Changing the way healthcare is delivered

Tapping big data to improve lives.
Our vision is to change the way healthcare is delivered by leading the personalization of health systems to be more responsive to patients, and deliver better value.

World leading chronic disease researchers

In kidney disease, epidemiology, and healthcare economics, based at Seven Oaks Hospital are receiving global recognition for their original and applied research. The Chronic Disease Innovation Centre (CDIC) was founded to accelerate and support their work, and to translate their research into action.

Although we deal in the analysis of population health records and big data, we are driven by the knowledge that our work helps to improve the quality of life for an individual person.

Mendel Schnitzer, 68 is living with advanced kidney failure. However, he is now able to perform his own dialysis at home or, more significantly, his summer cottage where he spends time with his grandchildren. Mendel uses simpler, portable, and more effective home dialysis equipment introduced at Seven Oaks Hospital by CDIC researchers.
The growing burden of age and lifestyle-related chronic disease

15% of Manitobans have Chronic Kidney disease (CKD)

The main causes are diabetes and high blood pressure

8,600 children under 17 already have CKD and 25% are at high risk for kidney failure

1,200 Manitobans with kidney failure currently need dialysis (highest per capita in Canada)

Hemodialysis patients spend over 15 hours each week in treatment and have only a 50% chance of living 5 years.

In-centre hemodialysis costs $95,000 to $107,000 per year per patient

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By the year 2014 more than 3,000 Manitobans will be living with kidney failure unless we identify those at risk and help them control high blood pressure and diabetes with medical management and support for lifestyle improvement.

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As a leader in prevention, Seven Oaks Hospital is the perfect home for the Chronic Disease Innovation Centre.

Practical results, no duplication

There is no other research institute in Manitoba, and few others in the world focused on chronic disease management and prevention like CDIC. Most medical research focuses on finding a cure through pharmacological treatment or genetic testing. CDIC research is primarily about sophisticated data analysis to predict risk, and to model and evaluate improved processes and treatment.

Responding to a growing need

Healthcare systems are under increasing pressure to cope with shifting demographics, increasing incidence of chronic disease and rising health care costs. We need to find new cost-effective prevention-focused solutions that promote wellness and improve quality of care and quality of life.

Seven Oaks Hospital recognized the need to invest in prevention over 20 years ago and created the Wellness Institute, the first facility of its kind in Canada. Wellness has since become a world leader in improving population health resulting in decreased hospital visits and reduced demand on health care resources.

Wellness provides our internationally renowned medical researchers with unique access to evaluation opportunities to conduct evidence-based studies. The genesis for CDIC arose from these synergies and the practical results of their work, which is already changing the way healthcare is delivered.

We will continue to expand our work benefiting from a rich base for testing and implementing innovative programs and services. CDIC is a research and development hub where leaders work collaboratively to apply next generation disease prevention and management approaches, supportive and enabling technologies and related advances in chronic disease.

CDIC endeavor to:

- Improve health, healthcare and well being of our patients
- Spur innovation that reduces healthcare costs
- Bring new healthcare products and technologies to market
- Provide local, national and international reach
- Unite experts from healthcare, research, academic, medical device and business sectors
Finding new answers in big data

Although most of us don’t realize it, each of us produces vast amounts of medical data each year by interacting with the healthcare system. There are patterns locked away in the growing sea of digital information that when discovered, can provide pathways to new groundbreaking health solutions.

CDIC researchers are tapping into this data in ways that have never been done before. Using advanced data-analysis of many thousands of patient records, they have been able to isolate indicators for improved disease screening and detection, management and prevention. In addition, they are also discovering new opportunities to improve healthcare efficiency. As a direct result of their work, our world-class researchers can now predict an individual’s risk of disease and help design and manage the care that is needed to meet their personal health, wellness and quality of life goals.

The benefits are cascading. When doctors can quickly and inexpensively screen their patients using routine lab tests, they can identify at-risk individuals and ensure they have access to specialists they need, or advise them on lifestyle changes to reduce risk of illness or even prevent it altogether. In turn, specialist wait times are reduced, and patients most in need of access receive it sooner, while others are referred to the caregiver best suited to meet their needs. Resulting from better optimization and prioritization, efficiency of the entire health system is improved.

CDIC research breakthroughs are resulting in cascading innovation. For example, as new screening methods are developed, corresponding technologies are required such as handheld and wearable devices along with supporting software that enable use in remote locations and patient monitoring.

From patient to advocate

Cathy Woods, 60 has become an advocate for CDIC research within the First Nations community where more options for kidney disease prevention are required. Cathy was successfully treated by researcher Dr. Paul Komenda using an aggressive drug treatment after a year of investigation and treatment had failed. Now fully healed, she is also participating in a multi-year CDIC research program as an advisor.

CDIC Researchers were active in the three year FINISHED Study to provide mobile kidney disease screening in high-risk communities in northern Manitoba. Early identification of kidney disease is critical for helping patients to prevent kidney failure.

FROM PATIENT TO ADVOCATE
Applied research – benefiting patients and the public

Even though it is early days, CDIC is already achieving results that benefit patients and health systems, at home and around the world.

Kidney Failure Risk Equation

The Tangri Study, named for Seven Oaks Hospital researcher, Dr. Navdeep Tangri has led to the development of a simple and reliable tool that is used with patients who have kidney disease. The Kidney Failure Risk Equation accurately predicts which patients are at risk of kidney failure.

Dr. Tangri’s study of several thousand Canadian patient health records resulted in an algorithm, published in the Journal of the American Medical Association, that used eight common lab tests to accurately predict a two and five year risk of kidney failure. Seven Oaks Hospital has been using the equation since 2011 to identify high-risk patients who need to see a specialist vs. low risk patients who can be managed by their family physicians.

Now a new study by Dr. Tangri and other international researchers using 700,000 patient records from 30 countries has simplified the equation and confirmed that it is applicable to kidney patients globally. The equation is now the global standard for predicting kidney failure. CDIC researchers have created online tools to help family physicians use the Kidney Failure Risk Equation with their patients.

Now researchers are applying the same process to create better risk equations for other diseases.

Improving quality of life

Hundreds of local patients with kidney failure can now dialyze at home as a result of research proving the cost-effectiveness and improved outcomes of home dialysis, along with improved quality of life and independence.

More effective devices, drugs and methods

CDIC researchers are partnering with industry to bring new devices to market for chronic disease management. One example is a handheld device used to screen for kidney disease without waiting for lab tests that could be used in remote communities. Studies are also underway to assess real-world effectiveness of current drugs, treatments and processes using health outcomes and utilization data.

A strong link with the University of Manitoba

CDIC principal investigators are Associate Professors at the Faculty of Health Sciences, College of Medicine at the University of Manitoba, and Dr. Claudio Rigatto is Section Head for Nephrology at the university. This deep relationship with UofM enables rapid transfer of CDIC innovation into education.

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The path to commercialization and global impact

CDIC is led by a core group of principal investigators with a broad array of medical, data analytics, health economics and research skills under one roof. This expertise combined with benefits of being situated within a community hospital with access to the Wellness Institute, and a market-oriented posture, combine to present a compelling case for commercial partners.

CDIC can provide research services to industry at every stage of the research and development process for pharmaceuticals, healthcare products, services and technology including:

- Designing and organizing research studies
- Proof of concept research
- Retrospective data analysis and risk prediction
- Clinical trial with patients
- Publication and knowledge transfer
- After market real-world effectiveness studies

CDIC is exporting its expertise and is already contributing to the local and provincial economy. Revenue includes consulting fees from Canada Wellness Institute (CWI) in China, commercial contracts for clinical trials, and studies for multi-national drug and technology companies. Commercialization work will help to fund administration of the centre further down the road.

Industry customers can also benefit from the CDIC’s preferred access to the Manitoba Centre for Health Policy’s Population Health Research Data Repository – a rich, clean and comprehensive collection of administrative, registry, survey, utilization (hospital, clinic, prescriptions, etc.) and population data for Manitobans.

A next generation facility for next generation researchers

CDIC has attracted a new generation of millennial scientists – a world-class group of curious, talented and inspired young professionals. Vibrant corporate culture and a contemporary physical environment are essential to the concept.

The CDIC research lab, situated within Seven Oaks Hospital will be consistent with what one might expect to see in Silicon Valley in a global technology firm. The workspace will be conducive to collaboration, independent study and feature state-of-the-art data processing workstations.

The cycle of support

Jack Raber has history with Seven Oaks Hospital. A member of the Wellness Institute from its inception, Jack has dealt with a series of health issues including chronic kidney disease. He has been supported over the years by the multi-disciplinary teams at the Hospital, and has been a participant in research studies.

Jack’s daughter, Janice, a nurse at Seven Oaks Hospital for over 25 years, has “walked the walk” with her father. She has unique perspective, as a daughter and a healthcare professional, on the continuum of care her father has received as his condition evolved. Janice cites sustained teamwork by hospital professionals as being central to Jack’s chronic disease management.

Relieving in giving back, Jack volunteered for years at Seven Oaks Hospital and is a contributor to both the hospital foundation and the Kidney Health Clinic.

Exporting expertise

Seven Oaks Hospital physician Sean Armstrong is in demand across North America to teach other physician teams to perform a bedside catheter insertion method perfected by Dr. Armstrong. This procedure provides more home dialysis options to kidney patients and an alternative to waiting weeks for a surgical slate and anesthesiologist to become available.

Dr. Sean Armstrong
Innovation doesn’t just happen, organizations have to purpose for it. Innovation requires vision, leadership and the willingness to embrace new ideas.

The perfect environment for innovation

Seven Oaks Hospital has been breaking new ground in prevention and management of chronic disease for over 20 years. It houses western Canada’s largest kidney health centre where researchers have improved services through the rapid translation of research into patient care. Partnering with the Wellness Institute, Seven Oaks has developed new ways to help patients manage and recover from diabetes, heart, lung and kidney disease.

CDIC researchers are early adopters in the use of advanced data analysis to improve chronic disease screening, detection and prevention. Another research area of focus is healthcare delivery systems. Researchers are working on process improvements to increase efficiency and reduce costs, and at the same time, to enhance patient outcomes. Seven Oaks Emergency Department has become a renowned demonstration site for process improvement.

Years ago the hospital’s directors made innovation a strategic priority. This mandate enabled management to deliver a sustained effort, which has resulted in operational excellence in innovation. Of equal importance, Seven Oaks Hospital has developed a rich culture of curiosity, ideation, and the collective determination to discover and deploy better ways of doing things. Today, world-leading researchers are drawn to the Seven Oaks Hospital community of innovation, and the momentum continues to build.

CDIC is an incubator for local, provincial and international collaboration. This is best illustrated by Dr. Tangri’s latest study with the Chronic Kidney Disease Prognosis Consortium based at Johns Hopkins University. The Consortium selects promising studies for researchers in several countries. Locally, CDIC works with Manitoba universities, and has projects underway with Manitoba businesses.

The perfect environment for innovation

Collaboration and growing intellectual capital

Our core group of physician researchers is attracting university collaborators from across Canada. Medical students (undergraduate to post-graduate) are working for CDIC principal investigators, and through mentorship will become the principal investigators of the future. Students participate directly in public health, economic and data analysis studies, while learning and contributing to the process.

Businesses are drawn to CDIC because of the practical results from their patient-focused research that reduces risk and helps prevent chronic disease.

The CDIC will create new paths for collaboration and innovation within the hospital, at Wellness Institute, and with family doctors working at the hospital and with residents training at Seven Oaks. In addition, the centre will continue to unite experts from healthcare, research, academic, medical device and business sectors.

Scientists will be working in a physical environment commensurate with the world-class research and innovation they are conducting.

CDIC Research vision

Leverage intellectual property into specific revenue generating products.

Successfully spin-off commercially viable products and IP into the private sector.

Will have established a sustainable business model with contract work and be developing marketable intellectual property.

10 YEARS

3 YEARS

5 YEARS

12 MONTHS

Dr. Ricardo Lobato de Faria

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The Chronic Disease Innovation Centre has its organizational structure and governance model well established, and its Board of Directors and Executive management are in place. CDIC is focused and operationally up-to-speed with a long-term strategic plan supported with short-term business priorities, including a clear revenue model:

- Research funding is secured through university-based grants, with multi-year programs in place and new long-term grants coming on stream.
- Capital funds for infrastructure and operating overhead will be secured through a CDIC capital campaign and other fundraising activity.
- Long-term administrative costs and operating infrastructure will be funded by revenue earned through commercial contracts.

CDIC’s aggressive commercialization agenda is well underway with numerous contracts secured with medical device, technology and pharmaceutical companies, and additional contracts in negotiation.

As the organization matures it will be in a position to selectively fund innovative chronic disease research projects that are difficult to fund under grant programs because they are higher risk, but also potentially higher reward investigations.

A solid organization with a sustainable plan

Community impact — an idea worth investing in

While the work at CDIC has global reach, it also directly impacts the local community. Research results are applied in the practice at Seven Oaks Hospital to directly improve patient care. And, community physicians are becoming knowledge users incorporating new methods into their practice. Together with Seven Oaks Hospital and Wellness Institute, CDIC provides a community solution to chronic disease prevention and management.

Supporting healthcare providers

CDIC has established links with family physicians and will increasingly become a resource by providing risk prediction tools and hosting Continuing Medical Education seminars on chronic disease for physicians and other healthcare providers.

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By focusing on sophisticated data analysis to predict risk, and to model improved processes and treatment methods, the Chronic Disease Innovation Centre at Seven Oaks Hospital is changing the way healthcare is delivered – at home and around the world. Please donate today.

www.cdic.ca/donate