONCURRENT CHEMORADIATION WITH CARBOPLATIN AND PACLITAXEL IN STAGE III NSLSC PATIENTS

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Keywords: Cancer, Innovation, Technology, Clinical Trials

Background: Lung cancer is the primary cause of cancer-related death in Canada, accounting for approximately 25% of cancer deaths in both males and females. The standard treatment for unresectable stage III NSCLC is concurrent chemotherapy with radiotherapy, followed by immunotherapy. Two predominant cytotoxic treatment regimens are used: etoposide/cisplatin or carboplatin/paclitaxel. Liang et al. identified a slight advantage in 3-year overall survival with etoposide/cisplatin, though with increased adverse events. Hypotheses/objectives: This study aims to comparatively assess the overall survival (OS) and progression-free survival (PFS) of stage III lung cancer patients undergoing concurrent chemoradiation with either etoposide/cisplatin or carboplatin/paclitaxel, prior to receiving durvalumab. Proposed methods: A retrospective review will be conducted, analyzing clinical records of patients diagnosed with stage III lung cancer at our cancer center. Results/implications: The outcomes of this comparison may refine the therapeutic regimen recommendations for stage III NSCLC patients, providing evidence-based guidance on the most effective sequence of treatment in conjunction with durvalumab.

ABSTRACT P42

PREDICTING EVENT MEMORY PERFORMANCE USING SUBJECTIVE RATINGS IN OLDER AND YOUNGER ADULTS

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Background: Subjective cognitive complaints are central to diagnosing common age-related conditions such as subjective cognitive decline, mild cognitive impairment, and dementia. However, the relationship between how individuals interpret their cognitive functioning and how they perform on cognitive tasks remains unclear. Objectives: The goal of the present study is to gain insight into the ambiguous relationship between subjective memory ratings and memory performance among older and younger adults using a more ecologically valid event memory paradigm. Methods: A cognitively healthy sample of 25 younger (aged 18-24 years) and 14 older adults (aged 60-80 years) participated in this study. They completed an event memory task, which consisted of watching 12 short video clips of everyday events and later recalling each clip aloud. Participants completed several subjective ratings related to their memory for each video. Results: A multilevel modelling approach demonstrated that individuals' subjective confidence in remembering and forgetting event details predicted event memory performance similarly in younger and older adults. However, older adults appeared overconfident when rating their memory performance relative to their peers, an effect not observed in younger adults. Conclusions: These findings suggest that the way in which subjective memory ratings are framed (e.g., remembering

details, forgetting details, or peer comparisons) impacts individuals' ability to predict their memory performance across adulthood. Future research is needed to extend this line of investigation to individuals at various stages of cognitive decline (i.e., subjective cognitive decline, mild cognitive impairment, and dementia) and could aid in accurate diagnosis and targeted intervention in these populations.

ABSTRACT P43

INVESTIGATING THE USE OF A PATIENT TOOL TO IDENTIFY GRADE 2 IMMUNOTOXICITY

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Grade 2 immunotoxicity refers to moderate immune-related side effects caused by immunotherapy. These side effects can manifest in various ways, including skin rashes, gastrointestinal issues, joint pain, and more. Grade 2 toxicity is the first grade of toxicity that requires withholding treatment and steroid intervention, which is why it is the focus of this study. These toxicities often escalate to higher grades before detection due to the absence of standardized guidelines for patients to recognize them. Baseline data from Windsor Regional Hospotal revealed a critical gap: none of the 15 prescribing oncologists had regular written guidelines for patients to identify these toxicities. As a result, 24% of immunotherapy infusions led to emergency room visits, with 5% resulting in hospitalizations between March and June of 2022. The considerable impact of delayed intervention underscores the urgency of addressing this issue. Our project aims to develop a user-friendly tool to identify grade 2 immunotoxicity. This tool will empower both patients and healthcare professionals to recognize grade 2 toxicities early, allowing for timely intervention. We will create a one-page infographic, available in multiple languages, to help patients self-identify grade 2 toxicities. This tool will be distributed through paper-based posters and a web-based platform. We will evaluate its effectiveness through feedback from patients and healthcare professionals. Successful implementation of our tool is expected to reduce emergency room visits and hospitalizations, enhance patient therapy completion rates, and improve patient experiences. The project's scalability will enable easy adoption in other cancer programs across Ontario and Canada.

ABSTRACT P44

CML STOP

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This study focuses on patients in Windsor with chronic myeloid leukemia (CML). Currently, this study includes 20 participants but there are approximately 100 CML patients being followed in Windsor. These patients previously had to continue life-long medications called tyrosine kinase inhibitors (TKIs) that can have negative side effects, such as heart disease, pleural effusions, vascular disease, diabetes, etc. Many patients with CML across Canada live in larger cities with completed studies that allow up to half of them to stop this life-long treatment safely with PCR testing every 4 weeks. This clinical trials aims to help patients in Windsor with a current turn-around time of 6 weeks for PCR testing. Patients have been offered an opportunity to stop their medications on this clinical trial, the only approved way to stop the medication. This study will improve the quality of life and re-define real-world stopping criteria for CML patients. Current results have demonstrated a 71% success rate in maintaining remission in CML patients stopping TKIs.

ABSTRACT P45

FACTORS INFLUENCING POST-TRAUMATIC GROWTH IN EMERGING ADULTS WITH CHRONIC MEDICAL ILLNESSES

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Managing a chronic illness can be stressful yet provides individuals with an opportunity to experience positive psychological change or post-traumatic growth (PTG). There is an increasing interest in PTG during health-related adversity, yet the factors that facilitate PTG are understudied. The current study used a collection of biopsychosocial factors as potential predictors of PTG, including physical pain, perceived social support, coping, pain self-efficacy, pain acceptance, and resilience. Using a convergent mixed-methods design, this study collected and analyzed quantitative and qualitative data to identify and deepen an understanding of the physiological, social, and psychological components that may contribute to positive personal growth in emerging adults with chronic medical illnesses. Five linear regression analyses were conducted, one for each predictor variable, with resilience as a mediator for PTG. Resilience significantly mediated the relationship between social support and PTG. An indirect mediation effect was demonstrated between pain intensity and pain self-efficacy with PTG. Adaptive coping directly affected PTG whereas pain acceptance did not predict PTG in this sample. Furthermore, thematic analysis (Braun & Clark, 2021) was used to analyze the

qualitative semi-structured interviews. Five themes were generated using thematic analysis from the qualitative data: 1) embracing the "silver-lining", 2) integration of the condition, 3) things I wish I knew, 4) chronic illness changes social networks, and 5) the ripple effect. Future research needs a more advanced statistical approach (e.g., SEM) to evaluate the interaction between predictor variables, especially within different severity levels of chronic pain symptoms.

ABSTRACT P46

USING PANTOPRAZOLE DURING FROZEN EMBRYO TRANSFER

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Additional Research Focus: Biomedical Research

Background: In-vitro fertilization (IVF) is an infertility treatment that involves collecting mature eggs from ovaries and fertilizing them with sperm. Frozen embryo transfer (FET) uses cryopreservation to save embryos from previous cycles/donors, which are then thawed before transferred into the uterus. Pantoprazole, a medication used to reduce symptoms of gastroesophageal reflux disease, has been proven safe during pregnancy. A meta-analysis found no increased risk of preterm delivery, spontaneous abortions, or major congenital birth defects. A 2005 study found that pantoprazole reduced the rate of major congenital malformations by 2.1% compared to the control group. However, there is a gap in existing research on using PPIs during pregnancy, especially when combined with FET and IVF. Objectives: The objective is to determine if using pantoprazole prior to FET results in a difference in biochemical and clinical pregnancy without miscarriage and/or ectopic pregnancy and improves live birth rates. Methods: 200 participants from Victory Reproductive Care will be recruited and randomly divided into equal experimental and control groups. The experimental group will receive 40 mg of pantoprazole orally 3 days prior to FET and 4 days after, while participants in the control group will receive a placebo following the same protocol. The FET procedure will be followed by the VRC standard operating procedure (SOP). After follow-up appointments, a custom form will be completed to monitor for clinical outcomes, including biochemical pregnancies, clinical pregnancies, miscarriages, and ectopic pregnancies. Future applications: Results from this study alter standardized IVF procedures and improve fertility.

ABSTRACT P47

QUETIAPINE USE IN INPATIENT TEAMS

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Background: Quetiapine, an atypical antipsychotic medication, has been increasingly used off-label in the management of agitation, insomnia, and delirium in medical and surgical patients because of its sedative properties. However, the use of Quetiapine as a sedative in this manner has been associated with an increased risk of adverse events, such as metabolic disturbances, respiratory depression, and falls, particularly in older adults. Objectives: This retrospective chart review investigates the extent and consequences of off-label Quetiapine use in non-psychiatric patients, with a focus on patient outcomes. We hypothesize that off-label Quetiapine use in patients is significantly associated with adverse health outcomes when compared to those not prescribed Quetiapine, such as greater patient harms, lengths of stay and readmission rates.

Methods: Electronic health records of all community-dwelling patients (aged 65 and above) admitted to the Medicine ward at Windsor Regional Hospital between April 2021 and April 2022 will be analyzed. Data extracted will include patient demographics, diagnosis, indications for Quetiapine use, dosage, duration of treatment, length of stay, patient harms, script upon discharge, and readmission rates. Descriptive statistics and regression analyses will be used to characterize Quetiapine prescribing patterns and effects. Future directions: Through our findings, we aim to illuminate the implications of off-label Quetiapine use in non-psychiatric settings, ultimately striving to improve patient outcomes and reduce healthcare costs. The results of this retrospective chart review will inform a potential quality improvement initiative to encourage evidence-based prescribing and limit quetiapine use to situations where it's been demonstrated to be safe and effective.

ABSTRACT P48

REAL-WORLD WEIGHT LOSS OUTCOMES OF OPTIFAST® TOTAL MEAL REPLACEMENT PROGRAM IN A COMMUNITY CLINIC

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Additional Research Focus: Social, Cultural, Environmental and/or Population Health Research

Background: The aim of the study was to investigate the effectiveness of the OPTIFAST program (OP), an evidence-based total meal replacement program, for weight loss in a community-based setting. This is a study of real-world data examining total weight loss, % weight loss, and change in BMI following 12-weeks of the total OP. Methods: Participants were selected from the only community-based obesity clinic in Windsor, Ontario. Participants were selected sequentially if they were adherent >80% of at least 12 weeks of a total OP within November 2019 to June 2022. Clinically relevant variables were collected in a retrospective chart review. Participants were examined for changes in BMI and % change in weight at a 12-14 week follow-up. Results: A total of 47 participants made up the total OP group. Mean age of participants was 47.7 ± 11.6; 81% were female. Baseline BMI was 44.4 ± 9.6 kg/m2; after 12-14 weeks of total OP, BMI was 38.3 ± 8.5 kg/m2 (net change in BMI is –6.2 ± 2.1 kg/m2). Weight change (%) after 12-14 weeks of total OP was –13.8 ± 3.6%. Conclusion: After 12 to 14 weeks of total OP, clinically significant weight loss was achieved. Similar results to the OPTIWIN study (Ard et al., 2019) was documented; however, the small sample size and retrospective nature of the study pose as potential limitations. Future directions involve increasing database sample size and comparing the effectiveness of a partial OP with total OP for weight loss.

ABSTRACT P49

CONSTRUCT VALIDITY OF THE V-8 IN SPORT-RELATED CONCUSSION AT BASELINE

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The V-8 is a brief measure of eight variables (energy, depression, anxiety, happiness, stress, motivation, fatigue, and pain) presented in a visual-analog format, intended for brief and repeated administrations. The purpose of the current study was to assess the construct validity of the V-8 in a healthy collegiate athlete sample. It was predicted that V-8 variables would be correlated with a number of related items and subscales of the other well-validated measures. Participants were 159 collegiate athletes (Mage = 20.26, SDage = 1.9, range = 17-25; 71% male; 65% White) referred to the Sport-Related Concussion Center at the University of Windsor for baseline testing efforts. Athletes were administered a comprehensive neuropsychological battery, including some self-report symptom measures such as PCSS, DERS-18, DASS-21, and PROMIS. They completed the V-8 at the beginning and end of evaluation. Pearson correlations were computed to compare each of the V-8 items with the PCSS and DERS-18, as well as appropriate subscales of the DASS-21 and PROMIS measures. Results supported good convergent validity evidence for the V-8 items against well-validated measures with validity coefficients ranging from moderate to moderately strong. Mean V-8 scores, as opposed to Time 1 and Time 2, tended to have the highest validity coefficients. Future research should replicate the findings at baseline and validate established cut-offs in a concussed population to further support the use of the V-8 in post-injury evaluations. The utility of the V-8 may be a useful tool in making return-to-play decisions for concussed athletes.

ABSTRACT P50

ANTICOAGULATION IN PATIENTS WITH CANCER-ASSOCIATED THROMBOSIS AND THROMBOCYTOPENIA: A RESTROSPECTIVE REVIEW

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Background: Patients with cancer-associated thrombosis (CAT) are at increased risk of bleeding for several reasons, including treatment- and disease-related thrombocytopenia. While the direct oral anticoagulants (DOACs) are used in the management of CAT, low molecular weight heparin (LMWH) continues to be recommended for patients with CAT and thrombocytopenia. Methods: We performed a retrospective chart review of adult patients at Windsor Regional Hospital with CAT and thrombocytopenia (platelet count <100,000/mcL within 14 days of CAT), treated with DOACs or LMWH. Data were collected for 100 days following venous thromboembolism (VTE). Primary outcomes included rates of recurrent VTE and bleeding. Results: Forty-two patients met inclusion criteria. Twenty-two (52.4%) were female, mean patient age at VTE diagnosis was 64 years. Twenty patients (47.6%) had a solid organ malignancy while 22 (52.4%) had a hematologic malignancy. Sixteen patients (38.1%) were initially treated with a DOAC and 26 (61.9%) were treated with LMWH. The number of patients with correlating platelet count range within the first 7 days of VTE diagnosis was: <25,000/mcL: n=3 (7.1%), 25,000-50,000/mcL: n=9 (21.4%), and 50,000-100,000/mcL: 19 (45.2%). There were no recurrent VTE events and 4 bleeding events (25%) among patients who received DOACs, while those treated with LMWH had 1 recurrent VTE (3.8%) and 3 bleeding events (11.5%). Conclusions: Rates of recurrent thrombosis and major bleeding were similar among thrombocytopenic

patients with CAT treated with DOACs or LMWH, although baseline characteristics differed among treatment groups. Further research is needed to determine the optimal management of patients with cancer-associated VTE and thrombocytopenia.

ABSTRACT P51

ESTABLISHING MULTIPLE MYELOMA DRUG SCREENING PLATFORM TO PREDICT PATIENTS' RESPONSE TO THERAPY

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Additional Research Focus: Biomedical Research

Multiple Myeloma (MM) is a hematopoietic malignancy, which consists of the abnormal proliferation of plasma cells, a type of white blood cell, in the bone marrow. MM typically affects patients aged 65 or older and causes various health complications including bone lesions, anemia, and hypercalcemia. Around 58,000 patients are diagnosed with MM yearly around the globe. Effective assessment of the disease progression and its response to current as well as novel therapeutic regimens require a throughput in vivo setting. This research focuses on a novel zebrafish xenograft model to study MM. Zebrafish demonstrate characteristics advantageous for efficient research approaches, including efficient imaging, capacity for high throughput assays, and genomic parallels with humans. The purpose of this project is to establish and validate an MM xenograft model in zebrafish as a study and drug screening in vivo platform. This project demonstrates how the inhibitory concentrations (IC50s) of standard-of-care and novel drugs are tested in vitro using MM cell lines and primary MM patient-derived cells which are collected in collaboration with hematologists at Windsor Regional Hospital. Fluorescent MM cells are then injected into zebrafish larvae at 48 hours post fertilization. We observe successful MM engraftment at 96 hours post-injection (HPI). The rate of tumour formation and burden are analyzed using microscopy with computer software, up to 144 HPI. The impact of applied therapy at established Lethal Dose 10 (LD10) on tumour growth is monitored and diverse regimens are compared to assess their efficacy.

ABSTRACT P52

CLINICAL SIGNIFICANCE OF GRADE IN TRIPLE NEGATIVE BREAST CANCER

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Triple negative breast cancer is a heterogeneous cancer type that lacks receptors for estrogen, progesterone, and human epidermal growth factor receptor-2 protein. An important prognostic factor for breast cancer patients is the tumour grade, which is the degree of cell proliferation or differentiation of the tumor cells from normal cells. In our initial study involving 305 TNBC patients from 2004-2017 at Windsor Regional Hospital Cancer Centre, we found a statistically significant difference between grade 2 and grade 3 patients, with grade 2 predicting significantly inferior progression-free and overall survival. Our current study is an attempt to validate these initial findings by expanding our dataset to include data from the London Health Sciences Center. A literature review on TNBC and grade was conducted, followed by a retrospective chart review for 305 TNBC patients from the Windsor Regional Hospital and 515 TNBC patients from London Health Sciences Centre. The parameters for data collection included patient demographics, tumour demographics, therapies, and patient outcomes. We calculated all patient stages using both American Joint Committee on Cancer 7th edition (AJCC7) and the updated AJCC8 staging systems. Initial review of the data supports our earlier findings with a relapse rate of 12.5% in patients with grade 3 tumors and 17% in patients with grade 1 and grade 2 tumors. The completed dataset will be analyzed and presented at the conference. Validating our previous findings of significantly inferior patient outcomes for grade 2 compared to grade 3 patients may alter the staging system used for TNBC patients.

ABSTRACT P53

EVALUATION OF A CONTINUOUS GLUCOSE SENSOR IN PATIENTS WITH DIABETES ON HEMODIALYSIS

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Additional Research Focus: Biomedical Research

The prevalence of end-stage renal disease (ESRD) has been steadily increasing to 14,000 patients on dialysis in Ontario, with diabetic nephropathy being a complication of diabetes that impairs more than half of these patients. Managing diabetes is imperative for these patients as both uremia and dialysis can affect insulin secretion and tissue insulin resistance. To avoid these further complications, patients with ESRD require continuous blood glucose (BG) levels monitoring. Continuous glucose monitors (CGM) have become widely available and are effective at continuously measuring BG levels but are not currently indicated in hemodialysis patients. Recently, a new category of CGMs called the flash glucose monitor (FGM) with models like the Freestyle Libre 2 allow for instant BG value readings. We hypothesized that the use of the Freestyle Libre 2 will accurately assess BG levels in hemodialysis patients with diabetes. A retrospective and prospective cohort study was performed which involved a review of patient medical records to identify participants. Selected participants had their BG data collected for a 14-day period via a finger-prick method and through the FGM. To date, we have collected data from 9 participants and anticipate expanding our sample size to 20 hemodialysis patients before statistical analysis. This prerequisite study will help researchers understand the mechanism of FGM to allow for better diabetes management in hemodialysis patients. We anticipate the results of this study to extend the benefits of FGMs to hemodialysis in Canada by assessing the accuracy and ability of FGMs to guide glycemic control.

ABSTRACT P54

NON-CREDIBLE PERFORMANCE OR SEXUAL TRAUMA HISTORY? NEUROCOGNITIVE PROFILES ASSOCIATED WITH REMOTE HISTORY OF SEXUAL TRAUMA

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Neuropsychological assessments leverage evidenced-based tools to highlight a pattern of a persons' strengths and weaknesses in neurocognitive and emotional domains. Hitherto, there is a dearth of knowledge examining these cognitive profiles in people who have experienced sexual trauma. The present study presents a serial case study examining the neuropsychological profile (i.e., measures of language skills, visual-spatial skills, attention/processing speed, memory, and executive function) from twelve people who endorsed a history of sexual trauma. During these assessments, performance validity tests (PVTs) were completed to determine the credibility of responding. Examination of these neurocognitive profiles suggests that 42% (n = 5) had evidence for noncredible responding and another 25% (n = 3) had indeterminate profiles, based on extant forensic standards of PVTs. Contemporaneously, all subjects had at least seven scores within the average to very superior range across disparate domains, especially within language and visuo-perceptual tasks. As such, the paradoxical co-occurrence of numerous failed PVTs with intact cognitive abilities may be a psychometric marker of complex trauma history. Given the small sample size, the variability of the sample, and the diverse experiences of sexual trauma, the results are preliminary. The potential roles of developmental timing, the survivor-perpetrator relationship, protective factors, and post-traumatic growth on cognitive functioning in people who have experienced sexual trauma are discussed. Future research is required as understanding the neurocognitive profiles of sexual trauma may decrease the likelihood of neuropsychologists erroneously labeling cognitive assessments of people who have experienced sexual trauma as non-credible, invalid, or indeterminate.

ABSTRACT P55

A PATIENT PERSPECTIVE ON APPLYING INTERMITTENT FASTING IN GYNECOLOGIC CANCER

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Background: As the research community undergoes a "revolutionary" paradigm shift from viewing patients as "subjects" to "experts," new projects can involve patients in the research lifecycle, from study design to data translation. Objectives: Researchers sought patient feedback on a proposed randomized controlled trial (RCT) in which gynecological cancer patients would modify their diets with intermittent fasting to gain insight into patients' perspectives, receptivity, and potential obstacles. Methods: A convenience sample of 47 patients who met the inclusion

criteria of the proposed RCT provided their feedback on the feasibility and protocols of the RCT using a multi-method approach consisting of focus groups (n = 8 patients) and surveys (n = 36 patients). Results: In general, patients were receptive to the concept of intermittent fasting, and many were interested to try it themselves. The patients agreed that the study design, with respect to the study assessments, clinic visits, and biospecimen collections, was feasible, and they provided feedback on what could facilitate adherence, such as convenient appointment scheduling times and availability of the study team for patient questions. Regarding recruitment, patients provided suggestions for study advertisements, with the majority agreeing that being approached by a medical professional would increase their likelihood of participation. Conclusions: Our study identified key themes pertinent to the design of cancer RCTs. Utilizing patient voices during the study design phase improves feasibility and provides opportunities for patient centered RCTs.

ABSTRACT P56

USE OF DIGITAL MOBILE TECHNOLOGY FOR RAPID ASSESSMENT OF TREATMENT INDUCED COGNITIVE DEFICITS IN MULTIPLE MYELOMA PATIENTS

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Cognitive dysfunction at baseline, in multiple myeloma (MM) patients, significantly impacts their quality of life and survival during treatment. Many MM patients are increasingly treated with new immunomodulatory agents. However, their potential central nervous system side effects and impact on cognitive function have never been systematically studied, due to the labour-intensive nature of neurocognitive assessments. Thus, the study aims to identify novel screening tools that are easier to administer to MM patients, are language-neutral, independent of learning effects, and can be correlated with validated neuropsychological tools like those proposed by the International Cancer and Cognition Task Force (ICCTF). The main objective is to assess cognitive deficits in MM patients using the ICCTF-recommended neurocognitive battery and the NIH Toolbox®. Furthermore, identifying cognitive domain patterns and discerning NIH Toolbox® components strongly correlated with the global fluid cognition score and the ICCTF battery. The secondary objective is to test the 5-minute Montreal Cognitive Assessment against the ICCTF and NIH Toolbox® battery for sensitivity and specificity. The exploratory aspect will assess the correlation between subjective versus objective cognition, using self-reported measures of cognition utilizing PROMIS SF v2.0 against the ICCTF and NIH Toolbox® battery. The results of this study can enable the incorporation of digital mobile technology as an efficient way to assess cognitive deficits in MM patients who are undergoing treatment and implement this into standard clinical care practice. Future steps will include expanding the sample size and obtaining a baseline cohort to explore the progression of cognitive deficits.

ABSTRACT P57

EFFECTS OF PHOTOBIOMODULATION ON COGNITIVE, PHYSICAL, AND CEREBRAL NEUROVASCULAR FUNCTION IN PARKINSON'S DISEASE: A PILOT STUDY

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Additional Research Focus: Biomedical Research

Parkinson's disease (PD) is increasingly prevalent, affecting ~170 per 100,000 Canadians annually. Currently, there is no cure for PD, warranting the investigation of potential new therapeutics. Photobiomodulation (PBM) is a low-level light therapy that has been proposed as an alternative treatment for neurodegenerative diseases, such as PD. PBM tenably operates through improvements in cerebral mitochondrial function thereby targeting physiological detriments, as opposed to dopamine replacement which operates primarily through symptom management. A pilot study investigating the implications of PBM on non-specific dementia demonstrated improvements in cognitive function and motor control compared to the placebo group. However, no study to date has examined PBM on cognitive, motor, and cerebral vascular outcomes in humans with PD. Ultimately, there is a lack of data regarding the efficacy of PBM, particularly for the use of treating PD. Accordingly, our study aims to attain pilot data to complete a full randomized control trial. The objectives of the study are to determine the effects of PBM in patients with PD on: (1) cognitive function; (2) motor function; and (3) cerebrovascular function. In our double-blind cross-over study, participants will be assigned to both the treatment and placebo groups. To determine whether there is a difference in receiving PBM compared to placebo, participants will undergo a series of cognitive, neurovascular, cerebrovascular, and physical assessments to determine their respective functional status. These data will provide insight into the potential use of PBM as an alternative therapy for PD.

ABSTRACT P58

IDENTIFYING THE CELLULAR IMPACTS OF TWO NOVEL GERMLINE PANNEXIN MUTATIONS FOUND IN EROSIVE OSTEOARTHRITIS PATIENTS

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Additional Research Focus: Biomedical Research

Erosive osteoarthritis (EOA) is a degenerative joint disease characterized by chronic interphalangeal joint damage. No cures exist for EOA due to a poor understanding of the mechanisms behind disease progression. Families diagnosed with EOA were identified to carry mutations in Pannexin 1 (PANX1) and Pannexin 3 (PANX3). PANX1 and PANX3 form channels that facilitate the passage of ions and metabolites important for joint development and maintenance. We investigated the effects of the PANX1 intracellular loop mutation (PANX1 IL-MT) and PANX3 N-terminal mutation (PANX3 NT-MT) on protein biochemistry and localization. Altered glycosylation was observed, with a significant increase in the high-mannose (Gly1) species and a significant decrease in the complex glycosylation (Gly2) species in comparison to wild-type (WT) PANX1 or PANX3 when ectopically expressed in U2OS and Hs578T cells. Additionally, the PANX1 IL-MT formed an Endoglycosidase H-resistant intermediate species which reflects inhibited processing of Gly1 into Gly2. However, no differences between the cellular localization of PANX1 IL-MT and WT were observed. In contrast, the PANX3 NT-MT showed increased intracellular localization, predominantly colocalizing with the chaperone protein calnexin at the endoplasmic reticulum (ER) and in lysosomes, possibly signifying ER-Phagy. Our findings suggest that the PANX1 IL-MT and PANX3 NT-MT may be involved in the EOA development by affecting protein biochemistry and localization, respectively. These mutations are amongst the first genetic factors identified in EOA, and the first germline mutation reported for PANX3. Studying these mutations will improve our understanding of PANX1 and PANX3 in EOA development, and as novel therapeutic targets.

ABSTRACT P59

ASSESSING THE SAFETY AND EFFICACY OF DROPLESS CATARACT SURGERY BY COMPARING POSTOPERATIVE COMPLICATIONS WITH NON-DROPLESS CATARACT SURGERY

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Cataract surgery is one of the most common surgical procedures available. An incision is made through the cornea and anterior lens capsule, and the cataract is emulsified and removed through photoemulsification, or via femtosecond laser assisted cataract surgery (FLACS) to be replaces with an artificial lens. In a non-dropless surgery, patients are required to self-administer steroid and antibiotic eye drops post-operatively. In a dropless surgery, a patented solution of moxifloxacin and triamcinolone is injected directly into the anterior vitreous following insertion of the intraocular lens. Eliminating the need for patients to self-administer eye drops and reducing the risk of poor adherence causing post operative complications. The efficacy and safety of the dropless surgery can be demonstrated by determining if there is a clinically significant change in the need for steroid drops at follow up and/or clinical signs of infections/endophthalmitis when compared to non-dropless surgery. Measurements of intraocular pressure, cells seen in anterior chamber, and clinical signs of inflammation are collected at 1 day and 1 week post op, as well as days between surgery and prescription of additional eye drops, which will be compared between both populations, to determine level of efficacy and safety. Data collection from patients who underwent dropless and non-dropless cataract surgery at Windsor Regional Hospital between 2016 and 2022 will be performed to determine if the dropless surgery is effective at reducing post operative inflammation and infection in patients undergoing cataract surgery. Expanded results will be prepared and discussed at conference.

Research Focus: Social, Cultural, Environmental and/or Population Health Research

ABSTRACT P60

UNDERSTANDING THE IMPACT OF THE COVID-19 PANDEMIC ON CHILD DEVELOPMENT COMPARED TO ESTABLISHED AGE-MATCHED STANDARDS

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Additional Research Focus: Clinical Research

Introduction: COVID-19 caused a significant reduction in social interactions. There is concern over how this has impacted childhood development, particularly for children of lower socioeconomic status (SES). Prior research suggests that without adequate social exposure, children will have increased difficulty in meeting developmental milestones. Methods: We will assess children's milestones at 18, 24, and 30 months using parent/guardian surveys. Recruitment will involve postcards and social media. Parents/guardians will complete three surveys covering cognitive, social, emotional, speech, language, fine motor, and gross motor development. A retrospective chart review will obtain data on milestones at 6, 9, 12, and 15 months. The developmental score of participants will be compared to accepted average developmental scores obtained from the literature. Results: Preliminary results show that the developmental milestones of children at 15, 18, and 24 months have not been affects by the reduction in social interactions. This could be due to a variety of cases including that the children were able to catch up to their peers in terms of developmental milestones. Retrospective chart review is still being conducted to confirm the findings. Discussion: This study will shed light on the possible impacts that COVID-induced isolation has had on development. The ubiquitous nature of the pandemic's isolation makes uncovering its effects on childhood development essential to devising and planning for the educational needs of youth. Through early identification, our research may provide insights into where to focus education efforts to ensure newborns born during the COVID-19 pandemic avoid long-term developmental deficiencies.

Abstract P61

DEVELOPMENT OF A CO-DESIGNED PILOT SUPPORT GROUP FOR STUDENTS WITH TYPE 1 DIABETES IN A POST-SECONDARY EDUCATION SETTING

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Additional Research Focus: Clinical Research

A challenging time for young adults (YA) with type 1 diabetes (T1D) is the transition to the post-secondary education setting, which is often associated with difficulties with sleep; substance use; adjusting to new routines; higher reports of diabetes distress, anxiety, depression, lower quality of life; and decreased diabetes self-management behaviours (Fredette et al., 2016). To mitigate the risk of these negative outcomes, it is crucial to address barriers (e.g., lack of social support) and promote facilitators (e.g., holistic approaches to improving systematic social support) to a successful transition to the post-secondary education setting (Kichler et al., 2023). The first two phases of the present study aim to design a mental health-based peer support group intervention for YA (aged 18-25) with T1D who are transitioning to a post-secondary education setting. Phase 1 will quantitatively measure levels of social support, diabetes distress, and barriers/facilitators to successful T1D management among post-secondary students with T1D across Canada. We hypothesize that regression analyses will demonstrate that social support moderates the relationship between post-secondary campus barriers and diabetes distress as well as post-secondary campus facilitators and diabetes distress. Data from Phase 1 will inform Phase 2, during which a focus group of stakeholders with extensive knowledge and/or lived experience of T1D will co-design the mental health-based peer support group intervention. Qualitative data from the focus group will be analyzed using content analysis. Results from these initial two phases will be used to inform a future feasibility and acceptability pilot study of the co-designed support group intervention.

Abstract P62

RESPIRATORY SYNCYTIAL VIRUS DETECTION AND DISEASE SURVEILLANCE ACROSS A MAJOR INTERNATIONAL LAND BORDER

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Respiratory Syncytial Virus (RSV) is one of the leading causes of morbidity in children under the age of 5 and as of 2023 still has no preventative pediactric vaccines available. Additionally, RSV is a non-reportable disease, making it difficult to track community prevalence. Wastewater surveillance is a non-biased method of assessing incidence of a disease in a community. This could inform RSV prevention measures however, wastewater signals must first be validated to clinical metrics. Composite samples are collected and extracted within a five hour period, then RT-

qPCR is used to measure the concentration of RSV viral RNA in wastewater. This method allows for results to be available the same day as collection. Samples are taken from three major wastewater treatment plants; two located in Windsor-Essex and one in Detroit, allowing for meaningful comparisons between the RSV seasons in a contiguous metropolitan area separated by an international border. Clinical measures of RSV in Windsor-Essex (RSV test positivity for Ontario) showed a strong positive correlation with the signal of RSV in the wastewater (Pearson's R = 0.812, $p<0.001$). Similarly, clinic measures for Detroit (hospitalization rates for Michigan) show a strong positive correlation with the signal of RSV in the wastewater (Pearson's R= 0.839, $p<0.001$). Comparison between the wastewater signals for these cities showed the onset and peak of Windsor's RSV season to be delayed approximately six weeks in relation to Detroit's RSV season. This research demonstrates that wastewater surveillance is an accurate means of assessing RSV prevalence, however work is still being done to determine the cause of such a lag in seasons.

Abstract P63

PREDICTING COVID-19 OUTBREAKS THROUGH ARTIFICIAL INTELLIGENCE-INFORMED WASTEWATER SURVEILLANCE

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The COVID-19 pandemic brought increased awareness to global public health crises and underscored the importance of accurate disease prediction to inform preparedness within the healthcare sector. Specifically, the COVID-19 pandemic showed that precise infection prediction serves a dual purpose: facilitating the efficient allocation of medical resources and precise disease diagnosis, while also functioning as a preemptive strategy to mitigate disease transmission. The pandemic validated the use of wastewater surveillance as a tool for early detection of COVID-19 outbreaks. In regions with limited clinical testing capacity, wastewater surveillance offers insights into the disease dynamics at the community level. The crux lies in constructing predictive models, pivotal for generating quantified estimates of the infected population. Modeling longitudinal wastewater data proves to be challenging, given that biomarkers in wastewater are susceptible to fluctuations influenced by multiple factors tied to the wastewater matrix and the characteristics of diverse sewersheds. Machine Learning (ML) and Deep Learning (DL) have emerged as notable domains for tackling intricate real-world issues. Hence, we propose harnessing the capabilities of ML and DL techniques, which gain strength from the growing pool of wastewater surveillance data. In this study, we present a modeling framework grounded in ML and DL to predict confirmed cases of COVID-19 within our community. This research leverages AI-based models to forecast the prevalence of the COVID-19 outbreak.

Abstract P64

COMBINATION OF RT-QPCR AND NANOPORE SEQUENCING FOR MONITORING SARS-COV-2 VOCS IN WASTEWATER FROM THE WINDSOR-DETROIT AREA

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Additional Research Focus: Health Service Research

SARS-CoV-2 which is responsible for COVID-19 has been evolving since it was first identified. Tracking the continuous emerged variants of concern (VOCs) in wastewater offers promising information for public health units to mitigate the spread of SARS-CoV-2 since VOCs can be more transmissible and cause more severe symptoms. Nanopore sequencing and reverse transcription quantitative polymerase chain reaction (RT-qPCR) are the two most common methods for VOCs identification and detection. Wastewater samples present a challenge for sequencing due to viral genomes that are highly fragmented and diluted, whereas RT-qPCR has the limitation that the mutations must be known in advance. Here, we employed both sequencing and RT-qPCR to detect and monitor the prevalence of variants with R346T mutation (e.g., BQ.1.1, XBB, BF.7) in wastewater collected from June 2022 to March 2023 in the contiguous Windsor-Detroit cross-border area. In total, 233 wastewater samples were analysed from which the mutation was detected since July 2022 using RT-qPCR. Initially, mutation frequency was < 20% before the middle of September and gradually increased to over 70% in December, reaching 95% in late March 2023 for both cities. A similar trend was observed when sequencing was applied, however, the R346T mutation was not identified until the middle of September, which suggests the sensitivity of sequencing in this study was lower than RT-qPCR. Combining sequencing with the more rapid sample analysis provided by RT-qPCR for monitoring mutations of infectious pathogens offers a promising approach to understand trends in disease transmission to better assist public health decision-making.

ABSTRACT P65

ENVIRONMENTAL SURVEILLANCE OF ANTIMICROBIAL RESISTANCE WITHIN THE HURON-ERIE CORRIDOR

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The rapid ascent of antimicrobial resistance (AMR) globally has caught the attention of governments worldwide including Canada where an action plan against AMR was recently released. The recent overuse of antibiotics has allowed the proliferation of diverse drug-resistant organisms including carbapenemase-producing Enterobacterales (CPE), which are of particular concern in Canada. Carbapenems are β-lactam antibiotics that are used as a last resort to treat severe infections of muti-drug resistant bacteria. While many efforts are focused on clinical surveillance, there is growing emphasis on the importance of environmental reservoirs for AMR genes. Here, we present the results of preliminary work to assess prevalence of CPEs within the Huron-Erie corridor of the Great Lakes. This region receives treated wastewater effluent and combined sewer overflow from 20 wastewater treatment plants along with substantial loading of agricultural contaminants from regional tributaries. Currently, we are monitoring two clinically relevant AMR genes, Klebsiella pneumoniae carbapenem resistant (KPC) beta-lactamases and New Delhi metallo-beta-lactamases (NDM). While we report high concentration of these genes in raw wastewater influent (KPC: 107 copies/L, NDM: 105 copies/L) and treated effluent (KPC: 103 copies/L), their abundance in receiving waters of the Detroit River and Lake St. Clair is variable. Persistent AMR has been measured near point sources of introduction with dilution of several orders of magnitude seen several km downstream. Still, the high frequency of wastewater treatment plants situated throughout the Huron-Erie corridor results in constant introduction of AMR throughout the region thus compromising the healthy and beneficial use of this important freshwater resource.

ABSTRACT P66

CONSTRUCTION OF IDENTITY IN INDIVIDUALS WITH INFLAMMATORY BOWEL DISEASE ACROSS THE LIFESPAN

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Inflammatory bowel disease (IBD) is a chronic illness that affects 10 million individuals worldwide; however, Canada has the highest rates of IBD per capita in the world. Presently, 0.7% of Canadians are diagnosed with IBD, which is expected to rise to 1% by 2030. Disease onset is typically between the ages of 15-45 years old. This is a crucial period for identity development and growth; however, IBD symptoms often disrupt these processes and cause individuals to abandon or reconstruct parts of their identity. As a result, changes in individuals' life plans and health status may cause them to grieve their former pre-IBD identities. In this qualitative narrative study, we captured the lived experiences of IBD, with a focus on what individuals have lost, gained, or accomplished across various avenues. Thirteen participants constructed IBD narratives using a holistic-form narrative approach, a method that captures various plot formulations and discourses that emerge through storytelling. We found three main plotlines: The "journey to acceptance", which detailed a route to acceptance wherein individuals integrated IBD into their identity, "the ambivalent story", which exemplified individuals who were unsure of IBD and the resulting impacts of the diagnosis on their identity, and "the grief story", which outlined grief and loss surrounding one's pre-IBD self. These results illuminate the role of narrative in shaping meaning-making and identity processes over the life course. We urge future researchers to explore narrative inquiry as a route to further understand the integration of IBD into one's life story/identity.

ABSTRACT P67

EFFECTS OF SOCIAL ISOLATION ON WELLBEING: UNDERGRADUATE STUDENT ENGAGEMENT IN POSITIVE AND NEGATIVE COPING BEHAVIOURS DURING THE CORONAVIRUS PANDEMIC

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Engagement in positive coping behaviours is correlated with enhanced wellbeing, whereas negative coping behaviours produce the opposite effect. The periods of lockdown during the COVID-19 pandemic (and the resulting social isolation) produced significant negative effects. The aim of this study was to elucidate the importance of positive coping behaviours as opposed to more negative coping styles and their effects on subjective wellbeing (SWB) and physical wellbeing (PWB) within an undergraduate student sample during a period of mandated social isolation. Questionnaire data were collected from N = 150 undergraduate students, and interviews were thematically coded for a subset of n = 20. Quantitative results showed a decrease in SWB from Time 1 (pre-pandemic) to Time 2 (height of the pandemic) when measured simultaneously. A strong positive correlation was found between SWB and self-care behaviours, as well as a strong negative correlation between SWB and dysfunctional behaviours. Associations were also noted between PWB and self-care behaviours at the different time points. Dysfunctional behaviour engagement was found to be a significant moderator of the relationship between SWB and loneliness. Four major themes (coping with new stressors of COVID-19, changes in work structure during COVID-19, importance of close relationships, and importance of technology) and

several subthemes were generated from interview transcripts. Contributions and suggestions towards ensuring that the wellbeing and coping strategies of undergraduate students is considered a priority, especially in the context of a global disease pandemic, are discussed.

ABSTRACT P68

UNDERSTANDING THE JOURNEYS OF PATIENTS THROUGHOUT TRANSITIONS IN CARE

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Additional Research Focus: Health Service Research

Care transitions are particularly challenging for older adults with complex needs or who have experienced major medical events. Efforts to improve care transitions and reduce associated burdens should be informed by an understanding of the transition experiences of older patients. This study aims to understand patient experiences during care transitions. Older adults needing acute and restorative care are invited to be interviewed within 72 hours of each care transition (admission, discharge). Interview data are interpreted through thematic analysis. Based on five male and four female participants, themes are developing related to personalized approaches to care and transition process. Contextual and critical transition point factors illustrate perceptions of care transitions improve with greater involvement, attentive and responsive staff, and trustworthy information about care goals and discharge. Poor care experiences involve difficulty getting attention from staff, disruptive roommates, and misleading transition information. While in restorative care (after acute care), participants report that personalized approaches to care allow for enhanced communication and staff interactions, increasing preparedness for the next transition. Patient factors, such as normalization urgency and inquisitiveness, also impact transition perceptions. A common stress point appears after discharge when participants experience a lack of follow through from services and accessibility issues in their homes. Understanding patients' experiences provides a foundation for addressing challenges and enhancing quality of care. The complexity of patients' journeys through care transitions illustrates a need to co-design improvements. The voices of caregivers and healthcare providers are also being collected to ensure proposed improvements address challenges they also experience.

ABSTRACT P69

PHYSICIAN PRACTICE PATTERNS ON THE USE OF INFERIOR VENA CAVA FILTERS FOR VENOUS THROMBOEMBOLISM

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Additional Research Focus: Biomedical Research; Clinical Research

Background: Use of inferior vena cava (IVC) filters has increased in recent decades, despite a lack of data demonstrating that filters reduce thrombosis-related mortality. Clinical practice guidelines vary in their indications for IVC filters and lack recommendations on monitoring practices post-insertion. Methods: We created a scenario-based survey to assess physician practices relating to IVC filter use in settings that are poorly defined by current guidelines. The survey was disseminated to thrombosis and interventional radiology societies to optimize response rates across disciplines. Results: We have received 53 responses to date. Hematologists/thrombosis physicians represented the most common type of healthcare provider (n=21; 39.6%), with 27 (44.26%) practicing in an academic setting as opposed to community centre. Most respondents indicated that their centre does not have filter removal protocols (n= 31; 50.62%). When provided with a case of acute pulmonary embolism (PE) with contraindication to anticoagulation but no leg deep vein thrombosis (DVT), 24 (43.64%) responded that they would proceed with a filter, whereas 29 (52.73%) would perform serial leg ultrasounds. Most respondents (n= 33; 60%) would consider filter placement for a proximal leg DVT diagnosed 2 days before absolute contraindication to anticoagulation but not when the DVT occurred 3 weeks earlier (n=15; 27.3% would insert a filter). Conclusion: Our survey results highlight the heterogeneity in the use of IVC filters in clinical practice, and call for a need to evaluate filters in controversial settings, such as non-acute thrombosis, and PE without DVT. Further efforts are needed to define monitoring practices post-filter insertion.

ABSTRACT P70

ESTIMATING THE INTANGIBLE BURDEN OF POLYCYSTIC OVARY SYNDROME: THE QUALITY ADJUSTED LIFE YEARS (QALY) VALUE

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The extent of Polycystic Ovary Syndrome (PCOS)-related intangible costs are unknown. The quality-adjusted life-year (QALY) is a measure of the value of health outcomes, i.e., the fraction of a perfectly healthy life-year that remains after accounting for the damaging effects of an illness or condition. QALY values were derived from the responses from 450 participants via a 36-Item Short Form Survey. We first estimated SF-6D scores via a standardized algorithm. The SF-6D is comprised of the following subscales: Physical Functioning, Role Limitations - both mental and physical (2-items), Vitality, Mental Health, Social Functioning and Pain. To convert these scores to QOL valuations, we then regressed these 6-dimensions on to the EQ-5D total score. A utility index was then calculated using the obtained regression weights to obtain a weighted linear sum of the SF-6D scores. The utility scores were scaled using the worst possible score on the SF-6D also referred to as the "pits". We converted the utility scores to QALY values with values ranging from 0-absolute worst to 1-absolute best. QALY values ranged from 0.21-1.0, with a mean±SD of 0.63±0.15. Of all respondents, 6 (1.3%) had QALY scores ≤0.20, 24 (5.2%) scores 0.21-0.39, 55 (12.0%) scores 0.40-0.49, 102 (22.2%) scores 0.50-0.59, 129 (28.0%) scores 0.60-0.69, 72 (15.7%) scores 0.70-0.79, 51 (11.1%) scores 0.080-0.89, and 21 (4.6%) scores ≥0.90 Forty percent of women with PCOS reported a loss of up to 50% of quality life years and only ~5% reported near perfect health. PCOS critically impacts QOL in affected women, resulting in significant intangible economic burden.

ABSTRACT P71

THRIVING WITH POLYCYSTIC OVARY SYNDROME ACROSS THE LIFESPAN

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Category: Social, Cultural, Environmental and/or Population Health Research

Polycystic Ovary Syndrome (PCOS) is the more prevalent hormonal disorder in women of reproductive age, with a global prevalence of up to 21%. Research on PCOS from a psychosocial perspective has a relatively recent history and has been almost exclusively centered around the view that PCOS disrupts the life course and feminine identity in negative ways. There is very little systematic research amplifying diverse pathways of development that focus on resilience, self-compassion, healing, and femininity, which is the goal of this study. Using a narrative interview methodology, participants were asked to construct their "PCOS story", including the main chapters of their story, and key scenes from various times in their lives across a variety of domains (e.g., health care, relationships, body image, self-management, and coping). They were also asked to reflect on their future script, with a focus on meaning-making and closure/resolution. While our sample size currently includes 70 women diagnosed with PCOS, 35 interviews (age range 19-58, Mage=29.6, TTD=4.45 years) have been fully transcribed, and coded thematically. Five these illustrate avenues of strength and resilience, overtime: 1. Embracing and caring for the self, 2. Pushing forward through advocacy, 3. Cultivating newfound agency to protect the future self, 4. Growth through lifelong learning, and 5. Moving beyond diagnosis labels. Our research is the first step toward challenging the deficit-based, biomedical framing of PCOS that dominates the current state of the literature by amplifying counternarratives of self-discovery, self-compassion, healing, and generativity. Implications for new pathways of knowledge will be discussed.

ABSTRACT P72

"IT'S LIKE I'M A FAILURE": INFERTILITY IN WOMEN WITH POLYCYSTIC OVARY SYNDROME

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Polycystic ovary syndrome (PCOS) is the most common endocrine disorder, present globally in 8-13% of women of reproductive age. While symptoms include irregular menstrual cycles, hyperandrogenism, insulin-resistance, and mental health concerns (e.g., anxiety, depression, and poor body image), most of the biomedical research on PCOS involves its impact on fertility and pregnancy-related complications. Given that restoring fertility is often the primary focus of treatment for women with PCOS, this study aimed to examine how women diagnosed with PCOS navigate issues related to infertility in their lives and how these issues impact their identity as women. The study utilized archival data collected from 2017-2018 through semi- structured interviews of 62 women diagnosed with PCOS in Canada. Data from the interview transcripts was coded using Braun & Clarke's (2020) reflexive thematic analysis, situated within a critical feminist lens. Six themes were constructed: (i) doctors' narrow perceptions of PCOS, (ii) lack of knowledge and perpetuation of misinformation, (iii) worries of not being able to conceive, (iv) stumbling blocks when trying to conceive, (v) the motherhood mandate, and (vi) feeling abnormal and unfeminine. This study expands on limitations from biomedical and quantitative studies conducted in this field and has implications for advocacy in women's health, specifically for PCOS and infertility.

ABSTRACT P73

CORRELATIVE IMPACT ASSESSMENT OF COLLABORATIVE ORAL HEALTH INTERVENTIONS IN ADULT ACUTE CARE

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Additional Research Focus: Health Service Research; Clinical Research

Poor oral health can be exacerbated by socio-demographics, severe mental illness, cancer and renal impairment. We aim to develop an impact profile of a prospective oral health program that transcends single-disciplinary intervention. By adopting a community-centric perspective, we seek to assess the sustainability of taught oral health practices, during and beyond hospitalization. Adults admitted for acute mental health care will be presented with an outline of oral health education. We would then gather data based on patient experience, health history/outcomes, and physician reports to assess likelihood of clinical and social value. Collection tools include patient-reported outcome measures (PROMs) and standardized oral health assessments. Analysis tools include descriptive statistics and regression analyses. Through literature review and surveys, we hope to probe the viability of a future quasi-experimental, longitudinal study. Expected outcomes include: increased awareness of oral health disparities and psychosomatic illness and improved oral health behaviors in patients. In addition to enhancing patients' personal well-being, it could also enhance their quality of life after they conclude their acute inpatient stay and return to their communities. Our study aims to inspire continuum of care. Patient response will offer insights into the program's effectiveness and contribute to healthcare accessibility and innovation. With a diverse clinical team, we can assert the importance of hospital-wide oral care protocol and perform correlation mapping with comorbidities; thus allowing physicians to better serve patients at-risk for oral deterioration and foster a cooperative circle of care. We can ultimately establish patient-guided care and positive habits to improve community health.

Research Focus: Health Service Research

ABSTRACT P74

SEMAGLUTIDE USE IN OVERWEIGHT PATIENTS AS A WEIGHT LOSS INTERVENTION: A SCOPING REVIEW

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Background: Semaglutide, Glucagon-like peptide-1 (GLP-1) receptor agonist, is an anti-hyperglycemic agent manufactured to manage type-2 diabetes. Its indication is to be used in diabetic patients who have failed at least one other anti-hyperglycemic agent in conjunction with regular exercise and a healthy, balanced diet. Apart from its optimal glycemic control, Semaglutide has become highly coveted due to its propensity to cause profound weight loss (>20%). It is presently distributed for cosmetic purposes resulting in its controversial use, rising costs, and supply scarcity. Objectives: The objective of this scoping review is to systematically map the existing literature on the use of Semaglutide in overweight (BMI of >25.0kg/m2) adult patients as a weight loss intervention to provide an overview of available data and identify knowledge gaps. Methods: Articles that were published in English addressing semaglutide use for weight loss purposes for overweight adults were sought. A 10-year date restriction was imposed as Semaglutide was not approved for the market until 2016. The databases searched were CINAHL and Ovid inclusively. Published and scholarly articles were sought and included. Screening of full-text papers and data extraction were performed independently by one reviewer. Results: There were 15 articles included in this review. The overlapping themes identified were emphasis on the safety, efficacy, and potential adverse events associated with the use of semaglutide. Conclusions: Semaglutide demonstrated clinically significant weight loss in non-diabetic overweight adults while reducing cardiometabolic risk factors. Similarly, to other weight loss agents, it must be coupled with healthy lifestyle changes for sustainable effects

ABSTRACT P75

ATTITUDES REGARDING SCIENCE KNOWLEDGE AND CLINICAL TRIALS

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Additional Research Focus: Clinical Research

Clinical trials are research studies aimed at evaluating the effectiveness of medical, surgical, or behavioural interventions. While cancer clinical trials success rates increased by 6.6% from 2012-2015, the average accrual rate for cancer patients remains only 7% in Ontario and as low 3% in smaller centers. Here we aim to explore what influences participation of patients in clinical trials by gauging the community's attitudes towards scientific knowledge and assessing methods of increasing positive associations with clinical trials. A mixed method approach was taken involving a survey portion along with qualitative semi-structured interviews. The survey was open to the general community and all respondents were invited to a "Be a Researcher" event. This consisted of a presentation about clinical trial research, an informational handbook, a 1-hour research lab tour and followed up by a 1-hour focus group. Results for the survey and focus group analysis have brought insight into primary hesitations about trials, what influences comfortability with certain procedures for research, and shed light on themes of research transparency for patients and lack of awareness of local research efforts related to clinical trials. The future of these results suggests improving upon understanding hesitancies surrounding clinical trials and finding ways to break down barriers between patients and the research they are being asked to participate in.

ABSTRACT P76

LONGITUDINAL ASSESSMENT OF FRAILITY CHANGES IN PATIENTS WITH HEMATOLOGICAL MALIGNANCIES & CORRELATION WITH SMARTWATCH IDENTIFIED RISK FACTORS

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Additional Research Focus: Clinical Research

Autologous stem-cell transplantation (ASCT) and parenteral chemotherapy remain the cornerstone of management for diverse hematological malignancies. However, these treatments are associated with significant short-term toxicity. Identifying at-risk patients is crucial as novel, targeted therapies emerge. Physical frailty, defined as the accumulation of age-related diseases and disabilities, independently predicts poor survival in these patients and is associated with increased healthcare utilization. Moreover, there is a lack of prospective studies with longitudinal data on frailty. Consumer-grade wearable devices such as smartwatches have been used to identify frailty and predict mortality. These devices provide data on physiological factors and can identify modifiable factors such as stress levels, providing opportunity for intervention through lifestyle alterations. In light of these findings and the need to better understand frailty in hematological malignancies, our project aims to investigate the interplay between physical frailty, cognitive function, and physiological parameters using consumer-grade wearable devices over an extended period of time. Patients planning to have ASCT or chemotherapy for less than three months will undergo cognitive and frailty testing at three time points. Patients undergoing chemotherapy for greater than 3 months will undergo testing once, 3 months post-therapy commencement. Frailty testing includes the Edmonton frail scale and the SCREEN-14 nutrition tool. Cognitive testing includes Quality of Life score using Promis Global 10 and the 5-minute MOCA test. Smartwatches will be provided and worn for 3 days. Results from this study will provide greater insight into the role frailty plays in hematological treatments, and allow identification of opportunity for feasible intervention.

ABSTRACT P77

A MACHINE LEARNING BASED OPTMIZATION METHOD FOR A HEALTH SUPPLY NETWORK DESIGN PROBLEM

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The supply disruptions and shortage of PPE during COVID-19 pandemic show the importance of health supply chain resilience and flexibility. In this research, we develop a Machine Learning (ML) based solution methodology for a healthcare supply network design problem in a medical implant company, where warehouse selection for vendor-managed inventory, hospital assignment, and delivery routing are considered simultaneously. The case is a variant of the location-allocation inventory routing problem. According to the literature, most of the research on ML in optimization only focuses on applying ML tools to individual combinatorial optimization problems. However, the healthcare supply chain optimization problem is the intersection of multiple decision-making models simultaneously, increasing their solution complexity. In this regard, we implement ML tools to design a hybrid optimization algorithm using Genetic Algorithm as the main optimizer and neural network-based regression models for cost feedback for subproblems. To prove the applicability of this solution approach, we evaluate its performance on both random instances and on a real case healthcare supply chain providing medical implants including 78 hospitals in Ontario, Canada.

ABSTRACT P78

ASSESSING HEALTH INFORMATION NEEDS IN CLL PATIENTS ON SURVEILLANCE

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Additional Research Focus: Clinical Research

Chronic lymphocytic leukemia (CLL), the most prevalent type of leukemia in the Western hemisphere, is a mature B-cell neoplasm characterized by the progressive accumulation of monoclonal B lymphocytes. Although often associated with good prognosis, CLL patients can suffer impairments in quality of life, symptom burden, and role function, even for those with disease not requiring intervention, and being maintained on surveillance or 'watch and wait' strategy. Dissatisfaction with the health information received may have a potential role in patient-experienced distress. Our study aims to evaluate patients' own assessments of their understanding of the disease and correlate this with patient reported depression and anxiety. We will assess patient reported interactions with healthcare workers as it relates to information provision, as well as emotional and psychological support. Additionally, the various information sources that most influence patients' understanding of their condition will be examined. Information/interventions commonly sought outside the allopathic healthcare system will be explored, to understand areas where information needs are the highest. An online REDCap survey will be available for patients with a histopathological CLL diagnosis followed with a watch and wait strategy in ambulatory care at Windsor Regional Hospital. We will aim to include 80 patients diagnosed within 6-36 months prior to study start date. Through this study we hope to identify information sources CLL patients found most helpful in learning about their condition, and how well they felt their information needs were met. We hope to correlate whether these factors tie into patient anxiety and stress levels.

ABSTRACT P79

EXPLORING THE DEVELOPMENT OF A HOME NASOGASTRIC FEEDING PROGRAM TO FACILITATE EARLY DISCHARGE OF INFANTS FROM THE NICU

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Additional Research Focus: Social, Cultural, Environmental and/or Population Health Research; Clinical Research

Achieving full oral feeding and appropriate growth are essential for discharge to home with preterm infants; however, attaining these goals can prolong discharge timing, increase resource utilization and impose a great deal of stress on families. Although some NICUs around the world have demonstrated success in home nasogastric (NG) feeding programs, these programs are absent in Canada due to the lack of specialized nutritional and feeding support in neonatal follow-up clinics. Within Windsor Regional Hospital (WRH), the neonatal unit offers post-discharge nutritional support through in-house dietitians. This resource makes implementing a home NG feeding program in Windsor-Essex possible. Before implementing this program locally, it is essential to understand the short and long-term impacts on families. To do this, we plan to review the readmission rates and emergency room visits of infants discharged with a nasogastric tube from WRH between January 2015 and December 2021. This study will also assess discharge timing and nasogastric feeding duration and its impact on infant growth and family's quality of life. This research will provide critical insights into the feasibility of implementing a home NG feeding program in Windsor-Essex. In doing so, this program has the potential to reduce readmissions and decrease utilization of hospital resources, while enhancing the care for infants and their families.

ABSTRACT P80

USING CARE NAVIGATION TO IMPROVE PATIENT-REPORTED OUTCOMES AMONGST OLDER ADULT PATIENTS: PRELIMNARY RESULTS FROM A PILOT STUDY

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Additional Research Focus: Social, Cultural, Environmental and/or Population Health Research

Background: Older adults often face significant challenges when navigating the health system. In hopes of improving older adult patients' interaction with the health system, Henry Ford Health (HFH) is piloting a care-navigation program, the Senior C.A.R.E Navigator Program. This program is designed to reduce unnecessary stress for older adult patients by providing them with information, advocacy, navigation, coaching, and resources. Objective: Recruit 100 older adult patients to the Senior C.A.R.E Navigator Program and evaluate its ability to improve patient-reported outcomes (PROs). Method: Patients complete five PRO measures, including the EQ5D today and four Patient-Reported Outcome Measurement Information System (PROMIS) measures (emotional, depression, anxiety, and self-efficacy) at baseline and three follow-up timepoints (3, 6, and 9 months). Responses provided during the follow-up surveys are compared to baseline using paired t-tests. Results: To date, 48 patients have completed the baseline survey, with 26 patients having completed surveys at all timepoints. Compared to baseline, no differences were observed at 3 months. For participants with 6-month follow-up, there were significant improvements in PROMIS depression ($p = .009$) and anxiety ($p = .024$) scores. For participants with 9-month follow-up, there was a significant improvement in the PROMIS depression ($p = .006$) and a trend for EQ5D health today ($p = .053$). Future directions: Recruitment for the Senior C.A.R.E Navigator Program pilot is projected to be completed by the end of 2023, with follow-up timepoint data collections to be completed for all patient by the end of 2024.

ABSTRACT P81

MIND THE GAP! UNDERSTANDING THE CANCER REHABILITATION NEEDS OF RADIATION THERAPY PATIENTS

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Purpose: People with cancer look to rehabilitation services for strategies to cope with impairments resulting from the disease and treatments. The aim of this work was to determine radiation therapy patient needs for cancer rehabilitation services. Methods: A patient needs assessment questionnaire was developed using a 4-point Likert scale and open ended questions to understand needs pre, during and post radiation therapy treatment. Hard copies of the survey with pre-paid postage envelope were distributed to all radiation therapy patients attending either; a planning appointment, a treatment appointment, or attending a follow up appointment during a one week time period in November 2022. Participants had one month to complete and return. Results: 53 surveys were distributed and 12 (4%) completed were returned. The average age of participants was 66 years (range 54-85). The most common diagnosis was breast (n=5) followed by prostate (n=4). The majority (n=11) of respondents were on active radiation therapy treatment at the time of completing the survey. The majority (n=10) of participants reported no need for rehabilitation services. All participants reported not being offered rehabilitation services at any point in their care. Four (33%) participants reported needing professional help with a physical problem due to treatments. Four (33%) participants reported transportation barriers as a problem accessing rehabilitation services for their physical problems. Eight (67%) respondents would like rehabilitation services to be offered at the cancer centre. Conclusions: Individual needs for rehabilitation services are low however, opportunity exists to better educate and offer support throughout the cancer journey.

ABSTRACT P82

STRUCTURED OBSERVATION: USING BEHAVIOURAL MAPPING TO IDENTIFY BARRIERS AMONG OLDER ADULTS ON A HOSPITAL CAMPUS

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Additional Research Focus: Social, Cultural, Environmental and/or Population Health Research

Background: Navigating hospitals is a frequent issue for patients and visitors (Mollerup, 2009). Consequential concerns lead to poor patient experiences due to frustration and unnecessary exertion (Guo and He, 2022). Objective: To further understand wayfinding journeys in a healthcare

environment to facilitate enhanced comprehension of patient interactions on a hospital campus and to implement mitigation strategies. Design: Structured observations (15 minutes across three days) at nine zones were conducted. This was in coordination with various outpatient program run times (i.e., 9:00am, 10:00am, and 12:00pm). Each zone was identified as a critical area based on knowledge of the facility and common behaviours of the target population. Drawn behavioral maps were used in conjunction with coded tables to identify barriers. Additional behaviours were added throughout observations as necessary. Participants/methods: Twenty-seven observations took place at a specialty hospital in Southwestern Ontario. Structured observations via behavioural mapping focused on individuals 65 years of age and older who were navigating the hospital campus, while still taking note of younger cohorts. Results: Within the nine zones, there were 11 locations where barriers were consistently observed. The barrier with the highest frequency was verbal interaction/articulation with n=45; the location with the highest frequency of barriers was the main intersection in the lobby with n=38. The most frequent barrier per location was noted as verbal interaction/articulation at the main intersection in the lobby with n=15. By understanding the critical navigation points where barriers exist, stakeholders can improve the patient experience by developing mitigation strategies to minimize these occurrences.

ABSTRACT P83

ENHANCING PATIENT-CENTERED CARE: IN-PERSON LANGUAGE TRANSLATION'S IMPACT ON QUALITY CARE

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Additional Research Focus: Social, Cultural, Environmental and/or Population Health Research; Clinical Research

Effective patient-provider communication is crucial for equitable access to quality care. This survey, conducted at the Windsor Kidney Function Clinic, assessed the need for language translation services by utilizing volunteer students from The Health Translation Network to provide translation services. A total of 55 patients were surveyed, each originating from non-English-speaking backgrounds, reflecting a notable range of linguistic backgrounds within the sample. Of the respondents, 73% reported challenges in understanding certain medical information due to language barriers. Additionally, 87% of patients expressed a strong willingness to utilize translation services if made available at the clinic. The results revealed that 76% of patients expressed a preference for in-person, face-to-face language translation during medical interactions, emphasizing the value of personal connection and cultural competence in healthcare communication. To evaluate the effectiveness of these services, a pilot test was conducted with five patients who received translation services from student volunteers. The pilot test results indicated that these services were well-received, significantly improving patients' understanding of medical information, reducing anxiety, and enhancing overall satisfaction with their clinic visit. These findings underscore the critical role of translation services in breaking down language barriers and promoting health equity. Most patients expressed a clear need for these services and were open to using them. Future studies will focus on the utilization of volunteer language translation services, examining potential correlations between patients' preferences and their actual experiences. Ongoing research will also incorporate the perspectives and preferences of physicians to assess their impact on patient care.

ABSTRACT P84

RELATIONSHIP BETWEEN CHRONIC PAIN AND COPING IN EMERGING ADULTS WITH AND WITHOUT POST-TRAUMATIC STRESS SYMPTOMS

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Additional Research Focus: Clinical Research

A connection between post-traumatic stress symptoms (PTSS) and chronic pain has been established in pediatric and adult populations. It is theorized that prior trauma may limit coping resources, thus leading to negative pain-related outcomes. Despite existing research on this relationship, a dearth of knowledge remains regarding chronic pain and PTSS in young adults (YAs). This developmental stage is often marked by periods of transition, which can introduce additional stressors that may influence coping resources. This study aims to explore the connection between chronic pain, PTSS, pain self-efficacy, and coping in YAs. It is hypothesized that PTSS will mediate the relationship between chronic pain and coping, while pain self-efficacy will moderate this relationship. Additionally, it is believed that YAs with prior trauma will report lower pain self-efficacy and employ fewer active/accommodative coping strategies. 120 participants will be recruited from the University of Windsor to form two groups (I.e., trauma, non-trauma). Eligibility criteria include ages 18-25, chronic pain, and English fluency. The trauma group must have at least one self-reported traumatic experience. Self-reported questionnaires will be administered to assess the relevant variables. Statistical analyses will be used to determine the mediating role of PTSS and the moderating effect of pain self-efficacy on chronic pain and coping. Furthermore, differences in pain- and coping-related outcomes between the groups will be explored. Understanding the relationship between chronic pain, PTSS, pain self-efficacy, and coping in YAs can help inform patient-centred interventions that focus on assisting YAs with coping with their chronic pain within a developmental context.

ABSTRACT P85

DESIGNING CROSSLINKED SEMICONDUCTORS FOR ELECTRONIC BIOSENSORS

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Additional Research Focus: Biomedical Research; Clinical Research

Semiconductors are materials with electrical properties that make it essential in the development of digital devices. Of most interest are the π-conjugated semiconducting polymers as they possess favourable charge transport, good mechanical properties and high biocompatibility. These features makes π-conjugated semiconducting polymers suitable candidates for developing biosensors and bioelectronics to help precisely detect the biomarkers or biophysical parameters associated with certain diseases or health conditions. In recent literature, the stretchability, biocompatibility and flexibility of organic semiconductors and related devices (particularly field-effect transistors) have made them the promising candidates for designing biosensors to be used in drug discovery, monitoring glucose levels, monitoring the onset of various diseases and more. The development of wearable electronic devices with innovative properties like stretchability and mechanical robustness could also help improve the reliability of cancer screening tests, reduce the need for invasive biopsy surgeries and help detect cancer in its early stages. This presentation will cover our group's effort to develop novel robust semiconducting materials and related biosensors through the photocrosslinking of semiconducting polymers with polydiacetylenes to investigate its effect on charge transport. The first part of the presentation will give a brief introduction to OFETs and semiconducting polymers and it will discuss the properties they possess that would make them the best candidates for health-monitoring devices. The subsequent parts of the presentation would focus on explaining the methods used to investigate the effect of covalently crosslinking the semiconducting polymers with polydiacetylenes and the impact it has on the device's key properties.

ABSTRACT P86

BARRIERS TO TREATMENT PARTICIPATION AND RETENTION IN MENTAL HEALTH SERVICES AT THE REGIONAL CHILDREN'S CENTRE

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Background: The Regional Children's Centre (RCC) at HDGH has found an increasing trend of no-shows and same-day cancellations from families seeking counselling and therapy. Research suggests retaining families in outpatient therapy is a common issue, with up to 20% to 80% of families leaving prematurely or receiving less than half of prescribed intervention (Masi et al., 2003). Low participation limits treatment benefits and no-shows and cancellations are costly to service providers and agencies (Spoth, 2000). Study Objective/methods: This study explored factors associated with "low treatment participation", defined as 5 or more appointment no-shows or same-day cancellations, from families discharged from RCC between April-October 2022 (n=31). The Gelberg-Andersen behavioural model (Gelberg et al., 2000) guided the retrospective chart review protocol on "low participation". Furthermore, we examined common barriers to treatment participation experienced by families actively enrolled in services at the RCC during August 2023. Of the 73 families emailed the 38-item Barriers to Treatment Scale (Kazdin et al., 1997), 35 participated (48% response rate). Results: Top barriers identified from low participation and actively enrolled families included conflicts with other activities or work, babysitting needs, current family stress level, fear that treatment will add more stress, and perception that treatment would bring out new problems in their child. Implications: Barriers and predictors of low treatment participation identified from this work will inform the next phase of this QI project, which includes the development and implementation of interventions to enhance participation and engagement in counselling and therapy services at the RCC.

ABSTRACT P87

INVESTIGATION OF THE QUALITY OF FERTILITY PRESERVATION EDUCATION PROVIDED TO CANCER PATIENTS AT WINDSOR REGIONAL HOSPITAL

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Additional Research Focus: Clinical Research

Background: Infertility is a challenge many young cancer patients face as a consequence of aggressive treatments. Moreover, many eligible patients do not receive discussion about their fertility, and even fewer obtain referrals to fertility specialists. Objectives: The goal of the investigation was to examine if and how fertility preservation education is provided to eligible patients at the Windsor Regional Cancer Program (WRCP). We hypothesize that barriers to accessing fertility treatments include cost and lack of information since there is currently no comprehensive fertility program in Windsor. Methods: The first part of the investigation involved a retrospective chart review on 54 eligible patients. Eligibility criteria included being less than 40 years old, presented to the WRCP between January 15, 2018 to January 15, 2020, and eligible for fertility preservation. Then, the 54 patients were contacted to participate in our survey and we received 11 responses. The survey data collected included demographics and experience with fertility preservation. The data were analyzed using RedCap. Results: The retrospective chart review revealed that 34% of the 54 eligible patients, and 36% of the 11 survey respondents were not educated on fertility preservation. Moreover, the survey showed that fertility preservation was most often discussed by nurses and nurse practitioners, and barriers to fertility treatment included not wanting children/already having children, concerns about delaying treatment, and cost. Lastly, the survey demonstrated a gender disparity as only 33% of the female respondents received fertility preservation discussions whereas 75% of their male counterparts received fertility preservation discussions.

Research Focus: Smart Mobility for the Aging Population Session

ABSTRACT P88

THE EFFECT OF FILE TYPE AND DXA PROTOCOL ON AN IMAGE PROCESSING FRACTURE RISK PREDICTION TOOL

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Category: Biomedical Research

This study aimed to compare the SSAM fracture risk tool using standard hip and IVA-HD DXA protocols, in both JPG and DICOM formats (four image types) to quantify the limitations associated with altered file types. This study was conducted on cadaveric femurs and clinic patients, with ethics approval. All scans were done using a Hologic Discovery A system. Seven isolated cadaveric femurs (5M/2F, 59.9 ± 11.9 years) were supported over 15 cm of water to simulate the attenuation of muscle and fat. Each femur was scanned using two main imaging protocols from the DXA scanner: a standard hip and an IVA-HD. Thirty patients (3M/27F, age 64.7 ± 11.3 years) received their regular hip DXA scan (standard hip), which was used to compare JPG (gold standard) and DICOM). Six patients (1M/5F, age 69 ± 7.7 years) received an additional scan using the IVA-HD imaging protocol. Hip scans were exported in JPG and DICOM (subsequently converted to PNG). The SSAM tool was applied to each image to calculate fracture risk (from 0 to 1). The tool uses the gold standard hip protocol (JPG). Bland-Altman plots were created to compare the gold standard to each of the other three image types. For most subjects, the file type and protocol didn't affect the SSAM tool. Overall, the tool (built with hip protocol JPG files) may be used with any scan type, without substantial impact on risk assessment. The present tool performs equally well on DXA scans regardless of file-type or scan protocol, showing potential for easy clinical integration.

ABSTRACT P89

LAYERING ELASTOMERS FOR STRETCHABLE ELECTRONICS

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Category: CREATE Network

Wearable technology is a rapidly growing field but there is a mismatch between how rigid electronic components are and how soft human skin is. Stretchable materials can replace the brittle components to fabricate devices that can be worn directly on the skin or integrated into the body. Elastomers are materials that have been used for these devices because they can provide mechanical stability, a soft surface to interact with human wearers and provide a physical barrier for protection from the environment. The limitation of elastomers is that it is difficult for a single elastomer to satisfy each of these needs, but a multi-elastomer system can provide unique physical properties that will ultimately fulfill the needs of wearable technology. This project consists of a layered elastomer system composed of a membrane of polydimethylsiloxane (PDMS) with a bulk layer of a commercially available elastomer. This composite demonstrates high stretchability and modifiable surface properties.

ABSTRACT P90

ENHANCES VFL FOR IMPROVED FEATURE UTILIZATION ACROSS PARTIALLY OVERLAPPED PARTIES

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Category: Clinical Research

Vertical federated learning (VFL) is an advanced technique where different parties collaborate to develop machine learning models on overlapping samples without directly sharing raw data. Existing improved works also allow federated interference on non-overlapping samples. However, current methods struggle to handle scenarios where the active party only shares overlapping data samples with a subset of the passive parties. In these cases, critical feature information from non-overlapping passive parties is not utilized, which can result in less accurate interferences. This issue is particularly common in real-world scenarios, such as healthcare, where patient data overlapping among all hospitals is not always achievable. Hence, we propose an enhanced VFL for improved feature utilization across partially overlapped parties. Our approach first learns hidden embeddings by improved FedSVD from overlapping samples among passive parties. Then, we leverage an Auto-encoder to simultaneously align the learned embeddings with the encoder's outputs, as well as the original data with the decoder's output. Next, a VFL model is employed with the encoder's result and overlapping data from the active party as the teacher model to generate soft labels. Furthermore, we implement knowledge distillation to train a student model using both soft and true labels. Once refined, this model can process non-overlapping data in active party. Additionally, we evaluate our model on real-world medical datasets.

ABSTRACT P91

A SMART WEARABLE SYSTEM FOR LOWER-LIMB JOINTS MONITORING

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Category: Biomedical Research

The biomechanics of the human lower extremities, from the hips to the toes, are crucial for various applications, such as clinical assessment, therapy, rehabilitation, activity tracking, fall prevention, injury avoidance, athletic performance, and virtual exercise guidance. These applications require measuring parameters such as joint angles, positions, movements, and center of mass during physical activities. However, the traditional methods for obtaining this data are based on expensive and bulky laboratory equipment, which restricts their use in natural and continuous settings. To overcome this limitation, we propose a novel wearable system that uses modern MEMS-based inertial measurement units (IMUs) to monitor lower-limb joints. These sensors are energy-efficient, highly accurate, and non-invasive, making them ideal for wearable applications. Our system also includes a smart application that integrates data acquisition, analysis, and modeling, providing real-time feedback and information. By automating the process, we aim to reduce costs and improve mobility monitoring. Our system is the first of its kind to offer comprehensive mobility data, early diagnosis of mobility issues, and quantitative information to enhance mobility. In the future, we plan to incorporate prediction and feedback models for applications such as fall detection, rehabilitation error correction, and personalized exercise recommendations.

ABSTRACT P92

EXPLORING CHEST X-RAY AND DEEP LEARNING FOR DIAGNOSING A SPECTRUM OF CHEST AND LUNG CONDITIONS AND ANOMALIES

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Category: Biomedical Research

Research purpose: This study uses chest X-Ray data and radiology reports to train a deep neural network to accurately detect various chest and lung conditions. Each dataset includes chest X-Ray images, often with both frontal and lateral views, and accompanying reports authored by experienced radiologists. Patient information has been meticulously de-identified for privacy. Methodology: We have access to a comprehensive dataset of high-quality Chest X-Ray images from the Beth Israel Deaconess Medical Center. These images will train a deep neural network. Semi-structured radiology reports have been processed to create a "diagnosis" label for each patient, enabling autonomous feature extraction and mapping to diagnose. Expected result: Our aim is to achieve exceptional accuracy in identifying medical conditions within X-Ray images, reducing interpretation time. We are exploring deep learning techniques like CNN, VGG16, ResNet, CapsNet, U-Net, to find the most promising approach. Conclusions: This research pioneers the use of deep neural networks (DNNs) in medical diagnosis using Chest X-Ray images and transformed reports. Our goal is to enhance diagnostic accuracy, expediate interpretation, and. Prioritize patient privacy, redefining diagnosis for improved healthcare efficiency.

ABSTRACT P93

VALIDATION OF PHYSICAL ACTIVITY LEVELS FROM SHANK-PLACED AXIVITY AX6 ACCELEROMETERS

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Category: Biomedical Research; Clinical Research; CREATE Network

With wearable inertial sensors, researchers can obtain objective measures of physical activity (PA) compared to subjective, self-reported data. In gait research, accelerometers are commonly worn at the shank to collect free-living data. While this placement can provide meaningful data on the lower limb's movement, there are limited methods in place to determine PA from this location. In cases where accelerometers are only place at the shank, researchers must ineffectively use additional sensors at common wear-locations (wrist, thigh, waist) to measure PA, even though this data can potentially come from one sensor. Therefore, this study aimed to identify and validate cut-points for measuring PA using shank-placed Axivity AX6 accelerometers in older adults. Free-living PA was assessed in 35 adults aged 55 and older, where each participant wore a shank-mounted Axivity and a waist-mounted ActiGraph simultaneously for 72 hours. Optimized cut-points for each participant's Axivity data were determined using an optimization algorithm to align with ActiGraph results. To assess validity, a leave-one-out cross validation was conducted. Bland-Altman plots with 95% limits of agreement, intraclass correlation coefficients (ICC), and mean difference were used for comparing the systems. The results indicated good agreement between the two accelerometers for classifying sedentary behaviour (ICC=0.85) and light PA (ICC=0.80), and moderate agreement for moderate PA (ICC=0.67) and vigorous PA (ICC=0.70). Removal of a significant outlier substantially improved the agreement for moderate PA (ICC=0.81) and vigorous PA (ICC=0.96). Overall, this study demonstrated the capability of the resultant cut-point model to accurately classify PA using shank-mounted Axivity AX6 accelerometers.

ABSTRACT P94

IN-HOME LONG TERM MOBILITY TRACKING BY A TURN-KEY IPS

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Category: Biomedical Research; Health Service Research; Clinical Research; CREATE Network

This project aims to enhance the quality of life for older adults with multiple chronic diseases by creating a low-cost, non-intrusive Indoor Positioning System (IPS) tailored to their needs for independence and mobility. The IPS technology allows for the longitudinal measurement of multiple parameters, such as movement speed and room transitions, within an individual's residence, providing crucial data for prognosis. Designed to be user-friendly, the turn-key IPS can be self-installed, requiring minimal technical expertise. Its performance has been validated through simulated indoor mobility experiments at the McMaster Smart-Home-for Aging-in-Place (SHAPE) facility and is further supported by an ongoing pilot clinical study in older adults' homes. Current analyses focus on identifying the rooms participants occupy over various time periods and correlating this data with biometric indicators like heart rate and step count. Future iterations will aim to refine data acquisition protocols and improve device design. This work not only offers a viable tool for effectively monitoring mobility in older adults but also has the potential to offer caregivers valuable insights and respite.

ABSTRACT P95

POINT-OF-CARE URINE TESTING USING OPTOFLUIDIC SENSORS

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Category: Biomedical Research; Health Service Research; Social, Cultural, Environmental and/or Population Health Research; CREATE Network

Point-of-care (PoC) diagnostics have become emerging tools in healthcare, particularly for remote applications and in-home use. We introduce an innovative approach to urine testing by integrating optofluidic sensors for point-of-care applications. Optofluidic sensors, which synergistically combine fluidic and optical properties, offer heightened sensitivity, selectivity, and rapid response, making them particularly apt for analyzing the complex composition of urine. The optofluidic-based urine testing device provides a feasible solution for consistent and accurate diagnostics, such as red or white blood cells, yeast and parasites. This technology is not only portable but also use-friendly, designed to empower individuals to

conduct regular checks from the comfort of their situations. Such a system is especially advantageous for patients requiring long-term monitoring, ensuring timely detection of potential health anomalies and facilitating early intervention. Our experimental results indicate a high degree of accuracy and reproducibility in detecting key urinary markers, matching, and in some cases surpassing, the performance of traditional laboratory-based tests. Furthermore, the integration of wireless communication modules paves the way for real-time data sharing with healthcare professionals, allowing for immediate feedback and advice. Overall, the presented optofluidic sensor for point-of-care urine testing stands as a promising frontier in decentralized healthcare. By enabling accurate, swift, and user-oriented urine analysis, it holds the potential to revolutionize long-term health monitoring, particularly in remote and in-home settings.

ABSTRACT P96

POSE-L: ALIGNING HUMAN MOTION WITH LANGUAGE

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Category: Health Service Research

Textual descriptions of human motion are rich sources of information, encompassing details such as the moving body part and the direction of movement. Language inherently captures the high-level information of human motion, remaining robust against variations in human body size and background noise. Drawing inspiration from the success of vision-language models, we introduce a Pose-Language model designed to align textual descriptions with human motion. This model consists of two streams: the Text Stream and the Post Stream, which interact through co-attention layers. The Text Stream's objective is to extract high-level insights from human motion descriptions, while the Human Pose Stream is engineered to convert 2D pose sequences into 3D, leveraging the knowledge derived from textual information. This model has the capability to use text as a cue for reconstructing 3D human motion, effectively addressing issues such as occlusion and depth ambiguity. Moreover, it can be applied to various downstream tasks, including human activity recognition, human activity segmentation, repetition counting, and activity quality assessment. At present, this model is pretrained on a relatively small dataset. In the future, with the availability of a large dataset containing human motion paired with text descriptions, this meta-model can be expanded into a powerful and unified pretrained model for a wide range of human motion-related tasks.

ABSTRACT P97

COMPARISONS BETWEEN IN-LAB AND OUT-OF-LAB FREE-LIVING DERIVED GATE PARAMETERS

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Category: Clinical Research

Background: Gait analysis can inform clinicians with important information as to the progression of knee osteoarthritis, but lab-based assessments may not fully reflect how the patient moves in the real world. Few studies have directly assessed the relationship between in-lab gait measures against longer-term free-living gait assessments using wearable sensors. Objective: The objective of this study was to compare gait parameters derived from in-lab to out-of-lab. Proposed methods: 10 older adults (Range: 50-71 yrs) with moderate-to-severe knee OA were recruited from an orthopedic clinic. Following consent, patients wore one wearable inertial sensor at each proximal tibia for one week. Markers were placed on lower body anatomical landmarks for walking 4-5 times using motion capture. Stride time (ST) for each side and asymmetry index (ASI) was calculated from each system. Results: An average of 14.0 strides/patient were analysed from the in-lab gait analysis compared to 6187.2 strides/patient from out-of-lab gait. Mean in-lab ST were not significantly less than mean free-living ST ($p = 0.17$), but mean standard deviation of ST and ASI were significantly greater in free-living ST than in-lab ($p=0.006$, and $p=0.04$, respectively). Implications: While a limited number of strides collected in-lab are generally consistent, free-living assessment has a much greater number of strides with a greater range of steps collected with a higher degree of variability.

ABSTRACT P98

ESTIMATING CENTER OF MASS FROM SMPL USING ANTHROPOMETRIC BODY SEGMENT PARAMETER PREDICTION

Andrew Mitchell[1], Longyun Liao[1], Dylan Kobsar[2], Rong Zheng[1]
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Category: Biomedical Research

Knowledge about human Center of Mass (CoM) has many valuable applications in fields such as kinesiology, biomechanics, and physiotherapy. One method for estimating human CoM, called the segmental method, consists of dividing a person's body into segments, and using Body Segment

Parameters (BSPs) to estimate CoM. BSPs consist of three values for each segment: the relative mass of the segment, the segment's longitudinal CoM position, and the position of the segment's radius of gyration. While the most popular method is to use statistical BSP values published by De Leva et al. in "Adjustments to Zatsiorsky-Seluyanov's segment inertia parameters" (1996), these values are only population averages, which can contribute error. One avenue for improving CoM estimation, therefore, is BSP estimation; by estimating subject specific BSPs, CoM follows as a natural consequence. We propose a method that makes use of modern 3D Human Pose Estimation (HPE) methods to estimate a subject's BSPs and CoM. Our method uses an SMPL model, a body model widely used as the target of 3D HPE, to estimate a collection of anthropometric measurements. These measurements are used as input for the linear regression model published by Merrill et al. in "Predictive regression modeling of body segment parameters using individual-based anthropometric measurements" (2019) to estimate the subject's BSPs. These are then applied back to the SMPL model to find the relative 3D coordinates of each segment's CoM and the relative weight of each segment, which are then used to estimate the overall CoM.

ABSTRACT P99

VALIDATION OF A SMART INSOLE FOR ASSESSING FOOT PROGRESSION ANGLE

Eseoghene Orogun[1], Matthew Rosato[2], Dylan Kobsar[1]

[1]McMaster University

[2]PROVA Industry

Category: Biomedical Research; Health Service Research

PROVA Innovations has designed a smart insole to reinforce and support gait assessment and retraining. The insole is designed to make use of built-in sensors (eg. accelerometers, gyroscopes) to detect the positions and angles that its users' feet and ankles may enter while it's being used. Specifically, the foot progression angle (FPA) is a variable of interest as it has been linked to reducing the knee adduction moment (KAM), which ultimately slows the progression of lower body disorders like knee osteoarthritis (KOA). The device will then provide audio, visual, and/or vibrational alters through an additional attachment on the outside of the shoe, whenever the foot enters a pre-programmed incorrect position/angle. PROVA hopes to help patients with lower limb disorders optimize their physical therapy and rehabilitation through this system. For this research, the smart insole would be pilot-tested to validate its sensors' accuracy, in order to make sure it is correctly detecting the foot progression angle. Participants will wear the smart insole as well as another device, the Xsens wearable system, that also measures FPA. The Xsens system has already been verified and serves as the 'gold standard' for measuring the same foot/ankle angles that the smart insole aims to examine. During data collection, research participants would wear both devices while completing a series of simple walking tasks. The collected data from both devices would then be processed, compared, and evaluated to determine if the PROVA insole accurately measures foot progression angles, as well as other supplementary gait variables.

Rapid Fire Presenters

ABSTRACT P100

IDENTIFYING AND DEVELOPING YOUTH HOMELESSNESS PREVENTION STRATEGIES THROUGH RESPONDENT-DRIVEN SAMPLING AND INTERSECTIONALITY

Evan Brown[1]**,** Kyle Jackson[1], Colleen Mitchell[1], Amy Peirone[1], Lindsey Welch[1], Mikayla Stocks[1], Sarah Wilkins[1]

[1]St. Clair College

Category: Social, Cultural, Environmental and/or Population Health Research

Youth homelessness is an ongoing and growing issue throughout Canada (Gaetz et al., 2016). Identifying and Developing Youth Homelessness Prevention Strategies through Respondent-Driven Sampling and Intersectionality aims to offset and potentially learn how to remedy this issue in Windsor-Essex County. By interviewing youth who have suffered or are suffering from homelessness, key themes and gaps in the current support system for youths can be identified and then repaired to ensure a system that is more in tune with the needs of modern youths. Due to the nature of youth homelessness, Respondent-Driven Sampling will be used to recruit interviewees. This means that our first wave of respondents, referred to the research team by Family Services Windsor Essex (FSWE), will be given the option to be compensated for referring individuals from their own social circle who qualify for the research interviews. The literature review of youth homelessness in North America was created to contextualize the future findings of the study. The study is based on intersectionality, focusing on different identities held by individuals, how each plays into different systems of oppression, and how that may have influenced the individual's experiences leading to homelessness. The literature showed that particularly vulnerable groups when regarding youth homelessness included LGBTQ2 (Lesbian, Gay, Bisexual, Transgender, Queer, and 2-Spirit), Indigenous youth and youth experiencing mental health issues.

ABSTRACT P101

MONITORING INFLUENZA A USING WASTEWATER SURVEILLANCE ACROSS A MAJOR NORTH AMERICAN LAND BORDER

R**yland Corchis-Scott**[1], Mackenzie Beach[1], Quidi Geng[1], Ana Podadera[2], Owen Corchis-Scott[1], Kenneth K.S. Ng[2], R. Michael McKay[1]

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[2]Department of Chemistry and Biochemistry, University of Windsor

Category: Social, Cultural, Environmental and/or Population Health Research

Laboratory based clinical assessment of respiratory infections is slow and often inaccurate since testing is limited to vulnerable patients and those who seek treatment. Wastewater surveillance is a rapid and non-biased method of determining the prevalence of a disease within a community with great promise for tracking underreported infectious diseases. Influenza A (IAV) is a serious and underreported respiratory illness which typically causes approximately 3500 deaths and 12,200 hospitalizations in Canada per annum. Wastewater surveillance was used to track the 2022-2023 IAV seasons in Windsor-Essex, ON, and Detroit, MI: a contiguous metropolitan area separated by an international border. RT-qPCR yielded mean IAV RNA concentrations for each of the epidemiological weeks within the study period (n=31). A strong positive relationship was observed between IAV cases, and the population weighted mean IAV M1 gene concentration in Windsor-Essex (Pearson's $R = 0.95$, $p = 0.001$). Similarly, a robust association was observed between new IAV hospitalizations in Michigan, and the population weighted mean IAV M1 gene concentration for metro Detroit (Pearson's $R = 0.96$, $p = 0.001$). Application of time-lagged cross correlation and qualitative examination of the wastewater signals shows the peak of the IAV season in Detroit was delayed in comparison to Windsor by four weeks. The delay may be attributed to differences in COVID-19 mitigations strategies and/or earlier IAV vaccine distributions in Michigan compared to Ontario. We show that wastewater surveillance for IAV reflects regional differences in infections dynamics and speculate that timing of vaccine administration can influence the onset and severity of a respiratory season.

ABSTRACT P102

IMPLEMENTING PATIENT NAVIGATOR SUPPORT TO ADDRESS BARRIERS IN RETINAL CARE: A MIXED METHODS STUDY

Charmaine Gaoiran[1], Omer Elkhidir[1], Mahmoud Hossami[1], Jeff Park[2], Pradeepa Yoganathan[3,4]

[1]University of Windsor

[2]University of Toronto

[3]Windsor Eye Associates

[4]Wayne State University

Category: Health Service Research; Social, Cultural, Environmental and/or Population Health Research; Clinical Research

Background: Patient navigators guide patients through the healthcare system to improve resource accessibility. While effective in various healthcare domains, their utility in retinal care remains unexplored. Retinal disorders, such as diabetic retinopathy or retinal detachment exposed to face barriers like low health literacy, financial issues, emotional distress, limited family support, and a lack of logistical support prevents them from accessing high-quality eye care. These populations are considered vulnerable and experience higher rates of vision impairment. Objectives: The study aims to identify barriers faced by retinal clinic patients and develop a patient navigator program by first identifying community resources, then implementing the program, and evaluating its impact on patient well-being. Proposed Methods: A mixed-method approach will be adopted. Qualitatively, participants will be interviewed to identify barriers to care. Quantitatively, a patient navigator intervention and surveys will assess the program's effectiveness. Key surveys include VFQ-25, IVI, GAD7, and PHQ9. Data, both before and after intervention, will be analyzed to gauge the program's impact. Future directions: Emerging themes from interviews highlight the community's unmet retinal care needs. Patient navigators can potentially address mental health challenges and service access limitations, improving patient quality of life. Results/ Implications: A community retina practice study unveiled various key barriers. Out of 100 approached, 49 showed program interest. Challenges included contacting primary care (10 patients), transportation (14), diabetes management (9 out of 40 diabetics), understanding eye conditions (10), and anxiety from retinal diseases (37). Implementing the patient navigator support system is anticipated to enhance clinic satisfaction and disease perspective.

ABSTRACT P103

COLLABORATIVELY ADDRESSING FOOD INSECURITY: CO-DEVELOPING A SUSTAINABLE AND EQUITABLE SCHOOL NUTRITION PROGRAM

Sarah Julius[1], **Cayla Wood**[1], Kathryn Markham-Petro[1], Beckie Berlasty[1], Vivian Hawe[1], Michaela Reid[1], Annamaria Lopez[1], Alexandra Frabotta[1], Justine Van Herk[1]

[1]St. Clair College

Category: Social, Cultural, Environmental and/or Population Health Research

Within Windsor-Essex, Ontario, 1 in 4 low-income households experience moderate or severe food insecurity, impacting 15% of individuals aged 0-17. Food insecurity can have a detrimental impact on the physical and mental health of school-aged children. School Nutrition Programs (SNPs) provide children with access to healthy meals in an educational setting and help address food insecurity. This project is exploring the logistics and feasibility of a sustainable, collaborative school nutrition program. The project is funded through NSERC's College and Community Social Innovation Fund and is working in partnership with the Ontario Student Nutrition Program (OSNP), ProsperUs, and AgScape. Community-based formative research will be utilized to design a multi-sector supported School Lunch Program (SLP) with a food literacy component. More specifically, focus groups and surveys will be conducted with stakeholders (e.g., parents and SNP school coordinators). The designed SLP will then be implemented for 8-months in an elementary school located within a priority neighborhood in Windsor-Essex to determine the feasibility of the intervention. Opportunities and challenges of the intervention will be determined through observation and feedback from stakeholders (e.g., the meal provider, teachers) to further refine the delivery of the SLP to address food insecurity in Windsor-Essex. The anticipated outcomes of the overall project will see a collaboratively designed and enhanced student nutrition program for the region, with the potential for replicability in other Canadian communities. This research will also inform the design of a randomized controlled trial to determine the impact of the intervention on student health and educational outcomes.

ABSTRACT P104

DISSECTING TUBERIN LOCALIZATION AND FUNCTION DURING THE CELL CYCLE

Ali Nadi[1], **Kole Polkinghorne**[1], Elizabeth Fidalgo da Silva[1], Lisa A. Porter[1]

[1]Department of Biomedical Sciences, University of Windsor

Category: Biomedical Research

Cells control their physiology and cell cycle processes by having an intricate coordination of thousands of signalling pathways. In cells, Tuberin (gene - TSC2) is a key tumour suppressor protein that forms the Tuberous Sclerosis Complex (TSC) with its main binding partner Hamartin (gene – TSC1). TSC is a key regulator of cellular growth, size, and division and the perturbation of this complex has been implicated in driving many diseases such as the TSC disease and certain cancers. In a non-canonical manner, Tuberin regulates mitotic entry of cells at the G2/M checkpoint by binding to and cytoplasmically retaining Cyclin B1 (gene – CCNB1) using a putative binding region that stretches from 600 to 746 aa. This amino acid region in Tuberin has been established to be a mutational hotspot with clinically poorer prognosis in diseased states. Using fluorescent imaging techniques, protein-protein interaction assays and flow cytometry, a series of Tuberin point mutations within the Cyclin B1 binding domain have been shown to be disruptive to the spatiotemporal localization of the TSC, binding of Cyclin B1 to Tuberin, and cell cycle timing. To further understand the physiological implications of the mutants, CRISPR mediated genomic editing has been used to insert the single point mutations into endogenous Tuberin of human cell lines. The development of these cell lines yields new methods to study the intricate workings of the cell cycle and will broaden our understanding of the basic biology behind proliferative disease like TSC and cancers.

ABSTRACT P105

RETROSPECTIVE ANALYSIS OF MULTIPLE MYELOMA PATIENTS PRESENTING TO ER AT OR IN 2 YEARS PRIOR TO DIAGNOSIS

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[1]Windsor Regional Hospital

[2]Department of Oncology, Windsor Regional Hospital

Category: Health Service Research; Social, Cultural, Environmental and/or Population Health Research; Clinical Research

Diagnostic delay is a common issue in multiple myeloma which is known to have an adverse impact on patient outcomes, including preventable deterioration in bone health, quality of life, and possibly survival. Despite primary care being the usual first port of presentation, available research suggests that for a high proportion of patients, a multiple myeloma diagnoses follow varied routes, and that a high proportion of patients are ultimately diagnosed in the acute care/ ER setting. Our study aims to determine the proportion of MM patients presenting to the ER at or before the initial diagnosis. This will be done through a retrospective chart review of all multiple myeloma patients with a histopathological diagnosis received between Jan 2020 and August 2023, at the Windsor Regional Cancer Center. We will aim to include a minimum of 30 patients with single or multiple ER visits, presenting with disease related symptomatology at or in 2 years prior to diagnosis. For patients presenting to the ER, we will review demographic data, symptomatology and reason for presentation, as well as proportion of patients requiring immediate hospitalization and intervention. Through this study we hope to identify the nature of emergent presentations in newly diagnosed multiple myeloma patients and identify demographic and disease-related characteristics that are potential associated risk factors, and hence facilitate strategies for earlier and more timely diagnosis.

ABSTRACT P106

A CROSS-SECTIONAL STUDY TO IDENTIFY BASELINE DATA AND REFERRAL RATES TO ADDICTION MEDICINE SERVICES IN PATIENTS WHO PRESENT WITH SUBSTANCE ABUSE

Nainika Venugopal[1], Andrew Nguyen[1], Mahtab Malekian Naeini[1], Zayya Zendo[1], Emma Mineau[2], Caroline Hamm[3], Robert McKay[3]

[1]Schulich School of Medicine and Dentistry

[2]University of Windsor

[3]Windsor Regional Hospital

Category: Health Service Research, Clinical Research

Background: Opioid substitution therapy (OST) has gained recognition for its effectiveness in the management of opioid use disorders (OUD) and associated harm reduction. Despite expansion of OST programs across Canada, the opioid crisis continues to persist, emphasizing the need to evaluate its effectiveness and identify barriers in its implementation and accessibility. Methods: A cross-sectional review was performed at a community hospital in Southwestern Ontario on patients who presented to the emergency department (ED) with features suggestive of an OUD or were admitted through ED with ICD-codes related to OUD between January 1, 2019, and December 31, 2022. Patient charts will be analyzed for data, including but not limited to demographics, frequency of ED visits, length of hospitalization, reasons for admission, and referral rates to the addiction medicine services (AMS). Results: Data from our previous study which only included patients presenting to the ED with features suggestive of OUD, had shown a total of 511 ED visits among 32 participants. Of these visits, 70 admissions were made of which 18.5% were referred to AMS, indicating barriers in the referral process. We will be expanding on this study to include relevant ICD-10 codes and will have results ready by the presentation deadline. Conclusion: We expect to see results similar to data collected from our previous smaller study, indicating a need for improved facilitation between hospital physicians and AMS through education on OST benefits and available AMS services, and implementation of AMS referral guidelines within hospitals.

ABSTRACT P107

LOSS OF ULK1 IMPAIRS AUTOPHAGY ACTIVATION, SPHEROID VIABILITY, AND TUMOUR PROGRESSION IN EPITHELIAL OVARIAN CANCER

Jack D. Webb[1,2], Lauren Viola[1], Adrian Buensuceso[1], Matthew J. Borrelli[1,2], Yudith Ramos Valdes[1], Bipradeb Singha[1,2], Trevor G. Shepherd[1,2,3,4]

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Category: Biomedical Research

Epithelial ovarian cancer (EOC) remains a leading cause of gynecological cancer-related deaths due its late diagnosis and absence of effective treatments for chemo-resistant disease. EOC metastasizes through peritoneal dissemination, often forming multicellular spheroids, in which autophagy—a cell survival mechanism—is induced, requiring ULK1 (Unc-51-like kinase 1) activity. Our study aims to further understand the role of ULK1 in EOC tumor growth and metastasis. Using CRISPR/Cas9 technology, we ablated the ULK1 gene in EOC cell lines and fallopian tube derived control line. Western blotting confirmed ULK1 loss and key autophagy markers. Autophagic flux was assessed using fluorescence microscopy and cell viability by Trypan Blue, Cell Titer-Glo, and Caspase-Glo assays. Bioluminescent imaging monitored tumor progression of ULK1KO xenografts, while immunohistochemistry (IHC) assessed Ki67 for cell proliferation and cleaved caspase-3 for apoptosis. ULK1 loss leads to impaired autophagy in EOC spheroids, with reduced LC3 processing and elevated p62 levels. All ULK1KO cells had reduced spheroid cell viability and integrity. ULK1 deficiency reduced tumor burden in xenografted mice, although differences were observed in tumor growth and extent of metastasis between EOC cells. Ki67 and cleaved caspase-3 staining revealed reduced cell proliferation and increased apoptosis respectively in tumors derived from ULK1KO cells. ULK1 is required for EOC spheroid formation and cell survival likely through its regulation of autophagy. ULK1 deficiency does not increase EOC cell sensitivity to standard-of-care chemotherapy, indicating that other therapeutic strategies might synergize with autophagy inhibition for EOC treatment. Altogether, ULK1 may have a multifaceted role in EOC beyond autophagy regulation.

ABSTRACT P108

BARRIERS TO EQUITABLE HEALTHCARE FOR CRITICALLY ILL TEMPORARY FOREIGN WORKERS

Chelsea Ymana[1], **Kailyn St. Pierre**[1], Dhuvaraha Srikrishnaraj[2], Genesis Flores[3], Kanza Mirza[2], Manahel Elias[2], Ryan Palazzolo[1], Farwa Zaib[2], Aya El-Hashemi[1], Retage Al-Bader[2], Abdelhady Osman[2], Alex Zhou[2], Maureen Muldoon[4], Indryas Woldie[1,5], Jayashree Mohanty[6], Amy Llancari[7], Corrin Primeau[8], Janet E. McLaughlin[9], Jood Issa[10], Juliana Wiggins[4], Nicole Sbrocca[5], Tanya Basok[4], Caroline Hamm[1,2,5]

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[8]Interim Patient Representative, Windsor Regional Hospital
[9]Human and Social Sciences, Laurier University
[10]University of Guelph
Category: Health Service Research; Social, Cultural, Environmental and/or Population Health Research; Clinical Research

Temporary foreign workers (TFW) are pivotal contributors to Canada's agricultural industry. Annually, over 50,000 TFW, constituting a quarter of all agricultural laborers, are integrated into Canada's farming industry to bridge labour gaps. Predominantly residing in the Windsor-Essex region, these migrant workers are hired through Seasonal Agricultural Workers Program (SAWP) using temporary contracts will no direct route to permanent residency. However, despite their vital role in this high-risk industry and financial contributions to our healthcare system, treatment of TFW with critical illnesses are often interrupted by the end of their contracts, with the majority unable to access the same quality of healthcare in their country of origin. Moreover, healthcare services are often mediated through employers. This increased dependence creates additional barriers, causing TFW to become hesitant when seeking primary care due to fear of job termination and repatriation. Ultimately, the lack of federal policies surrounding critically ill TFW creates moral distress for healthcare providers who are unable to ensure uninterrupted care. The objective of our research is to understand this injustice through retrospective case analysis and interviews with critically ill TFW. Our research also aims to survey healthcare professionals in the Windsor-Essex region to discover barriers faced by healthcare practitioners and potential avenues of policy change to better support their care. The overarching goal is to reform Canada's policy to allow the continuity of care of critically ill TFW and fulfil the ethical obligation to support TFW who play a critical role in our society.

CONCURRENT SESSIONS

Concurrent Sessions A: 2:00pm to 3:15pm

A-1: Innovations in Biomedical Sciences: From Genomic Insights to Disease Progression and Treatment

Moderator: *Dr. Andrew Hubberstey, University of Windsor*

ABSTRACT O11

THE ROLE OF NKR-P1A RECEPTOR IN INNATE IMMUNITY AGAINST CYTOMEGALOVIRUS

Mohamad Alkassab[1], Caroline Hamm[2,3], Mir Munir A. Rahim[3]

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[2]Division of Medical Oncology, Western University

[3]Windsor Cancer Centre, Windsor Regional Hospital

Category: Biomedical Research

Cytomegalovirus (CMV) causes latent infection in healthy individuals, but a severe and life-threatening infection in immunocompromised individuals and newborns. Natural killer (NK) cells are an important component of anti-CMV immunity in healthy individuals. NK cells express NKR-P1A, which is an inhibitory receptor, but its role in regulating NK cell responses during CMV infection is not known. We aim to investigate the role of NKR-P1A in NK cell-mediated anti-CMV responses during both latent and active CMV infections. Our analysis of peripheral blood mononuclear cells (PBMCs) has shown a significant increase in the proportion of NK cells lacking NKR-P1A expression (NKR-P1A--) during latent CMV infection. A larger proportion of NKR-P1A—NK cells from CMV-infected individuals expresses Ki-67, a protein involved in cell proliferation, compared to uninfected individuals, suggesting a selective expansion of NKR-P1A—NK cells. Moreover, MKR-P1A—NK cells display a more mature (CD57+), and activated (granzyme B+) phenotype than NKR-P1A+NK cells. These NKR-P1A-related alterations in the NK cell compartment are specifically seen in NK cells expressing NKG2C, an activating receptor involved in anti-CMV immunity, and not in NKG2C—or CD16+NK cells, suggesting a CMV-specific response. Similar analysis of PMBCs from bone marrow transplant (BMT) patients with active CMV infection show increased proliferation of NKR-P1A—NK cells compared to NKR-P1A+NK cells. Moreover, when stimulated in vitro, NKR-P1A+NK cell responses are significantly reduced compared to the NKR-P1A—NK cells during CMV infection. Together, these results indicate that NKR-P1A receptor is a negative regulator of NK cell-mediated anti-CMV immunity.

ABSTRACT O12

BETWEEN CANCER STEM CELLS AND CANCER ACTIVATED FIBROBLASTS TOWARDS ADVANCED THERAPIES AGAINST GBM

Sami Alrashed[1], Dorota Lubanska[2], Alan Cieslukowski[2], Lisa A. Porter[2]

[1]University of Ottawa

[2]University of Windsor

Category: Biomedical Research

Current treatment options for Glioblastoma (GBM), the most aggressive form of brain tumour remain suboptimal with survival rates of only 15 months. Treatment is hindered by GBM's limited response to conventional therapy, unpredictable progression, and recurrence in nearly all patients. Relapse in patients with GBM is driven by the presence of diverse populations of therapy resistant tumour initiating cells (TICs). Tumour microenvironment (TME) of GBM is known to play an integral role in the disease progression but the role of its integral component, cancer associated fibroblasts (CAFs), remains largely undiscovered in glioblastoma. This project will investigate the role of CAFs in regulation of TIC-driven tumour aggressiveness, therapy response and post-treatment GBM recurrence using a 3D model of patient derived mini tumours cultured in a dish (organoids). CAFs contribute to aggressiveness of several types of cancer, hence, elucidating CAF's gene expression profiles, defining functions and their potential variation in relation to tumour genetics will be also addressed in this project which will generate high profile data promoting further research. Uncovering the role of CAF's in driving GBM recurrence is of particular priority in search for effective therapeutic approaches against this deadly cancer. Correspondingly, CAFs and TICs exposed to standard therapy will be isolated and studied using the organoid model to gain a better understanding of the biology behind GBM recurrence while investigating the role of CAFs in tumour relapse (I.e., impact of the CAFs on TICs, potential signalling pathways or molecular markers as therapeutic targets).

ABSTRACT O13

APPLICATION OF GENOMIC SPATIAL STATISTICAL TOOLS EXPANDS THE MUTATIONAL SIGNATURE CONCEPT FOR CANCER TYPE CLASSIFICATION

Kathleen Hill[1], David Chen[1], Bin Luo[1], Joseph Butler[1], Freda Qi[1], Nicolas Boehler[1], Hallie Pavanel[1], Reg Kulperger[1], Charmain Dean[1]
[1]Western University
Category: Biomedical Research

Mutational signatures are valuable tools for the classification of cancer types and elucidation of mutagen exposures and mechanisms of mutation. The current conceptualization of mutational signatures fails to consider a broader spectrum of mutation types and the spatial landscape of mutations across entire chromosomes. Novel statistical tools permit examination of spatial relationships between single nucleotide variants (SNVs) and copy number variants (CNVs). We adapted the J statistic, a nonparametric test for spatial independence between genomic events to examine spatial associations between SNVs and CNVs in contexts of germline mutations and somatic mutations in cancer. Our J-statistic pipeline is packaged as an easy-to-use, standalone R package. The pipeline can be applied to a variety of statistical genomics scenarios that require tests of association between genomic regions and sets of genomic coordinates, in contexts of genotyping array data and whole exome or whole genome sequencing data input. The package offers a range of features that allow users to design hypothesis-driven tests for genomic spatial association using the J statistic, including customization of the maximum genomic distance between genomic points and regions and the interval step size to test for spatial association. Our tool successfully detected nonrandom associations between SNVs and CNVs relevant to novel mutational mechanisms associated with clustered heterozygosity and characterized nonrandom associations between SNVs and CNVs in a mouse model of breast cancer metastasis. Mutational signatures that incorporate signature spatial landscapes of mutations are predicted to increase the resolution of cancer-type classification and mechanistic understanding of carcinogenesis.

ABSTRACT O14

REAL-WORLD DATA ON CDK4/6 INHIBITORS WITH AROMATASE INHIBITORS AS FIRST-LINE PALLIATIVE TREATMENT FOR HR+/HER2- ADVANCED BREAST CANCER

Ram Patel[1], Abdullah Nasser[1,2]
[1]Schulich School of Medicine and Dentistry
[2]Windsor Regional Hospital
Category: Clinical Research

Background: Breast cancer remains one of the most prevalent malignancies affecting women worldwide. Over the past decades, molecular understanding of breast cancer has expanded, revealing distinct subtypes, and allowing for targeted therapeutic approaches. CDK4/6 inhibitors, in combination with aromatase inhibitors, have emerged as first-line treatment for metastatic breast cancer based on several landmark trials. Interestingly, while progression-free survival (PFS) was similar across those trials, a distinct difference in overall survival (OS) emerged in later analyses. Objective: In this study, we aimed to assess and compare the real-world PFS and OS outcomes associated with the use of palbociclib, ribociclib, and abemaciclib in combination with aromatase inhibitors in patients with HR+, HER2- advanced breast cancer at our cancer center. Proposed methods: A retrospective chart review is being conducted for 80 patients with advanced metastatic breast cancer at Windsor Regional Hospital diagnosed between Jan 1, 2015, and Dec 1, 2022. Relevant clinical variables will be extracted and median OS and PFS for each medication will be estimated. Future applications/directions: The study's findings will help examine any differences in OS and PFS in real-life settings for these medications and help inform the choice of first-line treatment.

A-2: Children, Youth and Maternal Health

Moderator: *Dr. Ingrid Qemo, University of Windsor*

ABSTRACT O15

MY FRIENDS ARE HERE! SO, WHAT ARE BLACK CHILDREN/YOUTH SUPPOSED TO DO IN SUMMER: SOCIAL & MENTAL HEALTH

Obianuju Bushi[1]
[1]University of Windsor
Category: Health Service Research; Social, Cultural, Environmental and/or Population Health Research

This presentation focuses on the stories of Black parents and their children in navigating summer months in Regina, Saskatchewan. This presentation also looks at a culturally relevant summer program for Black children established in 2018, in Regina, Saskatchewan (Canahari Multidisciplinary Summer Programs) that provides a brave space for Black school children and employment opportunities for Black youths in Summer focusing on community networking, academic support, STEAM, and improving health and wellbeing.

ABSTRACT O16

PREVALENCE OF PAEDIATRIC CONDITIONS PRESENTING IN PRIMARY CARE SETTINGS IN SOUTHWESTERN ONTARIO

Maegan Miklas[1], Charys Martin[1]

[1]Schulich School of Medicine and Dentistry

Category: Social, Cultural, Environmental and/or Population Health Research

Background: The Schulich School of Medicine and Dentistry has been prioritizing its curriculum to include Social Accountability. This represents a commitment to refocus the curricular content to identify and address the distinct needs of Southwestern Ontario. Objectives: The project focuses on determining the most common paediatric clinical conditions seen in Southwestern Ontario by family physicians. Methods: A survey was created and distributed to all Schulich-affiliated family physicians practising in Southwestern Ontario. The survey included a list of 29 conditions and 188 sub-conditions from the Canadian paediatric clerkship curriculum directory. Results: 29 participants responded to the survey. The most frequent conditions seen in the community by family physicians were: viral fever, crying/colic, well child-parenting, general fever, and anticipatory guidance. The least frequent conditions seen in the community by family physicians were: immunizations, diaper rashes, shock, meningococcemia, and diabetes mellitus. Discussion: Most of the frequent and non-frequent conditions aligned with our expected findings. However, there were a few conditions in each category that we were not expecting. Next steps: Identify if any paediatric clinical conditions are being under-represented or over-represented in our medical curriculum by compared to which is being seen in the community to our 3rd year paediatric clerkship curriculum. Use our findings to update the 3rd year paediatric clerkship curriculum to represent our community better.

ABSTRACT O17

USING STORYTELLING TO BUILD CAPACITY FOR PATIENT CENTERED OUTCOMES RESEARCH IN MATERNAL MENTAL HEALTH (MAMA)

Sara Santarossa[1], Leah Copeland[1], Dana Murphy[1], Ashley Redding[1], Hailey Maddox[1], Courtney Latimer[1], Sara Gilbertson[1], Wendy Corriveau[1], Amy Loree[1]

[1]Henry Ford Health

Category: Social, Cultural, Environmental and/or Population Health Research

Purpose: Mental health conditions are a top medical complication of the perinatal period, often under-diagnosed and under-treated. We aim to (1) use storytelling to share diverse perspectives on MAternal MentAl health (MAMA), (2) build capacity and engagement for patient-centered research by sharing these stories in a Storytelling Symposium, and (3) with the aid of a diverse stakeholder team, develop a MAMA-focused research agenda. Highlighted here is the storytelling training development and preliminary data. Methods: Using guidance from Morrise and Stevens' (2013) storytelling guideline development and training, we crafted a tailored, interactive training for patients (N=8), caregivers (N=2), clinical providers (N=2), and community members (N=2). Training includes 2 virtual sessions, accompanied by homework exercises and an interactive workbook. The workbook is a collection of exercises and reflections to support narrative creation, including listening to short, relatable stories to help generate ideas, a first-draft expression of their raw story, workshopping stories with a partner as an opportunity for reflection and feedback, storyboarding to transform their words into digital or live final products, and mental health resources, as participant's mental wellbeing is the top priority in the development of their stories. Results: Recruitment began in 08/2023. To date: 50 interested participants, 6 in-depth 1-on-1 follow-up phone interviews, 4 Storytellers selected for training, and training begins 09/23. Conclusion: The voices and lived experiences of those who have experienced MAMA will be leveraged through a unique, reflective, and artistic experience.

ABSTRACT O18

ASSESSING THE OUTREACH ACTIVITIES FOR FAMILY NAVIGATORS IN THE YOUTH MENTAL HEALTH SYSTEM: A RE-AIM FRAMEWORK

Jenn Voth[1], Melissa A. Paré[1], Leslee Ward[1], Jessica C. Kichler[2], Kendall Soucie[2], Stephanie Cragg[3]

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Category: Health Service Research

In Ontario, one in five youth are living with a mental health and/or addiction disorders (MHA) (Alimi et al., 2021). Failure to treat these needs results in negative implications for children, their families, and healthcare systems (Duncan et al., 2020). Family navigation is a successful intervention to reduce barriers to accessing health services by coordinating care, addressing obstacles, and matching services to the youths' needs

(Krabbe et al., 2021). The RE-AIM framework (Glasgow et al., 1999) was applied to assess how family navigators at an Ontario regional children's center focused their outreach activities (N = 300 events) for traditionally underservices populations (e.g., lower income) within the community. Results suggest that navigators were successful in reaching a large amount of stakeholders (N = 1651 individuals), yet were less successful engaging with specific target populations (e.g., Indigenous, LGBTQ+ youth, youth with disabilities, and racialized families; n = 19) and converting engagements to appointments (n = 6). Navigators provided outreach at 132 unique service agencies (e.g., youth centers) using a number of different outreach activities per event (e.g., program introductions; n = 164, clinic site visits; n = 22, one-on-one consultations; n = 33). There were a number of difficulties experienced by the navigators (e.g., individuals not interested in receiving services, lack of follow-up with services) and by the families (e.g., insufficient knowledge of the healthcare system) during the outreach process. Overall, navigators were effective at reaching youth and families with MHA, yet more targeted strategies are needed to reach specific target populations.

A-3: Healthcare Provider and Public Health Insights: Navigating the Future

Moderator: *Peter Wawrow, St. Clair College*

ABSTRACT O19

NAVIGATING PUBLIC HEALTH STRATEGIES: A MEDIA FRAMING ANALYSIS OF COVID-19 POLICY INITIATIVES FOR VULNERABLE POPULATIONS IN ONTARIO'S AGRICULTURAL INDUSTRY

Erika Borrelli[1]

[1]University of Windsor

Category: Health Service Research; Social, Cultural, Environmental and/or Population Health Research

The COVID-19 pandemic led to increased awareness regarding the execution and effectiveness of public health strategies throughout communities in Ontario. Southern Ontario's agricultural industry received heightened media coverage after becoming a hotspot for COVID-19 outbreaks. After the first COVID-19-related deaths of migrant farmworkers were reported in Windsor-Essex, media coverage and public discourses in the region shifted their attention toward regional, provincial, and federal public health policies intended to safeguard vulnerable populations. In the Summer of 2020, public health approaches in Windsor-Essex targeted outbreak management, including mass testing centres which aimed at alleviating workers' pre-existing accessibility barriers. Shortly after, Windsor-Essex became the only public health region in Ontario provincially mandated to reopen using a 'town-by-town' approach, meaning that while the city of Windsor progressed in Ontario's stages of reopening, agricultural towns like Leamington and Kingsville were held back. In this context, this study employs critical discourse analysis to examine how the discursive framing of migrant farmworkers in news media, provides insights into how institutional actors, key stakeholders, and advocates discuss and implement public health strategies for vulnerable populations. This study aims to challenge the dichotomy between how migrant farmworkers are framed as deserving of additional protections and responsibilized for strict public health measures, including being held accountable for the lack of progression in Ontario's stages of reopening, and as threats to growing COVID-19 numbers. This study will offer insights into how the ideological framing of vulnerable populations influences the approach of public health officials toward public health policy.

ABSTRACT O20

UNDERSTANDING ONCOLOGY CARE PROVIDERS EXPERIENCE, AWARENESS AND ATTITUDES ABOUT CANCER REHABILITATION SERVICES WITHIN WINDSOR/ESSEX COUNTY

Laura D'Alimonte[1], Krista Naccarato[1], Alexander Grant[1], Adrian Huang[1], NIcole Sbrocca[1], Kitty Huang[1]

[1]Windsor Regional Hospital

Category: Health Service Research

Purpose: Cancer and its treatments impacts on patients' daily living. Cancer rehabilitation strives to improve patient function leading to improved QoL. Oncologists play a vital role in patients gaining access to these important services. This work sought to understand oncology care providers experience and knowledge about cancer rehabilitation services within Windsor/Essex County. Methods: A provider questionnaire was developed using a 5-point Likert scale and open ended questions to understand practice, awareness and attitudes related to cancer rehabilitation. Electronic and hard copies of the survey were distributed to all Radiation Oncologists (RO), Medical Oncologists (MO), and Nurse Practitioners (NP) at the Windsor Regional Cancer Centre. The survey remained open for one month, with a reminder email at 2 weeks prior to the closing. Results: In total, 9/20 (45%) oncology care providers completed the survey; 2 RO, 5 MO, and 2 NP. The majority (n=5) of respondents had 11-20 years of experience. All respondents reported cancer rehabilitation services as important/very important for patients (Mean 4.89, SD 0.314). Oncology care provider were more likely to refer patients with mid to late stage disease over early stage disease or at initial diagnosis; 4.11 (SD 0.737), 2.56 (SD 1.26) and 2.44 (SD 1.07) respectively. Identified problems triggering a referral included; fatigue, deconditioning, pain and symptom management. Conclusions: Preliminary findings supports provider's place high value on the benefits of cancer rehabilitation services. Further local knowledge of available services and better access to these services is required.

ABSTRACT O21

PREDICTORS OF PATIENT STIGMA PERCEPTION APPRAISAL: TESTING A DYNAMIC STIGMA MODEL OF MENTAL ILLNESS

Sebastian Gyamfi[1], Cheryl Forchuk[2], Isaac Luginaah[2], Richard Booth[2]

[1]University of Windsor

[2]Western University

Category: Clinical Research

Background: Stigma in contemporary times should be regarded as a multifaceted phenomenon characterized by psychological, social, cultural, religious, and moral processes. However, there is a lack of research on stigma as a socio-cultural, religious, and moral phenomenon. Objective: This study aimed to test a Dynamic Stigma Model of Mental Illness (DYSMO) among a cohort of outpatients receiving care in Ghana. Methods: The cross-sectional study utilized convenience sampling to recruit 330 participants to examine hypothesized relationships within a newly developed stigma model using structural equation modeling techniques. Results: Confirmatory factor analysis produced a model with five latent variables and 17 indicators. Mediation analysis on the full structural model produced standardized fit indices that include the following: (X2/df = 335.403 (105), p=.000; RMSEA = .08 (90% CI: .072 -.092; CFI = .921; SRMSR =.059; TLI = .90). The significant regression coefficients of the DYSMO include structural violence (SV) versus religiocultural beliefs (RCB) = .463, p=.000; stigma perception appraisal (SPA) versus SV = .698, p=.000; SPA versus RCB = -.185, p=.042; anticipated discrimination (AD) versus SPA = .448, p=.000; and social withdrawal (SW) versus AD = .661, p=.000). Implications: The religious, cultural, and structural violence perspectives can promote and damage perceptions about mental health. This has research and public health implications for all stakeholders, including health practitioners, policymakers, and community members.

ABSTRACT O22

EMERGENCY DEPARTMENT REGISTERED NURSES' PERCEPTIONS OF SUBSTANCE USE DISORDERS AND SUPERVISED CONSUMPTION SITES

Aleksandra Ilievska[1], Gina Pittman[1], Jody Ralph[1]

[1]University of Windsor

Category: Health Service Research

Background: Canada is facing increased drug-related harms; thus, a stronger emphasis has been placed on harm reduction strategies such as supervised consumption sites (SCSs). There is a lack of literature on emergency department (ED) registered nurses' (RNs) perceptions of SCSs and substance use disorders (SUDs), especially in small to mid-sized Canadian cities. Objective: This study aimed to determine ED RNs' perceptions of SUDs and SCSs in Southwestern Ontario hospitals. Methods: A 27-question survey was sent to RNs currently working in EDs in Southwestern Ontario using an online Qualtrics® link. The research explored ED RNs' perception of SCSs and SUDs. Results: Quantitative results indicated that ED RNs (n = 146) were understanding of drug use and SUDs bult felt neutral towards SCSs. They indicated positive impacts and potential concerns of SCSs implementation, however most ED RNs reported that they would still refer their patients to such sites if one was available, despite their apprehensions. Conclusion: This research demonstrates the importance of harm reduction education in nursing curricula and the workplace. Recommendations include a harm reduction referral partnership between the ED and community partners. It is essential to advocate for policy development to include universal assessments of all patients on admission to the ED and encourage legislation that supports ethical policies and procedures that increases the use and access to SCSs.

A-4: sMAP: Smart Mobility for the Aging Population

Moderator: Sophini Subramaniam, McMaster University

ABSTRACT O23

DEVELOPMENT OF CLINICAL TOOLS TO GUIDE DIAGNOSIS AND TREATMENT OF OSTEOPOROSIS IN OLDER ADULTS

Ali Ammar[1], Fatemeh Jazinizadeh[2], Cheryl E. Quenneville[1,2]

[1]School of Biomedical Engineering, McMaster University

[2]Department of Mechanical Engineering, McMaster University

Category: Biomedical Research; Clinical Research

Hip fractures are one of the leading causes of mortality in older adults. A major contributor to hip fractures and fragility is osteoporosis, a disease commonly associated with age that reduces bone mass and strength. The current method of diagnosis used a DXA machine (which works similar

to an X-ray, but at lower doses of radiation) measures areal Bone Mineral Density to determine if a patient is osteoporotic. This method is shown to have poor results and is poorly correlated with actual practice risk prediction. Our novel tool uses machine learning, image processing and statistical modelling to improve the prediction of fracture risk, while still using standard dual-energy X-ray absorptiometry (DXA images). The algorithm extracts information from 2D hip DXA scans that represents not only the density at one site (as is done with T-score), but the bone's shape and how that material is distributed throughout it. Image processing techniques takes each DXA image and extracts this information concisely and automatically using machine learning. Using a large dataset (of scans and corresponding fracture history) we can "train" our algorithm, against which any new scan can be compared. Through testing, our tool has proved to be much more accurate than current clinical tools. The overall goal of this research is to ensure independence and better quality of life for older adults by facilitating improved diagnosis of osteoporosis and informing development of more accurate individualized treatment plans to prevent these osteoporotic related injuries.

ABSTRACT O24

ENHANCING THE EMERGENCY TRIAGE PROCESS USING MACHINE LEARNING

Ala' Karajeh[1], Rasit Eskiciolgu[1]

[1]University of Manitoba

Category: Biomedical Research; Clinical Research; Health Service Research; Social, Cultural, Enviornmental and/or Population Health Research; CREATE Network

Emergency medicine is among the most critical specialties that deal with a variety of cases, including life-threatening conditions and unstable patients. Moreover, various non-urgent patients turn to an emergency department for several reasons, which complicates the process for clinicians and nurses when it comes to identifying the proper severity of individual cases and creates more pressure on the staff due to overcrowding in the department. As a result, emergency patients usually complain of long wait times and recurrent emergency visits. Triage systems were tailored to assist with handling the workflow inside emergency rooms, such as the Emergency Severity Index. However, studies revealed a prominent obstacle in this regard where the accuracy of correct ordering of treatments is at most 60% for different acuity scales besides varying performance. Subsequently, some of the patients get under-triaged, and their condition may deteriorate while they are waiting to be examined or after being sent home. This talk will touch on a suggested enhancement for the triage process by utilizing machine learning capabilities and harnessing health big data. In addition, a brief will be given on another developed model that may help mitigate emergency unit crowdedness and deal with non-urgent emergency visits. Finally, some insights on a few groups of patients who left at different stages of the treatment process or even before it was initiated will be presented based on retrospective emergency data.

ABSTRACT O25

INCORPORATING INNOVATIVE TECHNOLOGIES FOR ENHANCED DECISION-MAKING AND PERSONALIZED CARE IN ORTHOPAEDIC CLINICS

Dylan Kobsar[1], **Matthew Ruder**[1], Kim Madden[1], Anthony Adili[1]

[1]McMaster University

Category: Clinical Research; Health Service Research

Background: With the rising number of older adults affected by osteoarthritis and a corresponding increase in waitlists for joint replacements, there is an urgent demand for advanced methods of monitoring this condition. Gait analysis offers valuable insights into the progression of knee osteoarthritis, supporting clinicians in making informed decisions. Objectives: This interdisciplinary approach aims to establish the validity, reliability, and outcome changes by combining in-clinic markerless motion capture and wearable sensors before and after end-stage knee arthroplasty. Proposed methods: We will collect in-clinic markerless motion capture data from a cohort of knee osteoarthritis patients at the time of surgical assessment, pre-operatively, and post-operatively. Recognizing that in-clinic systems may not fully reflect a patient's daily gait, we will also deploy wearable sensors for seven days on a subset of patients at these same time points. Each system will be evaluated for reliability, sensitivity to change, and the impact of surgical waitlists on gait and surgical outcomes. Implications and future applications: This project's ultimate goal is to establish gait analysis as a standard of care in osteoarthritis decision-making. Preliminary evidence suggests that the wearable sensor system offers a broader range of gait metrics compared to in-lab systems. However, further research is needed to identify the optimal combination of metrics from both systems to best meet the clinical needs of patients.

Concurrent Sessions B: 3:30pm to 4:45pm

B-1: Advances in Biomedical Sciences: Unraveling Complex Molecular and Cellular Pathways

Moderator: *Dr. Andrew Hubberstey, University of Windsor*

ABSTRACT O26

CHOLESTEROL IS REQUIRED FOR ACTIVITY-DEPENDENT SYNAPTIC GROWTH

Jeffrey Dason[1], Amber Shaheen[1], Claire Richter Gorey[1], Adam Sghaier[1]

[1]Department of Biomedical Sciences, University of Windsor

Category: Biomedical Research

Changes in cholesterol content of neuronal membranes occur during development and brain aging. Little is known about whether these changes affect neuronal membranes and whether these changes affect neuronal development and function. We generated transgenic flies that express the cholesterol binding D4H domain of Perfringolysin O toxin and found increased levels of cholesterol in presynaptic terminals of Drosophila neuromuscular junctions following increased synaptic activity. Reduced cholesterol impaired synaptic growth and largely prevented activity-dependent synaptic growth. Presynaptic knockdown of adenylyl cyclase phenocopied the impaired synaptic growth caused by reducing cholesterol. Furthermore, the effects of knocking down adenylyl cyclase and reducing cholesterol were not additive, suggesting that they function in the same pathway. Increasing cAMP levels using a dunce mutant with reduced phosphodiesterase activity failed to rescue this impaired synaptic growth, suggesting that cholesterol functions downstream of cAMP. We used a PKA sensor to show that reducing cholesterol levels reduced presynaptic PKA activity. Collectively, our results demonstrate that increased synaptic activity increased cholesterol levels in presynaptic terminals and that these changes likely activate the cAMP-PKA pathway during activity-dependent growth.

ABSTRACT O27

DYSREGULATION OF PANNEXIN 1 AND PANNEXIN 3 PROMOTES THE TUMOURIGENIC PROPERTIES OF CUTANEOUS SQUAMOUS CELL CARCINOMA

Brooke O'Donnell[1], Zahra Kardan[2], Daniella Johnston[1], Ayushi Bhatt[3], Dan Stefan[1], Andrew Bysice[4], Samar Sayedyahossein[5], Lina Dagnino[5], Sampath Loganathan[2], Kathryn Roth[4,6], Silvia Penuela[1,7,8]

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Category: Biomedical Research; Clinical Research

Pannexin (PANX) channels are present in skin and facilitate the passage of signalling molecules critical for cellular communication. Both PANX1 and PANX3 function in skin homeostasis and keratinocyte differentiation, but were reduced in a small number of human cutaneous squamous cell carcinoma (cSCC) keratinocytic tumour compared to epidermis controls. In our study, we analyzed PANX1 and PANX3 expression in cSCC using cell lines and a larger cohort of patient-matched samples, and determined the effects of their dysregulation on the malignant properties of cSCC. We found PANX1 and PANX3 levels were reduced in SCC-13 cells compared to N/TERT-1 keratinocytes. PANX3 transcripts were also decreased in patient-derived cSCC tumours compared to normal aged skin, but contrary to previous fundings, PANX1 was upregulated in cSCC tumours compared to skin controls. To investigate PANX1 channel function, we treated SCC-13 cells with established PANX1 channel blockers and determined PANX1 inhibition markedly reduced cell growth, but we are still investigating its effects on migration. To assess PANX3 function in cutaneous carcinogenesis, we employed the DMBA/TPA carcinoma model using our global PANX3 knockout (KO) mice. Although no mice developed carcinomas, 80% of wildtype and 100% of KO mice formed pre-cancerous papillomas. Average papilloma volume at endpoint was significantly increased in KO mice and over time trended to be increased in KO mice. Collectively, these findings suggest PANX1 and PANX3 dysregulation may have potential tumour promoting or suppressive effects for keratinocyte transformation into cSCC, respectively, offering the potential for new therapeutic targets in cSCC treatment.

ABSTRACT O28

mRNA TRANSLATION IN ASTROCYTES CONTROLS LONG-TERM SYNAPTIC PLASTICITY AND MEMORY

Vijendra Sharma[1], Mauricio M. Oliveira[2], Rapita Sood[1,3,4], Abdessattar Khlaifia[5,6], Danning Lou[3,4], Mehdi Hooshmandi[7], Tzu-Yu Hung[3,4], Niaz Mahmood[3,4], Maya Reeves[1], David Ho-Tieng[7], Noah Cohen[3,4], Po-chieh Cheng[3,4], Mir Munir A. Rahim[1], Masha Prager-Khoutorsky[8], Randal J. Kaufman[9], Kobi Rosenblum[10,11], Jean-Claude Lacaille[5], Arkady Khoutorsky[7,12], Eric Klann[2], Nahum Sonenberg[3,4]

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[6]Department of Psychology, University of Toronto Scarborough
[7]Department of Anesthesia and Faculty of Dental Medicine and Oral Health Science, McGill University
[8]Department of Physiology, McGill University
[9]Degenerative Diseases Program, Center for Genetic Disease and Aging Research, Sanford-Burnham-Prebys Medical Discovery Institute
[10]Sagol Department of Neurobiology, University of Haifa
[11]Center for Gene Manipulation in the Brain, University of Haifa
[12]Alan Edwards Centre for Research on Pain, McGill University

Category: Biomedical Research

Activation of protein synthesis after learning is a critical step in the formation of long-term memory. Whereas many studies documented the critical role of protein synthesis in neurons in learning and memory, the role of protein synthesis modulation in non-neuronal brain cells is unknown. Here, we show that activating mRNA translation in astrocytes via the integrated stress response (ISR) pathway is central for consolidating new memories and induction of long-lasting synaptic plasticity. ISR suppresses mRNA translation by phosphorylating the α subunit of the eukaryotic initiation factor 2 (eIF2). We report that learning engenders a decrease in eIF2α phosphorylation in astrocytes, which promotes protein synthesis. Selective genetic reduction of eIF2α phosphorylation in hippocampal astrocytes enhanced contextual and spatial memory and lowered the threshold for the induction of long-lasting plasticity in the hippocampus by enhancing neuronal excitability. Thus, learning-induced dephosphorylation of eIF2α in astrocytes promotes neuronal activity and consolidation of long-term memories.

ABSTRACT O29

THE ROLE OF LIVER KINASE B1 IN EPITHELIAL OVARIAN CANCER CELLS AND SPHEROID INVASION

Charles Trelford[1,2], Trevor Shepherd[1,2,3]

[1]Department of Anatomy and Cell Biology, Schulich School of Medicine and Dentistry, Western University
[2]The Mary and John Knight Translational Ovarian Cancer Research Unit, London Regional Cancer Program
[3]Department of Obstetrics and Gynecology, Schulich School of Medicine and Dentistry, Western University

Category: Biomedical Research

Epithelial ovarian cancer (EOC) is usually diagnosed late in tumour development and despite the initial success of surgery and chemotherapy, patients often relapse with chemo-resistance. Late-stage diagnosis compounded with high rates of recurrence after remission make EOCs the most lethal gynecological malignancies in the developed world. Therefore, this project was undertaken to characterize pathways that promote EOC survival and metastasis to target malignant cells resistant to chemotherapeutics. Given that liver kinase B1 (LKB1) has been previously reported to augment tumorigenesis in EOC, we hypothesize that LKB1 signalling is essential to EOC invasion. LKB1 signalling was antagonized through CRISPR/Cas9 genetic knockout of LKB1 and RNAi-dependent targeting of STE20-related kinase adaptor protein (STRAD; a LKB1 activator). EOC spheroids generated using Ultra-Low Attachment culture plates were re-seeded on transwell membranes to assess migration whereas transwells coated with collagen assessed invasion. EOC spheroids expressing nuclear GFP constructs were imbued in Matrigel where an IncuCyte S3 real-time live-cell imager monitored invasion. The loss of LKB1 signalling disrupted cell migration and invasion of EOC spheroids imbued in gel-like matrices and through transwell membranes. Immunoblotting cell lysates of LKB1 knockout or STRAD-specific RNAi-dependent targeting experimental conditions verified that LKB1-STRAD activity is linked to epithelial-mesenchymal transition and invasion. Finding genes and pathways promoting EOC invasion and metastasis is significant for late-stage EOC patients who are beyond the aid of chemotherapy. Our encouraging results thus far suggest that LKB1-STRAD activity may regulate EOC metastasis and targeting LKB1 could disrupt the dissemination of EOC resistant to chemotherapy.

B-2: Exploring Quality of Life; Pathways to Improved Outcomes
Moderator: *Ingrid Qemo, University of Windsor*

ABSTRACT O30

TOO DEPRESSED AND ANXIOUS TO SPEAK UP: THE RELATIONSHIPS BETWEEN WEEKLY FLUCTUATIONS IN MENTAL HEALTH AND SILENCE AT WORK

Kyle Brykman[1], Anika Cloutier[2], Erica L. Carleton[3], Daniel Samosh[4]

[1]Odette School of Business, University of Windsor

[2]Rowe School of Business, Dalhousie University

[3]Hill School of Business, University of Regina

[4]Employment Relations, Queen's Univeristy

Category: Social, Cultural, Environmental and/or Population Health Research

While it is widely acknowledged that some employees are more prone to silence than others, emerging research indicates substantial intraindividual variations in silence over time. This new perspective recognizes that silence is much more dynamic than previously indicated, as even the most vocal employee will withhold voice in some situations. However, many important questions remain regarding the origins of intraindividual fluctuations in silence, as well as the mechanisms underlying such effects and potential factors that mitigate them. We respond by adopting a motivational lens that considers how weekly fluctuations in employees' mental health relates to silence via distinct silence motives. Specifically, we propose that employees experiencing flares up of depression are more likely to engage in silence because depressive symptomology induces the expectation that voice is pointless (I.e., ineffectual silence motive). Likewise, we propose that employees experiencing flare ups of anxiety are more likely to engage in silence because anxious symptomology induces the expectation that voice is dangerous (I.e., defensive silence motive). Finally, we argue that voice endorsement attenuates these relationships by interrupting the link between motives and behaviours, such that employees experiencing heightened ineffectual and defensive silence motives are less likely to remain silent during weeks in which they experience greater voice endorsement. We find support for these predictions via an experience sampling methodology study conducted with 136 employees across four weeks. We discuss how these results enhance theoretical clarity on the dynamic links between mental health and silence and offer insights into how organizations can counteract silence.

ABSTRACT O31

ESHC CARES: IMPROVING PATIENT OUTCOMES WITH EARLY IDENTIFICATION & TREATMENT OF SEPSIS

Holly Kettler[1], Sara Wilson[2]

[1]Emergency Department and Registration, Erie Shores HealthCare

[2]Critical Care and infection Control, Erie Shores HealthCare

Category: Health Service Research

Background: Sepsis is a life-threatening condition. If sepsis is not recognized and treated early, it can lead to septic shock, organ failure and death. The performance ranging from sepsis recognition to administration of antibiotics at Erie Shores HealthCare (ESHC) is suboptimal. Around 53.5% of the patients, having signs and symptoms (S&S) of sepsis received antibiotics within an hour in 2021-2022. Objectives: Our goal is to reduce the burden of sepsis on patients and their families, by 1) improving sepsis recognition and 2) initiating first dose antibiotics within an hour of recognition. Methods: We have established a Code Sepsis and have developed an antibiotic medical directive for patients meeting SIRS/SEPSIS criteria. We educated Emergency Department nurses to recognize early the S&S of sepsis and to use the medical directives properly on a daily basis since January 2023. Data on time of sepsis recognition, antibiotic order and administration is collected and reviewed monthly for patients having a sepsis alert and receiving antibiotics as part of this operational research. We update the education and action plans regularly based on the data. This process has validated improvements (63% of the patients received antibiotics within an hour) in 2023. Future directions: ESHC continues to work on improving sepsis related patient outcomes and to bring awareness of this quality improvement project to other Emergency department in order to improve outcomes of patients diagnosed with sepsis.

ABSTRACT O32

INVESTIGATING SUBJECTIVE SLEEP QUALITY AFTER LUNG TRANSPLanovski[1], Jody Ralph[1], Sherry Morrell[1]

[1]University of Windsor

Category: Clinical Research

Background: Significant gaps exist in our understanding of sleep quality after lung transplantation. Purpose: The purpose of this study was to characterize the nature of subjective sleep quality after lung transplantation; to determine which factors are associated with poor sleep; and to

examine whether poor sleep has as relationship with health-related quality of life (HRQoL). Methods: In this cross-sectional, single center cohort study, 158 lung transplant recipients were invited to complete an anonymous REDCap survey. Sleep quality was measured with the Pittsburgh Sleep Quality Index with scores dichotomized to poor versus good sleepers based on PSQI cutoff>8. Additional self-report data included demographic and transplant related information; co-morbidities; Hospital Anxiety and Depression Scale. HRQoL was measured with the Short Form-12 with its mental and physical component scores. Results: Survey response rate was 38.4% and 52.5% of the sample evidenced poor sleep. On the bivariate level, poor sleep quality was significantly associated with symptoms of depression ($p < .01$); anxiety ($p < .01$); stressors of hospitalization ($p < .05$), and treatment of acute rejection ($p < .05$). On the multivariate level, only anxiety predicted likelihood of poor sleep (OR = 1.34, $p < .05$). Mental component of HRQoL was significantly related to poor sleep quality only on the bivariate level ($p < .01$). Conclusion: Poor subjective sleep quality remains prevalent yet an under-studied issue after lung transplantation. Further research is needed to improve understanding of poor sleep, its related factors, and its impact on HRQoL to optimize health and outcomes after lung transplant.

ABSTRACT O33

BUILDING AN INCLUSIVE, RESILIENCY-BASED FRAMEWORK TO SUPPORT PEOPLE WITH POLYCYSTIC OVARY SYNDROME ACROSS THE LIFESPAN

Kendall Soucie[1]

[1]University of Windsor

Category: Social, Cultural, Environmental and/or Population Health Research

Polycystic Ovary Syndrome (PCOS) is the more prevalent hormonal disorder in women of reproductive age, with a global prevalence of up to 21%. Research on PCOS from a psychosocial perspective has a relatively recent history and has been almost exclusively centered around the view that PCOS disrupts the life course and feminine identity in negative ways. There is very little systematic research amplifying diverse pathways of development that focus on resilience, self-compassion, healing, and femininity, which is the goal of this study. Using a narrative interview methodology, participants were asked to construct their "PCOS story", including the main chapters of their story, and key scenes from various times in their lives across a variety of domains (e.g., health care, relationships, body image, self-management, and coping). They were also asked to reflect on their future script, with a focus on meaning-making and closure/resolution. While our sample size currently includes 70 women diagnosed with PCOS, 35 interviews (age range 19-58, Mage=29.6, TTD=4.45 years) have been fully transcribed, and coded thematically. Five these illustrate avenues of strength and resilience, overtime: 1. Embracing and caring for the self, 2. Pushing forward through advocacy, 3. Cultivating newfound agency to protect the future self, 4. Growth through lifelong learning, and 5. Moving beyond diagnosis labels. Our research is the first step toward challenging the deficit-based, biomedical framing of PCOS that dominates the current state of the literature by amplifying counternarratives of self-discovery, self-compassion, healing, and generativity. Implications for new pathways of knowledge will be discussed.

B-3: Breaking Barriers in Healthcare: Strategies for Vulnerable Populations

Moderator: *Dr. Peter Wawrow, St. Clair College*

ABSTRACT O34

CHALLENGES TO PROTECTING MIGRANT FARMWORKERS' MENTAL AND PHYSICAL HEALTH DURING THE COVID-19 PANDEMIC

Tanya Basok[1]

[1]University of Windsor

Category: Social, Cultural, Environmental and/or Population Health Research

Using a Transnational Employment Strain approach, this presentation will illustrate that the COVID-19 pandemic exacerbated employment strains among migrant farmworkers in Canada. Employment demands increased for migrant farmworkers during the health crisis as the working and living environments, transformed by the pandemic, posed more risk to their physical and mental health. Furthermore, employment became even more insecure than before the pandemic for these workers, while employment resources, such as community support, remained limited. Unfortunately, policy interventions implemented at the federal, provincial or regional levels to contain the virus and protect migrant workers and broader communities often amplified pre-existing or introduced new employment demands because they failed to consider unique policy frameworks that shape these migrant farmworkers' employment and living conditions and social relationships with their co-workers and households in Canada and across transnational space.

ABSTRACT O35

COVID-19 MISINFORMATION, MENTAL HEALTH, AND THE IMPORTANCE OF LIBRARIES AS INFORMATION GATEKEEPERS

Rong Luo[1], Lida Fan[2]

[1]University of Windsor

[2]Lakehead University

Category: Social, Cultural, Environmental and/or Population Health Research

Background: The COVID-19 pandemic has led to a surge of misinformation. This infodemic not only blocks disease control efforts but also profoundly impacts mental health. Academic librarians, supported by library organizations, have assumed a crucial role in combating misinformation. Objectives: This study explores the relationship between exposure to COVID-19 misinformation, trust in such information, and their connection to anxiety and depression among Canadians during the pandemic. It also investigates the pivotal role of libraries in mitigating misinformation's adverse effects, emphasizing their contribution to public mental well-being in an era dominated by information overload. Methods: Drawing on relevant literature and data from the Canadian Perspective Survey Series (CPSS-4: July 20 to 26, 2020), statistical analysis examines the influence of misinformation on mental well-being. The study also assesses library strategies to counter misinformation and suggests improvements in information dissemination during crisis. Results: A significant positive association ($r = 0.134$, $p < 0.001$) exists between the frequency of encountering suspected COVID-19 misinformation online and Generalized Anxiety Disorder (GAD-7) scores. Higher GAD-7 scores correspond to increased exposure to misinformation. The study identifies demographic and socioeconomic variables associated with GAD-7 scores via stepwise regression analysis. Discussion: Libraries are essential for ensuring access to reliable information. They achieve this through public education, provision of trustworthy resources, research support, and sharing successful strategies within professional networks. This research underscores libraries; critical role in the battle against COVID-19 misinformation, emphasizing their contribution to public health and mental well-being in an era where information accuracy is paramount.

ABSTRACT O36

THE EVALUATION AND IMPLEMENTATION OF INCREASED MENTAL HEALTH RESOURCES, WITH MINIMIZED BARRIERS, FOR PATIENTS OF A LOCAL COMMUNITY HOSPITAL

Emma Mineau[1], Beckie Berlasty[1], David Potocek[1], Munira Sultana[2], Neelu Sehgal[2]

[1]St. Clair College

[2]Erie Shores HealthCare

Category: Health Service Research; Social, Cultural, Environmental and/or Population Health Research; Clinical Research

Experts suggest that Canada is facing a mental health crisis, with research noting a significant increase in mental health cases, as a result of the COVID-19 pandemic. This is worsened in rural communities where community-based care is significantly lacking due to fragmented and limited resources. According to the Canadian Mental Health Association, mental health supports in rural communities are "less comprehensive, available and accessible than in urban areas". Erie Shores HealthCare (ESHC) faces a number of challenges related to ED visits for individuals seeking mental health support. Due to factors of socio-economic status, cultural needs, and isolation, residents have limited options for support in the community if they are struggling with a mental health issue. As a result, the rate of visits and return visits are very high for mental health patients at ESHC. The research team will evaluate patient records of those who have visited the emergency department at ESHC for a mental health related issue or illness during a 5-year term. Data analysis will consist of identifying demographic and clinical characteristics of ED patients, using medical records based on nurse or physician documentation. ESHC will provide data such return visits per patient, admission rate, and transportation to psychiatric unit per patient. This project seeks to analyze trends in demographic and clinical characteristics of mental health visits to ESHC. The research team will identify patterns and trends, thereby identifying areas of need. The proposed project will also develop a set of recommendations for interventions to fill identified gaps.

ABSTRACT O37

ESHC CARES: COMBATING ADDICTION THROUGH RESOURCES & EDUCATION STUDY

Caterina Oriana Alfieri[1], **Munira Sultana**[1], Mason Leschyna[1,2]

[1]Erie Shores HealthCare

[2]Windsor Regional Hospital

Category: Health Service Research

Background: Opioid-related emergency visits, hospitalizations, and deaths have increased by 400% in the last decade across Windsor-Essex, with Leamington having the second highest burden of morbidity compared to other communities. However, morbidity appears to be reduced where opioid overdose education, combined with naloxone distribution, is administered. Objectives: This study seeks to 1) determine the socioeconomic

and health-related factors associated with opioid use and overdose, 2) assess whether opioid overdose education and the distribution of naloxone kits in the emergency department (ED) will decrease opioid-related morbidity, and 3) identify barriers to access the relevant resources. Proposed methods: Patients and those accompanying them to the ED for opioid-related morbidity will be invited to complete an anonymous survey determining factors associated with their opioid use and access to naloxone. Surveys will be distributed digitally by ED nursing staff. Patients and their accompaniment will receive a naloxone kit and education on how to administer naloxone and prevent opioid overdose. Survey data will be collected, and descriptive analyses performed over a period of 1 year. The results of this study serve to develop targeted programs within Leamington with the goal of reducing opioid harm. Future directions: Despite high rates in opioid-related morbidity and mortality, Leamington lacks resources to control the opioid epidemic. Unlike Windsor, Leamington does not have a transitional stability center, safe consumption site, naloxone distribution program, and psychiatrists to assist patients. The study will serve as a basis to develop and help pioneer future practice models in this regard.

B-4: sMAP: Smart Mobility for the Aging Population

Moderator: Meimei Peng, McMaster University

ABSTRACT O38

CONTACT-AWARE SENSING FOR AGING-IN-PLACE AND POINT-OF-CARE APPLICATIONS

Qiyin Fang[1], Hailey Wang[1], Meimei Peng[1]

[1]McMaster University

Category: Biomedical Research

Sensing technologies for remote monitoring of health-related parameters has become an active area of research, especially for aging-in-place and point-of-care applications. There is a critical need to establish contexts to interpret sensors data for a specific condition/disease. In this talk, we will discuss the general framework that connects temporal sensor data to the probability of specific contexts, which are used towards establishing the proper clinical diagnosis.

ABSTRACT O39

FITBIT AND FOUCAULT: NAVIGATING DISORDERED EATING AND UBIQUITOUT SELF-SURVEILLANCE

Kathryn Huckson[1]

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Category: Social, Cultural, Environmental and/or Population Health Research

Wearable fitness tracking devices have steadily gained popularity in recent years. These self-surveillance technologies are a constant reminder of social and medical pressures to maintain specific standards for health and wellbeing. Such normative standards may confuse boundaries between health-consciousness and health-obsessiveness, or normal versus disordered attitudes towards physical fitness and body image. This paper explores how Fitbit, as one of the most pervasive wearable fitness technologies (WFTs), may function as an extension of disciplinary and surveillant sociomedical discourses. In particular, I consider the implications of Fitbit for people with eating disorders, as lines between healthy and obsessive concern for measuring one's body become blurred. How does Fitbit extend medical prescriptions for a universal health ideal and micro-practices targeted at the body? Who is left out of such narrow definitions of health? How does the ubiquitous Fitbit impact the eating disordered subject? Using a Foucauldian lens expanded on through feminist post-structuralist theory, feminist technology studies, and critical disability studies, I will account for the ways in which eating disorder behaviours are discursively coded through cultural institutions such as the clinic and social media. I will expand this discussion to situate Fitbit as a tangible technology for biopower.

ABSTRACT O40

MAPPING THE CONTEXT OF SEDENTARY BEHAVIOUR (MAPS-B) IN OLDER ADULTS WHO ARE PRE-FRAIL OR FRAIL: A FEASIBILITY STUDY

Isabel Rodrigues[1], Jonathan Adachi[1], Steven Bray[2], Qiyin Fang[3], George Ioannidis[1], Dylan Kobsar[2], Alexander Rabinovich[4], Alexandra Papaioannou[1], Rong Zheng[5]

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Category: Health Service Research; Social, Cultural, Environmental and/or Population Health Research

There is increasing concern about the amount of time older adults spends in prolonged sedentary behaviours. Understanding context (posture, location, purpose, social environment) may provide insight into effective interventions. Our objective was to determine the feasibility of assessing context of sedentary behaviour in older adults with pre-frailty/frailty. Context was assessed over three days in winter and spring using wearable sensors for posture, indoor positioning system (IPS) for location within the home, and electronic/hard-copy diary for purpose and social context. We defined “feasibility process” using recruitment (20 participants within two-months), retention (85%), and refusal (20%) rates, and “feasibility resource” if the measures capture context and are all participants willing to use the measures. We approached 80 potential individuals, and 58 expressed interest. Of the 58 individuals, 37 did not enroll due to lack of interest or medical mistrust (64% refusal). We recruited 21 older adults (72±7.3 years, 13 females, 13 frail) within two months and experienced two dropouts (90% retention). The wearable sensor, IPS, and electronic diary captured its intended domain of context, but the hard copy was not completed with enough detail making it challenging to link it to the other devices. Twenty participants used the wearable sensor and ten used the electronic diary during winter and spring. Thirteen used the IPS in winter but only nine in spring. Using wearable sensors, IPS, and electronic diaries may be feasible in some cohorts, but future studies will need to determine other methods to assess the context, especially in diverse older adults.

THANK YOU

Thank you to all the registrants, speakers, students, sponsors, and community members for joining us for the 2023 Health Research Conference. It was through your support, commitment, and participation that we were able to hold the second health research conference in Windsor-Essex. We look forward to connecting at future events and highlight the positive impact of health research in our region.

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