

## The Challenges and Rewards of Investigator-Sponsored Research

Some people enjoy running their own business while others prefer the franchise model. This simple illustration has many parallels to investigator-sponsored research where an investigator:

- initiates, manages and conducts the trial
- supervises the administration, dispensing and use of a trial drug, natural health product or device
- obtains and manages external funding and trained staff
- enrolls and follows research participants

In recent years the number of investigator-sponsored research projects has increased at the Nova Scotia Health Authority. As with business operators running their own show, investigators find it challenging to sponsor and conduct their own research. All the factors that motivate health professionals to conduct research are still present with additional attractions, including:

- they may be able to more quickly offer promising products or new combinations of products and/or devices to help their patients
- they can design a trial to their own specifications
- they can develop their own therapeutic interests and build collaborations with other researchers in their field
- through publication and contributions to the scientific community, they may be able to attract funding for more research

There is a lot more involved with a stand-alone enterprise than there is with a turn-key franchise. The same is true when the

investigator is acting as both investigator and sponsor of a trial. An expanded role brings with it a plethora of responsibilities. There is a steep learning curve. There are a multitude of regulations to meet, design questions to settle, quality assurance mechanisms to be put in place, monitoring plans to be made, facilities, equipment and services to be secured, to name just a few considerations.

How does the investigator-sponsor succeed? The same way that the stand-alone business owner succeeds—by planning ahead and asking lots of questions. The secret to success is to consult early and consult often. This will help with understanding responsibilities, developing realistic budgets, negotiating contracts and agreements and building in processes that will ensure regulatory compliance.

If you are an investigator-sponsor, we encourage you to take advantage of the supports available from Research Services:

- consultations and education sessions
- guidance with agreements, data transfer, confidentiality, intellectual property, liability, insurance, clinical trial registration
- assistance with staff recruitment and help with budgets, research accounts, funds transfer, paying bills

Contact: [janet.gallant@nshealth.ca](mailto:janet.gallant@nshealth.ca)

<http://www.cdha.nshealth.ca/discovery-innovation/services-researchers/developing-research-study/idea-award>

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## Got questions? The Research Methods Unit's got answers!

Today's answer provided by: Steve Doucette, Senior Biostatistician, RMU  
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### *How many participants are required for my research study?*

**Introduction:** One of the key questions a researcher is faced with when designing a research study is the number of data points they will need to collect to address their specific research question(s). This important question is often overlooked, but even where attempts were made to justify the number of participants, studies often remain underpowered. The power of a study is simply how likely a study will detect a difference if, in fact, a difference exists. We obviously want this to be reasonably high. The math behind calculating a sample size for a specific study can range from relatively straightforward to extremely complex and largely depends on the study outcomes. For instance, does the comparison involve two groups on a categorical measure (e.g., mortality), or are you comparing five groups on a continuous measure (e.g., weight loss), measured daily over a period of three months? Regardless of your specific research question, the first and often most relevant question you must answer is: "What is the minimum clinically important difference (MCID)?"

**The MCID:** If you are far enough into the design process and know the specific research question in mind, the MCID shouldn't be too difficult to obtain. The MCID is not a statistical issue, but a clinical one. The key here is to determine the smallest difference your study would find before a statistically significant result will have some sort of impact in the research community. For instance, if you designed a study, collected data on hundreds of thousands of patients, and showed that by taking vitamin C daily, the risk of developing oral cancer was reduced from 100 in a million to 99 in a million, would this difference be meaningful? What if you designed a study with only 20 people, and showed that in this group of patients suffering from MS, the one-year risk of recurrent MS symptoms went from 95 percent to zero percent?

The size of a study doesn't necessarily indicate the quality of a study. In the first example, we have a large study aimed at showing a clinically unimportant difference. The second showed a clinically meaningful difference with very few patients in the study. When deciding the MCID for your study, you

simply have to think of the sort of difference that would generate excitement. If the rate of outcome in those untreated is 20 percent, will a drop to 19 percent matter? If the outcome is mortality, a drop of one percent is potentially very important. If the outcome were acid reflux in pregnancy, but the treatment cost thousands of dollars per week, then a one percent improvement may not be meaningful.

**Overpowered studies:** One might ask if studying more people is a bad thing. After all, with an increase in sample size, we would have an increase in power. The answer is that again, larger studies aren't necessarily better. Taking the MS example, if we randomized 200 people instead of 20, our confidence in the findings would surely increase. However, in doing so, we may have prolonged the study another couple of years due to the recruitment process. This would mean that something we could have shown to be true early on would not have been shown to be true until the end of an over-powered study.

**Underpowered studies:** The importance of the MCID is clear when designing a study that may have been thought to be adequately powered, but was in fact not. For example, a hypothetical study was designed in the hopes of seeing a drop of 15 cm in waist circumference using a drug aimed at targeting central adiposity in women. The decision of this 15 cm drop was determined because a previous study found a drop of 15 cm in men using the same drug. The proper statistical calculations were made, and it was determined a sample size of 200 would be adequate. In the end, the study failed to find a statistical difference, however a drop of 10 cm was noted (non significant). Further to this, it was previously shown that a drop of 10 cm in waist circumference significantly reduced risk of coronary artery disease. Unfortunately the results of this study would have a difficult time getting published in a high impact journal, since it was not adequately powered to detect the difference shown—which was in fact clinically relevant.

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**Sample size and outcome variability:** In most studies, the only thing needed in addition to the MCID is an estimate of how variable the outcome measure is expected to be. The variability of your outcome also directly influences the sample size. Taking the waist circumference example, if everyone consistently reduced their measurements by exactly 9 or 10 cm (low variability), it would take

far less people to show the difference exists than in the more likely scenario where some in fact did not lose, but others lost upwards of 20 cm (higher variability). The measure of variation is typically found using prior studies and in some instances, estimates of variability may not be needed. Once an MCID and variability is determined, a sample size can usually be calculated using an array of formulas, depending on the type of outcome.

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## Award Recognizes Outstanding Anesthesiology Researcher

Dr. Rick Hall has quietly and methodically improved anesthesia care and safety in Canada and beyond for more than 25 years. He was recently named the 2016 recipient of the Canadian Anesthesiologists' Society Research Recognition Award for his efforts. The award is the society's most prestigious research honour.

Before graduating with an MD, Dr. Hall conducted a prospective study of the influence of influenza vaccination on theophylline pharmacokinetics under the supervision of Dr. Ken Renton at Dalhousie. The results of the study, published in the Canadian Medical Association Journal in 1980, led to a hypothesis that the systemic inflammatory response to infection alters drug metabolism—the crux of Dr. Hall's career-long program of related basic and clinical research.

After accepting a position at Dalhousie as assistant professor of anesthesia and pharmacology in 1987, Dr. Hall began to merge his interests in the

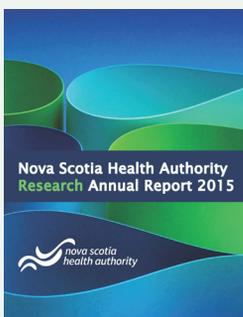
influence of inflammation on drug response with cardiac anesthesia. He has since conducted studies examining almost every facet of the practice of cardiac anesthesia.



Dr. Hall's work has so far resulted in more than 56 peer-reviewed research funding awards as principal or co-investigator, 200 publications and 180 invited presentations. And he has helped change the research landscape in Canada as a founding member of the Canadian Critical Care Clinical Trials Group, one of the leading clinical trials collaboratives in the world, and the Canadian Perioperative Anesthesia Clinical Trials Group (PACT).

Dr. Hall is a professor of anesthesia, critical care, and pharmacology, a world-expert in cardiac anesthesia and cardiovascular intensive care, and a Canadian authority on research ethics, particularly as it relates to end-of-life care.

Please join us in congratulating Dr. Rick Hall on his tremendous accomplishments.



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## Research Annual Report: All About the Research Participants

The 2015 Research Annual Report has just been released. The focus this year is on the lives, challenges and victories of patients who are enrolled in research studies.

If you would like a printed copy or an e-mail copy of the report, please contact [emily.walker@nshealth.ca](mailto:emily.walker@nshealth.ca). The report is also available at <http://www.cdha.nshealth.ca/discovery-innovation/annual-reports>

# Congratulations...

## September 2015 NSHA Research Fund Award Recipients

Applications for the next round of NSHA Research Fund awards are due at 4 p.m., March 15, 2016. Please use current versions of the application form. For details, check: <http://www.cdha.nshealth.ca/discovery-innovation/research-fund-competiton>

Name	Department	Award	Research Description
Ian Alwayn	Surgery/General Surgery, QEII	\$15,000	The role of preformed and de novo donor specific antibodies in liver transplantation
Manohar Bance	Surgery/Otolaryngology-Head and Neck Surgery, QEII	\$14,484	Understanding the relationship between decisional conflict and shared decision making in patients with acoustic neuromas considering surgical vs non-surgical management
Paul Bonnar	Internal Medicine/ Infectious Diseases, QEII	\$4,804	The microbiota changes in fecal microbiota therapy for recurrent clostridium difficile infection
Vishva Danthurebandara	Ophthalmology and Visual Sciences, QEII	\$4,100	A comparative cost-effectiveness analysis of following patients with glaucoma
Dan Gaston	Pathology and Laboratory Medicine/ Hematopathology, QEII	\$14,360	Next-generation sequencing-based transcriptional profiling of MAP3K6 mutation-positive familial gastric cancer
Todd Hatchette	Pathology and Laboratory Medicine/ Microbiology, QEII	\$15,000	Development of a multi-biomarker serological test for Lyme Disease
Jill Hayden	Community Health and Epidemiology, QEII	\$14,979	The Low Back Pain Emergency: patient and staff perspectives on why people present to the emergency room with non-specific low back pain
Jong Sung Kim	Community Health and Epidemiology, QEII	\$15,000	Investigating the role of nanoparticles in exacerbation of pre-existing respiratory diseases
Kwesi Kwofie	Anesthesia, Pain Management and Perioperative Medicine, QEII	\$14,244	Incidence of subepineurial injection with ultrasound-guided supra-clavicular brachial plexus block in cadavers
Madelaine Plourde	Surgery/Thoracic Surgery, QEII	\$14,982	Digital air-leak monitoring for patients undergoing lung resection: a randomized controlled clinical trial

# Congratulations...

## May 2015 QEII Foundation TRIC Grants Award Recipients

The next competition deadline is 4 p.m., May 2, 2016, For more information see:  
<http://www.cdha.nshealth.ca/discovery-innovation/qeii-fdn-tric-grants>

**\$2,904** — *FLO on Flow: Front line ownership of emergency department, hospital, and health-system patient flow—a novel approach to emergency-department overcrowding*

- **Dr. David A Petrie**, Chief, Central Zone Network of Emergency Departments, and Trauma Team Leader, Charles V. Keating Emergency and Trauma Centre, QEII
- **Karen Mumford**, CHE Senior Director, QEII Clinical Operations

**\$2,995** — *Non-pharmacological management of depression in dialysis patients, a scoping review*

- **Dr. S. Neil Finkle**, Medical Director, Peritoneal Dialysis Program, Central Zone, NSHA and Provincial Dialysis Programs, NS-PEI
- **Cynthia Stockman**, Health Services Manager, Outpatient Nephrology, Central Zone, NSHA

**\$3,000** — *An uncommon approach to a common problem: low back pain in the emergency department*

- **Dr. Jill Hayden** Affiliate Scientist, Central Zone, NSHA
- **Dr. Samuel Campbell**, Chief, Department of Emergency Medicine, Charles V. Keating Emergency & Trauma Centre, Medical Director of Triage, Interfacility Transport and in-House Paramedics, Central Zone, NSHA

**\$29,346** — *Feasibility and effectiveness study of implementing prism adaptation as a treatment for spatial neglect after right-hemisphere stroke*

- **Dr. Gail Eskes**, Staff Psychologist, QEII
- **Dr. Richard Braha**, Program Manager, Acquired Brain Injury Program (ABI), NSHA

## November 2015 QEII Foundation TRIC Grants Award Recipients

**\$2,931** — *Identifying and implementing value-based strategies to enable optimal primary health care for the refugee population in Nova Scotia*

- **Dr. Tara Sampalli**, Research, Quality and Knowledge Management Primary Health Care, NSHA
- **Graeme Kohler**, Health Services Manager, Primary Health Care, Central Zone, NSHA

**\$3,000** — *Improving Patient Access to Spine Care through Implementation of an Evidence-Based Multidisciplinary Spine Clinic*

- **Dr. Sean Christie**, Neurosurgeon, QEII Health Sciences Centre
- **Randi Monroe**, MHS Director, Rehabilitation and Supportive Care, Neurosciences and Rheumatology, Central Zone, NSHA

**\$50,781** — *Testing an educational intervention to enhance the interprofessional team's capacity to care for older adults in acute care*

- **Dr. Robin Urquhart**, Affiliate Scientist, QEII Health Sciences Centre
- **Mary Ellen Gurnham**, Executive Director, Learning and Professional Practice, Central Zone, NSHA

## Funding Opportunities

Deadline	Program Name	Agency	Website
4 p.m. March 15, 2016	Nova Scotia Health Authority Research Fund	Nova Scotia Health Authority	<a href="http://www.cdha.nshealth.ca/discovery-innovation/research-fund-competiton">http://www.cdha.nshealth.ca/discovery-innovation/research-fund-competiton</a>
4.p.m May. 2, 2016	Translating Research into Care (TRIC) grant program	QEII Foundation	<a href="http://www.cdha.nshealth.ca/discovery-innovation/qeii-fdn-tric-grants">http://www.cdha.nshealth.ca/discovery-innovation/qeii-fdn-tric-grants</a>

# Opportunities...

## Educational Opportunities

Date	Series/Topic	Facilitator	Time	Location
Feb. 10	Building Research Capacity Series: Building and Managing Your Own Research Team Register at <a href="mailto:elaine.strohm@nshealth.ca">elaine.strohm@nshealth.ca</a>	- Dr. Robin Urquhart Assistant Professor and Ramia Scientist, Dept. of Surgery, Dalhousie; Affiliate Scientist, NSHA	12 noon to 1 p.m.	RMU Multimedia Room Centre for Clinical Research Room 114 5790 University Avenue  Halifax, NS B3H 1V7
March 8	REACH: Are You Ready to be the Sponsor of a Clinical Trial? Register at <a href="mailto:elaine.strohm@nshealth.ca">elaine.strohm@nshealth.ca</a>	- Janet Gallant Program Manager, Research Education - Jennifer Thurlow Contract Grant Facilitation and Support, NSHA	12 noon to 1 p.m.	Royal Bank Theatre Halifax Infirmary 1796 Summer Street Halifax, NS B3H 3A7
March 9	Building Research Capacity Series: Services and Supports for NSHA Researchers: Who's Who Register at <a href="mailto:elaine.strohm@nshealth.ca">elaine.strohm@nshealth.ca</a>	- Sandra Crowell - Denise Hatchette - Daniela Meier - Stacey Pyke - Jennifer Thurlow Research Services NSHA	12 noon to 1 p.m.	RMU Multimedia Room Centre for Clinical Research Room 114 5790 University Avenue Halifax, NS B3H 1V7
April 13	Building Research Capacity Series: Pearls of Wisdom: Researcher Responsibility in Developing a Drug Trial Register at <a href="mailto:elaine.strohm@nshealth.ca">elaine.strohm@nshealth.ca</a>	- Julie Garnham Research Manager, Mental Health - Dr. Cynthia Calkin Psychiatrist, Mood Disorders Program, QEII; Assistant Professor, Dept. of Psychiatry, Dalhousie University	12 noon to 1 p.m.	RMU Multimedia Room Centre for Clinical Research Room 114 5790 University Avenue Halifax, NS B3H 1V7
May 10	REACH: Recipes for Success: Investigator-Sponsored Research Register at <a href="mailto:elaine.strohm@nshealth.ca">elaine.strohm@nshealth.ca</a>	- Janet Gallant Program Manager, Research Education, NSHA	12 noon to 1 p.m.	Royal Bank Theatre Halifax Infirmary 1796 Summer Street Halifax, NS B3H 3A7
May 11	Building Research Capacity Series: Health Research Using Secondary Data Register at <a href="mailto:elaine.strohm@nshealth.ca">elaine.strohm@nshealth.ca</a>	- Dr. Christy Woolcott Associate Professor, Perinatal Epidemiology Research Unit, Dalhousie University	12 noon to 1 p.m.	RMU Multimedia Room Centre for Clinical Research Room 114 5790 University Avenue Halifax, NS B3H 1V7

NOTE: If you would like to join remotely from a computer, you must register at least two days before the session date at [elaine.strohm@nshealth.ca](mailto:elaine.strohm@nshealth.ca)

If this is your first time joining remotely, contact Elaine at least two weeks in advance to ensure you have the capabilities required to join the session.

# What's happening...

## Research and Innovation is a vibrant part of our health system in Nova Scotia

My Hope for Health Care: Second Annual Research and Innovation in Health Care Forum took place in Paul O'Regan Hall at the Halifax Central Library on October 26, 2015. Over 300 people attended in person with 200 others joining in through a live stream on The Chronicle Herald website. Ten Nova Scotia researchers and innovators shared their hopes for improving health care and how research can help to get us there. Presenters used the innovative Pecha Kucha presentation format—20 slides and 20 seconds per slide for a fast-paced six-minute, 40-second presentation.

Dr. Stacy Ackroyd, Affiliated Scientist, Department of Emergency Medicine, QEII Health Sciences Centre spoke about how the Emergency Department experience for seniors can be improved using low-tech, back to basic supports.

Dr. Steven Beyea, Scientific Lead, BIOTIC Biomedical Translational Imaging Centre, QEII and IWK Health Centres, shared his ideas about how health research is an economic engine that can attract investment, generate revenue, create jobs and commercial products, and most importantly, improve patient care.

Dr. Lee Kirby, staff doctor, Nova Scotia Rehabilitation Centre, spoke about how the lives of wheelchair users across the world have improved through a wheelchair skills program developed at the Rehab Centre.

Mr. Gerry Post, Community Activist for People with Disability, in collaboration with the Nova Scotia Rehabilitation Centre, showed how providing affordable iAT bundles to people with disabilities could improve their independence and quality of life.

Dr. Robin Urquhart, Cancer Outcomes Research Program, QEII Health Sciences Centre, demonstrated innovation within Nova Scotia's cancer system—from prevention, diagnosis and treatment to novel human resources roles that are exemplifying the key ingredients for successful practice that elicits real change.

Other speakers included Dr. Brett Taylor and Dr. Marsha Campbell Yeo from the IWK Health Centre, Dr. Andrea Murphy from Dalhousie University, Dr. Jonathon Fowles from Acadia University and Mr. Glen Hogan from NSCAD University.

If you missed the event, you can watch the short videos on YouTube at: <https://www.youtube.com/channel/UC-UKMiGas26ilqMYFShpojQ>



The audience listens intently as Dr. Lee Kirby talks about the wheelchair skills program at the Nova Scotia Rehabilitation Centre.

# Research Resources...

## Researcher Directory



The Researcher Directory is available on our website. It continues to grow as more and more researchers sign on. It only takes a few moments to join. If you would like to be included, please complete and submit a researcher directory form to Emily Walker at any time. She will set up your profile, obtain your personalized PubMed search string and return your profile to you for approval before publishing to the Web.

You can join the Directory or access Directory listings at: <http://www.cdha.nshealth.ca/discovery-innovation/researcher-directory>

It only takes a couple of minutes to complete the form and submit it. For more information, please contact: [emily.walker@nshealth.ca](mailto:emily.walker@nshealth.ca)

## Research Methods Unit (RMU)

Do you need help refining the quantitative or qualitative methods for your research project, health economics, developing an analysis plan, data collection, building a database, managing your data, or analyzing your data? Would you like a quote for methods support for an upcoming funding application? The RMU can help. Our priority is to support your research.



It's easy—visit our web site to download an RMU Consultation Request form. Complete and send the form to us. We'll be in touch shortly thereafter to book an initial consult during which we will work with you to identify the best solution(s) for your needs. For more information about how the RMU can help your research, how the RMU consulting process works or to request a quote for an upcoming research grant application, please visit: [www.cdha.nshealth.ca/rmu](http://www.cdha.nshealth.ca/rmu) or contact the RMU: [rmu@dal.ca](mailto:rmu@dal.ca)

## Clinical Research Unit

Researchers now have access to a 5,400 square-foot, state-of-the-art Clinical Research Unit (CRU), located at the IWK Health Centre, for inpatient and outpatient research needs. Visit the CCFV web site at [www.centerforvaccinology.ca](http://www.centerforvaccinology.ca) for more information and a photo tour of the unit. All inquiries are welcomed. If you would like to tour the CRU and find out more about its services, please contact: Cathy Brown 902-470-7015 [catherine.brown@iwk.nshealth.ca](mailto:catherine.brown@iwk.nshealth.ca)



*Research in Progress* is produced by Research Services. You can view this newsletter and the newsletter archive at: <http://www.cdha.nshealth.ca/discovery-innovation/research-progress-newsletter>

Please direct inquiries, comments about or items for the newsletter to: Emily Walker 902-473-5156 [emily.walker@nshealth.ca](mailto:emily.walker@nshealth.ca)