

1. **Exploring Women's Alcohol Use as Self-Medication for Depression**

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**Co-applicants: Sherry Stewart, Dalhousie University, Peter Horvath, Acadia University, Julianna Wiens, Dalhousie University**

Which comes first chronic alcohol abuse or depression? Recent research indicates that the answer may depend on gender. For men, depression most often follows alcohol abuse, but for women it appears to come first – suggesting that women may use alcohol to self-medicate for depression. This study will build on existing research and seek to gain an understanding of women's experiences of the relationship between depression and problem drinking. A multi-method research design will be used, including semi-structured qualitative interviews with depressed women who are in treatment for alcohol abuse.

2. **A step toward recovery of movement**

**Robert Brownstone**  
**Division of Neurosurgery**  
**Dalhousie University**

Movement occurs when the brain sends two types of information to the spinal cord: the command to move, and the signal which sets the excitability of spinal cord neurones. The latter is regulated, largely, by what is known as the raphespinal system. In circumstances such as spinal cord injury, input from the raphespinal system is disrupted. However, recent evidence has identified a system within the spinal cord itself (the cholinergic system) that can play a similar role. This project will study motoneurone excitability and will compare the two systems in the hope that the cholinergic system can eventually be harnessed to perform the function of the raphespinal. For people with paralysis, this would be a step toward recovery of movement.

3. **A New Model of Care Delivery for Lung Cancer Patients and Their Families**

**Lorna Butler**  
**School of Nursing**  
**Dalhousie University**

**Co-Applicant Murali Rajaraman, QEII Health Sciences Centre**

This pilot study will lay the groundwork for a larger randomized study. The pilot study will involve 12 post-treatment lung care patients and their families who are receiving care at the Queen Elizabeth II Health Sciences Centre Cancer Clinic in Halifax. One group will receive care lead by a nurse while a control group went to the cancer clinic.

4. **Distance Treatment of Sleep Problems in School-aged Children With and Without Behavior Problems**

**Penny Corkum**  
**Department of Psychology**  
**Dalhousie University**

**Co-Applicant: Patrick McGrath, IWK Health Centre**

Up to 40 percent of elementary school-aged children suffer from severe and chronic sleep difficulties. Sleep problems have a major impact on many aspects of children's lives (e.g., academic, social-emotional, and behavioural) and their families (e.g., increased stress, exhaustion). These difficulties become even more pronounced in children with disruptive behaviour disorders (e.g. ADHA). Given the significance and widespread nature of sleep problems in childhood, the development and evaluation of effective treatment strategies is a health priority. Consequently, a critical need exists for a well-designed, controlled trial to evaluate the effectiveness of a comprehensive, behaviourally-based sleep intervention for elementary school children, particularly for those with additional behavioural difficulties. Furthermore, these services must be accessible to as many Nova Scotians as possible. Therefore, this intervention will be delivered using a distance treatment approach where the services are provided over the telephone. We expect that the children who participate in the sleep intervention will show improvements in the quality of their sleep, as well as improvements in their daytime behaviour. Moreover, it is anticipated that the parents will report a reduction in their overall level of stress. This study will also build capacity in this underserved health area.

5. **Neural Basis of Deprivation-Induced Vision Loss and Recovery**

**Kevin Duff**  
**Department of Psychology**  
**Dalhousie University**

Approximately 4% of the human population suffers from a type of visual impairment (called amblyopia) that cannot be treated with surgery or corrective lenses. We have recently focused much attention on the impact that deprivation has on the distribution and expression of neurofilaments in the visual system. Neurofilaments are cytoskeleton proteins that provide both structure and function to a neuron. We have recently shown that early visual deprivation causes a dramatic loss of neurofilament protein in cortical neurons connected to the deprived eye. These results suggest that a rearrangement of neural connections in the cortex contributes to the loss of vision. Neurons in the deprived cortex also exhibited anatomical characteristics similar to those found in neurodegenerative disorders. Our proposed experiments are designed to provide a characterization of neuro filament and neuro degenerative-like changes that result from visual deprivation. This line of research has already produced important insight toward understanding the neuronal changes that underlie deprivation-induced blindness. With the looming epidemic of neurodegenerative diseases, this research could also provide a mechanistic understanding of the progression and possible recovery from neurodegenerative disorders.

6. **Underlying Palliative Organized Inpatient Stroke Experiences: The EQUIPOISE Study**

**Gordon Gubitz**  
**Division of Neurology**  
**QEII Health Sciences Centre**

Stroke is a common disease in Nova Scotia, Over the next 20 years or so, more people will be affected by stroke; up to 15% of these people will die within a few days, especially if the strokes are very large. At the present time, doctors and nurses working on the Acute Stroke Unit in Halifax treat those dying from devastating stroke using established methods that aim to respect the patient, maximize comfort and reduce suffering. Little is known about how those close to these patients are affected by this palliative care process. In this research project, the patient's family or other loved ones will be asked to participate in an interview several months after the death has happened. If they agree to participate, they will be interviewed by a nurse who is also a professional bereavement counselor. A written survey will be completed, followed by a series of questions, which will be asked to learn more about the experiences of the bereaved as their loved one is being cared for while they die on our stroke unit. Nurses who care for these patients will also be interviewed to understand their experiences of providing palliative care. The results of the research will be used to modify our clinical practice, and to inform those who are in the process of developing Acute Stroke Units in other parts of Nova Scotia.

7. **A Randomized Prospective Study of Mandibular Overdentures Supported by one or two Unsplinted Implants Placed According to a 1 or 2-Stage Surgical Procedure and Using the Immediate or Delayed Treatment Protocol**

**Mats Kronstrom**  
**Department of Dental Clinical Sciences**  
**Dalhousie University**

Many edentulous (missing all their natural teeth) individuals suffer from impaired ability to chew, constant pain, and discomfort because of problems with their dentures especially in the lower jaw. By using dental implants to stabilize the denture, remarkable improvement in oral function and comfort can be achieved. Treatment options using a reduced number of implants and less complicated surgical procedures could be beneficial for these patients, resulting in less complicated and less expensive treatments. Developing simpler, less expensive methods and making them available for older edentulous individuals with limited financial resources could result in not only an improved oral health, but also benefit the individuals' psychosocial situation, nutritional state, quality of life and well being. This research project will aim to establish new and improved treatment options for geriatric patients with severe impairment of oral function and will measure subsequent improvements in their quality of life and well being.

8. **New class of potent anticancer molecules**

**Amitabh Jha**  
**Department of Chemistry**  
**Acadia University**

Currently available approaches for the intervention of cancer suffer considerable side effects. Many forms of cancers have become drug-resistant. The proposed investigation aims to develop clinically useful novel anticancer agents with potential to treat cancers unresponsive to current therapies. We have identified a new class of potent anticancer molecules. These compounds are markedly divergent in structure from currently available anticancer drugs and, hence, may be of value in treating drug-resistant tumors.

9. **The role of the muscles in shaping the bones and joints**

**Boris Kablar**  
**Department of Anatomy and Neurobiology**  
**Dalhousie University**

Mechanical effects on the growth of bones and joints are so evident that it seems highly probably that early fetal motility plays a part in shaping the skeletal system. This project will use a particular type of genetically engineered mouse embryos without skeletal muscles to investigate for the first time in vivo skeletal system development in the complete absence of skeletal myogenesis. This will help to increase our understanding of the consequences of the conditions characterized by muscle wasting and muscle loss.

10. **Molecular mechanisms of allergic asthma**

**Tong-Jun Lin**  
**Department Pediatrics, Microbiology & Immunology**  
**IWK Health Centre and Dalhousie University**

Mast cells are central players in allergic diseases. This is because allergen binding to the surface of mast cells initiates a series of molecular events leading to the release of potent mediators from mast cells. Our goal is to better understand the mechanisms involved in allergen-induced mediator secretion from mast cells. We will focus on two important molecules namely, protein kinase C (PKC) and protein phosphatase 2A (PP2A), the former phosphorylates proteins and the latter dephosphorylates proteins. Interaction between these two molecules likely has important regulatory role in allergen-induced mediator release from mast cells through maintaining the level of protein phosphorylation. Our experiments will be carried out to examine how PKC and PP2A interact during antigen-induced mast cell activation. Innovative approaches such as generation of embryonic stem cell-derived mast cells will be used. This study will provide new insights into the allergic diseases for the development of new approaches in order to control allergic reactions.

11. **Measuring Oral Health in Seniors**

**Debora Matthews**  
**Faculty of Dentistry**  
**Dalhousie University**

**Joanne Clovis**  
**School of Dental Hygiene**  
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**Co-applicants: Paul Allison, Susan Kirkland, Mary McNally, Mark Filiaggi, Patricia Main**

Nova Scotia has the third-highest percentage of seniors in Canada -and a need to establish oral health priorities that will contribute to healthy aging. Due to the private nature of oral health care, there are profound disparities among many under-served populations, including seniors, who have an increased risk of oral cancer, dental caries and periodontal disease. This pilot project recognizes that a clear understanding of people's needs is the first step toward developing appropriate policy. Researchers will assess the feasibility of measuring the baseline oral health status of Nova Scotians age 65 and over. The project will be partnered with the Senior Citizens' Secretariat and the Nova Scotia Dental and Dental Hygienists Associations.

**12. Development and Use of Quality Indicators of medication Use for Diabetes**

**Neil Mackinnon  
College of Pharmacy  
Dalhousie University**

This study will involve the development and use of tools that will measure the quality of the use of medications for diabetes. In the first step of the study, the four project partners, (1) Dalhousie University, Faculties of Health Professionals, and Computer Science and Medicine, (2) The Nova Scotia Department of Health, (3) The Diabetes Care Program of Nova Scotia, and (4) Lawtons/Sobeys Pharmacies) will jointly develop tools called quality indicators that allow one to assess the quality of medication use/non-use in patients with diabetes. Following this, individuals with expertise in computer programming and large databases will work with the Lawtons/Sobeys pharmacy computer system to turn these quality indicators into automatic alerts that will appear on the pharmacy's computer when a pharmacist fills a prescription for a patient with diabetes. Following the testing of this "alerts" system in one pharmacy, the remaining 34 Lawtons/Sobeys pharmacies in Capital Health will be randomly assigned to participate in the "alerts" system or provide the usual standard of care. During the one year in which the "alerts" will be used, feedback will be provided on a regular basis to pharmacists, physicians and the Diabetes Care Program of Nova Scotia. The researchers will measure whether these "alerts" actually do improve the quality of medication use.

**13. Cell Death in Heart Disease**

**Kishore Pasumarthi  
Department of Pharmacology  
Dalhousie University**

A tragic irony of heart disease is that the heart may be doing all the right things, all too well. During disease states, the heart attempts to compensate. It responds to increased workloads by activating various signaling pathways in an attempt to maintain normal cardiac performance. If these pathways are left unchecked, they can damage the heart muscle cells and subsequently lead to heart failure. This project will look at the role played by a protein called **Cyclin Dependent protein Kinase 1 (CDK1)** to determine whether eliminating or reducing the activity of CDK1 or other relevant proteins could help. Potentially, the research could lead to the development of better therapies for heart disease sufferers.

14. **Treatment of Patients with Hormone Independent Prostate Cancer**

**Ricardo Rendon**  
**Department of Urology**  
**Dalhousie University**

This project will challenge the current practice of maintaining hormonal treatment in all patients who have hormone independent prostate cancer with LHRH agonist injections. The researchers hypothesize that this treatment is unnecessary for most patients and highly expensive – being the most costly pharmacological intervention in cancer management — and that because of its toxicity it reduces patients' quality of life. They plan to demonstrate that the financial cost and toxicity burden can be reduced with no compromise to patient safety or treatment efficacy. The results are expected to have a major impact on the standard of care for this common disease in Nova Scotia and, potentially, nationally and internationally.

15. **Improving Preventative Health Behaviours in Nova Scotia**

**Steven Michael Smith**  
**Department of Psychology**  
**St. Mary's University**

Public health campaigns are well-intended – urging people to wear sunscreen, to exercise, etc. — but they often fail in their attempts to affect behaviour. This project will look at what goes wrong and what could be done better. For example, recent research suggests that ads showing out-of-shape people may backfire: viewers (especially young adults) may conclude that out-of-shape is “normal.” This project will combine laboratory and field studies to explore the theoretical underpinnings of public awareness campaigns. Researchers will explore the pressing question for health promotion strategy: How do we convince people to engage in healthier behaviours?

16. **The Frequency of Congenital Heart Disease in Nova Scotian Children**

**Andrew Warren**  
**Children's Heart Centre**  
**IWK Health Centre**

Through the linkage of three large population databases, this project will look at the incidence of congenital heart disease (CHD) in Nova Scotia children. Researchers will measure the prevalence of CHD among newborns in the province, assess the risk factors involved, and determine the rate and outcome of detection. The results are expected to be useful on three levels: to help individuals minimize their exposure to potential risks; to help practitioners assess the impact of interventions; and to help governments predict funding needs.