Capital Health Research Annual Report 2012-2013

Knowledge translation stories inside:

CANADA'S TOP 40 RESEARCH HOSPITALS 2012 RE$EARCH Infosource

A Message from the VP

This year's research report is all about knowledge translation. Knowledge translation is that crucial step in the research process where what's been learned is put into action. In other words, it's where the research rubber hits the road.

As you'll see in this report, the road to knowledge translation can take many different routes. It may start by way of bench research that ultimately leads to a new medication or device that dramatically improves the safety and effectiveness of patient care. It may involve years of observing patients to prompt new and better ways to respond to their complex needs, or years of studying health services to lead to new, more efficient ways to deliver care.

The challenge has been to transfer the new medication, device, method or service model from the minds of researchers, and the pages of journals, into the real world of clinical practice. It can be a long, bumpy and winding road, with roadblocks and detours along the way. Each step on the knowledge translation journey is a step forward. The researchers you will meet in this report have blazed their own trails and, as a result, patients are receiving better care, with better outcomes.

Our goal at Capital Health—and the broader academic health sciences network, which includes the IWK Health Centre and Dalhousie University—is to create smoother, more direct routes, so evidence can move more quickly into the realm of patient care. That is the rationale behind a new grant program that Capital Health and the IWK launched this year in partnership with the QEII Foundation and the IWK Foundation. Called 'Transforming Research Into Care'—or TRIC—these grants deliberately pair researchers with administrators to pursue research projects that will lead to improvements in the design and delivery of health services.

You will learn more about the TRIC grants on page 28. On the way, you will encounter inspiring stories of Capital Health researchers who are applying what they and their colleagues have learned to create pathways to superior patient care and a healthier society.

Many people have helped make this year successful. They are too numerous to mention but special thanks go to Lisa Underwood, the Director of Research Services, Bill Bean, CEO of the QEII Foundation and Chris Power, CEO of Capital Health. They are leaders with vision who make the work of researchers possible.

Patrick McGrath
Integrated Vice President, Research and Innovation
Capital Health and IWK Health Centre

Translating brain chemistry into a diagnostic test for Alzheimer:

The only way to tell if a person had Alzheimer's disease is to examine their brain after they die. In his left hand, Dr. Sultan Darvesh is holding a brain that shows the deteriorating effects of the disease. But he is pioneering a way to diagnose the disease early, so it can be treated before it can take its devastating toll.

For nearly 20 years, Dr. Sultan Darvesh has been unravelling the mysteries of an enzyme called butyrylcholinesterase (BCHE). Through years of careful study, Dr. Darvesh deduced that BCHE could be used as a diagnostic marker for Alzheimer's disease. Now, he is translating his discoveries about this enzyme into a revolutionary new technology with the power to diagnose this devastating disease in its earliest stages—before the damage has been done.

"Current technologies cannot tell us if a person has Alzheimer's disease while they are still alive," says Dr. Sultan Darvesh, a Capital Health neurologist, chemist and professor at Dalhousie Medical School. "We can only definitively diagnose the disease by examining the brain after death."

As a co-founder and director of the Maritime Brain Tissue Bank, Dr. Darvesh has had ample opportunity

This new technology will:

- provide a non-invasive means of diagnosing Alzheimer at an early stage of the disease
- help researchers monitor the effectiveness of experimental drugs to stop Alzheimer in its tracks
- open the door to effective early treatment, to stop or slow the damage before a person loses critical cognitive functions

to examine the stored brains of people who had Alzheimer's disease, dementia and other diseases affecting the brain. What he noticed is that BCHE accumulates specifically among the plaques and tangles of brains affected by Alzheimer's disease. It does not behave this way in other neurodegenerative diseases.

"The light went on, and I knew I had identified a potential marker for diagnosing Alzheimer in the living brain," Dr. Darvesh says. "The challenge would be to find an effective, non-invasive way to detect the enzyme."

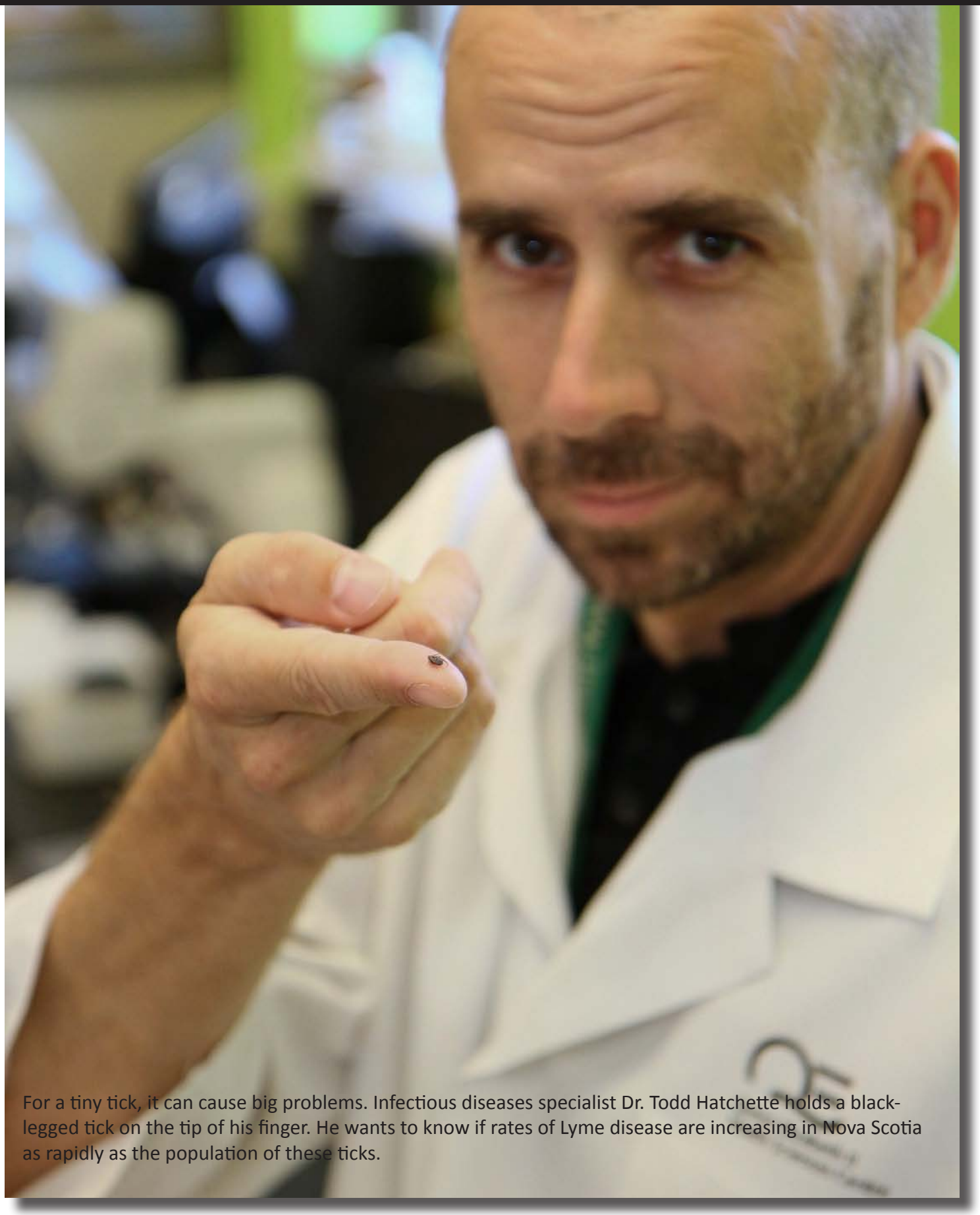
Over the past few years, Dr. Darvesh and his collaborators have synthesized and screened hundreds of compounds, seeking an agent that would bind with BCHE to illuminate the enzyme in nuclear-imaging studies. Last year, they found what they were looking for—a compound that's able to cross the blood-brain barrier, locate and bind to the BCHE, and light up in imaging scans. "It has just the qualities you need in a diagnostic agent," he says. "It's potent, targeted and specific."

Now, with help from a Knowledge Translation Grant from the Brain Repair Centre, Dr. Darvesh and his collaborators in the Biomedical Translational Imaging Centre (BIOTIC) are optimizing the compound to provide high-contrast, high-resolution images using PET and SPECT scanning technologies. They aim to have the compound ready for clinical testing in 2016.

Not only does this new compound open the door to early diagnosis—and therefore the possibility of effective treatment to stop Alzheimer's disease in its early stages—it also has the potential to aid the development of such disease-modifying drugs.

"Researchers need a way to see if their treatments are working in real peoples' brains," explains Dr. Darvesh. "Our compound provides this opportunity." In fact, Dr. Darvesh works closely with fellow neurologist and chemist Dr. Don Weaver, who recently left Halifax to intensify his efforts to develop effective anti-Alzheimer drugs. "I'm heading up the diagnostics arm in Halifax, and Don is heading the therapeutic arm in Toronto," notes Dr. Darvesh of their work with Treventis Corporation. "It's an exciting, very promising venture."

Learn more at www.treventis.com



For a tiny tick, it can cause big problems. Infectious diseases specialist Dr. Todd Hatchette holds a black-legged tick on the tip of his finger. He wants to know if rates of Lyme disease are increasing in Nova Scotia as rapidly as the population of these ticks.

Dr. Todd Hatchette tracks Lyme disease across Nova Scotia

Dr. Todd Hatchette has received a grant from the Capital Health Research Fund to learn more about diseases that animals—from ticks to horses—can pass along to humans. He has a particular interest in Lyme disease, which may be on the rise in Nova Scotia as the population of disease-spreading ticks expands and spreads across the province.

"Although not all black-legged ticks carry the bacteria that causes Lyme disease, the range of these ticks has been reaching into more and more areas of Nova Scotia in recent years," notes Dr. Hatchette, a medical microbiologist and infectious diseases physician at Capital Health and associate professor at Dalhousie Medical School. "What we don't yet know is if rates of Lyme disease are following a similar trajectory."

Dr. Hatchette and his team have analyzed close to 2,000 blood samples from people all across Nova Scotia, testing them for Lyme disease and comparing the geographic distribution of the disease to recent surveys of the expanding tick populations.

"We want a clear picture of the overall prevalence of Lyme disease across the province and where the disease is most concentrated," Dr. Hatchette says. "Then we can translate that knowledge into action, with an emphasis on the areas of highest risk."

Dr. Hatchette collaborates with the Nova Scotia Department of Health and Wellness and the Public Health Agency of Canada, which means the results of his research can be translated into public education programs quickly.

In addition to educating people about how to protect themselves from tick bites and how to safely remove ticks that have latched on, Dr. Hatchette and his colleagues are working to educate health professionals about how to recognize the early signs of Lyme disease.

"It's important to identify Lyme disease, as it can be effectively treated with antibiotics," explains Dr. Hatchette. "If it goes untreated, it can lead to serious, long-term problems with the joints and nervous system." Apart from a distinctive circular rash, early symptoms of Lyme disease resemble the flu: fever, aches and chills.

"We want to make sure we aren't mistaking Lyme disease for something else," he says. "It can be serious, so we need to understand if and how it's spreading in Nova Scotia and provide professionals and the public with the information they need."

This research will:

- reveal where in Nova Scotia rates of Lyme disease are highest
- show the relationship between tick populations and rates of Lyme disease
- inform public health officials about what areas of the province require intensive public and professional education programs
- inform the public about their relative risk of contracting Lyme disease

"Translating molecular biology advances into clinical care is not as easy as it may seem," says Dr. Drew Bethune—and he would know. As head of the Division of Thoracic Surgery at Capital Health and Dalhousie Medical School, Dr. Bethune has an especially keen interest in lung cancer. For the past few years, he's been working hard to make new targeted therapies available to lung cancer patients in Atlantic Canada.

"These drugs are actually small molecules that each target a specific genetic mutation involved in the growth of the lung cancer," explains Dr. Bethune. "They offer spectacular benefits—patients take them at home in pill form instead of going to the hospital for chemotherapy, there are few if any side effects, and they act quickly to put the cancer into remission."

The challenge for Dr. Bethune and his colleagues has been to build a bridge between these powerful new drugs and the people who need them.

"Unless the patient has the particular mutation that the

It takes a team. It took the determined, cooperative efforts of many people to turn the dream of molecular-genetic testing into a reality for cancer patients in Atlantic Canada. Key professionals involved included (front, l to r): Dr. Wenda Greer, director, Molecular Diagnostic Laboratory; Dr. Mary MacNeil, medical oncologist; Dr. Susan Douglas, senior research officer, National Research Council (NRC); (back, l to r): Dr. Zhaolin Xu, pathologist; Andrew Stone, project coordinator; Dr. Wojciech Morzycki, medical oncologist; Dr. Drew Bethune, head of the Capital Health Cancer Program and Dalhousie Division of Thoracic Surgery. Their efforts were supported by Capital Health, Dalhousie's Department of Pathology, the NRC and pharmaceutical companies including Pfizer Roche, Boehringer Ingelheim and others.

This genetic-testing facility will:

- ensure lung cancer patients have access to approved targeted treatments
- help pharmaceutical companies test new targeted treatments
- identify new genetic mutations involved in cancers
- provide molecular testing for other forms of cancer
- shed light on the role of genetic mutations in cancer

drug is designed to target, it does them no good," says Dr. Bethune. "So you need a facility where you can conduct highly sophisticated molecular-genetic testing."

That's where the new Atlantic Canada Molecular Oncology Centre comes in. Over the past few years, Dr. Bethune and his colleagues at Capital Health, Dalhousie Medical School, and the National Research Council (NRC) have laid the groundwork, developed the technology and secured the pharmaceutical industry partnerships to launch this facility in September 2012.

The Atlantic Canada Molecular Oncology Centre is the first facility of its kind in Canada. Here, laboratory staff analyze tumour tissues from advanced-stage lung cancer patients, using technology developed by the NRC. If they find a mutation that matches an available drug, the patient will receive the drug and a chance for added years of good-quality life.

A big part of translating molecular-genetic testing into better patient care involves educating cancer-care providers. To that end, Capital Health pathologist Dr. Zhaolin Xu has travelled across Atlantic Canada, talking to pathologists, oncologists, surgeons and other professionals about the new targeted treatments and how to access the testing for lung cancer patients.

"We've created a system for collecting, storing and analyzing lung cancer tissue samples from patients around the region," explains Dr. Xu, who collaborated with Dr. Bethune and others to establish one of Canada's largest lung cancer tissue banks in 2005. "Because we have a large number of lung-tissue specimens and information about the patient, their treatment and their outcomes, we can learn more about the mutations that drive lung cancer, how these affect patient outcomes, and what treatments provide the best results."

Lung cancer patients won't be the only cancer patients to benefit from the work underway at the Atlantic Canada Molecular Oncology Centre.

"We've built a regional centre of expertise in molecular-genetic testing, with the local knowledge and technology to translate what we're doing in lung cancer to other forms of cancer," notes Dr. Bethune. "As new genetic mutations are discovered, and new drugs developed to counteract their cancer-causing effects, we'll be able to test these targeted therapies in patients who would otherwise have no hope."

Translating gene discovery into treatment for eye disease:

Ten years ago, when ophthalmologist Dr. Johane Robitaille and colleagues discovered the FEVR gene—which when mutated leads to a potentially blinding disease called Familial Exudative Vitreoretinopathy—she never imagined she would be directly involved in translating this discovery into a cure.

"I thought our finding would get picked up in the literature by scientists in the business of developing therapeutics… it didn't occur to me I could participate in this research myself," says Dr. Robitaille, a specialist in hereditary eye diseases who, because these diseases run in families, works with children at the IWK Health Centre and adults at Capital Health.

To her immense satisfaction, Dr. Robitaille is now directly involved in testing potential treatments for FEVR, a rare inherited disease that inhibits the prenatal growth of blood vessels in the retina. She credits this new venture to the rare opportunity posed by the IGNITE project, a collaboration of more than a dozen investigators and a host of partner organizations—including Capital Health, the IWK, Dalhousie University and Genome Canada—that's dedicated to finding cures for orphan diseases like FEVR.

"Because of the IGNITE collaboration, I'm part of a large team that together has the expertise to find and validate treatments for FEVR," Dr. Robitaille says. "It's very powerful."

IGNITE project lead Dr. Chris McMaster brings drug-discovery know-how to the table, while Dalhousie vision scientist Dr. Melanie Kelly brings in-depth knowledge of mouse models of eye disease, and pediatric oncologist Dr. Jason Berman brings his zebrafish drug-testing model. Other collaborators bring knowledge of eye physiology and blood-vessel function to the project.

"We've developed fish and mouse models of FEVR and are testing several categories of compounds, starting in cells and moving to more complex models as we find success," explains Dr. Robitaille. "A recent grant from the Capital Health Research Fund is supporting a major part of this work."

Dr. Robitaille and her collaborators hope to identify several compounds that safely reverse the effects of FEVR-gene mutation in the lab, which they would then be able to test in patients. "It starts and begins with the patient," she says. "We found the gene by working with families, and aim to bring a treatment back to these families."

Learn more at http://igniteproject.ca

This research will:

- identify and test treatments for Familial Exudative Vitreoretinopathy (FEVR)
- potentially stop and even reverse vision loss associated with FEVR
- translate FEVR treatments into potential treatments for retinopathy of prematurity, which occurs because blood vessels in the eye have not fully developed at the time of a preterm birth

Dr. Johane Robitaille sets her sights on a solution for FEVR

Ophthalmologist Dr. Johanne Robitaille (left) is translating her discovery of the FEVR gene into a treatment for the potentially blinding disease caused by its mutation—with help from collaborators including Dr. Chris McMaster (right). Dr. Robitaille is an associate professor in the Department of Ophthalmology & Visual Sciences and Dr. McMaster is a professor in the departments of Pediatrics and Biochemistry & Molecular Biology at Dalhousie.

Dr. Robin Urquhart became the first Ramia Scientist at Dalhousie Medical School and Capital Health in the spring of 2013. In her new role as a knowledge-translation scientist, she works closely with Ramia Chair in Surgical Oncology, Dr. Geoff Porter, to bridge the gap between evidence and practice in cancer care.

This research will:

- identify barriers that prevent evidence from being applied in practice
- improve the uptake of new evidence-based tools, policies and practices
- improve the quality and accessibility of cancer care in Nova Scotia

Dr. Robin Urquhart learns how organizations best adopt change

As a knowledge-translation scientist in the cancer field, Ramia Scientist Dr. Robin Urquhart looks for the best ways to translate research evidence into new policies and practices. Her ultimate goal is to ensure that patients have access to the best possible cancer care—all the way from screening, to diagnosis, treatment and follow-up, or end-of-life, care.

"According to the Canadian Strategy for Cancer Control, patient outcomes would improve by as much as 30 per cent if health care systems put all the findings of research into action," notes Dr. Urquhart. "The challenge is to make this happen—it requires a lot of work and communication to identify and overcome personal, institutional and systemic barriers to change."

Dr. Urquhart knows the territory. Before accepting her new role as Ramia Scientist in the Department of Surgery in the spring of 2013, she spent seven years as a research coordinator and knowledge broker for Team ACCESS, an interdisciplinary research team at Capital Health, Dalhousie University and Cancer Care Nova Scotia that studied the quality and accessibility of colorectal cancer services in Nova Scotia.

"The work on Team ACCESS opened our eyes to important gaps in the system," Dr. Urquhart remarks. "For example, we discovered that as many as 25 to 30 per cent of colorectal cancer patients who underwent surgery were not referred to adjuvant treatment, such as chemotherapy or radiation, even though they met the criteria."

This finding prompted discussion within the cancer care community and led to additional Canadian Institutes of Health Research-funded studies to better understand how surgeons make decisions about referring colorectal, breast and lung cancer patients for adjuvant treatment. Dr. Urquhart is now working with clinicians and Cancer Care Nova Scotia managers to identify tools and strategies for ensuring that patients who could benefit from adjuvant therapies have access to them. She and her colleague, Dr. Geoff Porter—Ramia Chair in Surgical Oncology—have also teamed up with clinicians and researchers to see if similar improvements are needed in pancreatic cancer.

With two degrees in kinesiology and a degree in journalism—along with years of hands-on experience and an interdisciplinary PhD in knowledge translation—Dr. Urquhart is finding her new role to be a perfect fit. "I've always loved writing and have found that clear writing is a key knowledge-translation skill," she notes. "I love that I can apply all these facets of my background in my day-to-day work."

Dr. Urquhart is preparing to launch a number of studies, to learn how health systems go about adopting change. "My question is not 'does the innovation work?' but rather, 'what factors lead to the most successful implementation of proven innovations?'" she says. "I want to improve our ability to embrace new ways of doing things that will lead to better care and better quality of life for cancer patients."

Translating math into tools for understanding Alzheimer and dementia:

Geriatric medicine specialist Dr. Kenneth Rockwood and mathematician Dr. Arnold Mitniski have transformed complex and abstract mathematical equations into a simple tool that patients, families, caregivers and health professionals can use to track the symptoms of Alzheimer's disease and other forms of dementia. They've recently licensed their system into a tool that pharmaceutical companies can use to test the effectiveness of potential therapies in clinical trials.

"Alzheimer and dementias are much more difficult to track than many other diseases, like diabetes or blood pressure, which you can monitor with a single number," explains Dr. Rockwood. "Using mathematics, we've created a system that charts the status of entire constellations of symptoms into a single graph, so the progress of the disease and a person's ability to function can be understood at a glance."

This kind of information—about changes in many facets of a person's ability to function in daily life—is crucial for families who are trying to cope, communicate with each other and their care providers, and arrange the necessary supports to their family member

Dalhousie mathematician and research professor Dr. Arnold Mitniski (left) and Dr. Kenneth Rockwood (right) used mathematical formulas to translate complex information about patients' Alzheimer and dementia symptoms into simple graphs to help patients, families, health professionals and pharmaceutical companies better understand and track the symptoms of these diseases.

with Alzheimer or dementia. It's also crucial to recognizing which, if any, medications are helping which symptoms the most. This helps physicians fine tune their patients' drug regimens, and it helps drug companies who are working hard to develop new drugs to control the symptoms that matter most.

"There is incredible variability in Alzheimer's disease and dementias, especially in the earlier stages when we would hope to make the most impact with treatment," Dr. Rockwood notes. "Our graph provides that individualized feedback about a particular person's response to their treatment—as opposed to something general like 'some people find this helps with decision-making.' We want to know 'this helps Joe make decisions and follow instructions.'"

Drs. Rockwood and Mitniski were able to create their symptom-tracking tool thanks to an initiative called Dementia Guide. Dr. Rockwood launched Dementia Guide in 2007, to provide patients and families with an online portal for learning about Alzheimer's disease and dementias and tracking subtle changes in symptoms in great detail. Dementia Guide now has more than 3,000 subscribers—many receive the service for free in exchange for completing regular symptom surveys. Their input has provided the researchers with a wealth of data about the relationships among the many and varied signs and symptoms of these devastating brain diseases. As a result, subscribers now have access to the very graphs they helped to create.

Learn more: www.dementiaguide.com

This initiative is:

- helping patients and families understand and communicate about the symptoms of Alzheimer's disease and dementia that affect them
- helping health professionals provide patients with more individualized treatment that addresses the symptoms that matter to them and their families the most
- helping clinical trials researchers track participants' responses to experimental therapies for key symptoms of Alzheimer's disease and dementias

Translating eldercare study results into a comprehensive new model of care:

As a family physician, geriatrician and senior administrator with years of experience caring for elderly people, Dr. Barry Clarke knew there had to be a way to improve the quality of medical care that nursing home residents receive. In 2005, he and colleagues secured funding from Capital Health's Primary Health Care Transition Fund to launch Primary Care of the Elderly, an in-depth study of key issues surrounding the delivery of physician services in long-term care facilities.

"We found that an astonishing 75 per cent of all nursing home residents in the district were transferred from their nursing home to an emergency department at least once," says Dr. Clarke. "A third of the time, these transfers were against directives in the patients' files, and sometimes the outcomes were poor. In some cases, emergency transfers turned into long hospital stays and the residents lost their bed in the nursing home."

Dr. Clarke calls such inappropriate transfers "care by default." As he explains, "The patients were transferred to emergency because they required care that nurses are not authorized to provide, yet if the nurses could not reach the resident's family doctor, they had no choice but to order the transfer."

Primary Care of the Elderly revealed other problems, such as residents receiving infrequent visits from their family physicians, polypharmacy (residents regularly taking five or more medications), and a lack of communication between nursing home staff and residents' family physicians.

Dr. Alethea Lacas (right) is a family physician who provides ongoing care to residents of Maplestone Enhanced Care, through Care By Design, a new model of long-term care being rolled out in Capital Health. Since devoting a significant portion of her practice to Maplestone, she has developed a close connection to residents, including Sinclair Williams (left).

Care By Design provides seniors with continuity and quality of care

This new model of long-term care is:

- improving continuity and quality of care to nursing home residents
- reducing emergency transfers of residents by 48%
- providing emergency paramedic services inside nursing homes
- ensuring better safety of residents' medication regimens
- saving the health care system more than $2 million per year
- improving health professionals' confidence and satisfaction

To solve these systemic problems, Dr. Clarke developed "Care By Design." In contrast to the default model, in which family physicians "follow" their patients into long-term care, Care By Design allows family physicians with a strong interest in geriatrics to provide dedicated primary care to a nursing home's residents, in partnership with the facility's staff.

"Care By Design ensures that residents receive a comprehensive geriatric assessment from a dedicated family doctor who will see them frequently and stay in contact with nursing staff about their condition," says Dr. Clarke. "It charts a course for each person's care that takes their unique circumstances and wishes into account and opens the communication pathways to keep their care on track."

In emergency situations, nursing staff are now able to contact the doctor, and they can also call in specially trained and equipped extended-care paramedics. Instead of a stressful transfer to an emergency department, residents now receive intravenous antibiotics, oxygen therapy and other emergency procedures in their nursing home.

According to Dr. Emily Gard Marshall, assistant professor in Dalhousie Medical School's Department of Family Medicine, Care by Design is transforming care in Capital Health nursing homes.

"We're tracking a wide range of indicators across more than 2,000 charts and seeing positive results," notes Dr. Marshall, who holds a New Investigator Award from Capital Health. "Residents are seeing a physician more frequently, continuity of care is better, communication among the members of health care teams is improving, and polypharmacy and emergency transfers are down."

Health professionals involved in Care By Design are enthusiastic as well. In focus groups and surveys, Dr. Marshall has found that nursing home staff, physicians and paramedics all feel supported by the trusting relationships they've developed over the past two to three years through Care By Design, and that they feel empowered by their new ability to provide more effective, efficient and appropriate care.

"As we study this model, we understand its benefits more and more," Dr. Marshall says. "We're seeing major improvements—which may lead to enormous cost savings—and have begun exploring the impact on patient outcomes. Over time, as we fine tune the model and share our findings, we hope that Care By Design will become the new standard for long-term care across Nova Scotia and beyond."

Neurosurgeon and scientist Dr. Rob Brownstone and postdoctoral fellow Dr. Tuan Bui were on their way to defining a spinal cord circuit that controls the rhythmic pattern of walking, when they stumbled on another finding instead. They expected the lab mice in their study to walk in zigzags and circles, but the mice had no problem walking a straight line. What they could not do was keep a grip on the bars of their cages.

This finding may simply have seemed puzzling, except for the fact that Dr. Brownstone regularly sees patients with movement disorders. Shortly before Dr. Bui alerted him to their experiment's unexpected results, Dr. Brownstone was in his neurosurgery clinic, assessing a patient who was unable to control her grasp. "When she took my hand, she was unable to let go," he recalls. "I had to peel her fingers off one by one to release my hand."

When Dr. Brownstone saw the mice, his recent experience with his patient prompted him to make the connection immediately. He realized that he and Dr. Bui had discovered the spinal cord circuit that controls hand grasp—a landmark finding that was published in the prestigious journal, *Neuron*, in April 2013.

While they're still working to identify the neural circuits that control walking, Drs. Brownstone and Bui and their international collaborators now have another mission—to follow the scientific path that could lead to the eventual translation of their hand-grasp-circuit findings into an effective treatment for impaired hand function.

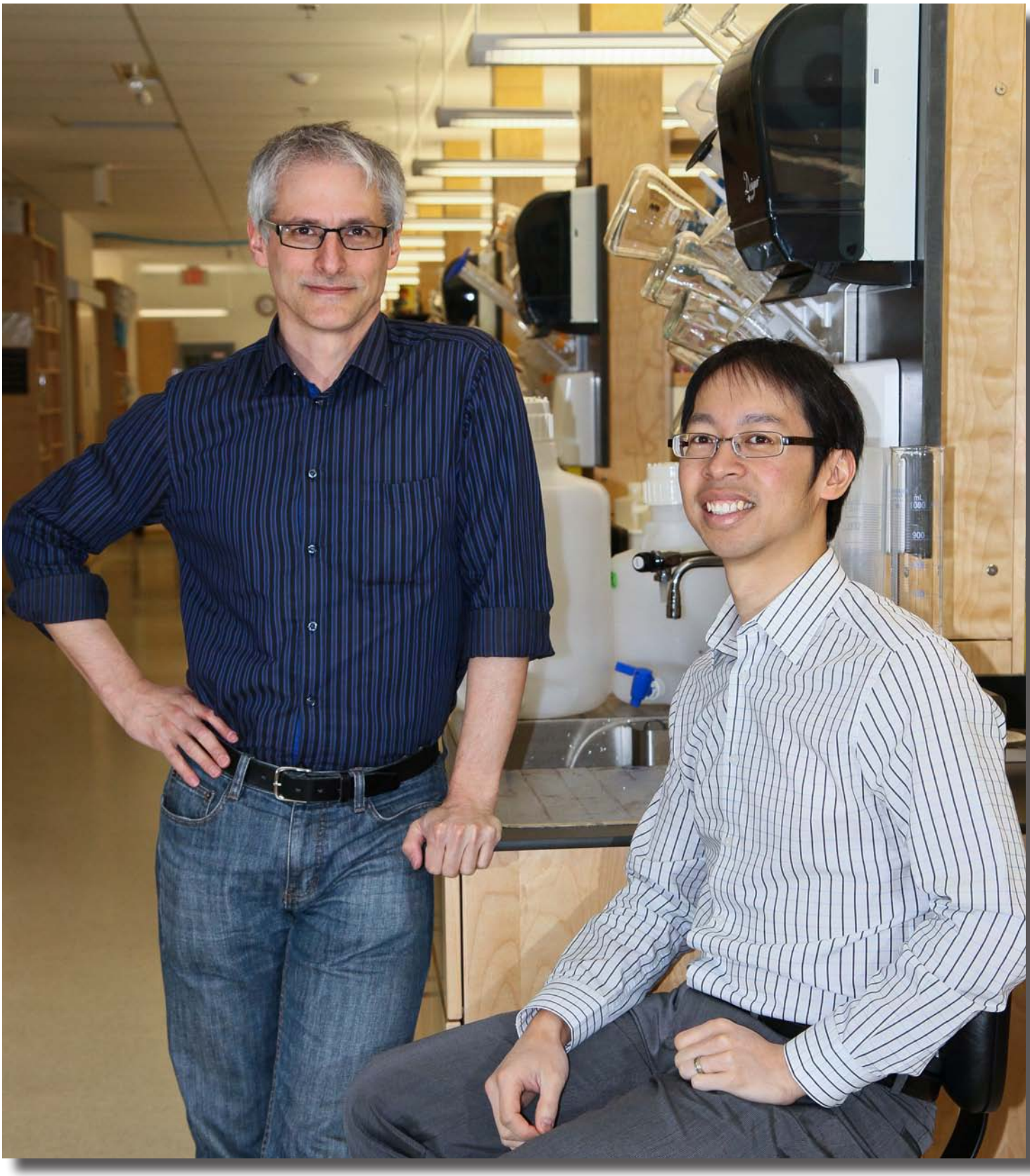
"This is an important circuit that causes major problems when it gets disrupted," Dr. Brownstone says. "Spinal cord injuries can sever the circuit entirely, making it impossible to hold on to anything, while neurodegenerative diseases like Alzheimer's can lead to an uncontrollable grip that doesn't allow people to let go of anything they touch. Either way, the disruption has a devastating effect on people's independence and ability to function."

As Dr. Brownstone notes, while he can't fix a patient's hand today, he hopes that in 20 years he could: "As a clinician scientist, I have a responsibility not only to treat the patients of today, but to advance the science that will lead to superior treatments in the future. Fundamental discoveries are essential to this process."

This research has:

- revealed the previously unknown circuit in the spinal cord that controls the hand's ability to grasp
- opened the door to previously impossible treatment of impaired hand function due to spinal cord injury and neurodegenerative disease

A surprise finding opens the door to possible treatment of impaired hand function



Dr. Rob Brownstone (left), Canada Research Chair in Spinal Cord Circuits and Capital Health-Dalhousie neuro-surgeon, professor and scientist, and postdoctoral fellow Dr. Tuan Bui (right), have discovered the spinal cord circuit that controls hand-grip function.

Translating imaging techniques into tools for monitoring multiple sclerosis (MS):

Many patients with MS experience a worsening of their symptoms as the fatty myelin sheath that protects their nerves gradually breaks down. In order to predict how a patient will do, and ensure optimum treatment and support for their symptoms, clinicians must be able to gauge the degree of nerve damage.

Dr. John Fisk, a Capital Health-Dalhousie neuropsychologist and associate professor, is creating more sensitive ways to monitor the progression of MS and to sort out its physical and mental symptoms from other conditions that patients may have.

"Often MS is not the only source of trouble," notes Dr. Fisk, who is part of a national team that's studying how other health issues impact people with MS. "For example, this group has the same rates of high blood pressure and diabetes as the general population, but these conditions may be associated with a higher degree of disability for people with MS."

And then there are problems with mental health and cognitive function, often caused by the MS itself. Dr. Fisk is particularly interested in cognitive problems—in other words, problems with thinking processes—which affect 40 to 70 per cent of people with MS.

"We're developing sensitive measures to screen for and assess cognitive issues, which for people with MS include difficulty paying attention, remembering, analyzing, solving problems and multi-tasking," says Dr. Fisk. "These are huge issues for our patients, who are often young with many responsibilities in their lives."

Dr. Fisk and his colleagues are testing such sophisticated techniques as functional magnetic resonance imaging (fMRI), which shows what areas of the brain are active during different kinds of tasks, and diffusion tensor imaging, which reveals damage to the myelin sheath that could slow down processing speed in the brain. They're also testing a much simpler and less expensive technique, called optical coherence tomography (OCT), currently used to test people's eyes.

"We want to know if these tools can help us detect cognitive problems early, so we can provide people with strategies to help them cope," he says. "These imaging techniques could also be used to test the effectiveness of potential new treatments in the drug-development pipeline."

This research is:

- shedding light on the many physical and mental problems that affect people with MS and how they can best be managed
- creating new tools to screen for and assess problems with thinking that affect many people with MS
- creating new ways to monitor the progress of MS-related nerve damage and to assess the effectiveness of current and experimental treatments

Dr. John Fisk explores new ways to track MS and its symptoms

The eyes may actually be the window to the brain. Dr. John Fisk and his team are conducting a Capital Health-funded study to see if an imaging test—commonly used to monitor damage to the retina and optic nerve caused by such eye diseases as glaucoma—could also be used to easily and inexpensively monitor the progress of multiple sclerosis. The researchers suspect that the gradual thinning of the optic nerve seen in MS may be an indicator of nerve-cell loss throughout the brain.

A Dalhousie-based team linking science, anesthesia, engineering and business is making rapid progress toward the launch of a revolutionary new device for removing carbon dioxide (CO_2) from the patient's airstream during general anesthesia. Unlike current CO_2-absorbing technology, which produces neurotoxic compounds when it comes into contact with anesthesia medications in the breathing circuit, the new device removes CO_2 without the side effects of current absorbers.

"The toxic by-products of the current soda lime-based CO_2-absorbers can be harmful to brain cells. They may contribute to cognitive declines in patients over the age of 65, who don't have the brain-cell reserves of younger people," explains Capital Health-Dalhousie anesthesiologist and professor Dr. Michael Schmidt, who has been searching for safer anesthesia methods in the lab for over 15 years. Biomedical engineering PhD student, Florentin Wilfart, began working with Dr. Schmidt to develop the safe CO_2-scrubbing technology in 2008. Within two years, they had progressed enough to bring in a business advisor, Dr. David Roach, an assistant professor in Dalhousie's Rowe School of Business.

"We need to build triangles between medical science, engineering and business to get the benefits of research to patients quickly," Dr. Schmidt says. "It's not enough to publish your results—you have to team up with the right experts to translate them into real-world advances."

Dr. Schmidt, Dr. Roach and Mr. Wilfart soon launched a start-up company, DMF Medical Inc., and secured funding from the Atlantic Innovation Fund, local partners and private investors to develop, test and commercialize their non-toxic CO_2-absorber. The technology has attracted so much interest, DMF was one of 20 early-stage Canadian medical device or diagnostics companies invited to represent the country's biotech industry at a BioNova-led trade mission to Washington, DC, in September 2013.

"The regulatory pathway is clear and the value proposition is overwhelming," notes Dr. Roach of the business case. "This technology provides much safer patient care, at a reduced cost, with less waste than current devices. It's designed to be used with existing equipment, so it will be easy and inexpensive for health care organizations to adopt. There's no downside."

Not only does the DMF device spare the patient from exposure to neurotoxins, it has the potential to cut down the amount of ozone-depleting anesthesia medications that get released into the environment. "Because there are no toxins being produced with our technology, there is less need to continually dilute the content of the breathing circuit with fresh gas containing anesthetic vapour," Mr. Wilfart explains. "This

This new technology has the potential to:

- reduce post-operative delirium and cognitive decline, particularly among elderly patients
- reduce the risk of learning disabilities in children who need multiple surgeries
- reduce waste by replacing disposable devices with recyclable ones
- reduce the release of ozone-depleting anesthetic vapours into the atmosphere, protecting the environment and saving money by using less anesthesia

means there is the potential to dramatically reduce the volume of anesthetic vapours that get discarded through hospital exhaust systems every day, which is safer for our atmosphere."

The team has nearly finished pre-clinical studies and will be ready for human studies of the device's effectiveness by the second half of 2014. At the same time, they're finalizing contracts with suppliers and making manufacturing and marketing plans. "It's coming along very quickly," says Dr. Schmidt. "We hope to see our CO_2 absorbers in use in operating rooms around the world by 2015. With the rapid aging of our population, we can't afford to have surgery and anesthesia adding to the growing burden of brain disease."

Rowe School of Business assistant professor Dr. David Roach (left), biomedical engineering PhD student Florentin Wilfart (centre) and anesthesiologist and professor Dr. Michael Schmidt (right) are commercializing a new technology that protects the brain during anesthesia.

Every year in Canada, 50,000 people have a stroke. While only a few die, thousands end up with physical and intellectual disabilities that severely limit them in their day-to-day lives.

Capital Health researchers are on the forefront of efforts to improve overall function and quality-of-life in stroke survivors—as well as to recover more specific abilities, such as the use of a compromised hand.

Getting to the heart of the matter

As a physiotherapist in the 1990s, Dr. Marilyn MacKay-Lyons noticed her stroke patients were exhausted and out of shape. As she explored this problem, she was struck by the ironic fact that, although stroke is caused by vascular disease, rehabilitation focused on the neuromuscular system, with little or no attention to improving cardiovascular health.

"I found that stroke patients were afraid to exercise, lest they trigger another stroke, but heart disease is actually the most common cause of death after a stroke," she says. "So, I began conducting studies to see how important cardiovascular exercise might be to recovering stroke patients."

Over the years, Dr. MacKay-Lyons discovered that challenging stroke survivors with regular cardiovascular exercise improved their overall physical fitness, mobility and energy levels, while reducing their risk factors for another stroke or a heart attack.

The challenge now is to spread the word and encourage more stroke rehabilitation programs, and survivors, to work cardiovascular training into their regimens. On top of travelling around the world to share her findings, Dr. MacKay-Lyons and her team have developed and tested programs that can be delivered in rehab centres and community settings, as well as an educational video to help patients meet their exercise targets at home.

More recently, a grant from the Capital Health Research Fund has allowed Dr. MacKay-Lyons to test the synergistic effect of exercising people's minds as well as their bodies, in collaboration with psychologist Dr. Gail Eskes. "We believe that combining physical and cognitive training will produce a bigger impact than either approach on its own," notes Dr. MacKay-Lyons. "We think it's a very promising strategy."

Stroke survivor Margaret Perron (left) says that, since she started cardiovascular and cognitive training through a Capital Health-funded study, she sleeps better, has more energy, and finds her thoughts much easier to control. Graduate student Ishika Sharma (centre) and Dr. Marilyn MacKay-Lyons (right) are delighted with Margaret's progress.

Rehab specialists devise and test new ways to improve stroke survivors' abilities

This research is:

- leading the way to more effective stroke rehabilitation and cardiovascular risk reduction
- combining cardio-vascular exercise and cognitive therapies to improve stroke survivors' outcomes and quality of life
- using innovative approaches to stimulate recovery of lost mental and physical functions
- ensuring the safety and effectiveness of assistive devices in real-world scenarios

(l to r) Physiotherapist Alison McDonald, physiotherapist/researcher Dr. Shaun Boe and stroke survivor Charles Nicholson

Giving stroke survivors a hand

Physiotherapist Dr. Shaun Boe focuses on the brain's recovery from stroke. He and colleagues at Dalhousie want to know if temporarily "turning down" the signals in part of the brain could be a way to help recover lost motor abilities. "The healthy part of the brain will always try to compensate for the injured area," explains Dr. Boe. "This seems like a good thing, but it can actually prevent the injured area from recovering."

By constraining the healthy part of the brain using a non-invasive technique called Transcranial Magnetic Stimulation, Dr. Boe and his colleagues believe they can prompt injured motor centres in the brain to re-form the connections they need to initiate and control movement.

Now Dr. Boe is applying the idea of constraint to rehabilitating hand function. With a grant from the Capital Health Research Fund, he and his team have launched a trial to see if stroke patients can regain the skilled use of their impaired hand better if their good hand is physically constrained. "In the study, we're providing patients with a large padded mitt within two weeks of the stroke," he notes. "This reminds them not to use their good hand, and makes them use their impaired hand before its non-use becomes entrenched. If we're successful, we aim to develop this approach into a cost-effective treatment protocol that could be used anywhere."

Safer walking for stroke survivors

Rehab engineer Kim Parker has Capital Health funding to see if a foot brace can help certain stroke survivors maintain their balance and pace while walking—especially while being challenged with a mental task that takes their focus away from the movements of walking. "In the real world, we have many distractions," she says. "It's important to understand the role that attention plays in a person's ability to walk safely and confidently with assistive technologies. The methods used in this study may be helpful to ensure we recommend the device most likely to support walking and prevent falls."

At least one in six visits to Capital Health emergency departments is due to symptoms that cannot be medically explained. When it comes to certain kinds of pain, this proportion skyrockets—three of four visits for chest pain, and nine of ten visits for abdominal pain, result in no conclusive medical findings.

"This lack of explanation for their suffering is often very dissatisfying for patients," notes Dr. Sam Campbell, professor and chief of emergency services at the Halifax Infirmary. "It may even make them worse, as they become more anxious about symptoms that have no apparent cause or cure."

In the early 2000s, Dr. Campbell started talking to Dr. Allan Abbass, psychiatry professor and director of Capital Health's Centre for Emotions and Health, about the many emergency-department visits that end with no clear diagnosis or way to help the patient. The two began to study the problem, finding the numbers cited above.

As an expert on the links between the emotions and physical health, and a global pioneer of a treatment called intensive short-term dynamic psychotherapy (ISTDP), Dr. Abbass thought he might have a solution. He and Dr. Campbell launched a clinical trial to see if ISTDP could relieve the suffering of people with a history of repeated visits to the emergency department for medically unexplained symptoms. They found that 80 per cent of participants responded to the treatment, and their overall number of emergency visits per year dropped by 70 per cent.

"Intensive short-term dynamic psychotherapy is a talk therapy that encourages people to acknowledge the stress in their lives and consider its potential role in their physical symptoms," explains Dr. Abbass. "For some people, just one session provides profound relief."

Drs. Campbell and Abbass translated their findings into a proposal to Capital Health's senior management:

Dr. Joel Town (left), Dr. Sam Campbell (centre) and Dr. Allan Abbass (right) are leading efforts to ensure that people who come to emergency seeking help for medically unexplained symptoms receive effective treatment that resolves their symptoms.

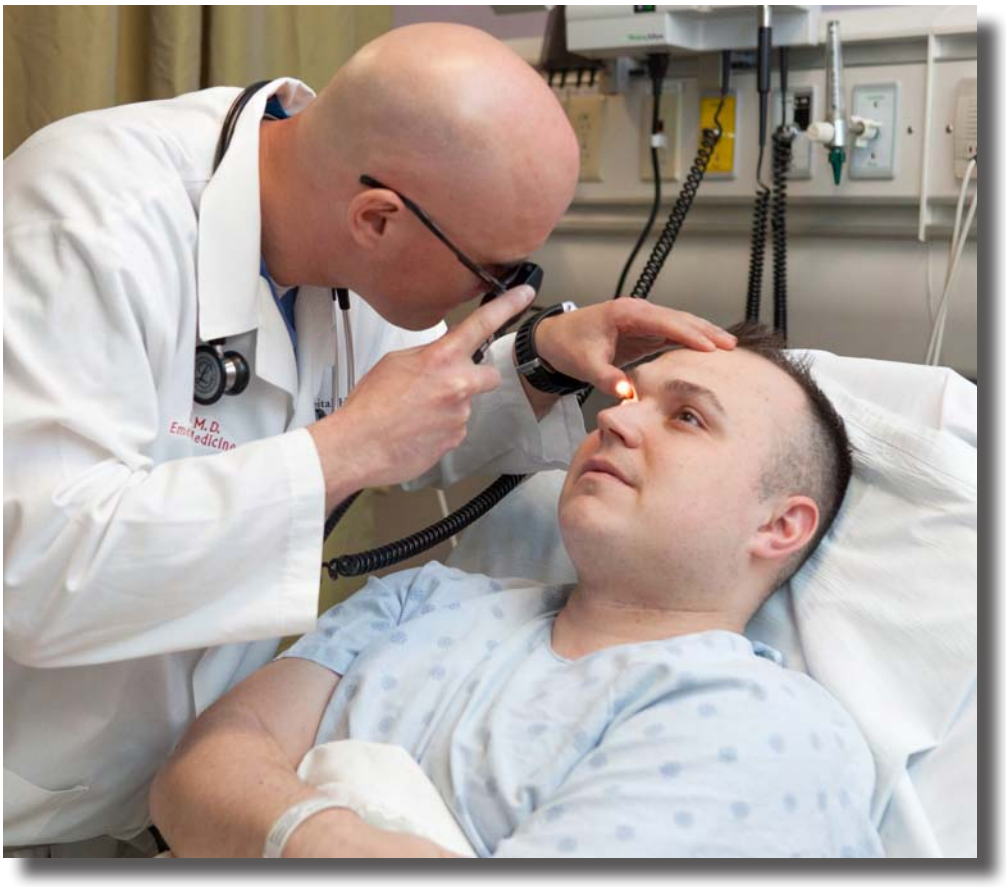
to establish a new clinic, affiliated with the QEII emergency department, where patients with medically unexplained symptoms could be assessed by a trained psychologist within a few weeks of their emergency visit.

"Many patients who would previously leave emergency with no help in sight are now receiving effective treatment," says Dr. Campbell. "A significant number of patients report a reduction in physical symptoms as well as depression and anxiety. They're not coming back to emergency, so our staff have more time to focus on people with injuries, acute illnesses and other kinds of problems they can address."

Dr. Abbass and Dr. Joel Town, a psychologist who works with patients in the Medically Unexplained Symptoms Clinic, are now finding ways to increase the impact of their work. Among many projects, they're teaching family physicians about the emotional roots of many medically unexplained symptoms, and providing information about their approach to interested health authorities in other parts of Nova Scotia and across Canada, as well as several other countries.

This new evidence-based clinic is:

- providing safe and effective treatment to people with medically unexplained symptoms
- preventing repeated unhelpful visits to emergency for people with medically unexplained symptoms
- reducing emergency room wait times and freeing staff to address acutely ill and injured patients
- improving the quality, efficiency and cost-effectiveness of care



This fall, researchers and administrators joined forces in an unprecedented way: they teamed up to prepare research grant applications for the very first round of QEII Foundation TRIC Grants.

TRIC stands for 'Transforming Research into Care' and that's exactly what these grants are designed to do.

"We based the TRIC Grant program on the strong belief that clinicians and administrators on the front-lines of health care have lots of great ideas about how to improve the system," explains Dr. Patrick McGrath, Integrated VP of Research and Innovation for Capital Health and the IWK. "But in order to make those improvements happen, you have to get the researchers and the administrators exploring problems and potential solutions together."

The idea to combine researchers' investigative abilities with administrators' practical know-how, and authority to make changes, emerged from discussions between Dr. McGrath and the QEII Foundation.

"We worked with Dr. McGrath to bring his TRIC Grant idea to life," says Bill Bean, president and CEO of the QEII Foundation. "The QEII Foundation's goal is to directly improve care for patients and these grants support the kind of transformative research needed to make real change. It's about working together and making positive changes for patients and for health care."

The QEII Foundation designated all proceeds from the 2013 *Charm Diamond Centres Night of Discovery* gala to the first year of Transforming Research Into Care (TRIC) Grants.

QEII Foundation TRIC Grants designed to deliver high-impact results

The QEII Foundation designated the proceeds of the 2013 *Charm Diamond Centres Night of Discovery* gala to the first year of the QEII Foundation TRIC Grants. Thanks to sponsors and guests, including the local research community, the event netted close to $230,000. The QEII Foundation added to the night's proceeds by contributing another $150,000. Grants funded through these proceeds will be awarded to researcher-administrator pairs at the QEII across two competitions in 2014, one in the fall and one in the spring.

The IWK Health Centre is also a key player in the TRIC program. The IWK Foundation will provide substantial funding for TRIC Grants to researcher-administrator pairs at the IWK.

The new grant program has captured the research community's imagination, prompting close to 40 researcher-administrator pairs at the QEII and the IWK to apply for the first round. These grants will be awarded in January 2014 in three categories: $3,000 over one year; $30,000 over two years; and $100,000 over three years. A committee of researchers, administrators and members of the business and broader communities—including a member of the QEII Foundation Board of Trustees—will thoroughly review the proposals.

"It's a stringent, multi-faceted process to ensure that proposals are scientifically sound and practically feasible," says Dr. McGrath. "On top of these essentials, our review committee will be considering the magnitude of each proposal's benefit in terms of the quality, safety, outcomes and cost of care, and as well as any commercial potential."

QEII Foundation TRIC Grants support research that will fuel direct and positive changes to the health care system, resulting in:

- more efficient, higher-quality health care
- higher patient satisfaction and better health outcomes
- safer health care with fewer complications and adverse events
- shorter wait times
- lower costs for the health system, patients and families
- better access to health care for under-served populations

Capital Health Research: All Research Accounts

Statement of Revenue and Expenses (April 1, 2012, to March 31, 2013)

Opening Balance April 1, 2012		**$**	**25,725,298**
Revenue			
	Grants*		8,764,278
	Contracts*		6,349,929
	Federal Indirect Costs Program		781,719
	Interest on Investments		491,929
	Donations & Other Revenue		236,543
	Ethics Review Fee		290,500
	RMU Consulting Fee		104,960
	Record Retention Fee		31,150
Total Revenue		**$**	**17,051,008**
Expenses			
	Compensation	**$**	**11,108,546**
	Supplies and Services Expenses		
	Transfers Offsite		1,464,484
	Purchased Services/Professional Fees		674,231
	Other Expenses		623,901
	Equipment		557,082
	Overhead to Dalhousie		529,087
	Travel/Professional Development		516,176
	Clinical Laboratory Services		476,248
	Diagnostic Imaging Services		283,001
	Pharmacy Services and Drugs		277,979
	Travel-Patient		273,596
	Printing/Office and Computer Supplies		244,920
	Maintenance		176,853
	Communications		42,754
	Medical/Surgical Supplies		42,564
	Recoveries of Expenses		(441,925)
		$	**5,740,950**
Total Expenses		**$**	**16,849,495**
Net Inflow/Outflow			**201,513**
Unrealized Gain (Loss) on Investments			**739,923**
Ending Balance March 31, 2013		**$**	**26,666,734**

Overhead Distribution	**12/13**
Capital Health Research Services	877,582
Capital Health Research Development	171,962
Faculty of Medicine, Dalhousie University	211,899
University Departments	317,187
Total Overhead	**$ 1,578,631**

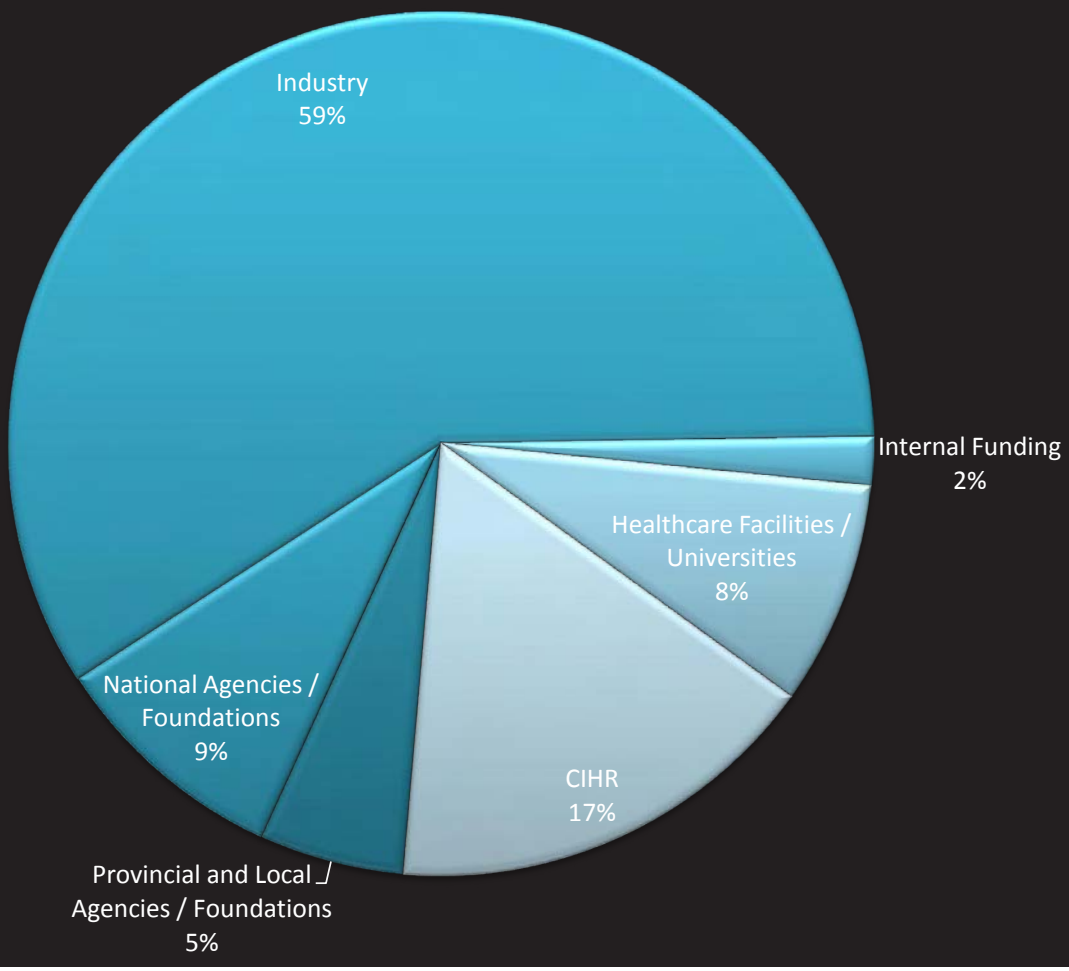
*Includes overhead

Awards for Research Conducted at Capital Health for 2012-2013 Fiscal Year

	Administered at Capital Health	Administered at Dalhousie
Research Grants	$7,388,823	$4,367,597
Research Contracts	$9,635,364	$4,750,304
	Total: $17,024,187	Total: $9,117,901

Total: $26,142,088

Source of Research Awards for 2012-2013 for Research Conducted at Capital Health



September 2012 Capital Health Research Fund Award Recipients

The Capital Health Research Fund competition is held twice a year. Researchers planning to carry out original research are eligible to apply for funding. Research funding awarded in the past year totalled $526,147.

September 2012 Awards			
Name	**Department**	**Award**	**Research Description**
Bezhuly, Michael	Surgery/Plastic Surgery	$14,945	Intraoperative hyaluronic acid gel (Restylane®) injection for improvement of scar quality following mammaplasty: Phase III, double-blinded, single-centre randomized controlled trial
Easton, Alexander	Pathology/Anatomical Pathology	$15,000	Angiostatin as a therapy for multiple sclerosis
Fleming, Kristen	Pathology/Anatomical Pathology	$5,000	Is p63 expression in Merkel cell carcinoma a prognostic marker?
French, Daniel	Surgery/General Surgery	$2,587	Cost analysis of video-assisted lobectomy versus open lobectomy
Hong, Paul	Surgery/Otolaryngology	$14,907	The effect of N-Acetylcysteine (NAC) on free autologous fat graft survival in a mouse model
Ishigami-Doyle, Yoko	Psychiatry	$4,280	Finding physiological indices of alertness in healthy young and older adults using electroencephalography (EEG)
Kinley, Jacqueline	Psychiatry/Day Treatment Program	$14,277	Facilitating emotional processing in psychotherapy
Landry, Thomas	Surgery/Otolaryngology	$10,000	Ultrasound imaging of the cochlea in decalcified human temporal bones
LeBlanc, Jason	Pathology and Laboratory Medicine/Microbiology	$49,761	Oral delivery of adjunct therapies for clostridium difficile infections
Liwski, Robert	Pathology/ Hematopathology	$15,000	Point-of-care diagnostic tools for hematology
MacDougall, Peter	Anesthesia/Pain Management	$14,834	The relationship between hip and knee replacement surgery and opioid prescribing: a COAP dataset review
MacIntyre, Ciorsti	Medicine/Cardiology	$5,000	The effect of shock burden on heart failure and mortality
Malik, Rizwan	Ophthalmology and Visual Science/Ophthalmology	$14,965	Gaining a better understanding of optic disc anatomy inpatients with myopic titled discs from Spectral Domain Ocular Coherence Tomography Imaging and improving detection of glaucoma
Meyer, Tracey	Emergency Medicine	$5,000	Blade tip location to facilitate endotracheal intubation using the king version video laryngoscope: a randomized trial using mannequins and lightly embalmed cadavers
Neufeld, Anastasia	Ophthalmology & Visual Science	$5,000	Analysis of macular pigment density in patients with age-related macular degeneration
Nolan, Stephanie	Pathology/General Pathology	$5,000	Immunohistochemical detection of the BRAF V600E-mutated protein in colonic adenocarcinoma with the VE1 antibody: a comparison of molecular and immunohistochemical approaches
Rockwood, Kenneth	Geriatric Medicine	$15,000	Sedentary behaviours of hospitalized older adults across levels of frailty
Stevens, Tynan	Radiology/Medical Physics	$4,980	Modelling grip force for enhanced specificity of presurgical mapping for primary motor cortex
Stueck, Ashley	Pathology and Laboratory Medicine	$5,000	Regression of cirrhosis: importance of local microvascular sufficiency and heptocellular senescence in regeneration
Town, Joel	Psychiatry	$49,986	Halifax treatment-refractory depression trial: a randomized controlled trial of Intensive Short-Term Dynamic Psychotherapy (ISTDP) compared to secondary care treatment as usual; Study 2: A cost-effectiveness analysis; Study 3: A process-outcome analysis

March 2013 Capital Health Research Fund Award Recipients

Since September 2007, the funding provided by the Capital Health Research Fund has totalled $1,852,126.

March 2013 Awards			
Name	**Department**	**Award**	**Research Description**
Clarke, Brian	Medicine/Cardiology	$15,000	Advanced cardiac imaging in heart transplant coronary artery disease
Clarke, Sharon	Diagnostic Imaging	$45,700	Comprehensive MRI of cholesteatoma: toward obviating the need for second-look surgery
Campbell, Clinton	Pathology and Laboratory Medicine	$4,579	Establishing a human hematopoietic stem cell xenotransplantation assay in zebrafish
Carter, Alix	Emergency Medicine	$13,713	The offload zone as a solution to emergency medical services offload delay in the Emergency Department
Carter, Michael	Pathology and Laboratory Medicine	$4,997	Binding studies of Alzheimer's disease drug candidates with human brain beta-amyloid
Darvesh, Sultan	Medicine/Neurology	$14,999	The relationship between butyrylcholinesterase and p53-Nmnat2-Sirt pathway in Alzheimer's disease
Humphreys, Nicholas	Medicine/Infectious Diseases	$3,367	Herpes Zoster Ophthalmicus following shingles vaccine: a survey of Canadian ophthalmologists
Hurton, Scott	Surgery/General Surgery	$4,800	Quality of care and health services utilization of pancreatic cancer patients in Nova Scotia
Johnston, Lynn	Medicine/Infectious Diseases	$15,000	Frailty in people living with HIV infection
Johnston, Michael	Surgery/Thoracic Surgery	$15,000	Early detection of lung cancer—a pan-Canadian study
Lehmann, Christian	Anesthesia	$14,881	Modulation of cannabinoid receptor 2 signalling—a new therapeutic approach in CNS injury-induced immune deficiency syndrome (CIDS)
McDonald, Alison	Physiotherapy	$15,000	Effectiveness of a DVD-based observational learning intervention: The Stroke Self Management Trial (SMART)
MacWilliams, Kate	Nursing/Emergency Medicine	$4,200	Miscarriages in the emergency department: a phenomenological analysis
Moorhouse, Paige	Medicine/Geriatric Medicine	$14,871	Outcomes associated with frailty in older adults with end-stage renal disease
Nantais, Jordan	Surgery/General Surgery	$5,000	Methylene Blue Therapy in experimental septic shock
Nickerson, Philip	Surgery/Neurosurgery	$14,970	Evaluation of spinal cord blood flow autoregulation and reperfusion following balloon compression injury in the domestic pig
Patriquin, Glenn	Medicine/Internal Medicine	$4,771	Attitudes towards screening solid organ transplant donors for Human T-Lymphotropic Virus—a national physician survey and assessment of patient decision-making
Sabo, Brenda	Nursing/Cancer Care	$14,902	Secondary trauma: the cost of caring work?
Shankar, Jai	Diagnostic Imaging	$14,875	CT perfusion in the prognostication of cerebral high-grade glioma
Szerb, Jennifer	Anesthesia	$15,000	Histological confirmation of ultrasound-guided needle placement in regional anesthesia: intraplexus sersus periplexus approach

Research Committees and Staff

Patrick McGrath, OC, PhD, FRSC, FCAHS
Integrated Vice President, Research & Innovation, Capital Health & IWK Health Centre
Tina Munroe, Executive Assistant

Research Services

Lisa Underwood, Director
Michelle Roden, Administrative Assistant
Alicia Benton, Coordinator, Contract Facilitation & Support
Janet Gallant, Program Manager, Research Education
Mary Kate Needler, Program Manager, Research Quality
Jayne Norrie, Coordinator, Institutional Awards
Stacey Pyke, Administrative Coordinator, Contracts & Grants
Judith Thompson, Human Resources Manager
Jennifer Thurlow, Coordinator, Grant Facilitation & Support
Emily Walker, Communications Coordinator

Research Financial Services
Denise Hatchette, Manager, Research Funds & Infrastructure
Jane MacLeod, Financial Analyst, Research
Hawley Murphy, Finance Officer, Research

Research Development & Planning
Sandra Crowell, Program Leader, Research Development

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Ken Jenkins, Manager
Nadine Gillam, Administrative Coordinator
Starla Burns, Ethics Coordinator
Amanda Hennebery, Ethics Coordinator
Joan Morrison, Ethics Coordinator
Pamela Trenholm, Ethics Coordinator

In addition to the Research Ethics Board executive and office staff, the board has 72 volunteer members. These members are drawn from the community, the legal profession, medical staff and hospital employees.

Research Fund Committee

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Dr. Gordon Gubitz - Co-Chair
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Dr. Sharon Clarke
Dr. Susan Bowles
Dr. Jeremy Brown
Dr. Gordon Budahan
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Dr. Jennifer Payne
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Amanda Tinning

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Capital Health

IWK Health Centre

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