

**1. Using a Social Ecological Approach to Explain Exercise Behaviour From a Gender Perspective in Cardiac Patients not Attending Cardiac Rehabilitation in Nova Scotia**

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**Team Members:**

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Coronary heart disease is the leading cause of death in Nova Scotia. A lack of exercise fitness is one potential mechanism used to explain this high mortality rate. Although research in cardiac rehabilitation (CR) has consistently shown that patients experience significant increases in exercise fitness upon completion, uptake to these programs has been reported to be as low as 15%. In addition, there is a gender disparity with more males engaging in regular exercise than females. This project will investigate why exercise levels are low in cardiac patients not attending CR, and why the gender disparity exists. A multi-disciplinary team within Dalhousie and across institutions outside of Nova Scotia will be established and training in health psychology will be provided to new researchers in the field.

**2. The Perspectives of Service Providers Regarding Factors Influencing the Stigmatization and Discrimination of People who are Illicit Drug Users and are Hepatitis C Positive**

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Surveys of health care professionals have revealed negative attitudes regarding illicit drug users who have tested positive for Hepatitis C. These perceptions are often based on misinformation and beliefs that these individuals are criminal, irresponsible, and immoral. Interventions have not been successful in changing practitioners' behaviours

over the long term. The purpose of this research is to identify factors beyond the individual practitioner and specific to hospital settings that contribute to these negative perceptions and potentially result in inadequate and/or inappropriate care. Interviews will be conducted with service providers in relevant services or agencies in both Halifax and Cape Breton to determine the factors that contribute to the stigmatization. The results will then be discussed with those interviewed to determine how these factors can be modified.

### **3. Evaluation of an Integrated Mobile Crisis Intervention Service**

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#### **Team Members:**

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This project is a collaboration between Halifax Regional Police, Emergency Health Services (Nova Scotia's ambulance service) and the mental health programs of the IWK Health Centre and Capital Health. The aim of the project is to evaluate a Mobile Crisis Intervention Service of staff from all four services that will deliver emergency care in the community to people with mental health crises, and will address both the needs of individuals in crisis and the training needs of partner staff. Information will be collected via existing health, police and Emergency Health Services databases, supplemented by surveys and focus groups of key informants.

### **4. Biomechanical, Neuromuscular and Psychological Characteristics of Low Back Pain**

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#### **Team Members:**

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Workplace injuries are an epidemic in Nova Scotia with workers' compensation claims for low-back pain incurring high cost to our community, not to mention the personal cost. In collaboration with the WCB of Nova Scotia, this project will seek to understand how the activation of muscles of the trunk is altered for persons with low-back injuries to prevent recurrent injuries that can develop into chronic pain. The proposal focuses on

the working-age adult with non-specific low-back pain who is within one-week of returning to work following injury. This research will aid the clinician in treatment planning as well as the caseworker in determining a plan of action for the injured worker to return to work. Limitations in mobility often accompany low-back pain and, thus, the development of secondary health-related issues. Therefore, reducing the disabilities associated with this pain is fundamental to overall health.

## **5. Functional Organization of Voltage-Dependent Calcium Channels at Neurotransmitter Release Sites: Implications for the Regulation of Neurotransmission and Calcium Channelopathies**

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Mutations in so-called P/Q-type calcium channels lead to calcium channelopathies, several hereditary diseases of the nervous system characterized by migraines, absence seizures, and loss of motor control. A major function of P/Q-type channels, in co-operation with other calcium channels, is the regulation of neurotransmitter release, which is necessary for the chemical communication between nerve cells. Therefore, pathological alterations in neurotransmitter release may possibly cause many of the symptoms observed in patients with calcium channelopathies. This project will study the effect of P/Q-type calcium channel mutations on neurotransmitter release. This research will define the role of P/Q-type calcium channels in the regulation of neurotransmitter release and provide a better understanding of why mutations of P/Q-type calcium channels have deleterious consequences for neural function.

## **6. Investigating Determinants of Adolescent Pregnancy: A Study of Factors Influencing Youth in a Rural Nova Scotia Community**

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**Team Members:**  
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**Blye Frank, Dalhousie University; Jacqueline Gahagan, Dalhousie University;**  
**Richard Gould, AV, SS, SW District Health Authorities; Barbara Johnston, South**  
**West District Health Authority; Doris Landry, South West District Health Authority;**  
**Michael Ungar, Dalhousie University; Madine VanderPlaat, Saint Mary's University**

The rate of teen pregnancy in Nova Scotia is very different depending on the community where young women live. Based on a measure called the Cumulative Probability of Pregnancy developed by the research team, it is estimated that over 25% of young women become pregnant before age 20 in Yarmouth. Working with the Yarmouth

Working Group for the Prevention of Teenage Pregnancy, data about factors that influence adolescent sexual risk behaviours will be gathered. The findings will be discussed with adolescents and adults in Yarmouth to determine how important they feel each factor is in relation to others, how the factors “work” to influence adolescent pregnancy, and whether they can be changed. From there, the research team will work with the Working Group and other stakeholders to determine which factors might be the best focus for local intervention. These findings will then be used for local policy and programming.

## **7. Viral Subversion of Cytokine mRNA Degradation in Kaposi's Sarcoma Tumourigenesis**

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**Team Member:**  
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The focus of this research is to contribute to ongoing work aimed at revealing the strategies used by viruses to infect host tissues and establish chronic disease. In people suffering from AIDS, co-infection with the Kaposi's sarcoma-associated herpesvirus (KSHV, human herpesvirus-8) causes a tumour known as Kaposi's sarcoma (KS). KSHV encodes a protein that undermines host gene expression to promote the release of pro-inflammatory cytokines from infected cells. These pro-inflammatory cytokines are key factors in KS tumour development. This research will help achieve better understanding of the molecular events that allow KSHV to promote inflammation and tumour formation. The ultimate objective is to use this knowledge to develop new anti-viral therapies that prevent KS tumour formation.

## **8. Preterm Birth Risk Assessment Using an Integrated Screening Method (PRISM)**

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**Team Members:**  
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Previous methods used to predict preterm delivery have not been very helpful in determining whether a pregnant woman is likely to deliver early or not. Recent studies have suggested that corticotrophin releasing hormone (CRH), a hormone produced by mothers and their unborn babies in response to stress, may be a better predictor than other methods in childbearing women with no symptoms of premature labour. This study will determine whether CRH levels in the mother's blood can be used alone and/or in combination with other tests to more accurately predict who will deliver preterm. Women receiving their prenatal care at the IWK Health Centre are being asked to participate. The investigators hope to establish the optimal screening protocol for preterm birth prediction in asymptomatic pregnant women.

## **9. Early Alzheimer's Disease in the Brain: A Functional and Spectroscopic Magnetic Resonance Imaging Study at 4 Tesla**

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**Team Members:**

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Alzheimer's disease is the most common cause of cognitive problems in late life. Currently, there is neither a simple test for the disease nor a cure for it. Nova Scotia has an excellent team of physicians and brain imaging experts, equipped with non-invasive and powerful imaging equipment to study Alzheimer's disease. This research will investigate what happens in the brain when trying to remember things, how the brain in an Alzheimer's patient works differently from that of a healthy older adult, and how common medications work to help patients. By scanning the brain at work, possible biological markers for early detection and treatment of Alzheimer's disease will be discovered.

## **10. Pathogenomic Investigations of Critical *Vibrio Parahaemolyticus* Proteins Involved in Human Enteric Disease**

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*Vibrio parahaemolyticus* is a human bacterial pathogen that is found in Atlantic coastal waters in warm summer months. These bacteria typically colonize oysters and other related shellfish found in the environment. Upon human consumption of poorly cooked or raw shellfish, these bacteria attach to gut intestinal cells and release a powerful toxin that is believed to cause diarrhea, which is often a symptom of gastroenteric infection. Worldwide infections are on the rise, reaching pandemic levels in Asia, suggesting the *Vibrio parahaemolyticus* could be a more serious threat to Nova Scotia. This research proposal will aim to identify and characterize the proteins of *Vibrio parahaemolyticus* that are involved in human disease and build on the studies already completed by the research team. The knowledge gained will contribute to social preparedness and rapid assessment measures leading to an overall improvement in the food and water safety initiatives of Nova Scotia.

## **11. Development of Recombinant Adenovirus-Based Mucosal Vaccine Against Respiratory and Genital Chlamydial Infection**

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Intracellular bacteria *Chlamydia trachomatis* and *Chlamydia pneumoniae* enter the human body through multiple sites causing a wide spectrum of ocular, genital and respiratory diseases of significant medical importance worldwide and specifically in Nova Scotia. Although antibiotics are effective for the treatment of acute chlamydial infections, asymptomatic infections are rampant. A safe and effective vaccine that can prevent chlamydial infections is urgently needed. In this study, a needle-free vaccine based on a common “cold” adenovirus will be created and tested. The knowledge to be gained will not only provide the scientific basis for rational design of a mucosal Chlamydia-vaccine for human use but also has important implications in directing the development of mucosal vaccines against other sexually transmitted diseases such as HIV and Herpes infections.

## **12. The Role of CD8+ Gamma-Delta T Regulatory Cells in Kidney Allograft Prolongation**

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