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Poster Program



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Number-Numéro	Presenter -Présentateur	Institution	Title - Titre
1	Alexandrea Isabella Forbes	Loch Lomond Villa	3D AND VIRTUAL REALITY EXPERIENCES TO IMPROVE COGNITIVE HEALTH AND LIFE ENHANCEMENT FOR THE ELDERLY
2	Christie Aguiar	saint john regional hospital	FAST TRACKING IN CARDIAC SURGERY—IS IT SAFE?
3	Angella Mercer	Dalhousie Medicine, New Brunswick	DEVELOPMENT OF A TARGETED METABOLOMICS PLATFORM AT DALHOUSIE MEDICINE NEW BRUNSWICK
4	Taylor, Catherine	Atlantic Cancer Research Institute	LIQUID BIOPSY USING EXTRACELLULAR VESICLES CAPTURED FROM BRONCHIAL LAVAGE FLUID OF NSCLC PATIENTS IMPROVES TUMOUR MUTATION DETECTION BY NEXT GENERATION SEQUENCING COMPARED TO PLASMA AND
5	Somkene Igboanugo	University of Waterloo	HEALTH OUTCOMES OF PSYCHOSOCIAL STRESS WITHIN FIREFIGHTERS
6	Caitlin Robertson	University of New Brunswick	NEW BRUNSWICK PHYSICIANS' PERSPECTIVES TOWARD MEDICAL ASSISTANCE IN DYING (MAiD)
7	Doucet, Mélina	Université de Moncton	ASSESSING THE CYTOTOXIC IMPACT OF ENOXACIN IN GLIOBLASTOMA MULTIFORME
8	Caitlin Barry	University of New Brunswick - Saint John	NEGATIVE SOCIAL INTERACTIONS PARTIALLY MEDIATE THE RELATIONSHIP BETWEEN SEXUAL ORIENTATION AND MENTAL HEALTH OUTCOMES FOR CANADIANS
9	Lauren Cook	Horizon Health Network	THE ESTABLISHMENT OF THE CANADIAN MULTIPLE MYELOMA PRIORITY SETTING PARTNERSHIP: LESSONS FOR PATIENT ENGAGEMENT AND RESEARCH METHODOLOGY
10	MacLeod, Jeff	Cardiovascular Research New Brunswick	THE IMPACT OF ROTATIONAL THROMBOELASTOMETRY (ROTEM) ON IN-HOSPITAL OUTCOMES AND BLOOD PRODUCT UTILIZATION IN PATIENTS UNDERGOING CARDIAC SURGERY
11	Bourcier, Dax	CFMNB	SCALE FOR THE ASSESSMENT AND RATING OF ATAXIA (SARA): APPROPRIATE FOR CLINICAL TRIALS OF AUTOSOMAL RECESSIVE SPASTIC ATAXIA OF CHARLEVOIX-SAGUENAY (ARSACS)?
12	Hara,Saadia	Université de Moncton	ÉTUDES DES IMPACTS CUMULATIVES DU DÉVELOPPEMENT DES RESSOURCES NATURELLES SUR LA SANTÉ, L'ENVIRONNEMENT ET LES COMMUNAUTÉS.
13	Véronique Thibault	Université de Sherbrooke	PHYSICAL ACTIVITY MOTIVES HAVE A DIRECT EFFECT ON MENTAL HEALTH BASED ON A LONGITUDINAL ANALYSIS DURING ADOLESCENCE
14	Isdore Shamputa	UNB Saint John	DEVELOPMENT OF A FRAMEWORK FOR EVALUATION OF SERVICES AND OUTCOMES FOR COMMUNITY HEALTH CENTRES: A COMPREHENSIVE SCOPING REVIEW
15	Kate Harland	RECAP	BARRIERS TO SEEKING SCREENING AND TREATMENT FOR HCV 20-39-YEAR-OLD PERSONS WHO USE DRUGS IN NEW BRUNSWICK, CANADA
16	Stefanie Materniak	RECAP	UNDERSTANDING EFFECTIVE DISSEMINATION OF KNOWLEDGE REGARDING HCV SCREENING AND TREATMENT AMONG 20-39-YEAR-OLDS WHO USE DRUGS IN NEW BRUNSWICK, CANADA
17	Fraser, Marc	Université TÉLUQ	DÉVELOPPEMENT D'UNE APPROCHE ÉCOSYSTÉMIQUE DE LA SANTÉ CONTEXTUALISÉE À LA RÉGION D'EDMUNDSTON
18	Dupuis-Blanchard, Suzanne	Université de Moncton	EXPLORING SOCIAL FRAILTY IN RECENTLY RELOCATED SEMI-INDEPENDENT OLDER ADULTS
19	Léger Jacob	Université de Moncton	FUNCTIONAL PLATELET-DERIVED MITOCHONDRIA INDUCE THE RELEASE OF NEUTROPHIL MICROPARTICLES
20	François Gallant	Université de Sherbrooke	ARE NEW BRUNSWICK YOUTH SWEATING, SITTING, AND SLEEPING ENOUGH? AN EIGHT YEAR STUDY
21	Daniel Saucier	Université de Sherbrooke (CFMNB)	MICRORNAS ISOLATED FROM EXTRACELLULAR VESICLES OF AMYOTROPHIC LATERAL SCLEROSIS PATIENTS PROVIDE A CIRCULATING SIGNATURE WITH DIAGNOSTIC POTENTIAL AND UNDERLIE PATHOLOGICAL MECHANISMS LINKED TO THIS CONDITION

22	Logan Slade	Dalhousie Medicine New Brunswick	TRANSCRIPTION FACTOR EB REGULATES TRIPLE NEGATIVE BREAST CANCER CELL SURVIVAL
23	Page Patric	Université de Moncton	IMPACT OF THE MIR 2355-5P IN VHL INACTIVATED CLEAR CELL RENAL CELL CARCINOMA
24	Ismael Foroughi	University of New Brunswick	SOCIOECONOMIC CHARACTERISTICS OF LOCAL COMMUNITIES MAY INFLUENCE THE HOSPITAL BURDEN AMONG ADULTS LIVING WITH MULTIPLE SCLEROSIS IN NEW BRUNSWICK
25	Lignos, Nicholas	University of New Brunswick	THE USE OF AMBIENT ACTIVITY TECHNOLOGY IN RESIDENTS LIVING WITH DEMENTIA
26	Eric Comeau	Dalhousie Medicine New Brunswick	INCOME LEVEL ASSOCIATED WITH TIME TO REHOSPITALIZATION FOR CHRONIC AMBULATORY CARE SENSITIVE CONDITIONS AMONG THE WORKING AGE POPULATION
27	Stephanie Ward	Université de Moncton	THE HEALTHY START-DÉPART SANTÉ ONLINE INTERVENTION: A PROMISING METHOD OF IMPROVING PHYSICAL ACTIVITY PRACTICES OF CHILDCARE EDUCATORS
28	Mohammad Keshavarz	UNB	CAN A RESISTANCE TRAINING REACH THE OPTIMAL INTENSITY WITHOUT SPECIALIZED EQUIPMENT FOR MEN LIVING WITH OBESITY? PILLAR SOCIAL, CULTURAL, ENVIRONMENTAL AND POPULATION HEALTH
29	Stacy Grieve	University of New Brunswick	TAZ functions as a tumour suppressor in multiple myeloma by downregulating MYC
30	Bridges, Sarah	University of New Brunswick	CENTRALIZED ACCESS TO PHYSICAL ACTIVITY PROGRAMS IN SAINT JOHN, NEW BRUNSWICK IS PROBLEMATIC FOR MAJORITY OF RESIDENTS
31	Nathalie Godin	Vitalité Health Network	EVALUATION OF HEALTH PROFESSIONAL'S COMPETENCIES ON IMMUNOTHERAPY CARE IN VITALITE HEALTH NETWORK
32	Erin Cunningham	University of New Brunswick	THE RELATIONSHIP BETWEEN LUMBAR MULTIFIDUS MUSCLE MORPHOLOGY, PHYSICAL ACTIVITY, AND LOW BACK PAIN IN YOUNG PEOPLE: A LONGITUDINAL STUDY
33	Desaulniers, Céline	Université de Moncton	AN EXERCISE PROGRAM ADAPTED FOR CHRONIC DISEASES IN A RURAL COMMUNITY: THE EXECO PROGRAM.
34	Ziv, Anat	University of New Brunswick	CANADIAN INPATIENTS REPORTING PRIOR UNMET PRIMARY HEALTH CARE NEEDS STAY LONGER IN HOSPITAL: EVIDENCE FROM LINKED SURVEY AND ADMINISTRATIVE DATA
35	Abdelali EL BOUZAOUJ	University of Moncton	Use of Ambient Activity technology in nursing homes for residents with dementia: A PROTOCOL FOR COST-BENEFIT ANALYSIS
36	Courtnei Soucy	University of New Brunswick	VARIABILITY IN PHYSICAL FUNCTION IMPROVEMENTS FOR PATIENTS LIVING WITH BREAST CANCER DURING A 12-WEEK EXERCISE PROGRAM
37	Sandra Magalhaes	NB-IRDT	AIR POLLUTION IS ASSOCIATED WITH PREVALENCE OF MULTIPLE SCLEROSIS: AN ECOLOGICAL STUDY
38	Kenneth D'souza	Dalhousie Medicine New Brunswick	EFFECT OF WHEY PEPTIDES ON METABOLISM AND INSULIN SIGNALING IN MUSCLE CELLS
39	Sarkar, Shreya	Saint John Regional Hospital	FRAILTY ASSESSMENT IN CARDIAC SURGERY: A DEFICIT BASED APPROACH AND IMPACT ON CLINICAL OUTCOMES
40	Dipsikha Biswas	Dalhousie Medicine New Brunswick	Branched-chain ketoacid dehydrogenase kinase: A novel target for inducing chemosensitivity in triple-negative breast cancer
41	Philippe-pierre Robichaud	Atlantic Cancer Research Institute	DEVELOPMENT OF LIQUID BIOPSY DNA METHYLATION ANALYSES FOR EARLY PANCREATIC CANCER DIAGNOSIS
42	Rebeca Martín-Jiménez	University of Moncton	MITOCHONDRIAL PHYSIOLOGY IS ALTERED BY ALPHA-SYNUCLEIN AGGREGATES GENERATED WITH A NOVEL PROTEIN AGGREGATION SYSTEM
43	Turner, Alison	University of New Brunswick	WEIGHT STIGMA AND HEALTH INEQUITIES IN NEW BRUNSWICK MARGINALIZED COMMUNITIES
44	Purvi Trivedi	Dalhousie Medicine New Brunswick	Loss of transcription factor EB action remodel lipid metabolism and cell death pathways in the cardiomyocyte

45	Horia-Daniel IANCU	Université de Moncton	BÉNÉFICES D'UN COURS D'ÉDUCATION PHYSIQUE QUOTIDIEN SUR LA SANTÉ DES ÉLÈVES DU PRIMAIRE DANS LA PERCEPTION DE LEURS PARENTS
46	McDougall, Rachel	Mount Allison University	LIGAND-CONJUGATED GOLD NANOPARTICLES IMPART VARIOUS TOXIC EFFECTS UPON OVARIAN ADENOCARCINOMA CELLS
47	Johnson, Mathieu	Université de Moncton	LINKING GENETIC CLONAL RENAL CELL CARCINOMA EVOLUTION TO LYSOSOMAL VULNERABILITIES
48	Murugesan, Alli	UNB, Saint John	THE CASE FOR KNOWLEDGE BASED ECONOMY: A COMPARISON OF CANADIAN ENTREPRENEURIAL UNIVERSITIES AND THE BIOHUNTRESS MODEL
49	Krystal Binns	NB PIHCI Network	PATIENTS' DEN: INNOVATION IN EMPOWERING PATIENTS TO SET RESEARCH PRIORITIES
50	Luke, Alison	University of New Brunswick Saint John	USING READERS' THEATRE AS AN INNOVATIVE APPROACH TO SHARE RESEARCH FINDINGS FOCUSED ON CHILDREN AND YOUTH WITH COMPLEX CARE NEED
51	Donna Bulman	University of New Brunswick	People Don't Still Whisper When They Talk About Alzheimer's Disease: Or do they?
52	Faith Moore	Dalhousie Medical School	MULTI-LEVEL LUMBAR SPINAL FUSION OFFERS CLINICALLY SIGNIFICANT REDUCTIONS IN PAIN AND DISABILITY
53	Molly Gallibois	University of New Brunswick	THE ASSOCIATION BETWEEN FRAILTY STATUS AND SEDENTARY BEHAVIOUR FOR LONG TERM CARE RESIDENTS
54	Power, Madeline and Russell, Madelaine	Mount Allison University	AMINO ACIDS ACTIVATE THE ORPHAN GPCRS GPR88 AND MRGPRX2
55	Lurette,Olivier	Université de Moncton	THE SHORT STORY OF MITOCHONDRIA: MITOCHONDRIAL SRC TARGETS ATP5B TO REDUCE MITOCHONDRIA LENGTH
56	Colpitts, Benjamin	University of New Brunswick	CHANGES IN RESTING METABOLIC RATE, METABOLIC FLEXIBILITY, AND GLUCOSE TOLERANCE FOLLOWING SPRINT INTERVAL TRAINING IN ADULTS LIVING WITH OBESITY
57	Hamel-Côté, Geneviève	Université de Moncton	Rapid modulation of mitochondrial functions and PKA pathway by targeting a G-protein coupled receptor to the mitochondria.
58	Weir, Jackson	University of New Brunswick	TAZ REGULATES IMMUNE MARKERS IN MULTIPLE MYELOMA
59	MacKinnon, Brandon	Mount Allison University	DEORPHANIZING CLASS A G-PROTEIN COUPLED RECEPTORS USING ARTIFICIAL SWEETENERS
60	Nicholas Fernandez	Mount Allison University	ORPHAN GPCRS GPR17 AND GPR52 ARE ACTIVATED BY THE ARTIFICIAL SWEETENERS SUCRALOSE AND SACCHARIN
61	Fareeha Quayyum	University of New Brunswick	BAND-AID SOLUTIONS: SMALL BUSINESS OWNERS' PERSPECTIVES ON A SUGAR-SWEETENED BEVERAGE TAX
62	Sarah Campbell	Horizon Health Network	Innovating Pediatric Behavioural Assessments and Care Pathways: Implementing a Community Social Pediatrics Model - Public Consultation Phase
63	Kendra Cooling	University of New Brunswick	SO FAR SO GOOD: AN EXPLORATORY ANALYSIS OF A STANDING INTERVENTION WITH OLDER ADULTS WHO ARE FRAIL
64	Grant Handrigan	Université de Moncton	Assessing the validity of a low-cost microcontroller-based load cell amplifier for measuring lower limb and upper limb muscular force.
65	Margaret Holland	UNB Saint John	CHILDREN WITH MEDICAL COMPLEXITY ARE HIGH RISK, HIGH USE PATIENTS IN ACUTE HOSPITAL SETTINGS.
66	Mattie, Anna	University of New Brunswick/ Loch Lomond Villa	FEASIBILITY AND USABILITY OF THE WELL-ASSIST SYSTEM BY ROUTINIFY FOR SELF-CARE AND CAREGIVING
67	Pakkiriswami, Shanmugasundaram	Atlantic Cancer Research Institute, Moncton	A PEPTIDE-ENABLED LAB-ON-A-CHIP PLATFORM FOR EXTRACELLULAR VESICLE CAPTURE AND DETECTION: A PATH TOWARDS POINT-OF-CARE LIQUIDBIOPSY
68	Liu, Tong	Dalhousie Medicine New Brunswick	CO-OCCURRING HOUSING INSTABILITY AND DRUG USE RESULT IN COMPLICATED HEALTH NEEDS AND REQUIRE UNIQUE POLICY INTERVENTION.

69		Lees, Marcus	University of New Brunswick	INACTIVE OLDER ADULTS EXERCISING AT HOME WITHOUT SPECIALIZED EQUIPMENT: AN EXPLORATORY CASE STUDY ON HOME-STEPS
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<p>1 Alexandra Isabella Forbes 3D AND VIRTUAL REALITY EXPERIENCES TO IMPROVE COGNITIVE HEALTH AND LIFE ENHANCEMENT FOR THE ELDERLY 1,2 FORBES_Alexandrea, 1 DONOVAN_Cindy, 2 MCCLOSKEY_Rose 1Loch Lomond Villa; 2University of New Brunswick INTRODUCTION: Research suggests that 47% of persons over the age of 85 either cannot walk or require mobility aids such as walkers and wheelchairs. Up to 80% of long-term care residents have psychiatric conditions including anxiety, depression and dementia. These mobility and mental health challenges create a heavy burden on caregivers who often must focus on basic physical care at the expense of residents' emotional needs. Unfortunately, emotional stimulation in long-term care facilities is not always optimal due to limited resources and multiple competing demands. Structured activities within long-term care facilities albeit effective, act largely as temporary distractions. These are often irregular and costly. HYPOTHESIS: Reminiscence therapy delivered through 3D immersive film and virtual reality aim to address residents' emotional needs to review and process events that hold personal significance. It is hoped that by exposing residents to immersive films, the rates of caregiver burnout and resident emotional wellbeing will improve. METHODS: Resident participants have witnessed and will continue to witness up to 5 3Scape immersive video experiences. Participants can engage with these video experiences in two ways: Individually via headset goggles that provide a 360-degree experience, or through more socially interactive sessions via 3D projection that is delivered to up to 5 participants at a time. The technology used in this project employs techniques such as: high frame rate, 3D stereoscopic imagery, coloration and sound adjusted for elderly persons, emotional soundscapes and realistic cinematic experiences. Notable psychological techniques include: mental triggering, positive storytelling and reminiscence therapy. RESULTS: To date, 42 participants have been recruited and 19 of those participants have viewed at least 2 of the 5 videos; there has been considerable positive feedback from staff and family members. Preliminary results have shown improvements in participants emotional wellbeing and general mood/interactive behavior. CONCLUSION: This use of 3D and virtual reality experiences offers great potential to improve quality of life for individuals living in long term care facilities. Findings also suggest enhanced workplace satisfaction for caregivers and potentially reduced costs related to pharmacotherapy and staff absenteeism.</p>	<p>2 Christie Aguiar FAST TRACKING IN CARDIAC SURGERY—IS IT SAFE? 1 AGUIAR_Christie, 1 MACLEOD_Jeffrey_B, 1,2 BROWN_Craig_D, 2 POZEG_Zlatko, 1,2 LEGARE_Jean-François, 1,2 HASSAN_Ansar BACKGROUND: Fast tracking (FT) in cardiac surgery was introduced as a mechanism by which patients could be extubated early and transferred out of the intensive care unit (ICU) the day of their procedure. By reducing ICU and ultimately hospital length of stay (LOS), it was anticipated that FT would reduce resource utilization and improve hospital efficiency. The purpose of this study was to examine the effect of FT on post-operative outcomes following cardiac surgery at the New Brunswick Heart Centre. METHODS: All patients undergoing first-time, on-pump, non-emergent CABG and/or valve surgery between 2010 and 2017 were considered. Patients who experienced an ICU LOS>24 hours were excluded. Comparisons between patients who were fast tracked and those who were not were carried out on the basis of baseline characteristics, intra-operative variables and in-hospital and 30-day outcomes. The risk-adjusted effect of FT on a 30-day composite of all-cause mortality, stroke, renal failure, any infection, atrial fibrillation and readmission to hospital was determined using multivariate regression modeling. RESULTS: 3247 patients formed the final study population (fast track: n=230; control: n=3017), of whom 89.2% had complete 30-day follow-up. Median initial ICU LOS was 7.5hrs for fast tracked patients vs. 20.0hrs for controls (p<0.0001). The percentage of cases that were fast tracked increased over time (2010: 4.8%, 2017: 12.5%). Fast tracked patients were more likely to have NYHA-IV symptoms (65.2% vs. 56.4%, p=0.01) but less likely to have COPD (2.6% vs. 9.5%, p=0.001) and EF<40% (3.9% vs. 9.9%, p=0.004). Intra-operatively, they were more likely to have undergone isolated CABG (84.8% vs. 77.7%, p=0.004) and experienced shorter median cross-clamp (61min vs. 70min, p<0.0001) and total bypass times (81min vs. 93min, p<0.0001). Post-operative LOS>5 days (32.2% vs. 40.6%, p=0.01) and 30-day rates of the composite outcome (37.6% vs. 48.9%, p=0.003) were significantly lower in fast tracked patients. Following risk adjustment, FT emerged as an independent predictor of improved 30-day outcomes (OR 0.69, 95% CI 0.51-0.94, p=0.02). CONCLUSION: FT at the NBHC was associated with reduced ICU and hospital LOS and improved 30-day outcomes. These results indicate that FT following cardiac surgery may be safely implemented in selected patients.</p>
<p>3 Angella Mercer DEVELOPMENT OF A TARGETED METABOLOMICS PLATFORM AT DALHOUSIE MEDICINE NEW BRUNSWICK 1MERCER_Angella, 1D'SOUZA_Kenneth, 1BISWAS_Dipsikha, 1DAO_Khoi, 1TRIVEDI_Purvi, 1YI_Esther, 1PULINILKUNNIL_Thomas, 1KIENESBERGER_Petra C 1Dalhousie Medicine New Brunswick, Dalhousie University, Saint John, New Brunswick, Canada INTRODUCTION: Metabolomics is a process by which advanced analytical chemistry is employed to perform high-throughput characterization of metabolites from biofluids, cells, organs, and tissue. Target metabolomics is an application wherein a cluster of chemically related metabolites are quantitatively measured with customized analytic approaches that are highly sensitive and selective. By inclusion of isotope-labeled internal standards or validated calibration curves of an external standard absolute quantification is achieved. Targeted metabolomics can be effectively applied in quantifying clinically relevant metabolic intermediates in many diseases including cardiovascular disease, obesity, diabetes, cancer, and inborn errors of metabolism. To track changes in cellular energy metabolism, our goal was to develop targeted metabolomics methods using an ultra performance liquid chromatography-tandem mass (UPLC-MS/MS) spectrometer platform to quantify specific metabolites. HYPOTHESIS: UPLC-MS/MS platform will enable absolute quantification of clinically relevant and related metabolites in cells, tissues and biofluids to advance metabolomics research. METHODS: Specific Extraction methods for various metabolites in a wide range of matrices - a suite of murine, rat, and human tissues and cell lines - were developed. Metabolite levels were determined using multiple reaction monitoring and internal standard calibrations on a Waters Acuity Ultra Performance Liquid Chromatograph with a Waters Xevo-TQs Micro Tandem Mass Spectrometer. RESULTS: Methods for the detection of distinct diacylglycerol/triacylglycerol species, 22 distinct amino acids including branched chain keto acids (ketoleucine, ketoisoleucine, ketovaline), and n-glycans have been successfully developed for mouse (liver, heart, and muscle), rat (liver, heart and muscle) and human tissues (atrial and adipose tissue, and various cell lines (3T3-L1, C2C12, H9C2 and MDA-MB-231) and are directly applicable to research involving metabolic disease. CONCLUSIONS: The quantification of targeted diacylglycerols/triacylglycerols, amino acids, branched chain keto acids, and n-glycans via UPLC-MSMS has been adopted as an important tool for metabolic disease research.</p>	<p>4 Taylor, Catherine LIQUID BIOPSY USING EXTRACELLULAR VESICLES CAPTURED FROM BRONCHIAL LAVAGE FLUID OF NSCLC PATIENTS IMPROVES TUMOUR MUTATION DETECTION BY NEXT GENERATION SEQUENCING COMPARED TO PLASMA AND 1TAYLOR_Catherine, 1CHACKO_Simi, 1LACROIX_Jacynthe, 1FOURNIER_Sebastien, 1CRAPOULET_Nicolas, 1GHOSH_Anirban, 1,2BARNETT_David, 3CRAPOULET_Stephanie, 3ABDELALIM_Hamza, 4FINN_Nicholas, 5MALLET_Marcel, 1,6LEWIS_Stephen M., 1,6OUELLETTE_Rodney 1Atlantic Cancer Research Institute 2Department Chemistry & Biochemistry, Mount Allison University 3Regional Research Support Office Dr. Georges-L.-Dumont University Hospital Centre 4Dr Léon-Richard Oncology Center, Vitalité Health Network 5Moncton Respiriology Clinic, Vitalité Health Network 6Department of Chemistry & Biochemistry, Université de Moncton INTRODUCTION: Liquid biopsies can improve access to molecular profiling for non-small cell lung cancer (NSCLC) patients when tissue biopsy material is unavailable. Extracellular vesicles (EVs) are cell-derived vesicles that are released in high numbers by cancer cells and are rich sources of biomarkers. The use of EVs in liquid biopsy has been reported to improve the detection of cancer biomarkers and, due to their proximity to the tumour site, bronchoalveolar lavage fluid (BALF) EVs have the potential to further improve detection of single nucleotide variants (SNVs) and gene fusions that are crucial for choosing the right treatment path for NSCLC. OBJECTIVE: To determine whether BALF collected from newly diagnosed NSCLC patients can be used for liquid biopsy to improve sensitivity of detection of EV-derived SNVs compared to EDTA plasma and to correlate genetic changes observed by liquid biopsy with tumour FFPE tissue biopsy. METHODS: Total nucleic acid (TNA) isolated from either FFPE tissue or EVs captured with the Vn96 synthetic peptide from BALF and EDTA plasma samples from newly diagnosed NSCLC patients was sequenced by next generation sequencing (NGS) using the Oncomine Lung Cell-Free Total Nucleic Acid Research Assay. RESULTS: EVs captured from BALF resulted in higher recovery of TNA compared to EDTA plasma (median: 92 ng/mL from BALF compared to 15 ng/mL from plasma, n=6). In three out of four cases where NGS revealed SNVs using liquid biopsy, SNVs were detected with higher sensitivity and at higher allelic frequency in the BALF than in matched plasma samples. Furthermore, an excellent correlation was observed between SNVs detected by liquid biopsy and the SNVs with highest variant frequency observed in tumour FFPE tissue. Combined, these data suggest that BALF from NSCLC patients contains a higher concentration of tumour-derived EV DNA than plasma. CONCLUSION: In summary, our research has demonstrated that BALF liquid biopsy may be useful for molecular profiling of NSCLC patients. Having access to reliable information about tumour driver mutations weeks or months before tumour biopsy material is available could mean earlier access to targeted treatment options for patients, thereby reducing treatment delays and resulting in better outcomes.</p>

<p>5 Somkene Igboanugo HEALTH OUTCOMES OF PSYCHOSOCIAL STRESS WITHIN FIREFIGHTERS 1IGBOANUGO_Somkene, 1,2 YAZDANI_Amin, 1BIGELOW_Phil, 1MIELKE_John 1. School of Public Health and Health Systems, University of Waterloo. 2. School of Business and Hospitality, Conestoga College. BACKGROUND: Firefighting is one of the most taxing professional occupations as they experience a wide array of stressors intrinsic to their jobs. Recently, psychosocial factors have become a major source of daily stress in the workplace. Research shows that chronic exposure to psychosocial stressors can lead to negative health outcomes. Considering the magnitude and frequency of duty-related exposures to psychosocial stressors (e.g., shift work, job demands), there is an urgent need to identify and synthesize the evidence describing how these stressors affect the general health of firefighters. HYPOTHESIS: The objective of this review was to examine the existing literature for studies that have explored the relationship between psychosocial stress and health in firefighters. The key research question to be answered was: by investigating the existing literature, can we identify the psychosocial stressors experienced by firefighters and the health outcomes associated with these stressors? METHODS: A review of the literature was performed using the following databases: PubMed, PsychInfo, and CINAHL. MeSH terms and author keywords, such as stress, psychosocial stress, firefighters, burnout, emotional disorders, and chronic disorders/illness were used. To be included, studies must have: (1) been published in the English language, (2) involved firefighters, (3) measured psychosocial stressors, and (4) reported on firefighter's health. RESULTS: A total of 20 studies were considered eligible because they fulfilled the data inclusion criteria. Data extracted included: study design, location, sample size, questionnaires used for psychosocial stress measurement, investigated health outcomes, and the findings. Firefighters experienced the following psychosocial workplace stressors the most: job demands, shift-work, tough physical environment, interpersonal conflict, self-esteem issues, lack of reward, difficult occupational climate and organizational system. These reported psychosocial stressors were associated with negative health outcomes including: depression, burnout, post-traumatic stress disorder, sleep disorders, alcohol dependence, cardiovascular disorders, musculo-skeletal disorders, irritable bowel syndrome, and gastro-esophageal reflux disease. CONCLUSION: Findings from this review strongly suggest that psychosocial workplace stressors play a role in the etiology and prevalence of negative health outcomes among firefighters. Interventions aimed at addressing psychosocial risk factors within the fire-service could help mitigate unfavorable health outcomes.</p>	<p>6 Caitlin Robertson NEW BRUNSWICK PHYSICIANS' PERSPECTIVES TOWARD MEDICAL ASSISTANCE IN DYING (MAiD) 1,2ROBERTSON_Caitlin, 1READ_EmilyA 1UNB 2CFN BACKGROUND: With the addition of medical assistance in dying (MAiD) to Canadian law in 2016 came many challenges to patients and providers. Since physicians and nurse practitioners (NP) are the professions able to provide MAiD, it is imperative to understand their perspectives. In New Brunswick, only physicians are currently providing MAiD within the two regional health authorities. AIMS: This research aims to understand what is shaping the perspectives of New Brunswick physicians toward MAiD. METHODS: Semi-structured one-on-one interviews with New Brunswick physicians will be conducted. A Straussian Grounded Theory approach to data collection and analysis will be taken to understand the social structures in place shaping their opinions on this topic. As such, the interview questions may evolve throughout the study based on ideas that emerge. We intend to have a purposive sample with half of the sample in support of MAiD, and half in opposition. A snowball sampling approach will be used to recruit participants, as well as a call for participants through the New Brunswick Medical Society's eBulletin. We will continue data collection until a sufficiency of information is observed. RESULTS: Data collection and analysis is currently underway and preliminary results suggest that this research will provide a rich understanding of what is shaping the views of New Brunswick physicians towards this important topic. This research will inform future studies on this topic and increase knowledge about how physicians' perspectives on MAiD influence access to this service for their patients. CONCLUSIONS: With the recent legalization of MAiD in Canada it is essential to understand the views of the practitioners legally allowed to provide this service; in New Brunswick, this is primarily physicians. Understanding these perspectives is important in shaping further policies and regulations that affect access to MAiD in our province.</p>
<p>7 Doucet, Mélina ASSESSING THE CYTOTOXIC IMPACT OF ENOXACIN IN GLIOBLASTOMA MULTIFORME 1DOUCET_Mélina, 1LEBEL_Andréa & 1MORIN_Pier Jr 1Department of Chemistry and Biochemistry, Université de Moncton, 18 Antonine-Maillet Avenue, Moncton, New Brunswick, Canada E1A 3E9 INTRODUCTION: The current treatment for patients diagnosed with glioblastoma multiforme (GBM), the most aggressive glioma, is the alkylating agent temozolomide (TMZ) in combination with radiotherapy. However, GBMs often exhibit resistance to this treatment and average patient survival nevertheless remains at a little more than a year. OBJECTIVE: Hence, there is clear interest in improving the knowledge regarding the cytotoxic impact of other compounds with therapeutic potential for GBMs. One such compound, enoxacin, has demonstrated interesting properties in various types of cancer, but has not been extensively characterized for its anticancer capabilities in brain tumors. METHODS: To address this knowledge gap, enoxacin was used, alone or in combination with TMZ, to treat GBM cells at a concentration of 100 µM and cytotoxic effects resulting from this treatment were assessed using an MTT assay. RESULTS: Results showed that enoxacin could reduce viability of various cell lines including T98G (58,9 % viability), Hs683 (61,6 % viability), U373S (69,3 % viability) and U373R (72,6 % viability). When enoxacin was combined with TMZ, the cytotoxic impact was even more significant on cells with the most substantial effects observed for T98G (48,7 % viability) and Hs683 (55,9 % viability) cells. CONCLUSION: These preliminary results support the further characterization of the agent enoxacin as a potential therapeutic approach for the treatment of GBMs. Further studies, including assessing the impact of enoxacin on anchorage-independent cell growth using soft agar assays and on expression of select cell death markers via immunoblotting, are envisioned.</p>	<p>8 Caitlin Barry NEGATIVE SOCIAL INTERACTIONS PARTIALLY MEDIATE THE RELATIONSHIP BETWEEN SEXUAL ORIENTATION AND MENTAL HEALTH OUTCOMES FOR CANADIANS 1 BARRY_Caitlin, 2 SPEED_David, 3 BEST_Lisa 1 University of New Brunswick Saint John, 2 University of New Brunswick Saint John, 3 University of New Brunswick Saint John INTRODUCTION: Canadian research has revealed that sexual minorities have an increased rate of mental illness. This greater reporting of psychopathology can be misconstrued as a direct result of sexual orientation. However, poorer health may be caused by adverse social experiences. The current study expanded on the health deficits experienced by Lesbian-Gay-Bisexual (LGB) Canadians and highlighted the contribution of social experiences to mental health adversity. This study critically examined how minority stress features (e.g., negative social interactions) further marginalize sexual minorities in a Canadian context. OBJECTIVES: This research aimed to investigate whether negative social interactions mediated the relationship between sexual orientation and adverse mental health among LGB Canadians. In addition, this research sought to provide a direct test of the minority stress theory. METHODS: Using a nationally representative sample of participants from the 2012 Canadian Community Health Survey – Mental Health Component (n = 22,495), researchers investigated the mediating impact of negative social interactions on the relationship between sexual orientation and mental health. Data analysis used weighted regression models, with the <medeff> Stata module to determine the proportion of mediated effect. Use of this dataset was beneficial, as it enhanced statistical analyses, provided an opportunity to validate smaller studies, and allowed generalizability to the Canadian population. RESULTS: Due to Statistics Canada's complex sampling strategy for data collection, weighted estimates were used in all regression models to ensure accuracy. Negative social interactions (NSIs) were found to partially mediate the relationship between sexual orientation and mental health outcomes, specifically depression and satisfaction with life. CONCLUSIONS: This research aimed to bring awareness to the loss of privilege faced by sexual minorities, and expanded on the theoretical understanding of minority stress theory, the social determinants of health, and the multitude of social inequities experienced by marginalized Canadians. Given that mental illness is an endemic issue in Canada, this research was timely and necessary.</p>

9 Lauren Cook

THE ESTABLISHMENT OF THE CANADIAN MULTIPLE MYELOMA PRIORITY SETTING PARTNERSHIP: LESSONS FOR PATIENT ENGAGEMENT AND RESEARCH METHODOLOGY

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INTRODUCTION: Multiple myeloma is a cancer of the plasma cells found in bone marrow that interferes with the production of healthy red blood cells, white blood cells, and platelets. Although myeloma is considered incurable, researchers have developed innovative treatments that lead to prolonged remissions and improved quality of life. Nevertheless, much remains unanswered about this relatively rare illness.

OBJECTIVE: In this project, we aim to identify the top 10 unanswered research questions shared by patients, caregivers, and clinicians. These results will be shared with research funders, researchers, and health professionals to influence the treatment, services, and care of Canadians living with myeloma.

METHOD: The project follows the rigorous methodology of the James Lind Alliance (JLA), a non-profit organization from England, that specializes in priority setting partnerships (PSPs). In accordance with JLA guidelines, we established a steering group of patients, caregivers, and clinicians. Together, we will develop and share two iterative surveys to elicit the research priorities of those affected by multiple myeloma.

RESULTS: Through the establishment of this project we have learned several lessons that are applicable to patient engagement and research methodology. In regard to patient engagement, this project demonstrates the value in compensating patient advisors, addressing power imbalances among team members, and the importance of open and flexible communication. Pertaining to research methodology, it is imperative to get feedback from the target population when developing a survey. Moreover, following established procedures, including getting Research Ethics Board approval, is beneficial to navigate the priority setting process and to add credibility to the results.

CONCLUSION: Too often research has not addressed the questions of those affected by an illness. To address the discrepancy between the research conducted and the research needed, it is important to engage patients, caregivers, and clinicians; and give them equal voices. Moreover, a systematic approach to priority setting is important to increase the credibility of results.

10 MacLeod, Jeff

THE IMPACT OF ROTATIONAL THROMBOELASTOMETRY (ROTEM) ON IN-HOSPITAL OUTCOMES AND BLOOD PRODUCT UTILIZATION IN PATIENTS UNDERGOING CARDIAC SURGERY

1 MACLEOD_Jeffrey_B, 1 AGUIAR_Christie, 2 CHANYI_Steve, 2 FOWLOW_Chris, 2 O'BRIEN_Ashley, 1,2 BROWN_Craig_D, 2 POZEG_Zlatko, 1,2 LÉGARÉ_Jean-François, 1,2 HASSAN_Ansar

1 Cardiovascular Research New Brunswick, 2 New Brunswick Heart Centre

BACKGROUND: Point-of-care viscoelastic coagulation testing, including rotational thromboelastometry (ROTEM) and thromboelastography (TEG), was introduced in cardiac surgery to allow for the quick diagnosis of coagulopathies and for the targeted treatment of bleeding patients. The purpose of this study was to determine the contemporary effect of ROTEM on in-hospital outcomes and blood product utilization in patients undergoing cardiac surgery.

METHODS: Patients undergoing first-time, non-emergent cardiac surgery at the New Brunswick Heart Centre were considered. ROTEM was implemented at the New Brunswick Heart Centre over the course of 2016. As such, pre-ROTEM patients included those operated on in 2015, while post-ROTEM patients included those operated on in 2017. Comparisons were made on the basis of baseline characteristics, intra-operative characteristics, in-hospital post-operative outcomes and rates of blood product utilization intra-operatively and/or within the first 24 hours following surgery.

RESULTS: A total of 1,438 patients were included (pre-ROTEM: n=691; post-ROTEM: n=747). ROTEM was used in 0% of pre-ROTEM and 15.5% of post-ROTEM patients. No differences in baseline characteristics were noted. Intra-operatively, pre-ROTEM patients were less likely to undergo isolated CABG and isolated valve procedures and more likely to undergo combined CABG/valve and other procedures (p<0.0001). In-hospital mortality (2.5% vs. 1.5%, p=0.25), re-operation for bleeding (0.7% vs. 1.9%, p=0.09) and stroke (1.0% vs. 1.9%, p=0.25) did not differ between the two groups. While rates of coagulation product use, defined as ≥1 dose of FFP, platelets, cryoprecipitate, FEIBA and/or fibrinogen concentrate, were comparable between the pre- and post-ROTEM patients, rates of pRBC use were lower in the post-ROTEM population (32.2% vs. 24.3%, p=0.001). Following risk adjustment, ROTEM was significantly associated with reduced pRBC use (OR 0.53, 95% CI 0.39-0.73, p<0.0001) but was not associated with coagulation product use (OR 0.88, 95% CI 0.64-1.21, p=0.43).

CONCLUSION: The institution of ROTEM at our centre did not have an effect on in-hospital outcomes or coagulation product utilization. It was, however, associated with reduced pRBC use, although it is not clear as to whether or not this phenomenon was the result of ROTEM use or the result of overall changes in clinical practice patterns.

11 Bourcier, Dax

SCALE FOR THE ASSESSMENT AND RATING OF ATAXIA (SARA): APPROPRIATE FOR CLINICAL TRIALS OF AUTOSOMAL RECESSIVE SPASTIC ATAXIA OF CHARLEVOIX-SAGUENAY (ARSACS)?

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BACKGROUND: The Autosomal Recessive Spastic Ataxia of Charlevoix-Saguenay (ARSACS) is a slowly progressive neurodegenerative disease presenting with cerebellar, pyramidal and neuropathic signs. We are documenting outcome measures to describe and quantify the progression of ARSACS in preparation for clinical trials, which are foreseeable in the near future. The Scale for the Assessment and Rating of Ataxia (SARA) measures cerebellar ataxia and is commonly used by neurologists and researchers worldwide. The SARA is a generic scale that takes 4 minutes for experienced clinicians to administer, and has been validated in over 13 different ataxic diseases, but has yet to be documented in ARSACS.

OBJECTIVES: 1) document the content and construct validity and 2) assess the responsiveness and clinical interpretability of the SARA over a four-year period in the ARSACS population.

METHODS: This methodological study will conduct a secondary analysis of the largest longitudinal study in ARSACS with 69 participants.

RESULTS: The SARA demonstrates excellent construct validity with absolute correlations (r coefficients) of >0.7 with the SFNT, >0.9 with the Barthel Index and 10mWT, >0.8 with the 30-CST, TUG, and LEMOCOT and >0.9 with the BBS and the DSI-ARSACS, and was able to distinguish between age group and disease stage. The SARA is expected to show limitations in the content validity for its assessment of lower limb ataxia, and was not able to detect change beyond the Minimal Detectable Change (MDC) over four years in ARSACS.

CONCLUSION: The SARA is valid scale to assess ataxia severity in the ARSACS population. The involvement of pyramidal and neuropathic manifestations in lower limb ataxia SARA scores should be taken into consideration for clinical interpretation. We recommend the use of the SARA as the best generic ataxia severity scale for ARSACS clinical trials as a secondary endpoint, and to describe ataxia severity for ARSACS registries.

12 Hara, Saadia

ÉTUDES DES IMPACTS CUMULATIFS DU DÉVELOPPEMENT DES RESSOURCES NATURELLES SUR LA SANTÉ, L'ENVIRONNEMENT ET LES COMMUNAUTÉS.

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1Université de Moncton

INTRODUCTION: Au Nouveau-Brunswick (NB), le développement des ressources naturelles est depuis longtemps un moteur de l'économie rurale. Cependant, ce développement mène à des impacts sur la santé, l'environnement et les communautés qui sont cumulatifs, complexes et souvent contrastants.

HYPOTHÈSE: Afin de mieux comprendre la nature des impacts cumulatifs et de pouvoir agir sur les questions d'équité en santé et en environnement, il est important de créer des endroits de réflexions compréhensives et collectives. Le Réseau ECHO est un programme de recherche qui se penche sur la collaboration entre secteurs pour prendre note et réagir aux influences du développement des ressources sur la santé et le bien-être, avec une emphase sur les environnements ruraux, isolés et les communautés autochtones. Dans le cadre du cas régional du NB du réseau ECHO, nous avons développé un atelier sur les impacts cumulatifs, en utilisant la région de Belledune et de la Baie des Chaleurs comme base de discussion.

MÉTHODES: Nous avons premièrement établi le profil historique du développement des ressources naturelles sur ce territoire et les différents suivis et activités qui s'y sont déroulées ainsi que les impacts cumulatifs répertoriés sur la santé humaine, les communautés et les écosystèmes. Nous avons ensuite conçu un atelier permettant de discuter de ces impacts cumulatifs à partir de mise en situation. L'atelier avait pour but d'amener les membres du groupe de travail de différents secteurs d'activités du Nouveau-Brunswick à réfléchir aux impacts cumulatifs de l'exploitation des ressources naturelles sur la santé environnementale des enfants. Un des outils qui a été développé sont des vignettes, un outil visuel permettant de marier images et histoires afin de faire valoir les perspectives diverses.

RÉSULTATS: Les vignettes ont permis d'intégrer différents types de savoir et fait valoir l'importance de la contextualisation dans la compréhension des impacts cumulatifs. Nous avons pu constater que l'interaction qui existe entre le développement, l'environnement et la santé sont souvent invisibles lorsqu'on parle d'exploitation de ressources naturelles.

CONCLUSIONS: L'atelier et les vignettes ont permis de faire ressortir ces liens et ont enrichi les discussions et la compréhension des enjeux pour les participants.

<p>13 Véronique Thibault PHYSICAL ACTIVITY MOTIVES HAVE A DIRECT EFFECT ON MENTAL HEALTH BASED ON A LONGITUDINAL ANALYSIS DURING ADOLESCENCE 1 THIBAULT_Véronique MSc, 2, 3 DORÉ_Isabelle, PhD, 3, 4 SYLVESTRE_Marie-Pierre, 3, 4 O'LOUGHLIN_Jennifer, PhD, 5 SABISTON_Catherine M., PhD, 3, 6 ABI NADER_Patrick, PhD, 1, 6, 7 BÉLANGER_Mathieu, Ph.D. 1 Université de Sherbrooke - Campus Moncton, New Brunswick; 2 School of Kinesiology and Physical Activity Sciences, Faculty of Medicine, Université de Montréal; 3 Centre hospitalier de l'Université de Montréal Research Centre; 4 School of Public Health, Université de Montréal; 5 Faculty of Kinesiology and Physical Education, University of Toronto; 6 Centre de formation médicale du Nouveau-Brunswick, Moncton, New Brunswick; 7 Research Services, Vitalité Health Network, Moncton, New Brunswick</p> <p>INTRODUCTION: Intrinsic and extrinsic motivation for physical activity (PA) have been associated with moderate-to-vigorous intensity PA (MVPA) which in turn is associated with mental health. However, no studies examined whether PA motives impact mental health directly or through an increase in MVPA.</p> <p>OBJECTIVES: This study examined the direct effect of five PA motives (i.e., enjoyment, competence, fitness, social, and appearance) on mental health and the indirect effect through MVPA in adolescents.</p> <p>METHODS: A total of 937 participants (55% female) age 10-11 at inception, provided data every 4 months over 8 years. Mediation analyses, based on the counterfactual framework, assessed the natural direct effect of enjoyment, competence, fitness, social, and appearance motives in adolescence on later mental health and the natural indirect effect through MVPA. Separate models were conducted for each of the five PA motives.</p> <p>RESULTS: We observed a statistically significant direct effect for all PA motives, except the appearance motive, on mental health. However, none of the indirect effects of PA motives on mental health were statistically significant, suggesting that these associations are not explained by MVPA.</p> <p>CONCLUSIONS: Results suggest that some, but not all PA motives, are directly associated with mental health. Intervention, programs and public health strategies aiming at promoting PA in adolescents need to acknowledge the importance of enjoyment, competence, social and fitness motives, especially to promote positive mental health, and integrate specific recommendation regarding the importance of the reason why adolescent participate in PA.</p>	<p>14 Isdore Shamputa DEVELOPMENT OF A FRAMEWORK FOR EVALUATION OF SERVICES AND OUTCOMES FOR COMMUNITY HEALTH CENTRES: A COMPREHENSIVE SCOPING REVIEW 1SHAMPUTA_Isdore, 1NAGEL_Daniel, 1KEEPING-BURKE_Lisa, 1WAYCOTT_Loretta, 2PYRKE_Ryan, 1GOUDREAU_Alex, 3GIBBONS_Caroline, 3DUBÉ_Anik, 1PYRKE_Courtney 1UNBSJ; 2Dalhousie Medicine New Brunswick; 3UdeM</p> <p>BACKGROUND: Community health centres (CHCs) are increasingly being used as a strategy to deliver healthcare services to geographically-based or population health-focused communities. Although often perceived as a comprehensive and effective means for healthcare delivery, there is a broad range in the composition of CHC services as well as inconsistency in how such services and outcomes are evaluated. There is also variation in how CHCs are defined, making comparisons and evaluation of their services and outcomes challenging.</p> <p>OBJECTIVES: The purpose of this scoping review was to identify and map literature that reflected the evaluation of services and outcomes of CHCs within the context of primary health care. The primary question for the review was "What are the frameworks used to evaluate services and outcomes of CHCs?" Secondary questions included: a) How is the concept community health centre defined or described in the literature?; b) What services and/or elements comprise a CHC?; and, c) How are services and outcomes of CHCs evaluated?</p> <p>METHODS: Informed by the Joanna Brigg's Institute methodology for systematic reviews, our research team conducted a rigorous search of 8 academic databases that yielded 27,868 articles for title and abstract screening. Of these, the full text of 548 articles was reviewed for eligibility resulting in 150 relevant articles for data extraction.</p> <p>RESULTS: Six broad categories of services provided by CHCs were identified from the dataset: a) primary care; b) specialty services (e.g. dental care, nutritional counselling, etc.); c) preventative care; d) health promotion and health programming; e) outreach and community development; and, f) navigation of services. Based on these services, the research team developed an inventory of indicators and instruments used to measure services and outcomes of CHCs. The review process and analysis also yielded a synthesis of a definition and conceptual model for CHCs in the context of primary health care.</p> <p>CONCLUSION: Given the dearth of frameworks to evaluate CHCs, these results and definition for CHCs will help lay a foundation for development of a comprehensive evaluation framework to measure services and outcomes of CHCs to inform future research and policy directions in healthcare service delivery.</p>
<p>15 Kate Harland BARRIERS TO SEEKING SCREENING AND TREATMENT FOR HCV 20-39-YEAR-OLD PERSONS WHO USE DRUGS IN NEW BRUNSWICK, CANADA 1HARLAND_Kate, 2NAGEL_Daniel, 1MATERNIAK_Stefanie, 1HOLDEN_Josh, 1WEBSTER_Duncan 1Centre for Research, Education and Clinical Care of At-Risk Populations; 2UNBSJ</p> <p>BACKGROUND: Substance use among Canadians in their child-bearing years continues to rise resulting in increased incidence rates of hepatitis C (HCV). It is estimated that 44% of people infected with HCV do not know their status, which poses a risk for perinatal vertical transmission of HCV amongst persons who use drugs (PWUD). Anecdotal stories suggest there is reluctance and barriers to seek screening and treatment for HCV in New Brunswick; however, there has been no formal exploration of these concerns for PWUD aged 20-39 years.</p> <p>OBJECTIVES: The overarching research question for our study was "How do individuals at high risk for HCV make decisions in seeking access to screening and treatment?" A main objective was to understand effective engagement of PWUD with the health care system for HCV testing and treatment.</p> <p>METHODS: We conducted a qualitative study with interviews of 28 participants who: a) were 20 to 39 years old; b) used substances by injection or snorting; and, c) either had an unknown HCV status since last risk behaviour or were known to be HCV positive but not engaged in care. Content and thematic analysis revealed numerous barriers faced by participants when considering testing and treatment for HCV.</p> <p>RESULTS: Themes identified from this study were: a) Structural & Systemic Barriers; b) Stigmatization; c) Personal Factors; d) Socio-economic Barriers; and, e) Knowledge of HCV. Structural and systemic barriers were universally cited as challenges amongst study participants, particularly in regards to accessing healthcare services and having a consistent primary care provider. Stigma and discrimination towards PWUD, particularly from healthcare providers, presented as the second most common barrier to screening and care.</p> <p>CONCLUSION: Given what is known about addictions and treatment, as well as the psychosocial burden to PWUD and costs of untreated HCV to the healthcare system, it is surprising that many common factors (e.g. stigma and access to services) remain obstacles to seeking screening and treatment for HCV. Programs and infrastructure may be strengthened to more effectively move people of child-bearing age through the cascade of care to decrease the incidence, prevalence, and associated morbidity of HCV.</p>	<p>16 Stefanie Materniak UNDERSTANDING EFFECTIVE DISSEMINATION OF KNOWLEDGE REGARDING HCV SCREENING AND TREATMENT AMONG 20-39-YEAR-OLDS WHO USE DRUGS IN NEW BRUNSWICK, CANADA 1MATERNIAK_Stefanie, 2NAGEL_Daniel, 1HARLAND_Kate, 1HOLDEN_Josh, 1WEBSTER_Duncan 1Centre for Research, Education and Clinical Care of At-Risk Populations; 2UNBSJ</p> <p>BACKGROUND: Substance use among Canadians in their child-bearing years is rising resulting in year-over-year increases in hepatitis C (HCV) incidence since 2012. An estimated 44% of people infected with HCV do not know their status. Knowledge dissemination strategies about screening and treatment are often shared among jurisdictions, but the process of accessing this information by persons who use drugs (PWUD) is not well known in New Brunswick.</p> <p>OBJECTIVES: The aim of the broader study was to understand the barriers and facilitators for PWUD in seeking screening and treatment for HCV. The objectives for this phase of the study were to: a) understand the knowledge of, and access to, HCV testing and treatment; and, b) explore methods of advertising to reach the target population.</p> <p>METHODS: Participants were included in the study if they: a) were 20 to 39 years old; b) used substances by injection or snorting; and, c) either had an unknown HCV status since last risk behaviour or were known to be HCV positive but were not engaged in care. Interviews were conducted with 28 participants, and a content and thematic approach was used to analyze the data.</p> <p>RESULTS: Participants represented rural and urban areas of southern New Brunswick. The mean age of participants was 30.5 years, 78.6% were actively injecting or snorting substances, and 89.3% had unknown HCV status. Most participants identified they accessed information from posters or pamphlets placed in areas they regularly frequented, and 53% of participants preferred to receive information through word of mouth from healthcare professionals and peers. In contrast, social media and the internet were cited as poor methods of information dissemination by many participants.</p> <p>CONCLUSION: Given a younger age demographic, it was somewhat surprising that social media and, to a lesser extent, the internet was explicitly cited as poor ways to disseminate information. These findings are critical to the development of effective strategies to inform and engage PWUD regarding HCV screening and treatment. Data from this phase of the study will be the basis for the design of a 12-month patient-informed HCV Engagement Program to be implemented and evaluated in New Brunswick.</p>

<p>17 Fraser, Marc DÉVELOPPEMENT D'UNE APPROCHE ÉCOSYSTÉMIQUE DE LA SANTÉ CONTEXTUALISÉE À LA RÉGION D'EDMUNDSTON 1,2FRASER_Marc, 2,3DUBÉ_Joanie, 1,4SURETTE_Céline, 1,2FILLION_Myriam 1Département Science et Technologie, Université TÉLUQ, Montréal, Québec, 2Centre de recherche interdisciplinaire sur le bien-être, la santé, la société et l'environnement (Cinbiose), Montréal, Québec, 3Institut des sciences de l'environnement, Université du Québec à Montréal (UQAM), Montréal, Québec, 4Département de chimie et biochimie, Université de Moncton, Moncton, NB</p> <p>INTRODUCTION: L'Organisation mondiale de la Santé estime que 23 % des décès et de 24 % du fardeau de maladies sont attribuables aux facteurs environnementaux. En 2016, le Nouveau-Brunswick se classait parmi les provinces les moins en santé au Canada. Parmi les sept zones de santé, le Madawaska/Nord-Ouest se classait deuxième en ce qui concerne le taux de faibles poids à la naissance et de décès prématurés dus aux cancers. Une étude de 2012 démontre que les taux de cancers de la thyroïde, du côlon, des poumons et du sein, ainsi que de leucémie sont supérieurs à Edmundston comparativement à la moyenne provinciale. Les activités économiques de la région, basée principalement sur les industries forestière, aviaire et manufacturière, peuvent émettre des contaminants environnementaux. Cependant, à notre connaissance, aucune étude n'a documenté les conséquences potentielles de ces activités sur la santé de la population du Madawaska.</p> <p>OBJECTIF: Documenter, de façon écosystémique et participative, l'état de santé et de bien-être de la population de la région d'Edmundston en lien avec ses déterminants sociaux et environnementaux, particulièrement ceux reflétant une exposition aux contaminants.</p> <p>MÉTHODES: Une consultation web préliminaire sur les préoccupations de santé et d'environnement a été menée. Des méthodes mixtes (cartographie communautaire et entretiens semi-dirigés), élaborées en collaboration avec des partenaires du milieu, documenteront les enjeux de santé et les déterminants environnementaux contextualisés. Une étude transversale basée sur l'Enquête sur la santé dans les collectivités canadiennes sera menée, en intégrant ces nouveaux indicateurs.</p> <p>RÉSULTATS: De décembre 2017 à février 2018, 193 personnes de la région d'Edmundston ont identifié la qualité de l'air et de l'eau, ainsi que la présence d'usines comme préoccupations environnementales et les taux de cancers et de maladies cardio-vasculaires et respiratoires comme préoccupations de santé. Au printemps et à l'été 2020, les méthodes mixtes seront déployées. L'enquête de santé est prévue pour l'automne 2020. Le développement des partenariats est en cours.</p> <p>CONCLUSIONS: Cette étude mènera au développement des connaissances contextualisées pour soutenir l'élaboration de stratégies d'intervention et de politiques publiques visant l'amélioration de la santé et du bien-être de la population de la région d'Edmundston.</p>	<p>18 Dupuis-Blanchard, Suzanne EXPLORING SOCIAL FRAILTY IN RECENTLY RELOCATED SEMI-INDEPENDENT OLDER ADULTS DUPUIS-BLANCHARD_Suzanne, 1, BIGONNESSE_Catherine, 1, MAILLET_Danica, 1, GOULD_Odetta, 2, ANDREW_Melissa, 3, LEGARE_France, 4 1Université de Moncton, 2Mount Allison University, 3Dalhousie University, 4Université Laval</p> <p>BACKGROUND: Although most older adults live outside of care institutions, not all seniors choose to live in traditional family homes. Among those who relocate, some relocate too early while others are pre-frail or frail when they relocate. Social frailty – the interaction between social vulnerability and frailty – could contribute to these untimely relocations.</p> <p>The goal of this study was to inform the concept of social frailty by examining a population of semi-independent older adults who recently relocated to a continuum of care community. The objectives of this study were to: 1) understand the influence of the social determinants of health on the relocation process; 2) explore whether relocation increases or reduces social frailty; and 3) measure the level of post-relocation frailty in study participants.</p> <p>Methods: This mixed method study combined semi-structured interviews on the relocation process, the frailty identification tool PRISMA-7, and socio-demographic surveys. Twenty-nine recently relocated seniors were recruited with the assistance of a Citizens' Advisory Committee along with advertisements, presentations, information booths, and word of mouth. Qualitative descriptive thematic analysis and descriptive statistical analyses were used to examine the relationship between frailty, socio-demographic variables and relocation.</p> <p>Results: Findings indicated that several social determinants contributed to frailty and that relocation into a continuum of care community could mitigate some aspects of social frailty. A conceptual framework on the influence of social frailty on relocation is presented.</p> <p>Next Steps: More research is needed to inform the concept of social frailty and to better understand the impact of social factors on frailty.</p>
<p>19 Léger Jacob FUNCTIONAL PLATELET-DERIVED MITOCHONDRIA INDUCE THE RELEASE OF NEUTROPHIL MICROPARTICLES 1,2LÉGER_Jacob_L., 1,2BOUDREAU_Luc_H. 1Département de Chimie et Biochimie, Université de Moncton, 2Centre de médecine de précision du Nouveau-Brunswick,</p> <p>INTRODUCTION: Inflammation is an essential process of the host defense against infections, illness, or tissue injuries. However, unregulated inflammation has been associated with chronic inflammatory auto-immune diseases, such as rheumatoid arthritis, multiple sclerosis, and atherosclerosis. Neutrophils (PMNL) are amongst the immune cells involved in the acute inflammatory response used to fight bacterial infections. Once activated, PMNL releases inflammatory mediators, enzymes and large quantities of microparticles in the extracellular milieu to recruit various immune cells required to fight the invading pathogens. Recent evidence also shows that platelets (PLTs), well known for their coagulation properties, are also implicated in the body's inflammatory response. Interestingly, activated PLTs can release fully functional mitochondria in the extracellular milieu. Known as the powerhouse of the cell, the mitochondria also share similar characteristics with bacteria. Therefore, we hypothesize that PLT-derived mitochondria present in the extracellular milieu, acting in a similar way as bacteria, induces a sterile inflammatory response that involves the PMNL.</p> <p>OBJECTIVES: Investigate the sterile inflammatory response of PMNL caused by the exposure of PLT-derived extracellular mitochondria.</p> <p>METHODS: Blood was obtained from healthy consenting donors, then PMNL and PLT-derived mitochondria were isolated and purified. Following the co-incubation of PMNL with various physiological doses of PLT-derived mitochondria, a characterization of the interaction between PMNL and PLT-derived mitochondria and an investigation of the inflammatory properties of PMNL was performed using flow cytometry, confocal microscopy, and high-resolution respirometry.</p> <p>RESULTS: Data demonstrates that PLT-derived mitochondria associate with PMNL as quick as 2 hours. PMNL also had a 2.47-fold mitochondrial-dependent increase in oxygen consumption. Data also shows that PLT-derived mitochondria significantly induce, in a dose-dependent manner, the release of PMNL microparticles.</p> <p>CONCLUSION: This research provides new insight into the role of PLT-derived mitochondria in the context of sterile inflammation. Specifically, the characterization of its interaction with PMNL reveals a novel modulator in the fundamental inflammatory response. The knowledge gained from this study provides insight into the mechanism of sterile inflammation in auto-immune diseases.</p>	<p>20 François Gallant ARE NEW BRUNSWICK YOUTH SWEATING, SITTING, AND SLEEPING ENOUGH? AN EIGHT YEAR STUDY 1,2 GALLANT_Francois, 1, 2 THIBAUT_Véronique, 1,2,3 BÉLANGER_Mathieu 1Université De Sherbrooke, 2Centre de formation médicale du Nouveau-Brunswick, 3Vitalité Health Network</p> <p>BACKGROUND: Canada was the first to adopt comprehensive 24-hour movement guidelines that include minimum requirements for moderate-to-vigorous physical activity (MVPA) and sleep time and maximum screen time (ST) to promote health benefits. However, no study to date has investigated how these three behaviours co-develop during adolescence.</p> <p>OBJECTIVES: 1) Assess adherence to the Canadian 24-hour movement guidelines for children and youth; and 2) Identify trajectories of MVPA, ST and Sleep during 8-years from childhood to adolescence.</p> <p>METHODS: Nine hundred and thirty eight participants of the MATCH study self-reported their MVPA, ST and sleep duration over 8 years. MVPA and ST were measured at all data collection cycles (n cycles=24), and sleep was measured once per year (n cycles = 8). Guideline adherence was dichotomised as meeting the recommendations for each specific health behaviour or not. Multi-group trajectory modeling was used to identify unique trajectories of co-development between behaviours. Analyses were stratified by sex.</p> <p>RESULTS: More than half of youth met one or two guidelines over the 8-year study. Between 25% and 30% of youth did not meet any guideline over the 8 years. Less than 5% of participants met all three guidelines over the study duration. Four different trajectories were identified for boys and girls. For boys and girls, a complier (good adherence to the guidelines; 12% boys and 9% girls), a decliner (decreasing adherence to the guidelines; 23% boys and 18% girls) non-complier group (low adherence to the guidelines; 42% boys and 42% girls) was identified. In boys, a movers group (high MVPA-low ST; 23%) was identified, whereas in girls a screen-complier group (moderate ST- low MVPA; 30%) was identified.</p> <p>CONCLUSIONS: General trends indicate decreases in physical activity, increases in ST and drops in sleep over time for both sexes. Overall, less than 5% of youth attained the recommended guidelines for MVPA, ST and sleep during adolescence. Within these general trends, using a nuanced approach such as trajectory analysis uncovered four clusters of co-development for each behaviour. This finding suggests that a one-size-fits-all approach for behaviour change might not be successful.</p>

<p>21 Daniel Saucier MICRORNAS ISOLATED FROM EXTRACELLULAR VESICLES OF AMYOTROPHIC LATERAL SCLEROSIS PATIENTS PROVIDE A CIRCULATING SIGNATURE WITH DIAGNOSTIC POTENTIAL AND UNDERLIE PATHOLOGICAL MECHANISMS LINKED TO THIS CONDITION 1,2SAUCIER_Daniel, 3WAJNBERG_Gabriel, 3ROY_Jeremy, 3BEAUREGARD_Annie-Pier, 3CHACKO_Simi, 4SAMBOU_Mariama, 4CORMIER_Julie, 3CRAPOULET_Nicolas, 5MARRERO_Alier, 3OUELLETTE_Rodney, 6O'CONNELL_Colleen, 4MORIN_Pier_Jr 1Centre de formation médicale du Nouveau-Brunswick, 2Université de Sherbrooke, 3Atlantic Cancer Research Institute, 4Université de Moncton, 5Dr. Georges-L.-Dumont University Hospital Centre, 6Stan Cassidy Centre for Rehabilitation INTRODUCTION: Biomarkers are urgently needed to facilitate amyotrophic lateral sclerosis (ALS) diagnosis or to act as indicators of therapeutic response in clinical trials. Unfortunately, the identification of suitable biomarkers remains elusive. MicroRNAs (miRNAs) are small non-coding RNAs that can regulate expression of multiple transcript targets and are gaining interest as potential biomarkers owing to their presence in blood, urine and extracellular vesicles (EVs). EVs are known to be released by cells of the nervous system and such particles are used in particular for cell-to-cell transmission under various conditions, including ALS. Enoxacin, an antibacterial agent with orphan designation for the treatment of ALS, has been shown to potentially upregulate the activity of DICER, an enzyme involved in the synthesis of miRNAs. OBJECTIVES: (1) To determine if a footprint of deregulated miRNAs exists in circulating samples of ALS patients and if these biomarkers could also underlie pathological mechanisms linked to this condition. (2) To explore the potential of miRNAs as treatment-mediated biomarkers. METHODS: To verify if a footprint of deregulated miRNAs exists, amplification, identification and quantification of miRNAs isolated from extracellular vesicles in the plasma of 14 ALS patients and 12 healthy controls was performed, followed by validation of the circulating signature via ddPCR. MiRNAs as treatment-mediated biomarkers were also explored in the mouse motor neuron-like hybrid cell line NSC-34 by treating these cells with the drug enoxacin. RESULTS: Quantification of miRNAs highlighted 5 up-regulated miRNAs and 22 down-regulated miRNAs in extracellular vesicles isolated from patients. Some miRNAs relevant to ALS were observed including miR-9-5p, miR-183-5p, miR-338-3p and miR-1246. The miRNAs miR-15a-5p and miR-193a-5p were noted for their potential to diagnose ALS and to discriminate patients at various stages of the disease, respectively. The expression of select miRNAs, particularly miR-99a-5p, increased 72 hours post-treatment in NSC-34 cells. CONCLUSIONS: Overall, this project has identified a series of miRNAs with diagnostic potential for ALS and reinforces the importance of studying the role of these non-coding RNAs in ALS.</p>	<p>22 Logan Slade TRANSCRIPTION FACTOR EB REGULATES TRIPLE NEGATIVE BREAST CANCER CELL SURVIVAL 1 SLADE_Logan, 1 BISWAS_Dipsikha, 1 IHIONU_Francis, 2 EI HIANI_Yassine, 1 KIENESBERGER_Petra, 1 PULINILKUNNIL_Thomas AFFILIATION: 1Department of Biochemistry and Molecular Biology, Faculty of Medicine, Dalhousie University, Dalhousie Medicine New Brunswick, Saint John, NB, Canada 2 Department of Physiology and Biophysics, Faculty of Medicine, Dalhousie University, Halifax, Nova Scotia INTRODUCTION: Transcription factor EB (TFEB) is a master regulator of lysosomal biogenesis and autophagy with critical roles in several cancers. Lysosomal autophagy promotes cancer survival through degradation of toxic molecules and maintenance of adequate nutrient supply. Doxorubicin (DOX) is the standard of care treatment for triple-negative breast cancer (TNBC); however, chemoresistance at lower doses and toxicity at higher doses limit its usefulness. By targeting pathways of survival, DOX can become an effective antitumor agent. HYPOTHESIS: TFEB activates DNA repair and inhibits apoptosis in DOX treated breast cancer cells. METHODS: Molecular effects of DOX treatment and function of TFEB was examined using cell culture models of breast cancer (MDA-MB-231, SUM159, BT-549, or non-cancerous MCF10A). TFEB gain and loss of function studies were performed using siRNA transfection or adenoviral overexpression constructs (either wild-type TFEB or mutant TFEB211A). Protein expression was analyzed by immunoblot or immunofluorescence microscopy, and lysosome biogenesis was measured by fluorescence microscopy. DNA damage was assessed by γH2A.X immunofluorescence microscopy. Cell viability was analyzed by the presto blue method and colony formation assays. Transcriptomics was accomplished by RNA-Seq quantification and subsequent genset enrichment analysis. RESULTS: In TNBC cells, TFEB was hypo-phosphorylated and localized to the nucleus upon DOX treatment. TFEB knockdown decreased the viability of TNBC cells while increasing caspase-3 dependent apoptosis. Additionally, inhibition of TFEB-phosphatase calcineurin sensitized cells to DOX-induced apoptosis in a TFEB dependent fashion. Regulation of apoptosis by TFEB was not a consequence of altered lysosomal function, as lysosomal inhibitors could not blunt the effect of TFEB to counter apoptosis. RNA-Seq analysis of MDA-MB-231 cells with TFEB knockdown displayed a significant downregulation in cell cycle and homologous recombination while genes involved in interferon-γ and TNFα signaling were upregulated. In consequence, knockdown of TFEB disrupted DNA repair following DOX, as evidenced by persistent γH2A.X detection. CONCLUSION: Our data describe a novel response to DOX chemotherapy in TNBC where TFEB is activated to suppress apoptosis and increase DNA repair while blocking this response augments cancer cell death alone and in combination with DOX.</p>
<p>23 Page Patric IMPACT OF THE MIR 2355-5P IN VHL INACTIVATED CLEAR CELL RENAL CELL CARCINOMA 1,2PAGE_Patric, 1,2TURCOTTE_Sandra 1Université de Moncton, 2Atlantic Cancer Research Institute INTRODUCTION: Kidney cancer is the 10th most common cancer in Canada. Despite the advances in targeted therapy, the 5-year survival rate for metastatic disease rarely exceed 10%. Clear Cell Renal Cell Carcinoma (ccRCC) is known to be initiated with the loss of function of the tumor suppressor gene von Hippel-Lindau (VHL). MicroRNAs (miRs) are a family of small non-coding RNA capable of negatively regulating the expression of target genes. We identified an overexpression of the miR 2355-5p following the loss of VHL in ccRCC. OBJECTIVES: Our specific aims are to i) Identify target genes regulated by the miR 2355-5p in ccRCC and ii) evaluate the impact of the miR 2355-5p during ccRCC carcinogenesis. METHODS: We used VHL mutated ccRCC cell-line and their genetically match counterpart expressing wild type-VHL. A bioanalysis was used to identify potential target genes for the miR 2355-5p. The expression of the miR was modified with the CRISPR/cas9 system and with specific inhibitors and mimics. A RT-qPCR was used to quantified the genes of interest. Migration assay using Transwell was used to observed the effect of the miR 2355-5p on cell motility. RESULTS: Approximately 125 genes were identified as potential targets of miR 2355-5p. Of that list, 14 were quantified by RT-qPCR and 7 of them showed modified expression level depending on miR 2355-5p expression. Importantly, reducing the expression of miR 2355-5p decreased the migration capacity of the VHL-deficient cells. CONCLUSION: Results from this research aims to identify new potential therapeutic targets through VHL-regulated miRNAs involved in ccRCC tumor development.</p>	<p>24 Ismael Foroughi SOCIOECONOMIC CHARACTERISTICS OF LOCAL COMMUNITIES MAY INFLUENCE THE HOSPITAL BURDEN AMONG ADULTS LIVING WITH MULTIPLE SCLEROSIS IN NEW BRUNSWICK 1FOROUGHI_Ismael, 1,2CROUSE_Dan Lawson, 1GUPTA_Neeru 1Department of Sociology, University of New Brunswick, Fredericton, Canada. 2New Brunswick Institute for Research, Data and Training, Fredericton, Canada. BACKGROUND: Multiple sclerosis (MS) is a complex and chronic neurological disease, the precise etiology of which remains unknown. Although the causal directions are not clear, MS has been associated with coexisting diabetes, hypertension and other cardiometabolic disorders, as well as depression and other mental health disorders. In Canada, prevalence of MS is known to be high; however, research into the local attributes that may shape provincial differences in MS outcomes has been limited. OBJECTIVES: The aim of this study was to examine the potential mediating role of neighbourhood environments on the risk of acute-care hospitalization for MS and common cardiometabolic and mental health comorbidities in the province of New Brunswick, Canada. METHODS: We conducted a population-based observational cohort analysis using pseudonymized administrative data on MS case ascertainment, hospital discharge abstracts, vital statistics, and resident registries linked to area-level socioenvironmental data. We used Cox proportional hazard models to estimate the risk of hospital admission between 2003/04 and 2015/16, with newly diagnosed patients entering the cohort at any time during this period, and censoring those who were no longer alive or not residing in the province in a given year. We generated adjusted hazards ratios (HRs) and bootstrapped 95% confidence intervals (CIs), controlling for individuals' time-varying and invariant characteristics. RESULTS: The study population included 2,130 adults aged 20 and over living with MS, for a prevalence of 240 per 100,000 person-years. After controlling for age and sex, patients residing in urban areas were significantly more likely to be hospitalized for MS (HR:1.31 [95%CI:1.03-1.67]). The risk of admission for cardiometabolic complications was significantly lower among residents of ethnically homogeneous neighbourhoods (HR:0.75 [95%CI:0.60-0.95]); that for mental health disorders was higher in neighbourhoods of socioeconomic deprivation (HR:1.80 [95%CI:1.06-3.05]) or residential instability (HR:1.61 [95%CI:1.05-2.46]). CONCLUSION: This study represents the first investigation of the associations between local environments and acute-care hospitalizations for MS and its common comorbidities in New Brunswick. The research adds to the growing body of literature suggesting that selected features of neighbourhood environments could give rise to increased hospital burden among adults with MS.</p>

<p>25 Lignos, Nicholas THE USE OF AMBIENT ACTIVITY TECHNOLOGY IN RESIDENTS LIVING WITH DEMENTIA 1,2LIGNOS_Nicholas, 1,2HERRINGTON_Madison, 2DONOVAN_Cindy, 1MCCLOSKEY_Rose 1Loch Lomond Villa, 2University of New Brunswick</p> <p>INTRODUCTION: Research suggests residents living with dementia in long-term care (LTC) facilities often lack stimulation in their environments, which can lead to an increase in disruptive behaviours. It is suggested the integration of non-pharmacological approaches into LTC facilities may reduce the severity and frequency of challenging behaviours displayed by residents with dementia. Ambient Activity Technologies have developed ABBY, an interactive computer display, which can be mounted in the hallways of LTC units to provide a means of entertainment and stimulation.</p> <p>HYPOTHESIS: The delivery of reminiscence therapy and entertainment through ABBY to residents living with dementia in LTC facilities aim to improve stimulation in their environments. This is done by providing the residents access to familiar media content. It is hypothesized the use of ABBY could improve the residents' emotional well-being by minimizing the occurrence of disruptive behaviours, enhance visitor satisfaction by family members, and reduce the impact of caregiver burden and burnout among LTC staff.</p> <p>METHODS: A mixed method study was conducted at Loch Lomond Villa nursing home consisting of quantitative and qualitative measurements. Several scales were used to measure changes in disruptive behaviours and moods of residents with dementia, caregiver and staff burden, and family satisfaction. Focus groups and interviews were also conducted to determine the effectiveness of ABBY as a therapeutic tool. A sample population of 35 residents, 17 staff members and 11 family members were employed in the study.</p> <p>RESULTS: The initial findings of the study demonstrate that ABBY is a positive therapeutic tool that can be used by residents, staff and family members to increase stimulation for residents living with dementia in LTC facilities.</p> <p>CONCLUSION: The findings suggest that technology may improve the quality of life for residents and staff in LTC facilities. Technologies similar to ABBY may facilitate better visitations by family members and friends. The use of ABBY may assist in reducing the display of disruptive behaviours among residents living with dementia, which could minimize the use of pharmaceuticals with LTC facilities.</p>	<p>26 Eric Comeau INCOME LEVEL ASSOCIATED WITH TIME TO REHOSPITALIZATION FOR CHRONIC AMBULATORY CARE SENSITIVE CONDITIONS AMONG THE WORKING AGE POPULATION 1COMEAU_Eric, 2LEONARD_Phil, 3GUPTA_Neeru 1Dalhousie Medicine New Brunswick, 2Department of Economics, University of New Brunswick, 3Department of Sociology, University of New Brunswick</p> <p>INTRODUCTION: Hospitalizations for ambulatory care sensitive conditions have been used as an indicator of primary care access in recent literature. In Canada, where primary care is provided on the basis of need rather than ability to pay, income itself should not be predictive of hospitalizations risks. However, some conditions, such as diabetes and hypertension, require management that goes beyond what is offered by primary care and involve out-of-pocket expenses for Canadians.</p> <p>OBJECTIVE: The objective of this research is to determine if people of working age with higher income remain out of hospital for longer than individuals with lower income, following a first hospitalization for diabetes or hypertension. This may be used to indicate that the ability of individuals to manage their conditions and mitigate disease progression is at least partly related to income.</p> <p>METHODS: This analysis uses the 2006 Census linked to the 2006-2009 Discharge Abstract Database (DAD). The target population is adults aged 25-65 hospitalized at least twice for diabetes or hypertension. A multiple regression survival analysis was applied to index hospitalizations and re-hospitalizations. The key predictor is income quintile derived from after-tax household income. Control variables include age, sex, regional location, marital status, education level, aboriginal or immigration status, and rural/urban. In-hospital transfers were removed prior to analysis.</p> <p>RESULTS: More affluent individuals were able to avoid re-hospitalization for diabetes or hypertension longer than those in lower income quintiles. Using the lowest income quintile as a control, time to re-hospitalization for diabetes decreased from the third income quintile (HR 0.86, 95% CI: 0.78-0.94) to the fifth income quintile (HR 0.89, 95% CI: 0.80-0.99). Similarly for hypertension, individuals in the highest three income quintiles remained out of hospital significantly longer than the control group, but risk did not decrease between the third and fifth quintile (HR 0.85, 95% CI: 0.76-0.95).</p> <p>CONCLUSIONS: These findings suggest individuals with higher income can better manage their diabetes and hypertension, and therefore remain out of hospital for longer than those with lower income. Further research is needed to understand the specific financial burdens of disease management that may accelerate the risk of hospitalization.</p>
<p>27 Stephanie Ward THE HEALTHY START-DÉPART SANTÉ ONLINE INTERVENTION: A PROMISING METHOD OF IMPROVING PHYSICAL ACTIVITY PRACTICES OF CHILDCARE EDUCATORS 1 WARD_Stephanie, 2,3,4 BÉLANGER_Mathieu 1 Université de Moncton, 2 Centre de formation médicale du Nouveau-Brunswick, 3 Université de Sherbrooke, 4 Réseau de santé Vitalité</p> <p>INTRODUCTION: Educators working in early childcare centres (ECCs) are important role models to promote healthy eating and physical activity in young children. In-person training interventions with educators have shown positive impacts on children's dietary intake and physical activity. However, the sustainability these interventions is limited by financial and human resource constraints. An online training intervention may be a more cost-effective, sustainable and effective way to reach educators, while also improving their practices.</p> <p>OBJECTIVES: To compare the effectiveness of an online version of the Healthy Start-Départ Santé (HSDS) intervention to the traditional in-person intervention and to usual practice on ECC educators' healthy eating and physical activity practices and knowledge of fundamental movement skills.</p> <p>METHODS: Thirty-six ECCs were randomly chosen across New Brunswick and were allocated to either the online training, the in-person training or the usual practice group. Educators in each group completed a self-administered questionnaire before and ten months after the intervention. The questionnaire included questions regarding educators' healthy eating and physical activity practices in the ECC, as well as their knowledge of children's fundamental movement skills. Group differences were assessed with mixed-effect models.</p> <p>RESULTS: A total of 40, 17 and 24 educators from the online training, the in-person training and the usual practice group respectively, completed the questionnaire at both time points. Educators in the online intervention reported marginally significant greater improvement in physical activity practices than the change observed among educators in the usual practice group and the in-person intervention (+1.3 vs. -0.8 vs. +0.2 points, respectively p=0.06). No differences were observed among groups for healthy eating practices and knowledge of fundamental movement skills.</p> <p>CONCLUSIONS: These preliminary results suggest that the online intervention has the potential to more effectively improve physical activity practices than the in-person intervention. If confirmed with studies using a larger sample, this approach may represent a cost-effective way of providing educators with the knowledge needed to implement healthier practices in ECCs.</p>	<p>28 Mohammad Keshavarz CAN A RESISTANCE TRAINING REACH THE OPTIMAL INTENSITY WITHOUT SPECIALIZED EQUIPMENT FOR MEN LIVING WITH OBESITY? PILLAR SOCIAL, CULTURAL, ENVIRONMENTAL AND POPULATION HEALTH 1,2 KESHAVARZ_Mohammad, 2,3 TOMPKINS_Stephanie, 2,3 SÉNÉCHAL_Martin, 2,3 BOUCHARD_Danielle 1 Faculty of Graduate Studies- Interdisciplinary Studies, 2 Cardiometabolic Exercise & Lifestyle Laboratory (CELLAB), 3 Faculty of Kinesiology, UNB, Fredericton, NB</p> <p>BACKGROUND; Even if the benefits of exercise are well known, long-term adherence is poor. Previous studies have shown that a circuit training using resistance exercises done in a fitness facility was enjoyed by men living with obesity and could be considered aerobic exercises at moderate intensity (average above 40% of heart rate reserve). This program could potentially lead to long-term adherence. However, it is unknown if a similar program can be completed in a home setting without specialized equipment. OBJECTIVE; The main objective of this study was to test whether a circuit resistance training using only body weight as resistance can reach aerobic moderate intensity without specialized equipment.</p> <p>METHODS; Ten men having a BMI over 30 kg/m² were recruited. Participants met the research assistant twice. During the first visit, they completed exercises without equipment (lunges, push-ups, squats, dips) for one-minute each, followed by one-minute of rest. The circuit will repeat until 50 minutes are completed. During the second visit, the same exercise circuit will be performed, but the order was altered (squats, push-ups, lunges, dips). Heart rate was measured via a heart rate monitor every 15 seconds.</p> <p>RESULTS; The participant's average heart rate during exercise at first visit and second visit was 59.4% and 51.5% of heart rate reserve respectively with no significant difference between two visits (P=0.22). Participants could reach at least moderate intensity for 89% of total time during the first visit and 82% of total time during the second visit with no significant difference between the two visits (P=0.61)</p> <p>CONCLUSION; Regardless of the exercise order, a resistance training program completed in a circuit manner reaches moderate intensity with no specialized equipment. The next step is to test the long-term adherence to such program compared with a traditional exercise program.</p>

<p>29 Stacy Grieve TAZ functions as a tumour suppressor in multiple myeloma by downregulating MYC 1GRIEVE_Stacy, 2WAINBERG_Gabriel, 1LEES_Miranda, 2CHACKO_Simi, 2CRAPOULET_Nicolas, 1,3,4REIMAN_Tony 1 Department of Biology, University of New Brunswick, Fredericton NB 2Atlantic Cancer Research Institute, Moncton, NB 3Department of Oncology, Saint John Regional Hospital, Saint John, NB 4Department of Medicine, Dalhousie University BACKGROUND: TAZ is a transcriptional coactivator downstream of the Hippo signalling pathway that functions as an oncogene in many solid tumours. However, its role in haematological malignancies is largely unexplored. Multiple myeloma (MM) is an incurable blood cancer that is often characterized by amplification and overexpression of the MYC oncogene. Despite efforts, direct targeting of MYC is not yet possible; therefore, alternative strategies to inhibit MYC activity are necessary. HYPOTHESIS: Dysregulation of TAZ may contribute to myeloma pathogenesis. METHODS: We combined analysis of publically available clinical patient datasets with human myeloma cell line models to interrogate the role of TAZ in MM. RESULTS: In this study, we show that, in contrast to solid tumours, expression of TAZ is lower in MM, with decreasing expression from normal plasma cells through intermediate stages of MM to fully active disease. Furthermore, high expression of TAZ correlates with better patient outcomes. We further show that TAZ is hypermethylated in MM patient samples and in a panel of MM cell lines. Genetic overexpression of TAZ or pharmacological upregulation of TAZ by treatment with the demethylating agent decitabine induces apoptosis. Importantly, TAZ-induced apoptosis is independent of canonical Hippo components LATS1/2 or the TEAD family of transcription factors. Instead, RNA-seq analysis revealed that overexpression of TAZ represses a MYC transcriptional program and we show that increased TAZ expression correlates with decreased MYC expression in both cell line models and patient samples. Finally, promoter de-repression of TAZ expression sensitizes MM cell lines through a reciprocal reduction in MYC expression using both clinically relevant therapeutics such as bortezomib and panobinostat. CONCLUSIONS: Our findings uncover an unexpected role for TAZ in MM tumorigenesis and provide compelling rationale for exploring the therapeutic potential of upregulating TAZ expression to restore sensitivity to specific therapeutics in MM.</p>	<p>30 Bridges, Sarah CENTRALIZED ACCESS TO PHYSICAL ACTIVITY PROGRAMS IN SAINT JOHN, NEW BRUNSWICK IS PROBLEMATIC FOR MAJORITY OF RESIDENTS 1BRIDGES_Sarah, 1MCKENNA_Mary, 2ADISESH_Anil 1University of New Brunswick; 2University of Toronto INTRODUCTION: Community physical activity (PA) programs near where an individual resides has been associated with positive outcomes in the rehabilitation of non-communicable disease and injury, along with reductions in return to work times. Location and availability of programs has been cited as a barrier to becoming more physically active, and in Saint John, New Brunswick, the large geographical footprint could amplify this barrier. OBJECTIVE: To catalogue the existing PA programs targeted to adults in Saint John, including those that focus on rehabilitation, and assess these opportunities on availability, accessibility, and geographical distribution. METHODS: All PA opportunities available to adults aged 19-65 were included. Characteristics of programs were gathered using a standardized template from program resources and contact with program coordinators. For programs targeting rehabilitation, a second questionnaire was administered. Spatial data analysis was conducted using ArcGIS to determine the distribution of PA programs. RESULTS: 91 PA programs were found and were more abundant in the centre of the city, in areas of lower population. 83% of programs required fees between \$10-\$150 monthly, or \$2-\$35 per-use. Men, women, and various age groups were evenly targeted, and there were a large number of programs open to beginners or individuals who were new to PA. Only one program offered childcare, and three allowed children to be present during programs. 98% of programs were accessible through public transit, and 88% were physically accessible. Two organizations offered three rehabilitation specific programs to those who have arthritis, survived cancer, or suffered cardiac events. These programs focused on minimizing decline, improving health outcomes, and offering social support, and were primarily accessed through referral and led by health care professionals. CONCLUSIONS: The distribution of PA programs in Saint John may have negative effects on the PA levels of Saint John residents who live in the outer communities. When creating new PA programs and rehabilitation focused PA programs, this distribution should be taken into account. Policy should be developed to encourage creating new PA programs in these neglected areas and encouraging the implementation of more rehabilitation focused PA programs.</p>
<p>31 Nathalie Godin EVALUATION OF HEALTH PROFESSIONAL'S COMPETENCIES ON IMMUNOTHERAPY CARE IN VITALITE HEALTH NETWORK GODIN_Nathalie, DOUCET_Marco Vitalite Health Network INTRODUCTION: Immunotherapy has recently emerged as a potent clinical strategy in oncology. These immunotherapy agents have serious and very different adverse effects from other anticancer therapies including autoimmunity and nonspecific inflammation. Consequentially, health professionals with immune-oncology (I-O) knowledge are required to promote a beneficial outcome for patients. We hypothesize that educating health professionals without formal immunotherapy knowledge will increase competency in providing a quality patient education, in promoting the detection of immune-related adverse events (irAEs) and in improving the management of irAEs. OBJECTIVE: Our aim is to evaluate the immunotherapy competency of health professionals in oncology, emergency departments, and community care on evaluation and treatment for irAEs in New Brunswick (NB) prior and post educational sessions. METHODS: Educational sessions of 1-2 hours were given based on the immune-oncology learning platform offered by the Canadian Association of nurses in Oncology through video conference. Health professionals from all satellite clinics ER departments and community care agencies were invited to participate. Subsequently, questionnaires were created by an immunotherapy specialized nurse to evaluate the knowledge competency of participants immediately before and after the session, and 4-6 months post-session. RESULTS: There was a significant difference in scores depending on when the survey was taken. As denoted on table 1, there were no significant differences between the time 2 and time 3 for the three questions (p = 1.000, p = 0.646, p = 0.450). However, there was a significant difference between the time 1 and time 2, and time 1 and time 3 in all three questions (p < 0.001). The survey also showed that 90% of nurses reported that the session improved their knowledge on immuno-oncology and 96% would implement the acquired knowledge from the sessions in practice. CONCLUSION: Disparities in knowledge regarding I-O exist amongst health professionals. Thus, certified educational sessions were conducted for health professional involved in immuno-oncology care. Data from this study suggests greater competencies in health professionals for general knowledge on immunotherapy, recognizing and managing irAEs, and educating their patients about I-O, following educational sessions.</p>	<p>32 Erin Cunningham THE RELATIONSHIP BETWEEN LUMBAR MULTIFIDUS MUSCLE MORPHOLOGY, PHYSICAL ACTIVITY, AND LOW BACK PAIN IN YOUNG PEOPLE: A LONGITUDINAL STUDY 1CUNNINGHAM_Erin, 1NOBLE_Jeremy, 1HEBERT_Jeffrey 1UNB Faculty of Kinesiology BACKGROUND: Back pain is the leading cause of disability worldwide costing over \$6-12 billion to the Canadian medical system annually. Physical activity levels and muscle morphology of the lumbar multifidus muscle have been linked to the development and prevalence of back pain. HYPOTHESIS: This study investigated the univariate and multivariable associations of lumbar multifidus morphology and physical activity behavior with back pain in young people. METHODS: We examined the prevalence of back pain relative to lumbar multifidus muscle morphology and physical activity in a prospective cohort study of children from the European Youth Heart Study. The primary outcome of low back pain at 2004 and 2009 was examined longitudinally relative to the exposure variables: physical activity data from 1997. A muscle morphology outcome from the two time points was examined relative to exposure variables of physical activity levels from 1997 and reports of low back pain at 1997 and 2001. RESULTS: A trajectory model using data from 361 observations was created. Two back pain trajectories were identified, with 12.1% of youth having a high probability of developing back pain. Logistic regressions indicated that muscle morphology and physical activity behaviour were not associated with a high-probability of back pain except for moderate and moderate-vigorous activity in 2010 (OR [95% CI]=1.042 [1.005-1.080] and OR [95% CI] =1.026 [1.003-1.050]). DISCUSSION/CONCLUSION: This study does not find a conclusive relationship between physical activity behavior and low back pain or muscle morphology and low back pain development in young people.</p>

<p>33 Desaulniers, Céline AN EXERCISE PROGRAM ADAPTED FOR CHRONIC DISEASES IN A RURAL COMMUNITY: THE EXECO PROGRAM. 1DESAULNIERS_Céline, 1BOUFFARD-LEVASSEUR_Vicky, 1PELLETIER_Anne 1Université de Moncton</p> <p>INTRODUCTION: To meet the needs of its citizens, Edmundston, a rural community in New Brunswick, created a community-based exercise program (EXECO) for people suffering from chronic diseases. The purpose of this program is to encourage physical activity among people with chronic diseases in the rural community.</p> <p>OBJECTIVES: Evaluate the benefits of the EXECO program from a quantitative (functional capacities) and qualitative (subjective) point of view.</p> <p>METHODS: EXECO is a 12-week program consisting of three 1-hour group exercise sessions per week led by health professionals. Group sessions consisted of cardiovascular, muscular and stretching exercises. Participants were taught to adapt the exercises according to their conditions. On a voluntary basis, 20 participants suffering from various chronic diseases had their functional abilities assessed, using the Senior Fitness Tests, at the beginning and at the end of the 12-week program. At the end of the program, they were also invited to participate in an individual interview to get some feedback on their perceived health, their physical activity level and their experience with the EXECO program.</p> <p>RESULTS: Our results show, among other things, an improvement of their balance on one leg (right = p: 0.004, left = p: 0.002) with eyes open, of their endurance of the lower limbs (30 sec sit to stand test) (p: 0.032) and of their cardiorespiratory endurance (2 min step test) (p <0.001). Participants appreciated the coaching and sense of security that the EXECO program provided. They also mentioned the program gave them the confidence they needed to become proactive in order to regain control of their illness. They also perceived the changes, made possible by the EXECO program, in their daily lives. They said the program had a huge impact on their social life and mental health, and that it gave them courage to do other activities.</p> <p>CONCLUSIONS: Rural communities, despite limited resources, can play an active role in the well-being of their members. The creation of the EXECO program is a good example where it is possible to see the improvement of the functional capacities as well as the satisfaction of the participants.</p>	<p>34 Ziv, Anat CANADIAN INPATIENTS REPORTING PRIOR UNMET PRIMARY HEALTH CARE NEEDS STAY LONGER IN HOSPITAL: EVIDENCE FROM LINKED SURVEY AND ADMINISTRATIVE DATA 1 ZIV_Anat, 2 GUPTA_Neeru; Department of Sociology, University of New Brunswick</p> <p>INTRODUCTION: There is some evidence that patients with chronic ambulatory care sensitive conditions are more likely to report a perceived unmet health care need, a commonly used indicator of inadequate access to care, and may delay seeking medical attention and experience adverse health outcomes. Unmet needs have been identified as an indicator of limited availability of health care services, individual accessibility problems, or acceptability problems. Research is limited on the impacts of unmet needs from primary care on the burden to the hospital system.</p> <p>OBJECTIVES: This study examined the association between self-reported unmet health care needs among older Canadians and subsequent length of stays for potentially avoidable hospitalizations.</p> <p>METHODS: We used data from the Canadian Community Health Survey linked longitudinally to the Discharge Abstract Database for 2007 to 2011. Using linked data allowed the examination of the relationship between self-reported unmet health needs with length of stays among inpatients 45 years and older. Reasons for unmet need classified into three categories: availability (such as, not available when required, waiting time too long), accessibility (such as, barriers due to cost, transportation) and acceptability (such as, did not know where to go, decided not to seek care). The outcome of interest is hospital stays with primary diagnosis of chronic obstructive pulmonary disease, diabetes, or cardiovascular disease. Poisson regression was used adjusting for sociodemographic variables, health behaviors, health status and year of survey.</p> <p>RESULTS: We found differences in length of stay between inpatients with prior unmet health care needs and those without. Patients reporting an unmet need related to accessibility (RR 1.29, CI: 1.27-1.30; P<0.05) and perceived availability of primary health care (RR 1.54, CI: 1.52-1.56; P<0.05) had longer stays in hospital than those without reported unmet needs. There was no significant relationship between reported acceptability with length of stay (RR 0.99, CI: 0.97-1.00).</p> <p>CONCLUSIONS: The availability of linked survey and administrative data allow for new opportunities for assessment of the association between self-perceived unmet health care needs and the hospital burden of chronic diseases.</p>
<p>35 Abdelali EL BOUZAOU Use of Ambient Activity technology in nursing homes for residents with dementia: A PROTOCOL FOR COST-BENEFIT ANALYSIS 1 EL BOUZAOU Abdelali 1 JBILOU Jalila 1 EL ADLOUNI Salah-Eddine 2 KANIK Marc 3 CINDY Donovan 4 MCCLOSKEY Rose 4 LIGNOS Nick 5 CHIGNELL Mark 1 Université de Moncton, Moncton, NB, Canada, 2 Ambient Activity Technologies, Toronto, ON, Canada, 3 Loch Lomond Villa, Saint John, NB, Canada, 4 University of New Brunswick, Saint John, NB, Canada, 5 University of Toronto, Toronto, ON, Canada</p> <p>OBJECTIVE: Many people living with dementia in Long Term Care (LTC) environments are under stimulated and socially isolated. Ambient Activity (AA) 'augments' the care environment by providing 'ambient' activity experiences that are meaningful to residents. ABBY was installed in six long term care in Canada. The research findings demonstrated clear evidence that using ABBY had beneficial effects on well-being in individuals living with dementia in long term care environments. However, to date no economic evaluation was performed, our team objective is to assess the costs and the benefits of using ABBY compared to current care.</p> <p>METHODS: Economic evaluation is a well-recognized approach combining costs and benefits within an evaluative framework to provide information to support decision-making in the welfare sector such as the healthcare system. Cost benefit analysis responds perfectly to the objective of the LTC decider that consists to measure the return of investment on implementing ABBY.</p> <p>RESULTS: A protocol of research was designed to conduct the CBA study with different measures and calculation method for the implementation, the baseline data collection was completed despite the barriers identified (Structuration of a collaborative approach; Management of unexpected contingencies (political, symbolic, conceptual, organizational and interpersonal); and Capacity building and quality management). The pre-implementation required far more resources and time than what was anticipated by the participants.</p> <p>CONCLUSION: Successful (Assistive technology) AT implementation in LTC is a complex and time-consuming process. The pre-implementation phase is a crucial step that needs to be well designed and integrated into the project's timeline and budget.</p>	<p>36 Courtni Soucy VARIABILITY IN PHYSICAL FUNCTION IMPROVEMENTS FOR PATIENTS LIVING WITH BREAST CANCER DURING A 12-WEEK EXERCISE PROGRAM 1,2 SOUCY_Courtnei, 1,2 SÉNÉCHAL_Martin, 3 HAMILTON_Ryan, 3 OLTHUIS_Janine, 1,2 BOUCHARD_Danielle R. 1 Cardio-metabolic Exercise and Lifestyle Laboratory, University of New Brunswick, Fredericton, NB Canada; 2 Faculty of Kinesiology, University of New Brunswick, Fredericton, NB, Canada; 3 Faculty of Psychology, University of New Brunswick, Fredericton, NB, Canada.</p> <p>INTRODUCTION: Exercise is known to improve physical function for patients affected by breast cancer engaging in exercise during and/or after treatment. However, it is hypothesized that physical function improvement is highly variable depending on the timing of testing. It is thus possible that the improvement observed might not be true change.</p> <p>OBJECTIVE: Describe the variability in the weekly performance on common physical function tests in breast cancer patients engaged in a 12-week exercise program.</p> <p>METHODS: A total of 27 patients who received a diagnosis of breast cancer were recruited in an exercise program with two sessions a week for 12 weeks in a community-based fitness facility. Baseline characteristics such as physical activity level (pedometer), and age were recorded. The 6-minute walk test, the one-leg stance test and the chair stance test were administered weekly.</p> <p>RESULTS: The average age of participants was 54 ± 12.2 averaging 109.3 ± 97.7 minutes of exercise at moderate or vigorous intensity at baseline. At pre-post measurement, a significant improvement of 66.3 meters +/- 134.6 was observed in the 6-minute walk test (p=0.040). The number of chair stands in 30 seconds also improved significantly pre-post 4 +/- 3.3 (p=0.000).</p> <p>CONCLUSIONS: The daily variability of exercise improvement surpasses or do not surpass the average pre-post change in common physical function tests when patients are being treated with breast cancer. It is important to take into consideration the variability of the tests before concluding a significant improvement in physical function while doing exercise during or after breast cancer treatment.</p>

<p>37 Sandra Magalhaes AIR POLLUTION IS ASSOCIATED WITH PREVALENCE OF MULTIPLE SCLEROSIS: AN ECOLOGICAL STUDY 1,2MAGALHAES_Sandra, 1,2CROUSE_Dan, 3CHAMARD-WITKOWSKI_Ludivine, 2SOMAYAJI_Chandy, 1GUPTA_Neeru 1Department of Sociology, University of New Brunswick, 2NB-IRDT, University of New Brunswick, 3Dr. Georges L. Dumont University Hospital INTRODUCTION: Environmental factors are likely involved in the etiology of multiple sclerosis (MS). Greater exposure to air pollution (AP) has been implicated as risk factor and basic science studies demonstrate that pollutants can cross the blood brain barrier. We recently conducted a prevalence study in New Brunswick (NB) and identified regional variation in MS prevalence. To explore this geographic variability undertook an ecological study on outdoor AP levels and MS prevalence. HYPOTHESIS: Geographic areas with higher levels of AP will have higher MS prevalence. METHODS: We used data housed at the NB Institute of Research, Data and Training (NB-IRDT) to identified prevalent MS cases living in NB in 2011, using the Canadian Chronic Disease Surveillance System (1995-2014). The Citizen Database, a population register of all residents issued a provincial health care card, was used to assign residential information (2011) for each MS case. We then stratified cases by geography, into one of the thirty-three Health Council Communities (HCCs). Population counts, for each HCC, were also obtained from the Citizen Database. We received long-term AP data (particulate matter<2.5µm (PM2.5), nitrogen dioxide (NO2), sulphur dioxide (SO2) and ozone (O3)), for each postal code in NB, from the Canadian Urban Environmental Health Research Consortium (CANUE). We report estimates from a negative binomial regression model. RESULTS: There were 1532 prevalent MS cases identified (prevalence April 1, 2011: 261 per 100,000 95%CI: 229-301). The number of cases across HCC varied widely (range: 6-170 cases) and average pollutant levels were all below established Canadian air quality standards (range: PM2.5 1.4-4.9 µg/m3; NO2 2.0-5.7 ppb; SO2 0.07-0.5 ppb; and O3 21.4-28.1 ppb). Co-pollutant collinearity was observed, though correlations were moderate; with highest correlations between PM2.5 and NO2 (r=0.55). In single-pollutant models only PM2.5 was positively associated with MS prevalence. In multi-pollutant models, PM2.5 remained positively associated with MS prevalence (prevalence ratio: 1.67 95%CI: 1.36-2.03 per µg/m3), whereas NO2 demonstrated a negative association (prevalence ratio: 0.81 95%CI: 0.69 to 0.98 per ppb). CONCLUSION: Our results offer additional evidence for a link between AP and MS, and highlight the need to conduct an individual-level study using personal-level AP monitoring.</p>	<p>38 Kenneth D'souza EFFECT OF WHEY PEPTIDES ON METABOLISM AND INSULIN SIGNALING IN MUSCLE CELLS 1 D'SOUZA_Kenneth, 1 MERCER_Angella, 2 MAWHINNEY_Hannah, 1,3 PULINILKUNNIL_Thomas, 2 UDENIGWE_Chibuikwe, 1,3 KIENESBERGER_Petra C. 1Dalhousie Medicine New Brunswick, Dalhousie University, Saint John, New Brunswick, Canada 2School of Nutrition Sciences, University of Ottawa, ON, Canada 3University of New Brunswick, Saint John, New Brunswick, Canada INTRODUCTION: The skeletal muscle is the primary site of insulin stimulated blood glucose disposal. Skeletal muscle dysfunction is a hallmark of obesity and insulin resistance. Insulin-sensitization of muscle may prevent or reverse obesity-induced metabolic complications. Bioactive peptides derived from food sources including milk and dairy products have gained interest for their roles in metabolic disorders, including obesity and insulin resistance. However, it remains unclear whether and how peptides generated by whey protein digestion impact muscle metabolism and insulin function. HYPOTHESIS: Bioactive whey peptides have an insulin-sensitizing effect on muscle cells. METHODS: Whey peptide mixture was generated via the hydrolysis of whey protein with pepsin and pancreatin, mimicking natural whey digestion in the gut. C2C12 myotubes were incubated with BSA or whey peptides for 16 h in the absence or presence of 0.4 mM palmitate to induce insulin resistance, followed by insulin signaling analysis. To examine the effect of dietary peptides on lipid metabolism in skeletal muscle, lipidomic analysis and high resolution respirometry were used. RESULTS: In C2C12 myotubes, whey peptides protected from palmitate-induced insulin resistance, as determined by improved AKT phosphorylation and Glut4 expression. Insulin sensitization of C2C12 myotubes was accompanied by decreased levels of inflammatory and ER stress markers following whey peptide treatment. Furthermore, whey peptides markedly reduced the accumulation of the lipotoxic signaling lipid, diacylglycerol, following palmitate treatment. Concurrently, whey peptides increased accumulation of the neutral lipid, triacylglycerol. Fatty acid linked mitochondrial respiration was unchanged by whey peptide treatment. CONCLUSIONS: In myotubes exposed to an obese-diabetic milieu, whey peptides ameliorate insulin resistance, potentially by lowering levels of the lipotoxic mediator, diacylglycerol, resulting in reduced inflammation and ER stress. Taken together, our data suggest that whey peptides directly enhance insulin function in muscle cells and could potentially be explored for the prevention and/or treatment of obesity-induced insulin resistance.</p>
<p>39 Sarkar, Shreya FRAILTY ASSESSMENT IN CARDIAC SURGERY: A DEFICIT BASED APPROACH AND IMPACT ON CLINICAL OUTCOMES 1,2,3SARKAR_Shreya, 2MACLEOD_Jeffrey Britt, 2AGUIAR_Christie, 2,3HASSAN_Ansar, 3BRUNT_Keith, 2, 3LEGARE_Jean Francois 1 Department of Biochemistry, Dalhousie University, Halifax, Nova Scotia, Canada 2 New Brunswick Heart Centre, Saint John, New Brunswick, Canada 3 Dalhousie Medicine New Brunswick, Saint John, New Brunswick, Canada INTRODUCTION: Frail, elderly patients are undergoing cardiac surgery at an elevated rate in New Brunswick, but little attention has been placed on the magnitude of frail surgeries in terms of patient outcome or system impact. HYPOTHESIS: i) Can a registry-based frailty scale be created to identify frail patients undergoing heart surgery? ii) Can the impact of frailty be assessed on post-surgery outcomes, in particular, return home in a timely fashion? METHODS: Patient data was obtained from the New Brunswick Heart Centre (NBHC) registry for all patients who underwent cardiac surgery between 2012-2017. A 21-point frailty score was established based on 21 baseline clinical deficits using independent binary risk variables. Patients were segregated into three groups based on their frailty score (low:0-4, medium:5-7 and high:≥8). Comparisons between the three groups were made using chi-square tests for proportions and t-test for continuous variables. RESULTS: 3436 consecutive patients were included in the final analysis. The mean age was 66±10 years, 23% were female, and 61% underwent isolated CABG. Patients were grouped on deficit-based frailty score namely: low (n=870), medium (n=1692), high (n=874). Patients with a high frailty score were at higher risk of prolonged hospitalization (median 7 days vs. 5 days; p<0.001) and failing to be discharged home (49%, vs. 17%, p<0.001) when compared to the lowest frailty score group. 30-day readmission rates were also significantly higher (18 % vs. 10 %, p<0.001) in the high frailty score group when compared to the lowest. Furthermore, increasing frailty scores were associated with a significant increase in 30- day mortality (low: 0.7%, medium: 1.2% and high: 4.7%; p<0.001). CONCLUSIONS: Here we demonstrate that a simple deficit-based frailty score is capable to identify the most vulnerable patients undergoing cardiac surgery to less favourable outcomes. Using this approach we were able to determine a deficit or frailty score that correlated directly with the likelihood of patients requiring prolonged hospitalization, failing to be discharged home and survival at 30days The present study provides the rationale for using this approach to study interventions aimed at our most vulnerable who suffer from frailty syndrome and impact their transition home.</p>	<p>40 Dipsikha Biswas Branched-chain ketoacid dehydrogenase kinase: A novel target for inducing chemosensitivity in triple-negative breast cancer BISWAS Dipsikha1, MUELLER Neil1, DUFFLEY Luke1, THIEN DAO Khoi1, EL HIANI Yassine2, KIENESBERGER Petra1 and PULINILKUNNIL Thomas1 1 Department of Biochemistry and Molecular Biology, Faculty of Medicine, Dalhousie University, Dalhousie Medicine New Brunswick, Saint John, New Brunswick, Canada 2 Department of Physiology and Biophysics, Dalhousie University, Nova Scotia, Canada. BACKGROUND: Triple-negative breast cancer (TNBC) represents approximately 15% of all breast cancers and is characterized by poor survival and an early peak of distant recurrences. The current treatment regimen includes cytotoxic chemotherapeutic, doxorubicin (DOX), an anthracycline class of anticancer agent. However, its usefulness is limited due to the cardiotoxic and chemoresistant effects that manifest in a dose and time-dependent manner. As such, it is pertinent to uncover novel mechanisms of inducing chemosensitivity to DOX in TNBC to enable usage of lower and effective doses of DOX. Tumours preferentially uptake branched-chain amino acids (BCAAs) for protein synthesis to facilitate oncogenic growth. BCAAs derived nitrogen is utilized for de novo amino acid and nucleotide biosynthesis in vivo. Branched-chain α-keto acids (BCKA), a catabolic product of BCAA is oxidized in the mitochondria by branched chain ketoacid dehydrogenase (BCKDH) complex, enzyme sensitive to inhibitory phosphorylation by BCKD kinase (BCKDK). It is plausible that targeting BCAA catabolizing enzymes will alter BCKA flux, induce nutrient insufficiency, thereby sensitizing TNBC cells to DOX-induced genotoxic stress. HYPOTHESIS: Inhibiting BCKDK augments intracellular BCAA oxidation, decreases protein synthesis sensitizing breast cancer cell to DOX induced genotoxic stress. METHODS & RESULTS: Western blot analysis of multiple TNBC cells revealed overexpression of BCKDK and the corresponding phosphorylated BCKDH levels. Genetic and pharmacological inhibition of BCKDK increased cell death, downregulated factors critical to protein translation. Furthermore, BCKDK inhibition dampened growth signalling including decreases in ribosomal S6 and eukaryotic translation initiation factor 4E-binding protein 1 with concomitant reduction in protein kinase B (Akt) phosphorylation, a driver cellular proliferation and survival. Downregulation of the protein synthesis machinery resulted in reduced cell proliferation as observed by decreased colony formation abilities of TNBC cells upon BCKDK silencing in the presence of DOX. Notably, BCKDK inhibition in TNBC cells increased translational repression as evident from hyperphosphorylation of AMPK, eEF2, and eEFK. Inhibition of BCKDK in TNBC cells also decreased ATP production, oxygen consumption and mitochondrial membrane potential as measured by extracellular flux analyzer studies. CONCLUSION: Loss of BCAA catabolism in tumors confer survival advantages in tumors, which could be therapeutically targeted to counter chemoresistance.</p>

41 Philippe-pierre Robichaud**DEVELOPMENT OF LIQUID BIOPSY DNA METHYLATION ANALYSES FOR EARLY PANCREATIC CANCER DIAGNOSIS**

12ROBICHAUD Philippe-Pierre, 1HORBAY Rostyslav, 1ROY Jeremy, 1 TAYLOR Catherine, 1 WAJNBERG Gabriel, 1FOURNIER Sebastien, 1 ANISH Bijj, 1CRAPOULET Nicolas, 1,2GHOSH Anirban, 1,2 LEWIS Stephen M., 1,2OUELLETTE Rodney J.*

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INTRODUCTION: Pancreatic cancer (PC) has a poor prognosis due to the lack of early diagnosis. Surgical resection is the best treatment option, but most patients are diagnosed at late disease stage due to the lack of symptoms. Therefore, early PC detection could greatly improve patient survival. The Atlantic Cancer Research Institute (ACRI) has developed a proprietary technology to capture extracellular vesicles (EVs) with the goal to deliver precision medicine through liquid biopsy technologies. Cancer cells secrete EVs that carry almost every cellular component and PC tumor cell DNA is known to be hypermethylated.

OBJECTIVES: To validate methylated genes in PC cell lines and to compare genomic DNA and EV DNA methylation. The ultimate goal was to detect EV DNA methylation in plasma spiked with EVs containing hypermethylated DNA.

METHODS: We selected genes known to be hypermethylated in PC to validate them with 4 pancreatic cell lines (H6C7 immortalized normal pancreatic cell line and 3 adenocarcinoma cell lines: BxPC3, Capan-2 and PANC10.05). Cell media was subjected to Vn96-mediated EV isolation, EV-DNA and genomic DNA were extracted, and the methylation analysis was performed using the Epitect II PCR Assay (Qiagen). To evaluate DNA methylation in plasma, normal plasma was spiked with EVs containing hypermethylated DNA followed by EV isolation and methylation analysis as described above.

RESULTS: Our data resulted in 4 significantly hypermethylated genes (CCNA1, EVC2, SOX17 and WT1) in the PC adenocarcinoma cell lines compared to the H6C7 cell line. We have shown that the genomic and EV DNA methylation profiles are almost identical. We confirmed that we are able to detect CCNA1 methylation when PC cell-derived EVs were spiked into human plasma and the amount of the methylated DNA detected correlates with the amount of spiked DNA ($r^2 = 0.9276$).

CONCLUSION: Our findings indicate that DNA methylation detection in liquid biopsy is promising for PC detection. A clinical study is now required to evaluate the sensitivity and specificity of the liquid biopsy DNA methylation for early PC and other cancer detection. This approach may lead to more complex methylation signatures at single-nucleotide resolution by adapting whole genome methylation sequencing.

42 Rebeca Martín-Jiménez**MITOCHONDRIAL PHYSIOLOGY IS ALTERED BY ALPHA-SYNUCLEIN AGGREGATES GENERATED WITH A NOVEL PROTEIN AGGREGATION SYSTEM**

1 MARTÍN-JIMÉNEZ_Rebeca, 1 LURETTE_Olivier, 2 SHETA_Razan, 2 OUESLATI_Abid, 1 HEBERT-CHATELAIN_Etienne

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INTRODUCTION: Parkinson's disease (PD) is the most common neurodegenerative movement disorder, characterized by a massive and progressive loss of dopaminergic neurons. The main hallmark of PD is the detection of proteinaceous intra-neuronal inclusions, referred to as Lewy bodies (LBs), in cerebral tissue. These inclusions are predominantly composed of aggregated alpha-synuclein (α -syn), a small protein ubiquitously and abundantly expressed in the brain. How these α -syn-rich inclusions precipitate neuronal death remains hypothetical, but growing evidence suggests the involvement of mitochondrial dysfunction. Current cellular and animal models of PD are based on α -syn overexpression and do not reproduce all the characteristics of LBs formation found in PD patient brains. Using a new protein aggregation system (PAS) to precisely control α -syn clustering, we aim to elucidate the exact mechanisms by which α -syn aggregation and LBs formation affect mitochondria.

OBJECTIVES: 1.- Monitor PAS-dependent α -syn aggregation in different cell lines 2.- Evaluate the impact of α -syn aggregates on mitochondrial physiology

METHODS: We developed different PAS constructs encoding for proteins that becomes aggregated in response to a precise stimulus. We fused PAS with human α -syn and a non-aggregatable form of α -syn to monitor the impact of α -syn.

RESULTS: Live imaging analysis of different cells lines revealed rapid formation of protein inclusions in cells over-expressing human α -syn but not in cells overexpressing the non-aggregatable form of α -syn. After stimulation, α -syn aggregates remained stable at least 24h. Our findings also illustrate that it is the aggregation of α -syn and not its overexpression that alters mitochondrial physiology. First, mitochondria become less interconnected, whereas mitochondrial mass and respiration are decreased only upon aggregation of α -syn. Interestingly, treatment with chloroquine, an autophagy inhibitor, prevents mitochondrial degradation induced by α -syn aggregation. Our results suggest that mitochondrial defects and ultimately neurodegeneration observed in PD could be prevented by targeting autophagy.

CONCLUSIONS: PAS allows to monitor α -syn clustering in real time, with a high spatiotemporal resolution and stability and offers an innovative tool to study the alterations in mitochondrial physiology associated with α -syn aggregates. This technique represents a technological advance in our understanding of how protein aggregation affects neuronal homeostasis leading to neurodegeneration.

43 Turner, Alison**WEIGHT STIGMA AND HEALTH INEQUITIES IN NEW BRUNSWICK MARGINALIZED COMMUNITIES**

1TURNER_Alison, 1SHEEHAN_Julia, 1BOMBAK_Andrea
1Sociology, UNB

INTRODUCTION: Weight stigma affects aspects of physical, mental, and emotional health. However, research that explores how weight stigma interacts with other stigmas has been largely underrepresented in current literature. Furthermore, characteristics of physical places affect the ability to safely access services or behave in healthy ways. Yet again, minimal research exists on how places in New Brunswick are welcoming, inaccessible, or unsafe for people subject to weight and other stigmas.

OBJECTIVES: We are examining experiences of weight stigma among diverse, higher-weight New Brunswick residents and documenting their recommendations for healthcare and making places in New Brunswick more conducive to wellbeing. Findings on delivering non-stigmatizing care and creating accessible spaces can be used by local stakeholders.

METHODS: In this first phase of an intersectional weight stigma study, thirty adults (≥ 18 years old) who have been classified as obese [≥ 30 Body Mass Index (BMI)] have been recruited. In addition to being higher-weight adults, the participants: a) are older adults (≥ 65 years), b) have incomes below Statistics Canada's definition of income adequacy (lower income), or c) identify as Francophone Canadian. The participants are taking part in an ethnographic study consisting of two sets of interviews and participant observation. The first interview was semi-structured and focused on experiences of weight stigma and how that intersects with other stigmas. The second interviews are underway and are about places in New Brunswick that affect wellbeing. These have consisted of participant observation, a semi-structured interview, and fieldnotes of each location and participant. The data is being analyzed by thematic content analysis.

RESULTS: Analysis of the initial interviews suggest that other stigmas intersect with weight stigma felt by the participants. Participants have reported feeling judged, not listened to, and not respected in healthcare experiences based on multiple stigmatized components of their identities. This affects how they experience healthcare and their health seeking behaviours.

CONCLUSIONS: The preliminary results show that other stigmas negatively interact with weight stigma and affect participants' overall healthcare experiences. It is important to understand how local groups experience these stigmas to create a more accessible and inclusive New Brunswick for all.

44 Purvi Trivedi**Loss of transcription factor EB action remodel lipid metabolism and cell death pathways in the cardiomyocyte**

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BACKGROUND: Loss of TFEB action, impaired lysosomal autophagy and increased proteotoxicity are observed in numerous metabolic diseases. Previous research from our laboratory demonstrated that glucolipotoxicity following nutrient overload causes cardiomyocyte injury by inhibiting TFEB and suppressing lysosomal function. However, the identity of signalling and metabolic pathways engaged by the loss of TFEB action in the cardiomyocytes remain unknown.

HYPOTHESIS: Loss of TFEB action is sufficient to remodel cardiac energy metabolism and to negatively impact cardiomyocyte viability and function.

METHODS and RESULTS: In cardiomyocytes subjected to nutrient-overload ex-vivo, saturated fatty acid, palmitate, but not polyunsaturated fatty acids decreased TFEB content in a concentration- and time-dependent manner. Hearts from high-fat high-sucrose diet-fed mice also exhibited a temporal decline in nuclear TFEB content with marked elevation of distinct lipid species suggesting that when myocyte threshold of lipid loading exceeds its metabolic capacity, loss of TFEB and cardiomyocyte stress is observed. Transcriptome analysis in murine cardiomyocytes with targeted deletion of myocyte TFEB (TFEB^{-/-}) revealed enrichment of differentially expressed genes (DEG) representing pathways of nutrient metabolism, DNA damage and repair, cell death and cardiac function. Strikingly, genes involved in autophagy, proteolysis and lysosome function constituted a small portion of DEGs in TFEB^{-/-} cardiomyocytes signifying that TFEB plausibly regulates non-canonical pathways of cardiac energy metabolism than the canonical pathway of autophagy. TFEB^{-/-} myocytes exhibited higher lipid droplet accumulation and increased caspase-3 activation. Alternatively, increased constitutive localization of TFEB inhibited nutrient overload induced lipid deposition and caspase-3 activity.

CONCLUSION: Our data demonstrated that TFEB insufficiency and its loss of action in the cardiomyocyte remodels energy metabolism and renders the heart prematurely susceptible to nutrient overload-induced injury and failure.

<p>45 Horia-Daniel IANCU BÉNÉFICES D'UN COURS D'ÉDUCATION PHYSIQUE QUOTIDIEN SUR LA SANTÉ DES ÉLÈVES DU PRIMAIRE DANS LA PERCEPTION DE LEURS PARENTS 1 LEBLANC_Roger, 2 IANCU_Penelopia, 3 BOUFFARD-LEVASSEUR_Vicky, 1 IANCU_Horia-Daniel 1École de kinésiologie et de loisir, Université de Moncton, Campus de Moncton, 2École de travail social, Université de Moncton, Campus de Moncton, 3Secteur Éducation et kinésiologie, Université de Moncton, Campus d'Edmundston</p> <p>INTRODUCTION : Un projet pilote d'éducation physique au quotidien (ÉPQ) a été mis en place dans deux écoles du District francophone nord-est du Nouveau-Brunswick. Ce projet fait partie d'une étude plus large qui s'intéresse à la perception des élèves, des parents et des enseignants sur l'ÉPQ. Les résultats partiels présentés ici se concentrent uniquement sur les perceptions des parents.</p> <p>OBJECTIF : Saisir les bénéfices d'un cours d'ÉPQ chez les élèves du primaire à partir de la perception de leurs parents.</p> <p>MÉTHODES : Cette étude qualitative et exploratoire, suivant un paradigme interprétatif, a été faite auprès de 70 parents francophones du Nouveau-Brunswick. Les méthodes de collecte des données utilisées étaient les groupes de discussion avec les parents, les entretiens et les notes de terrain permettant ainsi la triangulation. L'analyse thématique a été utilisée pour le traitement des données.</p> <p>RÉSULTATS PARTIELS : Cette recherche a permis d'exposer certains bénéfices d'ordre psycho-relational, physique, académique et socio-économique d'un programme d'ÉPQ à partir de la perception des parents. Parmi les bénéfices observés chez leurs enfants, les parents interviewés mentionnent le fait d'aimer davantage l'école, d'avoir plus de facilité à se concentrer dans la salle de classe, d'être beaucoup plus actifs physiquement à l'extérieur des heures de classe, de préférer une alimentation plus saine et d'avoir plus de facilité à s'endormir la nuit. Les parents affirment également avoir observé que leurs enfants démontrent plus d'énergie, plus de motivation pour les travaux scolaires et un meilleur comportement à la maison. Plusieurs parents ont indiqué avoir été intéressés à faire eux-mêmes plus d'activité physique en raison de la participation de leurs enfants au projet de l'ÉPQ.</p> <p>CONCLUSION : En somme, la majorité des parents interviewés considèrent que l'ÉPQ est bénéfique pour leurs enfants et sont d'avis que ces cours devraient continuer.</p>	<p>46 McDougall, Rachel LIGAND-CONJUGATED GOLD NANOPARTICLES IMPART VARIOUS TOXIC EFFECTS UPON OVARIAN ADENOCARCINOMA CELLS 1MCDUGALL_Rachel, 1MELI_Vicki, 1MACCORMACK_Tyson, 1ROURKE_Jillian 1Mount Allison University</p> <p>INTRODUCTION: Gold nanoparticles (AuNP) have emerged in modern medicine as agents of diagnosing and treating cancerous tumors due to their many functional chemical and physical properties. However, AuNP have also been shown under some circumstances to be toxic to cells, although the mechanisms by which this toxicity is imparted remain to be determined.</p> <p>OBJECTIVE: This study set out to elucidate the toxic character of AuNP conjugated with molecules of various hydrophobic and electric characteristics upon ovarian adenocarcinoma cells of the SKOV3 line.</p> <p>METHODS: AuNP were conjugated with either PEG, N(Me)3Br, or DMAP capping agents and were administered to cells in treatments ranging from concentrations predicted to be slightly toxic to highly toxic (low to high AuNP concentration). Cells were then subjected to one of a variety of assays, including neutral red, DCFDA, MTT, colony-forming, and crystal violet, in order to assess cell viability, oxidative stress, cellular metabolism, morphology, and overall health after subjection to nanoparticle treatment.</p> <p>RESULTS: Preliminary findings show a noticeable difference in the morphology of SKOV3 cells subjected to more toxic treatments compared to less toxic treatments. Additionally, cells treated with higher concentrations of AuNP produced more reactive oxygen species (ROS) during the treatment period. These findings indicate a toxicity series of DMAP > PEG > N(Me)3Br in terms of ROS production, and N(Me)3Br > DMAP > PEG for morphological toxicity imparted by AuNP. Further results are expected to provide an explanation for this variance, as well as show a difference in the toxic character of AuNP species conjugated with ligands of different hydrophobic and electric character, as studies propose that these characteristics induce different mechanisms of toxicity upon cancerous cells.</p> <p>CONCLUSION: These results could be used to predict the cytotoxicity of AuNP conjugated with various ligands, which has applications in the use of AuNP conjugated with cancer-fighting pharmaceuticals.</p>
<p>47 Johnson, Mathieu LINKING GENETIC CLONAL RENAL CELL CARCINOMA EVOLUTION TO LYSOSOMAL VULNERABILITIES 1,2JOHNSON_Mathieu, 1,2TURCOTTE_Sandra* 1Département de chimie et biochimie, Université de Moncton, 2Atlantic Cancer Research Institute</p> <p>INTRODUCTION: Kidney cancer is part of the ten most frequently diagnosed cancer in Canada. Clear Cell Renal Cell Carcinoma (ccRCC), the most common type of kidney cancer, is characterized by an inactivation of the tumor suppressor gene von Hippel-Lindau (VHL). More recently, seven ccRCC evolutionary subtypes have been characterized which some are linked to mutations in PBRM1, SETD2 or BAP1. Our previous studies demonstrated the possibility of targeting VHL deficient cells by blocking autophagy with the small molecule STF-62247. We hypothesize that some ccRCC subtypes could be sensitive to lysosome-targeting agents.</p> <p>OBJECTIVES: Our specific goals are to 1) generate cell models matching the subtypes recently described and 2) evaluate their response to lysosome-targeting agents.</p> <p>METHODS: CRISPR-Cas9 and the Gateway cloning system were used to performed genetic alterations to create new cell models. XTT viability assays were used to evaluate cell response to different agents disturbing lysosomes. Confocal microscopy was used to study lysosomal physiology.</p> <p>RESULTS: Our results demonstrated more sensibility to specific lysosomal agents such as STF-62247, YM-201636 and vacuolin-1 in A704 and RCC-ER cells driven by the consecutive inactivation of PBRM1 and SETD2 after the loss of the VHL gene. The effect of the reintroduction of these genes on cell viability is also investigated.</p> <p>CONCLUSION: Altogether, the creation of these models will give us an opportunity to demonstrate the potential of targeting lysosomes in specific ccRCC subtypes and to contribute in the development of new therapeutic approaches in a context of precision medicine.</p>	<p>48 Murugesan, Alli THE CASE FOR KNOWLEDGE BASED ECONOMY: A COMPARISON OF CANADIAN ENTREPRENEURIAL UNIVERSITIES AND THE BIOHUNTRESS MODEL 1, 2 MURUGESAN_Alli, 2,3 GYALTSHEN_Shara, 2,3 GOLI_Shashanka, 2,4 LOUGHEAD_Lucas, 4 DAKOTA_Lutes, 1 FLEET_Gregory and 1 DOIRON_Daniel 1University of New Brunswick, Saint John; 2BioHuntress Therapeutics Inc., Saint John; 3University of New Brunswick, Fredericton; 4Economic Development Greater Saint John</p> <p>INTRODUCTION: The Canadian biotechnology and life sciences sector is a significant contributor to the innovation economy and one of the country's fastest growing industries. A high proportion of innovation activities occur through regional clustering. Regional clusters of knowledge-intensive industries can be observed by the employment levels of scientists, engineers and other highly trained employees within a concentrated region. The presence of a research-intensive university is always a driving factor. Entrepreneurship and academia are not always meaningfully associated with one another. The former is usually driven by products/profits while the latter through publishing/peer recognition. BioHuntress Therapeutics Inc. bridges both fields, facilitating a cultural shift in the mindset of traditional academia towards research. BioHuntress has been created to commercialize valuable academia-born inventions, and is currently establishing itself as an intermediary, R&D intensive biomedical incubator.</p> <p>OBJECTIVES: We evaluated the economic impact generated by Canada's entrepreneurial universities on their regional economies by examining the revenue and economic impact generated by research activities of UBC, UoW and UNB. Based on the commonalities of these models, we checked if it is reasonable that Saint John could also shift toward the knowledge-based economy.</p> <p>METHODS: While the direct impact of academic research on regional economies is difficult to measure, there are indicators. These include patents filed/granted, licensing deals, income, and spinoff companies launched. Collectively, they track research and commercialization activities, thereby providing valuable insight into how research-intensive universities drive the regional clustering of knowledge-intensive industries.</p> <p>RESULTS: The nucleation of academic entrepreneurial activities around and within universities have made a significant impact on their regional economies, directly through revenue and employment generated from new companies, as well as indirectly through the human capital effect.</p> <p>CONCLUSION: These entrepreneurial universities serve as successful innovative models demonstrating the positive impact of translational research on regional economies. Promoting and enhancing entrepreneurial culture through the endorsement of early stage incubators such as BioHuntress, life science accelerators, enhancement of technology transfer services, more supportive institutional infrastructure, and improvement of entrepreneurial and management skills of UNB graduates could transform the future economic landscape of Saint John, and even more broadly, the Atlantic region.</p>

<p>49 Krystal Binns PATIENTS' DEN: INNOVATION IN EMPOWERING PATIENTS TO SET RESEARCH PRIORITIES BINNS, Krystal1; DOUCET, Shelley2,3,4; COOK, Lauren5; LUKE, Alison6, STODDARD, Roger7; STANDING, Kevin8; and ROBINSON, Bryn9. 1NB SPOR PIHCI Network; 2,3,4Jarislowsky Chair in Interprofessional Patient-Centred Care, Associate Professor at the University of New Brunswick, Research Lead NB SPOR PIHCI Network; 5Maritime SPOR SUPPORT Unit; 6Centre for Research in Integrated Care; 7Patient partner; 8Patient Partner; 9Horizon Health Network. INTRODUCTION: Patient engagement has emerged as the next evolution of health research. Although patients are increasingly engaged as meaningful research partners, one area of engagement that has received little attention is patients' involvement in setting research priorities. OBJECTIVE: The purpose of this presentation is to present an innovative model of patient engagement in which patients took the lead in setting research priorities at two public events called the Patients' Den. METHODS: The Patients' Den was styled after the popular television series Shark Tank and Dragons' Den. The first Patients' Den was held May 10th, 2018. The second was held October 3rd, 2019. Approximately three months before the events, calls were advertised for prizes of \$2,500 and \$5,000 grants for patient-oriented research projects focused on primary and integrated health care innovations. Submissions were screened for eligibility, scientific merit, and feasibility by a panel of four methodology experts and one patient advisor. Shortlists of finalists were created. Finalists were then invited to present their proposal to a patient panel at a public forum. The patient panel was tasked with selecting the winning research teams. As part of the ongoing evaluation, we will distribute a survey to attendees and participants after the second event to gain further insight into the perceived strengths and weaknesses of the event. RESULTS: The inaugural Patients' Den event was held May 10th, 2018, and the second was held October 3rd, 2019. Approximately 140 stakeholders from a variety of backgrounds attended the events, including members of the public, patients, caregivers, clinicians, trainees, researchers, and decision-makers. In 2018, the event was the first of its kind in Canada and was livestreamed across the country. The Patients' Den events provided patient advisors with an opportunity to prioritize health research funding; exposed stakeholders to a model of meaningful patient engagement; and created a positive, collaborative environment for patient partners, researchers, and the public to engage in open dialogue without any barriers. CONCLUSION: Lessons learned will guide those interested in hosting a similar event and help build capacity and best practices for meaningful patient engagement.</p>	<p>50 Luke, Alison USING READERS' THEATRE AS AN INNOVATIVE APPROACH TO SHARE RESEARCH FINDINGS FOCUSED ON CHILDREN AND YOUTH WITH COMPLEX CARE NEED LUKE, Alison1, DOUCET, Shelley1, BELL, Sandra1, SZYMANSKI, Victor2, JACKSON, Poppy3 1University of New Brunswick Saint John 2NB Primary and Integrated Health Care Innovations (PIHCI) Network 3Centre for Research in Integrated Care (CRIC) BACKGROUND: Arts based knowledge translation (KT) in health research allows researchers to share findings in creative ways with the aims to increase engagement, create spaces for dialogue, and improve the accessibility of research findings. Readers' theatre, as a type of arts based KT, has been used in health research as a powerful tool when sharing qualitative research findings with a variety of audiences. OBJECTIVES: In this poster presentation, we will share our experiences developing and using readers' theatre as an innovative KT tool. Following each readers' theatre performance, audience members and readers will complete a survey so we can assess their thoughts and feelings on both the content, as well as the discussion it generated. METHODS: Our project employed readers' theatre as a framework for the creation of a variety of scenes using qualitative data that explored the experiences and needs of families who have children and youth with complex care needs. Our team interviewed 120 stakeholders, including families, as well as care providers across health, education, and social sectors. Data was analyzed using thematic analysis. Findings were shared with an expert in theatre from the Department of English at the University of New Brunswick (UNB) in Saint John. In collaboration with the research team, this expert created 12 scripts drawing on the qualitative experiences of families who care for children and youth with complex care needs for presentation in a variety of settings, such as health professional classes and workshops. RESULTS: The purpose of readers' theatre is to engage audience members to experience the research findings through both hearing and voicing the words of interview participants. This project involves presenting research findings as readers' theatre scenes in a variety of settings to allow diverse stakeholder groups the opportunity to embody the lives of these families and to foster patient-centred care. CONCLUSIONS: In summary, readers' theatre is an innovative KT tool that allows researchers to creatively share qualitative findings from health research focused on children and youth with complex care needs with a diverse range of groups.</p>
<p>51 Donna Bulman People Don't Still Whisper When They Talk About Alzheimer's Disease: Or do they? 1Bulman_Donna, 1RICKARDS_Tracey, 1HENRY_Justine, MCCLOSKEY_Rose, 1DIETCH_Patty 1University of New Brunswick INTRODUCTION: Stigma that is experienced by family/friend caregivers and health care professionals caring for people with dementia has a significant impact on quality of life. Understanding how stigma is experienced is critical as it is anticipated that the number of caregivers will increase in the future. OBJECTIVES: (1)To increase understanding of how stigma is experienced by family/friend caregivers and health care professionals caring for people with dementia within the New Brunswick context. (2) To explore how stigma is experienced using the theoretical perspective developed by Pryor and Reeder. METHODS: A qualitative descriptive approach is used. We conducted one-on-one semi-structured interviews with 19 health care professionals and 19 family/friend caregivers between 2016 and 2017. A thematic analysis was used to interpret the data. RESULTS: Although most of our findings were consistent with the theoretical model, we found that while participants were stigmatized frequently, they were not stigmatized due to lifestyle factors. Healthcare professionals articulated more instances of structural stigma than family/friend caregivers, and conflicting accounts were given about the relationship between rurality and stigmatization. CONCLUSION: Additional research is required to determine the relationship between the onset controllability of dementia, rurality, and stigma. It is also recommended that a variety of educational initiatives be developed, to ensure health care professionals and family/friend caregivers are aware of behaviors and stereotypes contributing to stigmatization of people living with dementia. Finally, building an evidence-base of effective interventions to alleviate stigma will contribute to the quality of life of family/friend caregivers and health care professionals.</p>	<p>52 Faith Moore MULTI-LEVEL LUMBAR SPINAL FUSION OFFERS CLINICALLY SIGNIFICANT REDUCTIONS IN PAIN AND DISABILITY 1,2MOORE_Faith, 3BIGNEY_Erin, 1,2,3MANSON_Neil, 3RICHARDSON_Eden, 3DARLING_Mariah, 3Dana El-Mughayyar 1,2,3ABRAHAM_Edward 1HHN; 2Dalhousie University; 3Canada East Spine Centre BACKGROUND: Studies have shown long segment spinal fusion surgeries can lead to more adverse events compared to shorter segment fusion, but exploration of the effect of fusion length on long-term outcomes is scarce. Previous literature comparing the effect of number of levels fused has focused on one level changes or failed to include thoracolumbar fusion greater than 5 levels. OBJECTIVE: To determine if an increase in the number of segments fused in thoracolumbar spinal fusion surgeries effects intraoperative and long-term outcomes. METHODS: A Prospectively collected retrospective cohort study. Participants (N =321) were adults receiving elective thoracolumbar spinal fusion that consented to being part of the CSORN data base. Patients were put into one of three cohorts based on the number of levels fused; 1 level (n=107), 2-4 levels (n=107) and 5+ levels (n=107). Outcomes measured included the Oswestry Disability Index (ODI), Numeric Rating scales for back and leg pain (NRS-B/NRS-L), patient satisfaction, length of stay in hospital, blood loss and adverse events. ANOVAs and chi-squared analysis were utilized. Tukey's Post Hoc analysis was used. Significance was p< 0.05. RESULTS: Increase in the number of levels fused resulted in significantly (p< 0.001) longer surgery duration and length of stay in the hospital; higher amounts of blood loss and adverse events. At the 24 month follow-up, the only significant difference between cohorts was that 1-level fusion had the significantly lower ODI and NRS-B pain scores than both 2-4 and 5+ cohorts. Change scores (baseline- 24months) show 5+ levels fusion reported significantly less improvement in pain (NRS-B & NRS-L). There was no significant difference between cohorts in patient reported satisfaction (p=0.234). CONCLUSIONS: Increasing the levels fused means a more negative intraoperative experience. However, for long term outcomes once fusion is multi-level there is no additional negative association with increasing levels fused.</p>

<p>53 Molly Gallibois THE ASSOCIATION BETWEEN FRAILTY STATUS AND SEDENTARY BEHAVIOUR FOR LONG TERM CARE RESIDENTS 1,2GALLIBOIS_Molly, 1,2SÉNÉCHAL_Martin, 3HANDRIGAN_Grant, 4JARRET_Pamela, 2MCGIBBON_Chris, 5CAISSIE_Linda, 2HERBERT_Jeff, 1,2BOUCHARD_Danielle 1Cardiometabolic Exercise and Lifestyle Laboratory, 2University of New Brunswick, 3Université de Moncton, 4Horizon Health Network, 5 Saint Thomas University INTRODUCTION: Older adults spend most of their time engaging in sedentary behaviour, particularly those living in long-term care (LTC) facilities. The impact of sedentary time on frailty is unknown. The objective of this study was to investigate the association between frailty status and sedentary behaviour amongst LTC residents. METHODS: This cross sectional analysis included 38 long-term care residents. Frailty was measured using the Clinical Frailty Scale (1-9) while total sitting/laying time, number of transitions from sitting to standing, upright time, and stepping time was collected over seven consecutive days via ActivPAL accelerometers. Association between frailty status and sedentary behaviour was tested using linear regression models adjusting for potential confounders RESULTS: Participants were 60.5% female with an average age of 85 years old. They spent an average of 91.44% of their day in a seated or reclined position. The average frailty status was 5.5 ± 1.35. Significant correlations were found between frailty status and upright time, sedentary time, and the number of transitions from sitting to standing. When adjusting for age, Body Mass Index, and sex, through the linear regression model, significant results were still found with r2 scores of 0.28, 0.32 and 0.14 for daily upright time, stepping time and the number of transitions accordingly. CONCLUSION: These findings suggest that sitting more and standing less is associated with frailty. Standing should be encouraged for LTC residents.</p>	<p>54 Power, Madeline and Russell, Madelaine AMINO ACIDS ACTIVATE THE ORPHAN GPCRS GPR88 AND MRGPRX2 1 POWER_Madeline, 1 RUSSELL_Madeline 1Mount Allison University INTRODUCTION: G-protein coupled receptors (GPCRs) are the target of many prescription, non-antibiotic drugs. The estimated 800 different GPCRs represent the largest family of proteins in the human genome. Importantly, there are many with no known ligand, known as orphan receptors. GPCRs are essential to cellular communication as they bind to a diverse range of signaling molecules, including metabolites, and transmit their presence intracellularly by coupling to G proteins. Indeed, L-amino acids have recently been shown to allosterically modulate Ca_r, a GPCR that regulates Ca²⁺ homeostasis in the parathyroid glands and kidneys. HYPOTHESIS: We hypothesize that free amino acids act as allosteric and orthosteric modulators for orphan GPCRs and in lipid metabolism GPCR signaling. The purpose of this study was to investigate amino acid activation of 72 orphan receptors and 72 lipid metabolism GPCRs, including receptors with known lipid ligands and receptors that alter lipid metabolism. METHODS: A high throughput screening (HTS) methodology designed to link GPCR receptor activity to a luciferase reporter was used to quantify receptor activation. Human embryonic kidney cells expressing the necessary assay components (HTLA) were transfected with the 144 GPCRs of interest 24 hr prior to treatment with a mixture of 20 essential and nonessential amino acids. Those GPCRs showing a statistically significant change in luminescence were identified as strong receptor candidates for further evaluation. RESULTS: Following the initial screen performed in triplicate, ten orphan receptors showed a significant change in luminescent signaling when compared with untreated controls. Of these, GPR88 and MRGPRX2 had the highest fold-change activation 4.20 and 3.18, respectively. Ongoing studies are using subgroups of amino acids to ultimately identify novel GPCR-amino acid interactions. CONCLUSIONS: By identifying amino acid signaling at orphan and lipid metabolism GPCRs, this study will act as a first step in understanding the role of metabolite signaling at GPCRs in the regulation of complex metabolic processes. This will contribute to the growing knowledge that metabolites act as important signaling molecules while also providing novel information on receptors implicated in obesity, diabetes, and/or the metabolic syndrome.</p>
<p>55 Lurette,Olivier THE SHORT STORY OF MITOCHONDRIA: MITOCHONDRIAL SRC TARGETS ATP5B TO REDUCE MITOCHONDRIA LENGTH 1 LURETTE_Olivier, 1 GUEDOUARI_Hala, 1 ROBICHAUD_Julie-Pier, 2 MORRIS_Jordan, 2 PRUDENT_Julien, 1 HÉBERT CHATELAIN_Étienne 1 Canada Research Chair in Mitochondrial Signaling and Physiopathology, Dpt. Of Biology, University of Moncton. 2 MRC Mitochondrial Biology Unit, University of Cambridge,UK INTRODUCTION: Mitochondria are dynamic organelles undergoing cycles of fusion and fission. Mitochondrial number, shape and size are therefore always changing to maintain mitochondrial activity. Alterations in mitochondrial function are associated with various pathologies such as Alzheimer's and Parkinson's diseases. Src is a kinase implicated in cellular processes like proliferation, morphology and survival. Although Src is known to be located in mitochondria where it targets several proteins, its impact on mitochondrial dynamics and activity remain unknown. OBJECTIVES: The aims of this work are (i) to discriminate the effect of intra and extra mitochondrial Src on mitochondrial physiology, and (ii) identify the targets of Src. METHODS: To assess the impact of Src on mitochondrial respiration and shape, mutant of Src specifically targeted to the organelle were expressed in different cell types. Targets of Src were identified using biotin proximity-dependent labelling. RESULTS: Deletion of Src down regulates mitochondrial respiration and induces mitochondrial elongation in mouse embryonic fibroblasts and HeLa cells. Re-expression of Src only in mitochondria is sufficient to rescue alteration of mitochondrial shape in Src^{-/-} cells. We identified Atp5B-Y418 as target of mitochondrial Src. Strikingly, expression of a phospho-mimetic of Atp5B-Y418 also rescues mitochondrial defect induced by deletion of Src. Finally, mitochondria do not elongate in cells over-expressing mitochondrial Src and phospho-mimetic of Atp5B-Y418 upon nutrient deprivation. CONCLUSIONS: The study shows that intra-mitochondrial Src targets Atp5B-Y418 to reduce mitochondria size. This process must be finely tuned to allow mitochondria to adapt to nutrient stress. Since the discovery of mitochondrial Src almost 20 years ago, this study is the first to clearly state its impact on mitochondrial dynamics.</p>	<p>56 Colpitts, Benjamin CHANGES IN RESTING METABOLIC RATE, METABOLIC FLEXIBILITY, AND GLUCOSE TOLERANCE FOLLOWING SPRINT INTERVAL TRAINING IN ADULTS LIVING WITH OBESITY 1,2COLPITTS_Benjamin H., 2SEAMAN_Ken, 1,2BOUCHARD_Danielle R., 1,2SÉNÉCHAL_Martin. 1Cardiometabolic Exercise & Lifestyle Laboratory; 2Faculty of Kinesiology, University of New Brunswick BACKGROUND: Obesity is associated with a higher resting metabolic rate (RMR), an impaired metabolic flexibility and a lower glucose tolerance. In healthy individuals, exercise has been shown to enhance performance and overall health through an improvement in these variables. However, limited research has investigated the relationship between sprint interval training (SIT) and change in RMR, metabolic flexibility, and glucose tolerance in individuals living with obesity. OBJECTIVES: The primary objective of this study was to compare changes in RMR, metabolic flexibility, and glucose tolerance in individuals living with obesity compared to individuals without obesity following a 4-week SIT intervention. METHODS: Adults living with obesity (BMI ≥ 30 kg/m²; n=9) or without obesity (BMI ≥ 18.5 ≤ 24.9 kg/m²; n=13) who are physically inactive were recruited. Participants took part in a 4-week SIT intervention performed three times per week. The SIT intervention consisted of a 30-sec Wingate with a load of 7.5% of the participant's body weight and was separated by four minutes of active recovery at 59 watts. Outcome measures were changes in RMR and metabolic flexibility (measured with indirect calorimetry), and glucose tolerance measured with an oral glucose tolerance test. RESULTS: A significant change in RQ was observed in the normal weight group (0.79 ± 0.04 vs. 0.82 ± 0.04; p=0.017), while no significant difference was observed in individuals living with obesity following 4-week SIT (p>0.05). Changes in RQ were significantly different between the two groups (normal weight: 4.6% ± 6.0% vs. obese: -0.6% ± 4.6; p=0.040). No significant differences were observed following the 4-week SIT intervention for RMR and glucose tolerance (p>0.05). CONCLUSION: Individuals living with obesity may respond differently to SIT regarding changes in metabolic flexibility compared to individuals without obesity; however, similar changes were observed in glucose tolerance and RMR. More research is needed on SIT and improvements in metabolic health outcomes in individuals living with obesity to further understand the relationship between them.</p>

57 Hamel-Côté, Geneviève

Rapid modulation of mitochondrial functions and PKA pathway by targeting a G-protein coupled receptor to the mitochondria.

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INTRODUCTION: G-Protein Coupled Receptors can modulate mitochondrial functions via G protein activation. This activation can occur both inside and outside the mitochondria. Depending on their location, G protein effectors such as PKA are exposed to different feedback mechanisms, many of them involving phosphatases. It remains unknown how intra- or extra-mitochondrial G protein activation differently modulates these effectors and how this affects mitochondria functions.

HYPOTHESIS: Intra- and extra-mitochondrial G protein activation differently fine-tunes mitochondrial functions by inducing different feedback mechanisms.

AIMS: 1) Determine the impact of intra- and extra-mitochondrial signaling pathways triggered by G proteins on mitochondrial functions. 2) Characterize the spatio-temporal dynamics of the feedback mechanisms.

METHODS: Mouse Embryonic Fibroblasts (MEFs) stably expressing either (i) an untargeted mutant receptor, (ii) DREADD-Gs (Designer Receptors Exclusively Activated by Designer Drugs that couple to Gs) or (iii) DREADD-Gs targeted to the mitochondria (MLS-DREADD-Gs). Both receptors activate G proteins only after stimulation by clozapine-N-oxide (CNO).

Mitochondrial membrane potential (MMP) and superoxide production levels were determined using MitoTrackerRed™ and MitoSOX™, respectively. PKA signaling was analyzed in subcellular fractions by western blotting, whereas phosphatase activity was evaluated by in-gel phosphatase assays.

RESULTS: Our results show that CNO increased MMP only in cells expressing MLS-DREADD-Gs. We also observed that over-expression of PKA inside mitochondria increases superoxide production, suggesting that MLS-DREADD-Gs affects mitochondrial functions via mitochondrial PKA. Although both DREADD constructs increased phospho-PKA substrate levels after stimulation, only the MLS-DREADD-Gs increased phospho-PKA substrate and PKA levels in mitochondria-enriched fractions. Other studies demonstrate that the downregulation of phosphatase activity can amplify PKA signaling. Here we show that stimulating DREADD-Gs increased phosphatase activity in the mitochondria-enriched fractions whereas stimulating MLS-DREADD-Gs decreased it. Next, we examined the localization of phosphatases involved in this pathway: activated MLS-DREADD-Gs decreased Protein-phosphatase (PP)-1, but not PP-2 levels in the mitochondria-enriched fractions.

CONCLUSION: Altogether, our results indicate that activation of MLS-DREADD-Gs results in a faster modulation of mitochondrial function probably by allowing a rapid activation and re-localization of the PKA pathway. These data suggest that mitochondrial activation of G proteins could be a manner for cells to fine-tune mitochondrial functions rapidly.

59 MacKinnon, Brandon

DEORPHANIZING CLASS A G-PROTEIN COUPLED RECEPTORS USING ARTIFICIAL SWEETENERS

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INTRODUCTION: We live in a society in which we are bombarded with click bait about diets. Artificial sweeteners are gaining increasing popularity as an alternative to sugar; however, new studies in rats show that prolonged exposure to artificial sweeteners increases breast, brain and urinary cancer risk and is associated with long-term metabolic disruptions. These sweeteners have demonstrated activity that is mediated via G-protein coupled receptors (GPCRs). GPCRs mediate many of our physiological responses to stimulants; however, around 100 of these receptors are deemed orphan, and may represent targets for sweetener activation.

HYPOTHESIS: The artificial sweeteners aspartame and acesulfame K can activate multiple receptors, including orphan GPCRs, to mediate the long-term metabolic effects of artificial sweeteners in the body.

METHODS: A high throughput screen platform was used to simultaneously quantify β -arrestin recruitment to 72 orphan GPCRs. The cells were stimulated by the addition of the artificial sweeteners aspartame and acesulfame K for 24 hours and their luminescence was then measured to quantify receptor activation.

RESULTS: Preliminary findings show that there were seven orphan receptors with increased activation following sweetener treatment. Of particular note the following GPCRs due to them having the highest fold change from the luminescence performed; GPR4 which is a proton-sensing G-protein coupled receptor, GPR32 which has no known function and GPR84 whose activation is involved in the inflammatory response, but the mechanisms have been incompletely described. Validation is currently underway.

CONCLUSIONS: If these three GPCRs are proven to have artificial sweeteners as ligands, this will represent the first known ligands for these orphan receptors facilitating future studies aimed at determining the biological function. These findings could have implications for the role of GPR84 and artificial sweeteners with inflammatory responses.

58 Weir, Jackson

TAZ REGULATES IMMUNE MARKERS IN MULTIPLE MYELOMA

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INTRODUCTION: Multiple myeloma is an incurable hematological cancer that kills upwards of 110,000 people every year. Because most patients ultimately relapse, there are ongoing efforts to develop novel therapeutics. Immunotherapy offers promise in some cancer treatment but has been thus far disappointing as a monotherapy for myeloma patients. Several types of immunotherapies such as monoclonal antibodies or checkpoint inhibitors work by targeting specific immune markers on the surface of myeloma cells. Understanding how the expression of these immune markers is controlled can lead to better selection of patients that will benefit from these types of therapies, and the development of new therapies.

HYPOTHESIS: Our previous studies have shown that TAZ can function as a tumour suppressor in myeloma by downregulating MYC and inducing cell death. Based on transcriptome analysis, our data also suggests that TAZ can specifically regulate the expression of four immune markers: SLAMF2, SLAMF7, PDL1, and PDL2. This study aimed to validate the TAZ-mediated expression of these immune markers.

METHODS: Publicly available myeloma datasets were probed to evaluate the correlation between TAZ and immune marker expression. Human myeloma cell lines were transduced with lentiviral constructs expressing TAZ or different TAZ mutants to evaluate mRNA and surface expression of the immune markers.

RESULTS: In clinical datasets, TAZ expression negatively correlates with SLAMF7 and SLAMF2 and positively correlates with PDL1 and PDL2. TAZ overexpression reduces SLAMF7 and SLAMF2 mRNA expression and induces PDL1 and PLD2 mRNA expression. Flow cytometry analysis shows that consistently, TAZ significantly upregulates PDL1 surface expression while moderately reducing SLAMF7 surface expression.

CONCLUSIONS: Our study shows that TAZ regulates immune marker expression in myeloma cell lines and clinical patient datasets. We provide deeper insight into the role of TAZ in multiple myeloma that could lead to the rational development of immune-combination therapies.

60 Nicholas Fernandez

ORPHAN GPCRS GPR17 AND GPR52 ARE ACTIVATED BY THE ARTIFICIAL SWEETENERS SUCRALOSE AND SACCHARIN

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INTRODUCTION: Artificial sweeteners (AS) have long been considered to be a non-toxic alternative for sugars and effective tools in promoting weight loss through a reduction in calorie consumption. However, recent trends suggest that long-term AS exposure may contribute to the opposite effect in some patients, leading to gut dysbiosis, obesity and type II diabetes. G-Protein coupled receptors (GPCRs) represent a family of more than 700 transmembrane receptor proteins, responsible for many cell-cell and cell-environment signalling processes, approximately 100 of these receptors remain without known ligands and comprise a family known as orphan GPCRs.

HYPOTHESIS: The full signal transduction pathway which contributes to artificial sweetener sensing in the GI tract has yet to be fully understood and orphan GPCRs may play a role in metabolic effects which are associated with AS consumption. We aimed to determine if the common artificial sweeteners, sucralose and saccharin may act as ligands this set of receptors.

METHODS: 72 orphan GPCRs were treated with a combination of saccharin and sucralose at concentrations of 1 mM and 300 μ M, respectively. Receptor activation was quantified using the Parallel Receptor-ome Expression and Screening via Transcriptional Output - TANGO (PRESTO-TANGO) platform, which measures β -arrestin recruitment.

RESULTS: GPR17 and GPR52 were identified as having a significant difference between receptor activity with and without AS treatment with 1.3-fold and 2.0-fold increases for GPR17 and GPR52, respectively. Currently, experiments are being conducted through the PRESTO-TANGO platform to determine the dose-response relationship for these two receptors with sucralose and saccharin, alone and in combination.

CONCLUSIONS: These findings promise to develop understanding of sweet molecule sensing and metabolic reactions to AS consumption. Specifically, these receptors provide a mechanism by which AS may generate physiological signals independent of interactions with the sweet taste receptor, T1R2/T1R3.

<p>61 Fareeha Quayyum BAND-AID SOLUTIONS: SMALL BUSINESS OWNERS' PERSPECTIVES ON A SUGAR-SWEETENED BEVERAGE TAX 1QUAYYUM_Fareeha, 1BOMBAK_Andrea, 2MANN_Kelsey, 2BECK_Krista, 3LAPLANTE_Jeff, 4CHAMPAGNE_Michael, 2RIEDIGER_Natalie 1University of New Brunswick, 2University of Manitoba, 3National Indigenous Diabetes Association, 4Aboriginal Youth Opportunities</p> <p>INTRODUCTION: Implementing an excise tax on sugar-sweetened beverages (SSB) has gained traction around the globe as a health intervention targeting diabetes and other health concerns related to excess sugar intake. However, there is a lack of research that examines small business owners' attitudes toward a proposed future SSB tax in Canada and their experiences of selling SSB.</p> <p>AIMS: This qualitative study explores perceptions of the SSB tax among small business owners or managers in Manitoba of varying economic status, as well as their recommendations for health interventions and policymaking to reduce sugar consumption.</p> <p>METHODS: Participants (n = 7) are self-identified small business owners or managers from Manitoba neighborhoods of high, median, and low incomes, including rural Manitoba. Semi-structured interviews were conducted with participants, which were recorded and transcribed. Interview transcriptions and field notes underwent thematic analysis in NVivo 12 to identify emerging themes.</p> <p>RESULTS: Five participants said they were against the SSB tax, while two participants vocalized their support. Emerging themes were concerns about the tax's effectiveness and the need for other reforms. Most participants felt the tax would not achieve its goals, as they predicted that the majority of customers would continue with their former purchasing patterns of SSB. Main concerns about the tax's effectiveness were that it does not address the root causes of high sugar consumption and that many consumers will ignore the small price increase. Participants also called for the government to focus on other community issues, citing changes to the healthcare system and financially assisting vulnerable community members as more pressing matters than SSB consumption.</p> <p>CONCLUSIONS: Small business owner perspectives provide key insights into the efficacy of SSB taxation as a health intervention, as small businesses influence local food environments and interact closely with target demographics of the SSB tax. Their calls for alternative and more comprehensive health interventions, as well as for the government to take action within their communities, should be recognized and researched further.</p>	<p>62 Sarah Campbell Innovating Pediatric Behavioural Assessments and Care Pathways: Implementing a Community Social Pediatrics Model - Public Consultation Phase 1,2GANDER_Sarah, 1,3CAMPBELL_Sarah, 1FLOOD_Kathryn, 1ROBINSON, Bryn. 1Horizon Health Network, 2 Memorial University of Newfoundland, 3University of New Brunswick.</p> <p>INTRODUCTION : It is well-documented that children facing social disparities, trauma and toxic stress will experience a disproportionate number of negative physical and mental health outcomes across their lifespan. A common manifestation of this is the increasing prevalence of behaviour-related diagnoses in school-aged children. Regardless of whether a child suffers from a true behaviour disorder, or they are displaying symptoms that relate to complex and challenging social conditions, they require a thoughtful, collaborative and inclusive approach to their care. Community Social Pediatrics (CSP) adopts such an approach.</p> <p>OBJECTIVE : The purpose of the current study is to examine and understand the experiences of children and their families during the referral and treatment process for pediatric behavioural referrals. We will also explore the perspective of service providers on the challenges and strengths of the current system.</p> <p>METHODS: A focus group was conducted with caregivers whose children were in various stages of care/treatment. Questions focused on: positive and negative experiences in the system; efficacy of services; the child's experience; wait times; and system cohesion. A second session was conducted with relevant professionals. Topics of this session included: policy and system barriers; compliance; burn-out; and insights into the family experience.</p> <p>RESULTS: Families' positive experiences were associated with respectful and effective communication, integrated wrap-around services, assistance with navigation, and a child-centred approach. Negative experiences were rooted in access barriers, feeling stigmatized by service providers, and a lack of mental health services for children. The service providers echoed these issues: provide equitable and efficient access to services; understand the needs of the family; strengthen relationships with partners and clients; and create a supportive working environment.</p> <p>CONCLUSIONS: Social Pediatrics seeks to impact health at the community level and addresses the needs of children and families in a way that reflects the social context of their lives, community and society. Assessment and care procedures are delivered through a medical-legal-social model designed to remove barriers, reduce fragmentation and increase collaboration and communication across the entire care team. The findings of this study will help inform the delivery of a CSP program through the lens of our community's local context.</p>
<p>63 Kendra Cooling SO FAR SO GOOD: AN EXPLORATORY ANALYSIS OF A STANDING INTERVENTION WITH OLDER ADULTS WHO ARE FRAIL 1,2 COOLING_Kendra, 1 BOUCHARD_Danielle, 1 GALLIBOIS_Molly, 1 SÉNÉCHAL_Martin, 1 READ_Emily, 1 HEBERT_Jeff, 3 CAISSIE_Linda, 4 JARRETT_Pam, 1 MCGIBBON_Chris, 2 HANDRIGAN_Grant 1.Faculty of Kinesiology, University of New Brunswick, 2.École de kinésiologie et de loisir, Université de Moncton, Moncton, N.B, 3.Faculty of Arts, St. Thomas University, Fredericton, N.B. 4.Horizon Health Network, Saint-John, N.B.</p> <p>BACKGROUND: Frailty is characterized by having three of five qualifying factors– reduced gait speed, poor grip strength, decreased body mass, inactivity, and self-reported exhaustion. Physical activity has been demonstrated to improve frailty status in older adults. This is a randomized controlled trial that implements standing in older adults who are frail as a physical activity intervention.</p> <p>OBJECTIVES: By encouraging assisted standing time up to 100 minutes/ week for 22 weeks, we hypothesize that the participants will improve their standing ability and that this improvement will be evidenced by more standing, for longer periods of time and this exposure will increase physical, cognitive and psychosocial indicators of wellbeing in this population. In this exploratory analysis, we aim to measure total standing time after 11 weeks of a 22-week intervention in order to evaluate participant adherence and daily standing time evolution.</p> <p>METHODS: All participants are encouraged and assisted with up to 20 minutes of daily standing time. For this analysis, we looked at daily total average standing time, weekly total average standing time, and intervention adherence for a total of 50 participants.</p> <p>RESULTS: Daily total average standing time was 10.6±6.7 minutes (x̄±sd). Weekly total average standing time was 52.9±33.7 (x̄±sd) minutes. Out of 50 participants, nine participants no longer participate in the daily standing sessions, resulting in a dropout rate of 18%.</p> <p>CONCLUSIONS: There is a large amount of variability in the total daily and weekly average standing times for the participants midway through this intervention. It is currently unknown how this will affect the post intervention measures of physical, cognitive and psychosocial indicators of wellbeing in this population. Keywords: Frailty; Standing; Older adults; attrition</p>	<p>64 Grant Handrigan Assessing the validity of a low-cost microcontroller-based load cell amplifier for measuring lower limb and upper limb muscular force. 1HANDRIGAN_Grant, 1GAUDET_Julie 1École de kinésiologie et de loisir, Université de Moncton, Moncton, N.B.</p> <p>BACKGROUND: Lower limb and upper limb maximum muscular force development is an important indicator of physical capacity. There are many ways to measure maximum muscle force, ranging from manual muscle testing to sophisticated instruments that can measure different types of muscle contractions for different body segments, under different velocity and angular conditions. Isometric muscle force development correlates well with the most advanced methods of muscle force and continues to be widely used in laboratory and clinical settings, primarily because of its ease of measure.</p> <p>OBJECTIVES: The objective of this study was to assess the validity of a low-cost microcontroller-based load cell amplifier for measuring lower limb and upper limb maximal muscular force development.</p> <p>METHODS: Thirty one participants underwent two testing sessions on two separate days in this experimental protocol. Each testing session lasted approximately 30 minutes and consisted of four trials of maximum force development of the lower limb (isometric leg extension), and four trials of maximum force development of the upper limb (isometric bicep flexion). Each testing session, either upper or lower body, was presented in a randomized order. Muscular force development was measured using a load cell and the output was split into a commercial load-cell amplifier (2100, Vishay, USA) and into a low-cost microcontroller-based load-cell amplifier (HX711, Robotshop, USA).</p> <p>RESULTS: Twenty-seven females and four males participated in this study (21.1±2.3 years, 65.1±19.6kg, 165±8cm). Mean lower body muscular force was measured at 24.9±8 kg for the microcontroller-based load-cell amplifier and 26.5±8.5 kg for the commercial load cell amplifier. Mean upper body muscular force was measured at 9.7±3.4 kg for the microcontroller-based load-cell amplifier and 10.6±3.5 kg for the commercial load cell amplifier.</p> <p>CONCLUSIONS: The low-cost microcontroller-based load-cell amplifier is comparable to a commercial load cell amplifier for measuring lower limb and upper limb maximum isometric muscular force.</p>

<p>65 Margaret Holland CHILDREN WITH MEDICAL COMPLEXITY ARE HIGH RISK, HIGH USE PATIENTS IN ACUTE HOSPITAL SETTINGS. 1,2HOLLAND_Margaret, 1,3LUCK_Kerrie, 1,2,3LUKE_Alison, 1,2SZYMANSKI_Victor, 1,2,3,4,5DOUCET_Shelley 1University of New Brunswick in Saint John; 2NB SPOR PIHCI Network; 3NaviCare/SoinsNavi; 4Jarislowsky Chair in Interprofessional Patient-Centred Care, University of New Brunswick in Saint John; 5Dalhousie Medicine New Brunswick INTRODUCTION: Children with medical complexity (CMC) have multiple, chronic, severe health conditions and typically require more and different types of healthcare than other children. There is little population-based information on CMC in the existing Canadian literature. An accurate portrait of the pattern of hospital utilization and outcomes is needed to set targets and inform efforts to improve healthcare delivery for CMC. PURPOSE: To investigate hospital utilization and outcomes of CMC in Canada. METHODS: STUDY DESIGN: Population-based cohort study. PARTICIPANTS: Hospitalized children (aged 0 to 17 years) from all regions in Canada except for Quebec (N = 191,000). DATA: 2006/07 to 2008/09 Discharge Abstract Database (DAD) linked to the 2006 Census OUTCOMES: In-hospital mortality, 28 day unplanned readmission, admission to a step down or intensive care unit (ICU), length of stay, and cost of care. EXPOSURE: Pediatric Medical Complexity (PMCA 3.0). CMC are children with chronic conditions affecting 2 or more organ systems, a progressive chronic condition, malignancy, or continuous technology dependence. RESULTS: 6.2% of hospitalized children in Canada were identified as being CMC. Cost of hospitalization for CMC was 3 times higher on average than for other hospitalized children. The average length of stay for CMC was 3.2 times longer than other hospitalized children. Multivariate logistic regression analyses indicated that hospitalized CMC have 3.97 greater odds of being admitted to an ICU or step-down unit (95% CI: 3.75 - 4.21); 12.88 greater odds of dying in the hospital (95% CI: 10.28 - 16.14); and 2.12 greater odds of experiencing an unplanned hospital readmission within 8 to 28 days (95% CI: 1.86 - 2.42). Hospitalized CMC often have significant social complexity, including but not limited to, living in a rural/remote community, low socioeconomic status, inadequate housing, lone parent/caregiver family, and Aboriginal status. CONCLUSIONS: CMC account for a disproportionate share of hospital expenditures in Canada. CMC are at increased risk for several adverse outcomes including in-hospital mortality, admission to an ICU or step-down unit, longer length of stay, and 28-day unplanned readmission. Interventions for CMC have the potential to result in considerable cost-savings and improvements in overall health and well-being for CMC.</p>	<p>66 Mattie, Anna FEASIBILITY AND USABILITY OF THE WELL-ASSIST SYSTEM BY ROUTINIFY FOR SELF-CARE AND CAREGIVING 1,2 MATTIE_Anna, 1,2 HERRINGTON_Madison, 1 DONOVAN_Cindy, 2 MCCLOSKEY_Rose 1LLV; 2UNB INTRODUCTION: Research suggests as individuals age, they prefer to remain within their home for as long as possible instead of moving to long-term care facilities. The concept of aging in place is to promote aging individuals to remain active within their own homes by providing supportive health care services when needed. As the demand for care increases, aging in place becomes an important policy to prevent capable individuals from relocating. Routinify WellAssist technology has been created to provide a health care service within homes promote of aging in place by delivering individualized care to aging adults. HYPOTHESIS: By implementing Routinify WellAssist technology in the home, the study aims to promote of aging in place by encouraging independence through the delivery of routine reminders to the aging adult using technology. These reminders serve to maintain wellness for individuals while they age in place and reduce informal caregiver burden and avoid relocation. METHODS: A mixed method study was conducted within New Brunswick area using quantitative and qualitative measurements. Scales employed in the study were used to investigate self-efficacy, self-compassion, and aspects of the wellness index to measure changes in perceived independence of the aging adults. Interviews were also conducted to determine the effectiveness of Routinify WellAssist technology as an of aging in place strategy. Surveys were completed with caregivers to determine whether they perceive an increase in independence by minimizing caregiver burden through the use of the technology. RESULTS: Preliminary results from the study have shown that Routinify WellAssist technology is an affirmative resource that can be used to support of aging in place by potentially increasing independence levels in aging adults through improvement in self-efficacy, self-compassion, and wellness. Caregivers have indicated feeling less burnout from caregiving in result of a decrease in dependency levels from the aging adult due to the support provided by the technology. CONCLUSION: The findings suggest that Routinify WellAssist technology may potentially promote of aging in place for adults. By encouraging independence through the delivery of routine reminders the use of the technology may assist in deferring the need of long-term care facilities for aging adults.</p>
<p>67 Pakkiriswami, Shanmugasundaram A PEPTIDE-ENABLED LAB-ON-A-CHIP PLATFORM FOR EXTRACELLULAR VESICLE CAPTURE AND DETECTION: A PATH TOWARDS POINT-OF-CARE LIQUIDBIOPSY 1PAKKIRISWAMI_Shanmugasundaram, 2RAJU_Duraichelvan, 2BATHINI_Srinivas, 2BADILESCU_Simona, 2PACKIRISAMY_Muthukumarana, 1OUELLETTE_Rodney, 1GHOSH_Anirban, 1Atlantic Cancer Research Institute, Moncton, New Brunswick, Canada. 2Department of Mechanical Industrial and Aerospace Engineering, Optical-Bio Microsystems Laboratory, Concordia University, Montreal, Canada. INTRODUCTION: Extracellular vesicles (EVs) are small extracellular membrane bound nano-vesicles of 30-300 nm in size that are packed with molecules such as DNA, RNA, proteins and lipids. Cancer-derived EVs have emerged as a potential source of material for liquid biopsy-based diagnostics due to their high concentration and stability in body fluids. Here we present a simple peptide-enabled microfluidic lab-on-a-chip (LOC) platform for capture and detection of EVs directly from bio fluids. OBJECTIVE: This work is aimed to develop a clinically suitable LOC device for EV detection, which could significantly improve the routine diagnosis of liquid biopsy. METHODOLOGY: To develop the LOC, gold nanoparticles were deposited onto glass substrate to create gold nano-islands and then PDMS is bonded using plasma discharge. The gold nanoislands were functionalized through a linker to immobilize streptavidin. Biotinylated Vn96, a synthetic peptide that binds EVs with high efficiency, was grafted onto streptavidin to capture EVs present in biofluids. To determine the functionalization of the gold nanoislands with the linker, followed by streptavidin and Vn96 binding, localized surface plasmon resonance (LSPR) spectrum was recorded at each stage of the bio-sensing protocol. We performed nano particle tracking analysis (NTA) to count / size-distribution of EVs eluted from the chip, ddPCR for RNaseP gene quantitation and ELISA for EV surface proteins. RESULTS: The collected spectra showed a red-shift of gold-LSPR band around 6 nm that resulted from the high affinity binding of Vn96 (on-gold nano-island) with EVs, which provided a means of measuring captured EVs by LSPR sensing. The NTA showed that the total number of EVs is approximately around 1x10⁸ in the eluted fraction from Vn96 chip. We also quantitated RNaseP DNA copy number present in EVs eluted from the chip. We tested ELISA-like assay to identify EV-surface molecules like CD63 in the Vn96-chip and are proceeding with experiments to assay miRNA. CONCLUSION: The obtained results show that Vn96 based lab-on-a-chip platform could be used to detect EV-specific molecular markers. To improve the versatility of this microfluidic platform, fluorophore tagged probes against EVs specific proteins, miRNA and DNA can be used for on-chip detection in liquid biopsy.</p>	<p>68 Liu, Tong CO-OCCURRING HOUSING INSTABILITY AND DRUG USE RESULT IN COMPLICATED HEALTH NEEDS AND REQUIRE UNIQUE POLICY INTERVENTION. 1 LIU_Tong, 2 PASSI_Jenna, 2 WILLIAMS_Nicole, 2 MILANEY_Katrina, 1 DUTTON_Daniel 1 Dalhousie Medicine New Brunswick, 2 University of Calgary BACKGROUND: Substantial effort has been made to gather data from people experiencing homelessness across Canada. The challenge is that survey tools are often non-standard and comparison across regions is lacking. Data driven research on drug consumption, homelessness, and related risk factors are critical to informing public health policy. OBJECTIVES: Data from two surveys in Alberta are presented here, with their novel findings and policy implications. Our objectives are to (1) inform conference participants of the tools developed to measure the relationships between the perceived need for health services among those experiencing homelessness and using drugs; (2) Display key relationships from three studies conducted using this data. METHODS: Summary statistics between groups of interest across the three studies were compared with t-tests, chi-square tests, or correlation coefficients. Data analysis was conducted using linear and logistic regression. RESULTS: Key results include: (1)Housing instability is associated with twice the likelihood of hospital utilization among people who use drugs (OR=2.2); (2) Diagnosis with addition or mental health problem is associated with hospital use, and that relationship is modified by sex, such that females are extremely likely to rely on hospital services (difference in magnitudes by sex = 300%); (3) Despite the higher utilization of hospitals, unmet health needs are much more prevalent in those experiencing housing instability. (OR=2.4); (4) Suicide attempts and psychiatric hospital stays among people experiencing homelessness are reported more frequently by women, who seem to be disproportionately diagnosed with mental illness (OR=1.9) CONCLUSIONS: Among people experiencing homelessness needs are complex. Women have substantially more need than men with respect to mental health care needs, drug use can change the type of health care needs required, and males and females experience different reactions to homelessness. Policy prescriptions and homeless prevention rely on this knowledge (for example, triage into housing first programs). Females who use drugs seem to be at particularly high risk for high cost health care use, and intervention through social care organizations could have a higher benefit than hospitalization.</p>

69 Lees, Marcus

INACTIVE OLDER ADULTS EXERCISING AT HOME WITHOUT SPECIALIZED EQUIPMENT: AN EXPLORATORY CASE STUDY ON HOME-STEPS

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INTRODUCTION: Older adults experience physical activity barriers such as time, cost, and transportation. Many exercise guidelines recommend aerobic activity and resistance exercise for health benefits. Thus, this study aimed to influence physical activity while using materials that could be assembled at home.

OBJECTIVES: Influence regular physical activity for inactive older adults with a home-based exercise program using non-specialized equipment. Three objectives were established: 1) quantify aerobic intensity; 2) measure changes step count; 3) explore participant barriers and enablers to Home-steps.

METHODS: Home-steps consisted of Square-Stepping Exercise (SSE) for the aerobic intensity and body weight circuit training for resistance. SSE includes forward, backward, lateral and oblique steps, and step patterns. Developed by Shigematsu & Okura in Japan, 2006, SSE combines a memory task and moderate intensity. It is low cost and easily administered, stepping patterns can range in difficulty. Circuit training with nonspecialized equipment was pilot-tested with volunteers to choose appropriate exercises.

RESULTS: Over 3 weeks, participants completed Home-steps program. From interviewing participants, the most common physical activity barrier was time management and the most common physical activity enabler was convenience. Pre-intervention, participants commonly self-reported a lack of motivation as an important barrier to physical activity.

CONCLUSIONS: In conclusion, a home-based exercise program using nonspecialized equipment could help older adults reach CPAG and influence regular physical activity. After exploring participant enablers, convenience was identified as a facilitator to home-based exercise.

Thank you to all who participated!

Merci à tous ceux qui ont participé!