

Health Research Grants Funded Applicants: 2002-2003

The list below is a summary of the funded applicants in the 2002-2003 competition.

Identifying Proteins as Drug Targets for Treating Periodontal Disease

Stephen Bearne
Department of Biochemistry and Molecular Biology
Dalhousie University

With the widespread emergence of antibiotic-resistant bacteria over the last two decades, the need to develop new antibiotics with novel modes of action is becoming increasingly important. Fusobacteria play a role in the development and progression of several bacterial infections, most significantly periodontal disease, and since fusobacteria use D-amino acids differently from humans, inhibiting D-amino acid metabolism in bacteria appears to be a promising approach for the development of effective new antibiotics. The researchers will examine how the levels of various fusobacterial enzymes are altered depending on the D-amino acid nutrient source, which will help them to identify enzymes that play a significant role.

Language and Literacy Treatments for Children with Down Syndrome.

Patricia Cleave
Dalhousie University

Derrick Bourassa
Acadia University

Elizabeth Kay-Raining Bird
Dalhousie University.

Down Syndrome is a frequently occurring (ie 1 in 600 live births) chromosomal disorder resulting in cognitive, language and literacy difficulties. The proposed study will investigate the efficacy of four different intervention programs for children with Down syndrome. Two of the programs are designed to teach language skills that support the development of reading, the other two are designed to teach reading skills directly. It is essential to understand what intervention programs work for which children with Down syndrome in order to develop appropriate educational programs for these children. As education is a pre-requisite for health, this study will contribute to our understanding of how to encourage the healthy development of children with Down syndrome.

Can the Medication Pioglitazone Improve Blood Sugar Control in Adolescents with Type 1 (Juvenile) Diabetes?

Elizabeth Cummings
Department of Pediatrics
IWK Health Centre

Denis Daneman
Hospital for Sick Kids

Type 1 or juvenile diabetes is one of the most common chronic diseases of childhood. Diabetes is frequently difficult to control during adolescence; this is also a time when diabetes complications, which may lead to blindness or kidney failure, commonly begin. It has often been assumed that poor diabetes control in adolescents is the result of poor compliance and lifestyle issues; however, it may be that the hormonal effects of puberty make adolescents more resistant to insulin than patients of other ages. This study will assess whether pioglitazone, a new medication that decreases insulin resistance and is usually used in type 2 or non-insulin dependent diabetes can improve blood sugar control and, thus, help lower the risk of diabetes complications in adolescents with diabetes.

Menopause and the myth of the strong black woman: The health and well being of midlife African Nova Scotian women

Josephine Etowa
School of Nursing
Dalhousie University

Racism is an issue of concern for 96% of study participants, who affirmed that it exists in many forms and is a destructive force that intersects with many aspects of women's experiences of menopause and midlife health on a daily basis. Women admitted that racism continues to feed their sense of stress as well as others' expectations that they will be "strong." Although the forms of racism may have changed over time, its overall destructive impact remains the same. Women are never able to let down their guard because of the need to constantly protect themselves and their families against racism. The accumulation of stress over the years resulting from pent-up anger, frustration, humiliation, and fear, from racism undermines women's health.

Evaluation of an Early-Intervention Initiative with High-Risk Families Living in High-Needs Communities

Jean Hughes
School of Nursing
Dalhousie University

Parents who live under the stressors of poverty, social isolation or abuse face a great challenge that seriously weakens parenting interactions and jeopardizes child development. They also often lack the support necessary to engage in positive parenting practices. This study involves testing the effectiveness of a comprehensive early intervention program, called Growing Together, that was established in late 1999 to respond to the multiple needs of high-risk young families living in two diverse communities: North Dartmouth and Northside-Victoria Cape Breton. GT is designed to (1) promote healthy child development and prevent future problems in both parents and children; and (2) intervene early in situations where the development of an infant or child is at risk.

Preparing new Antibiotics

David Jakeman
College of Pharmacy
Dalhousie University

The proposed research will develop and improve techniques to use enzymes as catalyst and will also use the enzymes to prepare new molecules for widespread use in treating bacterial infections and cancer. We will prepare potential antibiotics and screen these molecules for activity in treating cancer and bacterial infection.

The proposed research fits within the objectives of the NSHRF because it builds capacity for training scientists who will discover and develop new drugs and treatments for important diseases including cancer and infectious disease. It remains important to develop new methods to prepare drugs and develop drugs because despite significant advances in science many diseases remain difficult to cure. Another important reason to develop new drugs are the significant side effects observed with some drug entities, through careful development of new drugs these side effects will likely be overcome.

Long-Term Outcomes in Newborns Who had Extreme Jaundice

Krista Jangaard
Department of Pediatrics
IWK Health Centre

Newborn jaundice, a yellowish discoloration of skin and eyes is a common condition in the first week of life. The jaundice reflects the newborns inability to handle bilirubin, a by-product produced when haemoglobin breaks down. If bilirubin levels become extremely high, there can be long-term, non-reversible effects such as cerebral palsy and hearing loss. This study will look at the outcomes of all newborns born between 1994 and 2000, divided into three groups by the peak bilirubin level: none, moderate and extreme, and will assess its impact on the long-term outcomes.

Examining the Relationship of Nutrition and Exercise to Falls Prevention Among Frail Older Adults

Shanthi Johnson
School of Nutrition & Dietetics
Acadia University

Unintentional falls are one of the leading causes of mortality and morbidity among frail older adults. The consequences of falls include considerable physical, psychological, and economic costs. Recent analysis of the economic burden of accidental falls in Canada is estimated to be \$3.6 billion annually. From the literature, it is evident that not only do the frail elderly have a higher incidence of falling, they also have poor nutritional status and compromised functional capacity, including strength and balance. The purpose of this study is to examine the role of exercise and nutrition, as well as to determine the impact of combined home-based nutrition and physical activity-based interventions to prevent falls.

Does the length of time to reaching specialist treatment effect the outcome of depression?

Stephen Kisely
CDHA/Dalhousie University

This study compares variables affecting access to specialist psychiatric services. A longer time to reaching psychiatric services may have an effect on the outcome of psychosis. Similar information is not available for depressive illness which affects one in twenty Canadians. It is also important to consider other variables such as educational level, treatment setting, illness severity and concurrent physical illness. This study will establish whether delivery is affected by variables such as demographic, psychosocial or geographical factors, and to quantify the relative importance on outcome of increase time in reaching specialist care. Care pathways for patients referred to the Capital Health District in Nova Scotia will be collected using a structured interview. Information will also be collected on a socio-demographic and clinical factors as above. Pathways over the following 18 months will be described using the Nova Scotia health services research databases, which contains details on inpatient and outpatient care. It also contains the death registry. Outcome in terms of mortality, health service use and illness severity will be measured using the same interviews and questionnaires. The effect of pathways duration on outcome will be analyzed taking into account the affect of these other variables.

Prevalence and Prevention of Depression in At-Risk First-Year University Students

Peter McLeod
Dept. of Psychology
Acadia University

This three-year research project involves researchers from Dalhousie University, Acadia University and the Colchester East Hants Health Authority and has two goals: to determine the extent of depression among first-year students at Acadia and to test a promising prevention program for students at risk of a major depressive disorder, which frequently occurs for the first time in adolescence or young adulthood. Prevention of depression could reduce suffering and enhance well-being for many at-risk individuals.

Public Health Nurses Contributions to Primary Health Care and the Health of Nova Scotians

Donna Meagher-Stewart and Megan Aston
School of Nursing
Dalhousie University

Public health nurses are frontline workers in public health services across the province, account for the largest number of public health practitioners, and work primarily with populations with low socio-economic status. Limited research is available describing their practice and their effectiveness, particularly with respect to the concepts of citizen participation and inter-sectoral collaborative practice. The purpose of this study is to examine the primary health care practice of public health nurses in ensuring that Nova

Scotians receive the most appropriate care by the most appropriate providers in the most appropriate settings.

Inflammatory Bowel Disease Comprehensive Care Program for Children and Families

Anthony Otley
Division of Gastroenterology/Department of Pediatrics
IWK Health Centre

The number of children in Nova Scotia diagnosed with Crohns disease and ulcerative colitis, inflammatory bowel diseases, is increasing. This research project involves developing a comprehensive care program for older children and adolescents and their parents. A multi-purpose internet-based program will help with disease and pain self-management, give up-to-date and complete disease information, and provide a forum to talk with peers who have similar problems.

How Can We Measure Access to Care in Cancer?

Geoff Porter
Dept. of Surgery/Faculty of Medicine
QEII Health Sciences Centre and Dalhousie University

Access to care for patients with cancer is important for many reasons, most especially because more timely care may improve the chances for cure with surgery. Therefore, this project will study access to care and variations in access to care in different regions over a two-year period in cancers that are primarily treated with surgery: colorectal cancer, breast cancer, stomach cancer, and liver cancer. This research is of importance to all Nova Scotians where, at present, cancer is the second most common cause of death.

Enhanced Production of Cells to Treat Parkinson's Disease Using Neural Stem Cells

Victor Rafuse
Dept. of Anatomy & Neurobiology
Dalhousie University

Parkinson's disease is a progressive neuro-degenerative disorder for which there is no cure. Patients with Parkinson's disease have symptoms ranging from slow and decreased movements to muscular rigidity to uncontrollable tremors while resting. These symptoms are caused by the selective loss of neurons in the brain that use dopamine as their neurotransmitter. The objective of this research is to increase understanding of how neural stem cells promote the survival of dopamine cells in the brain. It is the researcher's expectation that this knowledge will one day be used in the clinical setting to prevent the degeneration of the very neurons that cause the disease.

A New Test to Diagnose Premature Labour

Heather Scott
Dept. of Obstetrics & Gynecology
IWK Health Centre

The researchers hope to reduce the rate of unnecessary hospital admissions without any increase in harm to mothers or their babies by applying a new diagnostic test that has been approved for use in Canada for women with suspected premature labour. The fetal fibronectin (FFN) test has been shown to help doctors decide whether women with premature labour pains can stay home or should be admitted to hospital.

Developing a Way to Ensure that Breast Reduction Surgery is Offered to Those that Need it Most

Leif Sigurdson
Division of Plastic Surgery
Dalhousie University

Breast reduction surgery is one of the most common procedures performed by plastic surgeons. However, they cannot determine which patients are most in need of breast reduction surgery. This research project will help them identify those most in need of the procedure.

Exploring High Blood Pressure in People with Diabetes

Peter L. Twohig
Department of Family Medicine
Dalhousie University

Diabetes and high blood pressure often go together and cause both illness and death for Nova Scotians. This project looks at why some people with diabetes are able to improve their blood pressure control, while others are unable to do this. Researchers will interview health care providers and patients, using both focus groups and one-on-one interviews. Listening to, collecting and analysing the experiences of people with high blood pressure and diabetes may provide new information that can be used by health care providers by identifying the barriers to effective blood pressure control.

Medical Applications of a Quantum Medicine Laboratory

Donald Weaver
Division of Neurology
School of Biomedical Engineering, Chemistry
Dalhousie University

The next 30 years is sometimes referred to as the "information age". Computers and sophisticated calculations are being used increasingly in medical research and in drug design and discovery. The proposed research will use advanced methods of computer simulations within a high performance computing environment to study problems relevant to understanding brain function and to designing drugs for brain diseases. Calculations will be done to facilitate understanding how electrical signals are generated within the brain. Additional calculations will be done to aid in the design of drugs for diseases such as Alzheimer's disease.

What do Nova Scotians know and practice with regards to childhood motor vehicle restraints?

Natalie Yancher
IWK Trauma Program
IWK Health Centre

The use of vehicle restraints by children has reduced rates of fatal and non-fatal injuries in motor vehicle collisions. However, appropriate restraint use is not uniform among all children, and errors of non-use, mis-use, or inappropriate use of restraints are common. The purpose of this research is to determine: 1) the current practices of motor vehicle restraints use by children under the age of 12 years in Nova Scotia, 2) the present level of knowledge of caregivers in regards to current recommendations for childhood vehicle restraint use for various stages of age and size, and 3) the way caregivers presently obtain information regarding appropriate vehicle restraint use for their children, and the way they would prefer to. Data will be obtained through a population-based, province wide telephone survey. Discrepancies between what is reported to be known and what is practiced, as well as differences in responses based on caregiver age, education, income and other social and demographic variables will be explored. Results of this study will aid in targeting appropriate public awareness campaigns, and provide data to complement efforts in developing more comprehensive childhood vehicle restraint legislation in Nova Scotia. Ultimately, this would lead to a reduction in motor vehicle collision injuries in children.