Health Sciences Centre Achieves

“Gold Standard” of 24/7 Angioplasty Care

Teleophthalmology
Bringing Portable Eye Exams to Diabetics in the Region

P.A.R.T.Y. Program
Preventing Risk-Related Trauma in Youth
Our Journey to Health Together

Keith Taylor
Co-Chair, Patient Family Advisory Council

I was surprised to realize it has been over 2 years since a friend called me who works at the Thunder Bay Regional Health Sciences Centre (TBRHSC). She asked if I would become a volunteer Patient Family Advisor (PFA). She explained that exciting changes were coming in the way patients and their families would be integrated as partners in running our Health Sciences Centre: Patient and Family Centred Care (PFCC). I was intrigued and needed to know more. Since then there have been 86 PFAs involved in over 200 working groups and committees at TBRHSC.

I learned that the most recent patient survey (NRC Picker) results showed that we went from below the Ontario Teaching Hospital average to constantly exceeding it in patient satisfaction. This evokes a sense of pride for our Health Sciences Centre, and we, as PFAs, played an important role in this achievement. The true icing on the cake came in late 2011, when Accreditation Canada came for a site visit. We had many PFAs involved in the process and passed our Accreditation with flying colors. We were awarded leading practice for “Patient and Family Centred Care”. We are the first and best in the entire country at engaging our patients.

I hope I can speak for patients in saying thank you. First, thank you to the Board of Directors for seeing the future and taking a big step towards this huge and innovative change. Thank you to Senior Management for taking on the challenge to change the culture and for doing so with honest conviction. We know change, even positive change, is no easy task. Thank you especially to the staff, clinical and non-clinical, for embracing the PFCC model of care. The positive outcomes brought TBRHSC to a new level of excellence. TBRHSC is a great facility, modern and full of equipment to keep us healthy. However, if we measure our success based on our staff, our philosophy and our model of care, I see a proverbial giant in healthcare.

Results of PFCC

The provision of care that is respectful of and responsive to, individual patient/family preferences, needs and values, and ensures that patient values guide all clinical decisions. Accreditation Canada recognizes Patient and Family Centred Care is:

• a change from serving patients to partnering with patients
• working with patients and families, rather than doing things to or for them
• a change in organizational culture, in how we define our work, and how we practice together

The Patient and Family Centred Care model is designed to have Patient Family Advisors (volunteers) involved in all decisions from Food Services to management hiring committees, and more. The philosophy is designed to make patients and their families partners, not only in their care, but in day to day operations. After all, patients are experts about themselves and make the best decisions regarding their care.

Before the introduction of PFCC, TBRHSC was somewhere in the middle grouping in overall patient satisfaction (approximately 13 hospitals). The direct relationship built with Patient and Families through the PFCC model helped raise scores that are setting a new bar in patient satisfaction.
Report from the Chair of the Board of Directors

Angèle Brunelle
Chair of the Board, Thunder Bay Regional Health Sciences Centre

Our Strategic Plan is well supported. I marvel at the level of dedication constantly demonstrated by our healthcare professionals, staff, volunteers, and donors who work together to do so much more than meet the needs of patients and families. The results of our willingness to go the extra mile are evidenced in patient satisfaction surveys. We were honoured when Accreditation Canada commended our Health Sciences Centre, designating our Patient and Family Centred Care (PFCC) model of care as a Leading Practice in Canada. This distinction confirms what our patients and families have reported. We were also commended by Accreditation Canada for our leadership in Family Visitation using Telemedicine. In addition, TBRHSC was ranked one of the Top 40 Research Hospitals in Canada by Research Infosource. We are evolving into an Academic Health Sciences Centre.

None of these considerable accomplishments could have been possible without the outstanding support and involvement of our partners. We are leaders in healthcare delivery because we are backed by so many who care about our ability to succeed. Our community is our motivator.

The past year has been one of tremendous change, and a source of great pride for the many people involved. I commend them for setting us on this path. We continue to face challenges on a daily basis; Gridlock occurs as we struggle to provide for the needs of Alternate Level of Care (ALC) patients and acute care patients, and we are faced with difficult financial decisions. However, our focus is on finding solutions with our community partners, so that we may provide the right care at the right place at the right time.

As my term as a Board member and Chair of the Board of Directors comes to a close, I wish to thank my fellow Board members and the Health Sciences Centre team for their support and commitment. I know our Thunder Bay Regional Health Sciences Centre is on a clear path to success. With such capable leaders backed by enthusiastic partners and a dedicated community, healthcare in Northwestern Ontario has the brightest of futures.

Angèle Brunelle
Chair of the Board, Thunder Bay Regional Health Sciences Centre

Report from the President & CEO

Andrée G. Robichaud
President and CEO, Thunder Bay Regional Health Sciences Centre

Through engagement with our community, we learned valuable lessons to apply to our Strategic Plan. We learned that age, ethnicity, background, and personal history are our best assets for comprehensive strategic planning. Together, our multiple perspectives help us to see the whole picture with more clarity, enabling us to understand our present and visualize our future.

Throughout our strategic planning process, we welcomed new perspectives, and now we are realizing the benefits. It is an exciting time in healthcare in Northwestern Ontario.

We are fulfilling our Academic and Research mandates in alignment with our Clinical Services. Adapting a Program Management model allowed us to design healthcare around the needs of our patients and strengthened accountability and transparency. Co-leading with our physicians, patients, and families facilitates a proactive focus on our Strategic Directions.

This annual report is a celebration of the journey of Patient Family Centred Care and our organization’s transformation into an Academic Health Sciences Centre. As you read through it, I believe you will be as proud as I am. You will learn of significant accomplishments from each of our four Strategic Directions: Comprehensive Clinical Care, Addiction and Mental Health, Aboriginal Health, and Chronic Disease. Each success is rooted in our commitment to Patient and Family Centred Care (PFCC). For example, we expanded our capacity to help our patients live healthier lives with the opening of the Centre for Complex Diabetes Care.

You will also see highlights from our Quality Improvement Plan and Performance Scorecard. These tools drive change through focused improvement targets and support our commitment to outcomes and accountability to the people of Northwestern Ontario.

Our Thunder Bay Regional Health Sciences Centre belongs to you as a member of our community. I encourage you to embrace the activities that shape your care. We continue to seek input and new ways of conducting the business of healthcare. We saw the possibility this year as we moved toward our new future, and we will continue to realize meaningful successes. We are becoming Healthy Together.

Andrée G. Robichaud
President and CEO, Thunder Bay Regional Health Sciences Centre
Alignment of Programs and Services

Through measured examination of the health status of the residents of Northwestern Ontario and with broad partner engagement, Thunder Bay Regional Health Sciences Centre developed the Strategic Plan 2015 to lead us to our Vision: Healthy Together.

To achieve this Vision, we will need to focus on the health needs of the population that we serve, and to provide services in new and innovative ways. With the patient and family at the centre of everything we do, efforts will be focused on Aboriginal Health, Chronic Disease Prevention and Management, Comprehensive Clinical Services and Mental Health and Addictions. As an Academic Health Sciences Centre, providing leading-edge patient care comes from the integration of excellent Clinical Services, Learning and Research.

Health Status

Population Characteristic Highlights

- Census data shows that the North West region has 230,000 individuals which accounts for 2% of the province’s population.
- 53% live in the City of Thunder Bay; 27% Kenora District; 11% Thunder Bay District (excluding Thunder Bay); 9% Rainy River District.
- NWLHIN is home to a third of the on-reserve Aboriginal population, a quarter of the off-reserve and just over half of all “Indian Reserves and Indian Settlements” in the province. Aboriginal people are estimated to represent 19.2% of the population in the NWLHIN.

Population Health Status in the Northwest LHIN compared with the Province of Ontario

- Significantly lower percentage of residents perceive their health as excellent or very good.
- Residents have the highest rate of diabetes mortality of all 14 LHINs.
- Residents have significantly higher mortality rates for all circulatory system disease such as heart disease or stroke.
- Life expectancy is the lowest in the province.
- Mortality rates due to all external causes, and suicide specifically, are significantly higher.
- Higher rates for most chronic conditions including arthritis, high blood pressure, other heart disease, asthma and diabetes.

North West Population Health Practices

Significantly Higher Rates of:

- Smoking
- Secondhand Smoke
- Heavy Alcohol Consumption
- Obesity
- Student Substance Use

Significantly Lower Rates of:

- Fruit and vegetable consumption
- Access to a regular medical doctor
- Contact with medical doctor in the past 12 months
- Influenza immunization
- Student physical activity

We have bad habits that contribute to us being sicker than the rest of the Province.

“"We need to change as the needs of our population changes."

Nella Lawrence, Manager Program Planning & Telecommunications, TBRHSC
Cardiovascular and Stroke Program

Definition
The Cardiovascular and Stroke Program leads the delivery, development and implementation of services to prevent, screen, diagnose, treat and rehabilitate patients with a broad spectrum of vascular diseases. Specialty areas include:
- Cardiac care, including the development of Cardiac Surgical and Advanced Rhythm Management programs
- Stroke and Neurology care, including the development of a Neuro-interventional Program
- Vascular care, including the development of vascular surgical and interventional programs
- Renal vascular access support
- Ensuring safe, effective transport medicine care, in collaboration with EMS providers

Ensuring safe, effective transport medicine care, in collaboration with EMS providers

Areas include:
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The Cardiovascular and Stroke Program

Foundation Support
The Thunder Bay Regional Health Sciences Foundation has been critical for the development of the Angioplasty Program, helping achieve 24/7 emergency angioplasty capabilities.

“The development of an interventional program was a critical component in the development of a second Catheterization (Cath) Lab and both Cardiac Catheterization Labs. The Foundation has contributed approximately $5 million for cardiac care, including the development of a second Cath Lab,” said Glenn Bodnar, a Community and Long Term Care Development Officer at the Thunder Bay Regional Health Sciences Foundation.

Challenges
Limited vascular capacity in Ontario and Manitoba to support Northwestern Ontario
Congestive heart failure (CHF) lengths of stay and re-admissions too high
Growing cluster of high-risk patients with infectious endocarditis and addiction issues

Focus
Reduce death/disability due to vascular diseases
Support healthy lifestyles; our Exercise Rehabilitation Program will become a hub for health promotion
Provide our patients with information to self-manage their diseases
Become a full-service tertiary centre offering cardiac and vascular surgery, advanced rhythm management, and interventional neur and vascular care

Goals
Create a comprehensive congestive heart failure pathway to guide care
Use technology to support post-discharge follow-up using Interactive Voice Response (IVR) to reduce readmissions
Create dedicated cardiovascular and stroke program beds
Continue planning for advanced cardiac services expansion
Increase outreach/education visits

Second Cath Lab Means Gold Standard of 24/7 Angioplasty Services
The Angioplasty Program at the Thunder Bay Regional Health Sciences Centre reached a major milestone with the opening of a second Catheterization (Cath) Lab four years after the program first started. With the new Cath Lab officially opened on August 10, 2011, the Angioplasty Program can now offer 24/7 emergency angioplasty services, the Gold Standard for the treatment of heart attacks.

With two suites being utilized, the waiting time for patients to receive an angioplasty is much shorter. We are now far more capable of handling the emergency cases.

The second Cardiac Catheterization Lab was named “The J. Armand Bombardier Foundation Cardiac Catheterization Lab” in honour of Bombardier’s $300,000 contribution towards the project. James Forbes, who himself had life-saving angioplasty at the Health Sciences Centre, knows first hand how important it is to have angioplasty services here in Thunder Bay rather than having to be sent to Ottawa, Hamilton, or elsewhere.

“I have heard about people’s lives being changed ‘in a heartbeat’, but I didn’t think that I would ever be part of the story,” Forbes said. “However here I am, talking to you. How can words express my gratitude? How can my family say thank you? Having the doctors and the teams of healthcare workers so close at my time of need was tremendously comforting. They literally saved my life. It is priceless.”

The Angioplasty Program also welcomed its third Interventional Cardiologist in 2011, Dr. Andrea MacDougall, who joined Dr. Mark Henderson and Dr. Ian Billingsley.

Meet Scientist
Dr. Lily Wu
Investigating modern diseases
Our modern diet is causing modern diseases. Dr. Lily Wu and her team are investigating the workings of metabolic syndrome – a combination of disorders including hypertension, diabetes, and obesity – and then finding ways to treat and prevent it.
Chronic Disease Prevention and Management Program and Medicine Services

DEFINITION
The Chronic Disease Prevention and Management Program includes Northwest Regional Renal Program, the Centre for Complex Diabetes Care, the Barrie Regional Cancer Centre and the Internal Medicine Clinics. The Medicine Service includes Inpatient Units 2A Renal and Medicine Care, 2B Chronic Disease, Convalescent Teaching Unit and Medicine Care, and STM Medical Short Stay Unit, as well as the Hospitalist Service.

The new combined Program and Service focuses on four diseases/conditions: chronic kidney disease, diabetes, obstructive lung diseases (COPD & asthma) and obesity. Our Strategic Direction will be based on Ontario’s chronic care model, spanning the full patient continuum and integrating primary to tertiary care assessment and management.

The Program/Service also provides leadership for the Admitting department, administrative coordinators, local ground patient transportation, and the Nurse-Led Outreach teams.

HEALTH STATUS
Northwestern Ontario has the highest-than-average incidence of chronic disease including diabetes, pulmonary diseases, and renal disease. Incidence rates are particularly high among Aboriginal people. The region also has higher incidence of risk factors including tobacco use, alcohol use and obesity.

Chronic diseases tend to have a compounding effect. Complications of illness can also lead to other serious health issues. For example, diabetes can lead to renal failure, loss of eyesight of amputation.

The Chronic Disease Prevention and Management Program is developing new screening and prevention programs as well as new initiatives to empower patients with the skills and confidence necessary to manage aspects of their chronic diseases with their healthcare providers.

Teleophthalmology Screening Program
Early Detection of Diabetes-Related Blindness

The Ontario Telemedicine Network (OTN)’s new Teleophthalmology screening program detects diabetic retinopathy, a complication of diabetes that affects the retina (the inner lining of the eye). Diabetic retinopathy is the leading cause of legal blindness in North America, and with diabetes on the rise, the number of people affected is expected to rise as well.

To combat this, the Canadian Diabetes Association (CDA) recommends all patients with diabetes undergo retinal screening to detect the early signs of vision loss.

However, distance is a real barrier for people in Northwestern Ontario who need to access this type of care. This is especially true in fly-in First Nation communities where diabetes is widespread but access to care is difficult.

OTN’s Teleophthalmology is a web-based screening program that allows patients to get their vision exams faster. The unit is portable so it can travel to the patients rather than vice-versa.

A specially-trained photographer takes a picture of the patient’s eyes using a high-end camera attached to a special retinal screening device. These images are transmitted to an ophthalmologist for review.

Locally, Teleophthalmology launched on October 28, 2011. It is provided by the new Centre for Complex Diabetes Care (CCDC) at Thunder Bay Regional Health Sciences Centre and the Canadian National Institute for the Blind (CNIB) Eye Van, and is funded by the Ministry of Health and Long-Term Care.

At the CCDC, we recognize that the medical context of a diabetic patient and family associated with the patient is important. It is knowing that stabilizing diabetes, managing the condition, and appreciating the risk of serious associated conditions means that everyone has to be accountable for care. It doesn’t go away because of the complexities. I am excited about the potential of the CCDC to help people at their time of need,” said Dr. Saleem Malik, Medical Director for the CCDC.

The Ministry of Health and Long-Term Care will contribute up to $2.6 million to support the operations of the Centre.

Foundation Support
The Thunder Bay Regional Health Sciences Foundation dedicated over $200,000 in the last several years to Northwest Regional Renal Program, including funding for hemodialysis equipment at its Sioux Lookout unit. The Foundation is committed to closer-to-home treatment, which reduces travel time and costs for regional patients and promotes better overall patient care.

Meet Scientist Dr. Mitch Albert
Illuminating parts of the body never seen before

Dr. Mitchell Albert, co-inventor of hyperpolarized (HP) gas MRI, has come to Thunder Bay to realize the full potential of this promising technology for diagnostic imaging and treatment of breathing disorders as well as other diseases including cancer, stroke, and diseases of the brain.

The Centre for Complex Diabetes Care
An Interdisciplinary Team for Complex Diabetes Care

Diabetes is a growing problem in the region. Provincially, 11% of the population has this chronic disease, and those numbers are even higher in Northwestern Ontario.

In 2011, Thunder Bay Regional Health Sciences Centre, Saint Joseph’s Care Group, and Sioux Lookout N’ko Yo Win Health Centre partnered to launch the Centre for Complex Diabetes Care (CCDC), a program for Level 3 patients (those most affected by the disease). The CCDC provides a single point of access to specialized interprofessional teams using a coordinated approach to diabetes management and treatment.

The CCDC team works directly with an individual’s primary care provider to ensure comprehensive services are provided.

“This centre will leave a lasting legacy for many patients and families in Northwestern Ontario as these people cope with a significant healthcare challenge,” said Gill Labine, First Vice Chair of the Health Sciences Centre’s Board of Directors.

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#Click to read more

ACCOMPLISHMENTS
Opened Centre for Complex Diabetes Care
Launched Regional Bariatrics Care Centre
Launched Internal Medicine Clinics, which reduce re-admissions and visits to the Emergency Department

CHALLENGES
Higher-than-average rates of chronic disease
High re-admission rates among chronic diseases patients contributing to higher demand for acute care beds and higher volume in the Emergency Department
Finding proper supports for discharged patients, especially those without a primary care provider

GOALS
Implement the provincial Chronic Disease Prevention and Management (CDPM) framework
Realize a reduction of readmission rates for patients with COPD, chronic heart failure and cancer
Implement Ontario Wait Time Strategy as it relates to vascular access surgery for Chronic Kidney Disease patients
Improve transitions of care and
from community partners through standardized admission and discharge processes
Collaborate to develop a regional healthcare service plan to enable delivery of appropriate care in the most appropriate setting
Helping People with Psychiatric Disorders Who Break the Law

There is still a considerable amount of stigma and misunderstanding when it comes to people with mental illness who break the law. It is a complex issue that requires compassion and awareness. The Thunder Bay Regional Health Sciences Centre Forensic Mental Health Unit, a tertiary service, cares for adult individuals who come into conflict with the law and who may have a psychiatric disorder. In Ontario, access to the forensic mental health system is almost always provided as a result of court action. At any point during proceedings in a criminal case, the court can order a psychiatric assessment to determine whether due to mental illness a person is (a) Unfit to Stand Trial or (b) Not Criminally Responsible for their actions. That person is then transferred from the criminal justice system to a forensic mental health program for assessment. If the individual meets either condition, they remain within the forensic mental health system for treatment and rehabilitation. The Ontario Review Board, an independent tribunal established under the Criminal Code of Canada, has jurisdiction over this group of individuals. The role of forensic mental health is not to punish, but to help rehabilitate and reintegrate people into the community. Staff members working within Forensic Mental Health Services at the Health Sciences Centre understand the issue of stigma, and are committed to treating everyone with respect and dignity. At every stage of the process staff must balance the needs and rights of the patients with that of the public in terms of security requirements. Most patients – people who are determined not to be a threat to themselves or others – are treated through outpatient services. Currently, the program at the Health Sciences Centre serves 70 outpatients annually. The program also has a secure 20-bed inpatient unit for patients who require supervised treatment. An interprofessional collaborative practice approach, developed over decades of research and experience, helps ensure that people with mental illness get the support they need and reduces the chance of future conflicts with the law.

Dual Committee Raises Awareness About Mental Health

Mental health is a critical element of holistic care. Yet one of the biggest barriers to promoting good mental health is the stigma surrounding mental illness – both inside and outside healthcare. As part of the Mental Health Program, a dual committee uses both Mental Health Awareness Week (celebrated nationally in the first week of May) and Mental Illness Awareness Week (first week of October) as a time to address negative perceptions and discrimination, reduce stigma and promote good mental health. In some cases, the committee works in partnership with community agencies. The committee also organizes events within the Health Sciences Centre to highlight mental health issues. For example, last October Mackinley Steinhoff, a local magician with schizophrenia, staged a show in the cafeteria.

“One of the biggest things I want to do is use magic as a vehicle to removing stigma about mental illness”

Mackinley Steinhoff

The initiatives of this committee are well aligned with the Health Sciences Centre’s Strategic Plan. Our goals include improving the patient care experience for people living with mental illness, and providing staff with education to improve confidence and capability working with individuals with mental illness.

The committee hosts mental health workshops for staff throughout the Health Sciences Centre. Topics have included mindfulness, stress in the workplace, and coping effectively with stigma. The committee also put together an interactive exposition highlighting mental health services within the Health Sciences Centre and community agencies. Evaluations of these sessions have been very positive and encourage request more of the same.
New Diagnostic Assessment Programs (DAPs) Speed Diagnosis

Reaching a cancer diagnosis faster means that patients can start treatment earlier, which in itself can help improve patient outcomes. Diagnosis also plays an important part in patient care: the wait time between finding an abnormality or concerning symptom is found to diagnosis can be one of the most stressful phases of the cancer journey.

We have developed several Diagnostic Assessment Programs (DAPs) to speed up the time to diagnosis. Multidisciplinary teams of care professionals, including physicians, technologists, nurses, support staff and therapists, work together to accelerate time to diagnosis by removing barriers to access and improving communication.

The program launched the new Lung DAP in 2011 to reduce diagnosis wait times by more than half to 6-7 weeks. Previously, diagnosis could take up to 18 weeks.

“The DAP really helps ease anxiety and gives patients and families the support and contact they need through the entire diagnostic phase of care. Our goal is to ensure patients are active participants in the process and that they have access to the information and emotional support they need,” said Joanne Leducourier, Director of the Cancer Program.

Incidence of lung cancer is approximately 10% higher in Northwestern Ontario than the rest of the province, according to Cancer System Quality Index (CSQI) data reported by Cancer Care Ontario in 2010. Other DAPs include those for colorectal cancer and malignant lymphoma. The Lymphoma DAP includes an innovative new method developed at the Health Sciences Centre. Diagnosis of lymphoma requires a biopsy of the affected lymph node. Traditionally, this required surgery to obtain the tissue sample. In some patients it is now possible to get the sample using an image-guided core needle. This outpatient procedure can be booked faster than a surgical procedure, and is less invasive than surgery, which reduces discomfort and recovery time for patients.
Emergency Department Visits

Last year, there were 109,179 patient visits to our Emergency Department. We are proud to be one of the highest provincial performers for certain wait times, and strive to improve in other areas. Strategies, including establishing a Psychiatric Emergency Service, have been identified to address challenges such as prolonged lengths of stay for admitted patients and increasing demand for service in the ED.

Improved PFCC Strategies for ICU

Based on feedback, the Critical Care Unit (ICU) is changing the way it interacts with families, incorporating them more into the treatment process. This aligns with the Health Sciences Centre’s model of care, addressing the needs of the family during what is a traumatic time, and ultimately providing better patient care. Specific initiatives include customized direction maps, a resource list of staff who can be called upon to help families find their way to the Critical Care Unit, and strategies to improve communication with family members. These include bedside whiteboards and bedside signs to remind staff of the goal to have an initial visit with the family within 30 minutes of their arrival to the Critical Care waiting room. Staff will also orientate families to the critical care environment so that they feel more welcome.

Plans are in development to build on this concept by improving the transfer process from ICU to inpatient units for smoother transitions.

Meet Scientist-Clinician Dr. David Kisselgoff

Improving quality of portable x-rays

Dr. Kisselgoff is working on an improved Mobile Radiography Unit that could significantly improve the quality of portable radiography images. The system would be used in areas where physicians need quick access to information to better treat patients.

Foundation Support

Children get bored in the Emergency Department waiting area, but playing or sitting on the floors exposes them to a higher risk of injury or infection. Thanks to a Volunteer Association / Health Sciences Foundation Family CARE Grant, children have a safe, family-friendly play area with chairs and tables designed from hospital-grade materials that are easy to clean and maintain.

ACCOMPLISHMENTS

Surge Capacity Management

Planning put in place

The Emergency Department (ED) is one of the highest performers in Ontario for wait times related to non-admitted lengths of stay and physician initial assessment.

A fast-track triage process for non-acute patients developed

Launched the STEM program in partnership with the Base Hospital (program and Superior EMS to identify STEM heart attacks in the field).

Equipment and space enhancements in the non-acute area of the ED.

Created the ED-Quality Clinical Nursing Practice Coordinator position, resulting in several quality and process improvements.

Expanded hours for injury prevention and social workers.

Completion of approximately 10 P.A.R.T.Y Program sessions for local high school students.

CHALLENGES

For the ED, prolonged length of stays for admitted patients and increasing volume, as well as staff recruitment/retention and space issues.

Providing trauma education to regional partners.

Delays in patient transfers for patients who are ready to transfer to the next level of care.

FOCUS

Regional critical care outreach to serve critically ill patients in the region using Telemedicine and other technologies.

Improved ICU to ward transitioning.

Participation in additional trauma-related research projects.

Implement Medication Reconciliation in the ED.

Co-lead the development and implementation of a Psychiatric Emergency Service.

Redesign the physical space in the ED.

GOALS

Expand Critical Care support to region using Telemedicine.

Revise resuscitation “code policy” throughout the Health Sciences Foundation Family CARE Grant.

Provide trauma education to regional partners.

Reduce ED overcrowding.

Develop strategies to reduce avoidable ED visits.

Create a process for interprofessional rounds for trauma patients.
In a lot of ways, William Genyk is a normal three-year-old boy. active, boisterous, certainly gregarious. Unfortunately, being so animated can get him into trouble. William has a blood disorder called hemophilia, a disease that prevents blood clotting. Even a simple fall can result in a trip to the Paediatrics Outpatient Unit. Wendy took advanced training in October so she can help kids with severe hemophilia. A big part of what she does is teach families how to incorporate hemophilia into their lifestyle. “Kids are more active and prone to accident than adults,” Wendy said. Hemophiliacs have had the disorder from birth, so “by the time they get older, they have developed those skills.” It’s a service that Lyle, for one, is grateful for. “The way they treat William, it’s unbelievable,” Lyle said. “It’s like being amongst family.”

“Helping William”

In a lot of ways, William Genyk is a normal three-year-old boy. active, boisterous, certainly gregarious. Unfortunately, being so animated can get him into trouble. William has a blood disorder called hemophilia, a disease that prevents blood clotting. Even a simple fall can result in a trip to the Paediatrics Outpatient Unit. Wendy took advanced training in October so she can help kids with severe hemophilia. A big part of what she does is teach families how to incorporate hemophilia into their lifestyle. “Kids are more active and prone to accident than adults,” Wendy said. Hemophiliacs have had the disorder from birth, so “by the time they get older, they have developed those skills.” It’s a service that Lyle, for one, is grateful for. “The way they treat William, it’s unbelievable,” Lyle said. “It’s like being amongst family.”

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Helping William

Women and Children’s Program

Youth Suicide Prevention Task Force Recognized

Angela Hill, Coordinator of the Child and Adolescent Mental Health Unit and co-chair Sheila Hansen, Public Health Nurse with the Thunder Bay District Health Unit, were the recipients of the Canadian Injury Prevention & Safety Promotion Conference’s Leadership Award in 2011 for their role in the development of the Thunder Bay Youth Suicide Prevention Task Force. The Health Sciences Centre played a leadership role in the development of the Task Force, a collaborative effort involving 26 community mental health and education organizations including Francophone and First Nation partners. The Task Force has developed awareness tools for teachers, parents, coaches (in development) and youths themselves. These include brochures, help cards, and a website www.harostodal.ca that outline the warning signs and provide information about where to seek help.

Another component is the Youth Suicide Rapid Response Protocol or “fan out” to help local schools cope with a suicide or other tragedy. Member organizations provide different services. For the Child and Adolescent Mental Health Unit’s part, it provides assessments and safety services for those identified as being high risk for suicide themselves. “The thing with youth suicide is that there is often a ripple effect – after the suicide of one youth, other youths may start feeling suicidal or overwhelmed,” Hill said. The fan out has been used five times since 2009.

Public Health Ontario has recognized the Task Force and its youth suicide prevention strategy as a “Best Practice” model.

Meet Scientist Dr. Laura Curiel

Incisionless surgery using HIFU

Dr. Laura Curiel and her team test the safety and effectiveness of MRI-guided, High Intensity Focused Ultrasound (HIFU) to treat uterine fibroids. Current treatment options for uterine fibroids involve traditional surgery but with this new approach, fibroids are eradicated with heat, reducing side-effects and risk.

Visit scientist profile

Foundation Support

Labour and Delivery received a grant from the Thunder Bay Regional Health Sciences Foundation for new infant warmers, to give baby the best welcome to his/her new world. These are special beds where newborns can be cared for and examined in a warm, safe, and lighted area. The warmers are equipped with oxygen, suction, and temperature regulation.

“Pointillism”

A new approach, fibroids are eradicated with heat, reducing side-effects and risk.
Coastal Ontario, by promoting healthy lifestyles to reduce the risk of cancer, we also reduce the risk for other conditions including heart disease, diabetes, CO2, renal disease, and other chronic diseases.

ACCOMPLISHMENTS: Established the new Service to provide prevention and awareness as well as screening services for a wide range of diseases and conditions.

Continued to develop specific screening programs including breast, cervical, and colorectal screening.

CHALLENGES Include:

• Identifying the needs of a broad audience, including screening and prevention strategy that meet those needs.
• Providing prevention and screening services to a diverse geographic area, especially remote Aboriginal communities throughout Northwestern Ontario.

FOCUS Develop a comprehensive prevention, screening, and care strategy for Thunder Bay and all of Northwestern Ontario.

GOALS: Launch the Integrated Screening Program in Northwestern Ontario.

Create partnerships with primary care physicians and teams in Northwestern Ontario. (CCO) screening programs: ColonCancerCheck, the Ontario Breast Screening Program (OBSP), and the Ontario Cervical Screening (OCS) Program.

Launch the new Integrated Screening Program coach in 2012.

Increase screening in each of the three CCO screening programs by 10% each year for the next four years.

Streamline the process by which patients access results in cases of abnormal screening results.

Programming to support prevention and screening for all chronic diseases is underway, including Your Health Matters, a workplace and community-based healthy lifestyle program. Training for lay leaders and health care providers has included volunteers who delivered the program in seven remote communities.

New technology is assisting us to better understand the health profiles of specific neighborhoods and communities across the region. We use Cancer Care Ontario’s Geo Mapping system to pinpoint regional sites for mobile coach visits and screening drop-in locations, based on the specific demographics and screening rates of adults living in these areas.

Sioux Lookout’s Meno Ya Win Health Centre is a significant partner in the development of long-term strategies to improve access for chronic disease prevention and early detection for residents of northern, rural, and remote communities.

Meet Scientist Dr. Ingeborg Zehbe

New HPV screening methods for Aboriginal women

Dr. Zehbe and her team conducted an HPV self-sampling pilot test involving 49 Aboriginal women. The group is now working on the second phase of the study involving over 1000 participants from 10 First Nations communities in the region.

128-Slice CT Scanner Provides Hi-Res, Low Dose Radiation

The new 128-slice CT scanner will significantly improve patient care, providing higher resolution images faster and at a lower dose of radiation.

Stephen Exley, Manager of Molecular Imaging at the Health Sciences Centre, said that minimizing radiation dose to the patient was a priority.

“For every patient, from the paediatric patient to the bariatric patient, will get the lowest possible dose,” Exley said.

It does this by actually gauging body size and mass, even adjusting dose rates as it passes over different parts of the body so that ‘thinner’ parts of your body will receive less radiation.

Foundation Support

For certain women at higher-risk of breast cancer, breast MRI is a highly sensitive imaging device (85%-99%) that can detect abnormalities that other tests cannot. The Thunder Bay Regional Health Sciences Foundation dedicated $185,000 – raised at the Bakers Airline Classic curling bonspiel – to purchase the dedicated breast MRI coil and MRI-safe biopsy devices.

Resolution is also greatly improved. For CT scanners, the number of slices is similar to the number of mega pixels for digital cameras. Going from a 16-slice scanner to a 128-slice you give an idea of the jump in image quality.

The higher resolution allows for certain procedures like CT-guided biopsies.

Faster scanning time means that patients need to hold their breath for seconds instead of minutes, and will also contribute to higher image resolution.

“It doesn’t matter your age, it doesn’t matter your size, we can provide a quality image at the lowest dose possible,” Exley said.

Under/NevertScreened Initiative Targets Earlier Detection

In Northwestern Ontario, rates for chronic diseases continue to be the highest in the province. While the region does well in breast screening with higher than provincial survival rates, the region has one of the lowest rates for eligible men and women who participate in ColonCancerCheck, the province’s organized colorectal screening program.

As a result, men and women are often diagnosed with later stage illness and colon cancer survival rates are below those in the rest of the province. Less than one in three women in the region are up-to-date with cancer screening for breast, cervical, and colorectal screening.

As part of our strategy to improve the health of our population, we launched the two-year Under and Never Screened Initiative in 2010 to reach eligible adults who do not currently participate in organized screening for breast, colorectal, and cervical cancers.

Diagnostic Services

DEFINITION Diagnostic Services include Clinical Laboratory and Pathology, Cardiac / Respiratory, and Diagnostic Imaging.

Services are provided to inpatients, patients admitted to the Emergency Department, and outpatients referred from Thunder Bay and region.

ACCOMPLISHMENTS: Installed new 128-slice Computed Tomography (CT) scanner

Launched Powerscribe, which enables physicians to dictate reports using voice recognition software.

Recruited Dr. Richard Bilat, whose focus will be an imaging and cancer mapping, and Dr. Jonathan Broshloud in Nuclear Medicine.

Implemented new Immunohistochemistry (IHO) stainer for faster cancer diagnosis.

Launched free ocytometry program to help diagnosis lymphomas and leukemias.

Launched Lymphoma Diagnostic Assessment Program (LDAP) for faster lymphoma diagnoses.

Launched breast MRI collection procedures.

Improved quality audits in Haematology.

Improved computerized cross-matches for Transfusion Medicine.

Improved test utilization to eliminate redundant tests in areas like cardiac, thyroid, and blood work.

Became Sympotic Lead for cancer reporting via standardized College of America Laboratory Medicine guidelines.

CHALLENGES: The number of diagnostic tests ordered exceeded provincial averages.

FOCUS: Continual improvement of our quality assurance policies, including upgrading reporting software with feedback review as part of its processes.

GOALS: Create partnerships with primary care physicians and teams in Thunder Bay and elsewhere.

Join a Magnetic Resonance Imaging (MRI) and Computed Tomography (CT) pilot project in partnership with local and regional care providers.

Meet Scientist Dr. Ingeborg Zehbe

New HPV screening methods for Aboriginal women

Dr. Zehbe and her team conducted an HPV self-sampling pilot test involving 49 Aboriginal women. The group is now working on the second phase of the study involving over 1000 participants from 10 First Nations communities in the region.
Televisitation

A Key Supportive & Palliative Care Tool

Geography is one of the major barriers to healthcare we face in Northwestern Ontario. For patients, travelling to get healthcare can be costly, time-consuming, and stressful. Telemedicine aims to overcome this barrier by allowing patients and clinicians to connect via videoconference. That means that instead of travelling to Ottawa for a 15-minute appointment with a specialist, you could request the appointment be made through Telemedicine, saving the time and expense to travel. This is just one example. In fact, Telemedicine was used in over 30 programs last year for different types of events like clinical consultations as well as educational sessions and administrative meetings. At one point, it was estimated that Telemedicine saved approximately $4.5 million in kilometres in patient travel, and $18 million in associated costs.

In 2011/2012, 96 providers from a number of professions (e.g., physicians, nurses, social workers) at the Health Sciences Centre used Telemedicine for a total of 5,179 Telemedicine events, up from 8,374 events the previous year. There are 22 Telemedicine suites in the Health Sciences Centre that can connect with 54 communities in Northwestern Ontario including 28 First Nations communities, as well as with major centres in Ontario and elsewhere.

One area in particular – Televisitation – was designated an Accreditation Canada “Leading Practice” in 2011. Primarily this is used to connect regional patients at the Health Sciences Centre to their family and loved ones in their home communities. It has also been used in other circumstances, including in one situation when a family member was quarantined. Televisitation reduces loneliness and isolation for better patient care – and possibly better outcomes.

Foundation Support

The Tbaytel Tamarack House on the fifth floor of the Medical Building is a “home away from home” for regional patients undergoing cancer treatments in Thunder Bay. The Health Sciences Foundation continuously provides support to Tamarack House to make their stay more comfortable. This past Christmas, the Foundation surprised residents with two flat screen TVs thanks to a gift from the Dryden Rotary Charity Foundation.
Support Departments

Imagine the task faced by Laundry and Linen Services at Thunder Bay Regional Health Sciences Centre. The department serves all patient care areas and processes over a million kgs of laundry each year. It takes a dedicated team to get the job done. “Laundry and Linen is one of the ‘invisible’ services integral to patient care,” says Nick Cavezza, department manager. “We’re part of the healthcare team contributing towards effective and efficient patient care at our Health Sciences Centre.”

Laundry and Linen Services is comprised of 28 full and part-time employees, as well as a volunteer Patient and Family Advisor (PFA) who provides input to enhance the patient experience. “The PFA provides a new perspective to help us better meet the needs of patients through suggestions regarding our services and products. For example, the PFA can tell us if our towels are large enough or blankets are warm enough,” explains Cavezza.

The department also focuses on infection control. “Soiled linen must be collected and sorted, and until it is cleaned, it is all considered contaminated,” says Cavezza. Procedures are in place to protect patients and employees. There are separate areas for soiled linens, and employees must wear isolation gowns and gloves where soiled linens are sorted.

Contributing to patient care also means implementing new technologies. “We constantly look for opportunities to reduce costs while enhancing service,” notes Cavezza. For example, energy-efficient bedspreads with improved heat retention values reduce the number of spreads required and keep patients warmer. The result is more effective care, reduced workload and cost-savings.

**DID YOU KNOW...**

Work in Laundry and Linen Services begins at 5:00 am daily. The majority of linens are folded by automated equipment. All loads of laundry are washed at 170°C. All cleaning chemicals are automatically injected into laundry machines.

**Laundry and Linen Services**

An integral part of patient care

**Financial Statements**

Thunder Bay Regional Health Sciences Centre continues to manage resources responsibly and has a history of operating in a surplus financial position. In 2012 TBHSC finished in a deficit position of $1.9 million compared to a deficit of $2.3 million in the prior year. The shortfall over the last two years is a result of the Health Sciences Centre providing services to the community and region above our funding corridor. The Health Sciences Centre serviced 2,300 weighted cases above our funded activity. TBHSC has one of the lowest administrative and support service expense levels in the province, demonstrating our efficiency and commitment to maximizing resources towards patient care. TBHSC continues to work with the Local Health Integration Network (LHIN) to resolve this issue.

**Statement Of Financial Position**

March 31, 2012 (Amounts in $ thousands) 2011

<table>
<thead>
<tr>
<th>ASSETS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current assets</td>
<td>28,982</td>
<td>28,779</td>
</tr>
<tr>
<td>Non-current assets</td>
<td>246,473</td>
<td>256,185</td>
</tr>
<tr>
<td>Total Assets</td>
<td>275,455</td>
<td>284,964</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Liabilities and Fund Balances</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current liabilities</td>
<td>40,339</td>
<td>40,175</td>
</tr>
<tr>
<td>Non-current liabilities</td>
<td>222,717</td>
<td>235,323</td>
</tr>
<tr>
<td>Total liabilities</td>
<td>263,056</td>
<td>275,498</td>
</tr>
</tbody>
</table>

| Fund Balances | 12,399 | 14,466 |
| Total Liabilities and Fund Balances | 275,455 | 284,964 |

**Statement Of Operations**

For the year ended March 31, 2012 (Amounts in $ thousands) 2011

<table>
<thead>
<tr>
<th>REVENUE</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ontario Ministry of Health and Long-Term Care / North West Local Health Integration Network</td>
<td>227,010</td>
<td>220,085</td>
</tr>
<tr>
<td>Other patient services</td>
<td>26,716</td>
<td>26,721</td>
</tr>
<tr>
<td>Other funded programs</td>
<td>8,727</td>
<td>13,732</td>
</tr>
<tr>
<td>Ancillary services and other</td>
<td>16,420</td>
<td>15,177</td>
</tr>
<tr>
<td>Total revenues</td>
<td>295,213</td>
<td>289,973</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXPENSES</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries and benefits</td>
<td>199,003</td>
<td>195,068</td>
</tr>
<tr>
<td>Medical, surgical supplies and drugs</td>
<td>34,959</td>
<td>33,866</td>
</tr>
<tr>
<td>Supplies and other</td>
<td>22,666</td>
<td>21,665</td>
</tr>
<tr>
<td>Other funded programs</td>
<td>8,744</td>
<td>9,226</td>
</tr>
<tr>
<td>Plant operations and equipment maintenance</td>
<td>10,057</td>
<td>13,614</td>
</tr>
<tr>
<td>Amortization</td>
<td>21,245</td>
<td>20,868</td>
</tr>
<tr>
<td>Total expenses</td>
<td>297,094</td>
<td>292,307</td>
</tr>
</tbody>
</table>

Deficiency of revenue over expenses (1,881) (2,334)

**Expenses by Program and Service**

<table>
<thead>
<tr>
<th>Program and Service</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular and Thoracic Services</td>
<td>4.4%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Children’s Program</td>
<td>6.3%</td>
<td>6.1%</td>
</tr>
<tr>
<td>Emergency and Critical Care Services</td>
<td>9.0%</td>
<td>8.5%</td>
</tr>
<tr>
<td>Hospital programs</td>
<td>0.8%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Integrated Services</td>
<td>10.2%</td>
<td>10.5%</td>
</tr>
<tr>
<td>Mental Health</td>
<td>14.0%</td>
<td>10.7%</td>
</tr>
<tr>
<td>Neurological Services</td>
<td>4.4%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Program and Medicine Services</td>
<td>4.2%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>4.6%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Public Health</td>
<td>3.0%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Regional Cancer Program</td>
<td>9.0%</td>
<td>8.5%</td>
</tr>
<tr>
<td>Regional Child Development Services</td>
<td>1.0%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Regional Program, Adult Health Services</td>
<td>5.6%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Regional Program, Base Hospital, Emergency and Outpatient Services</td>
<td>1.0%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Regional Program, Women’s and Children’s Programs</td>
<td>0.3%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Regional Program, Screening Services</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Respiratory</td>
<td>5.5%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Surgical and Anesthesia Services</td>
<td>3.0%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Telemedicine Services</td>
<td>0.5%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Total expenses</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

**Revenue**

<table>
<thead>
<tr>
<th>Program and Service</th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ancillary services and other</td>
<td>25.7%</td>
<td>25.1%</td>
</tr>
<tr>
<td>Other patient services</td>
<td>67.0%</td>
<td>67.0%</td>
</tr>
<tr>
<td>Other funded programs</td>
<td>7.6%</td>
<td>7.6%</td>
</tr>
<tr>
<td>Other services</td>
<td>0.5%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Total revenues</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
Academic
The Thunder Bay Regional Health Sciences Centre and the hospitals that came before it have a long tradition of teaching the next generation of healthcare providers. We are the largest facility in the region for physician students from the Northern Ontario School of Medicine (NOSM) – and other medical schools – who require practical, hands-on experience.
But it’s not just doctors. It’s also nurses, physiotherapists, social workers, dieticians, physician assistants, counsellors, and care providers from almost every healthcare profession. Patients get immediate benefits as well: several studies have shown that teaching hospitals tend to provide better patient care. Research thrives in an academic environment too. The Health Sciences Centre is one of only 24 members of the Council of Academic Hospitals of Ontario (CAHO), which provide the most complex and urgent care, teach the next generation of healthcare providers, and foster healthcare innovation through research and discovery. We are proud to be part of such an elite group.

Health
The Thunder Bay Regional Health Sciences Centre is continually improving its programs and services to meet the needs of Northwestern Ontario. In order to do that more efficiently, we recently adopted a Patient and Family Centred Care (PFCC) model of healthcare. In short, it means treating the patient – and their families – instead of treating the disease. This philosophy literally changes our approach to everything we do.
Central to this is the Patient and Family Advisor (PFA) program. Over 85 former patients and family members of patients sit on more than 200 committees that determine everything from forming new policies to hiring program directors. Despite their lack of formal medical knowledge – or perhaps because of it – PFAs offer new insights into patient care.
Healthcare doesn’t start and stop at the Health Sciences Centre doorways either. We are continually developing community partnerships throughout the region to improve our continuity of care for a smoother transition in and out of our programs to meet our Vision of being “Healthy Together.”

Sciences
The Thunder Bay Regional Health Sciences Centre has worked hard to develop the growing scientific community we have today. From the early days of cancer research 20 years ago funded by the Northern Cancer Research Foundation, to developing partnerships with Lakehead University, other researchers around the world through clinical trials, and now the Thunder Bay Regional Research Institute, the Health Sciences Centre has become known as a world-class centre for research in a very short time. We are listed in the Top 40 Research Hospitals in Canada as one of the fastest growing programs.
That’s important for many reasons. Of course, there are the economic benefits to the region. But there are clear patient benefits as well including new equipment like the PET scanner, the opportunity to join cutting-edge clinical trials, and other advantages that being a research centre brings. We are also attracting some of the best care providers because of our emphasis on research.

Centre
The Thunder Bay Regional Health Sciences Centre serves the largest region in Ontario, and indeed one of the largest areas in the world. Distance is a real barrier to providing timely, quality care to an area the size of France, but with a population that’s about 10% that of Toronto. We’re finding innovative ways to overcome that barrier. We deliver a number of programs and services to the region that are becoming recognized world-wide. Our Regional Cancer Program supports 13 satellite sites throughout the region where patients can receive chemotherapy and in some cases other cancer services closer to home. We were pioneers in what has now become our Telemedicine Program, providing consultations, education, and even meetings to benefit patients via videoconference by connecting with over 50 sites in the region and countless others around the province and elsewhere.
Most importantly, we have become a leader in the region, creating a model of quality, timely, closer-to-home patient care for everyone in Thunder Bay and across Northwestern Ontario.

Cyclotron is coming to town
Medical isotopes will fuel research, patient care, and sustainability

Revolutionizing non-invasive imaging
HP gas MRI breathes deep for new look at lungs

Labours of the Mind Have Value
Nurturing good ideas first step on road to commercial and social return

Also in this issue:
Two new scientists add depth to research pool
Clinical Trials Drive Patient-Centred Research Solutions
Thunder Bay Regional Research Institute – an independent, not-for-profit corporation – is the research arm of the Thunder Bay Regional Health Sciences Centre. Our scientists work closely with clinicians, medical professionals, and academic and industry partners to improve healthcare through excellence in patient-centred research focused on three molecular imaging-based platforms.

Research is advanced through discovery and development of new technologies and processes that are brought to patients through clinical trials. With successful trial validation, discoveries proceed to commercialization for the benefit of patients everywhere.

Message from the Chair of the Board

I am proud to serve as Chair of an organization that has grown in leaps and bounds over the past five years thanks to overwhelming faith and support from funders in government, academia, business development, industry, the community, and partners such as the Thunder Bay Regional Health Sciences Foundation.

Thunder Bay Chamber of Commerce awarded TBRRI the Not-for-Profit Business Excellence Award at the annual awards gala in May. I am continually amazed at the research drive and global vision of our diverse, creative group. As our City and region struggle to restore our resource-based economy, I believe more firmly than ever that it is intellectual capital – bright minds – that will catalyze our strengths, step by step, to ensure our sustainability.

Tornado Medical Systems, a medical imaging company with offices in Thunder Bay, is working in tandem with Clinician Scientist Dr. Jae Kim to build a prototype of an imaging device that will revolutionize breast cancer surgery outcomes for women everywhere. Also underway is collaboration with MARS Innovation to commercialize Dr. John Rowlands’ X-ray Light Valve system that produces lower-cost higher-quality digital X-ray images with four times less radiation exposure.

This is the kind of global thinking and solutions that our community is capable of creating.

Our research talent is superlative and they have come here from all over the world because Thunder Bay offers the best of many worlds – a state-of-the-art academic work environment, unique and progressive research programs, and a wonderful quality of life.

This year, the Board says thank you and good bye to three new scientists: Dr. Lily Wu, who focuses on the causes and treatment of cardiovascular disease; Dr. Chris Phenix, who uses functional MRI to understand how brain reorganization during stroke rehabilitation leads to motor recovery.

As we near the close of our first five-year plan, the future looks bright. Thunder Bay Regional Research Institute (TBRRI) has experienced an excellent growth trajectory for almost five years now and we continue to attract scientists, research staff, and students. This year we welcomed two new scientists: Dr. Lily Wu, who focuses on the causes and treatment of cardiovascular disease, and Dr. Jane Lawrence-Dewar, who uses functional MRI to understand how brain reorganization during stroke rehabilitation leads to motor recovery.

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Most Canadians believe that Canada should be a global leader in health and medical research, and Northwestern Ontario’s medical healthcare cluster is at the forefront of that ambition. Our scientists are entrepreneurs, drivers of change, and their work is poised to have global significance. Despite being one of Canada’s newest and youngest research institutes and academic health sciences centres, Thunder Bay Regional Health Sciences Centre was named one of Canada’s Top 40 research hospitals this year by Research Infosource.

We believe that excellent healthcare is vital to our growth as a community and we are proud to partner with other organizations who share our vision. And, I can’t say enough about the support and investments of our local, provincial, and federal governments – Mayor Keith Hobbs, Minister Michael Gravelle and MPP Bill Mauro, MP Greg Rickford and Minister Glen Murray, and the Honourable Minister Tony Clement who travelled to Thunder Bay to cement final funding for our new cyclotron facility and bring good news to Tornado Medical Systems and Lakehead University that will help strengthen our growing research and healthcare cluster.

This year, Thunder Bay welcomed the first satellite office of Cancer Care Ontario to join the collaborative environment at ICR Discoveries. Our clinical trials program is working with the Ontario Institute for Cancer Research to ensure that patients in Northwestern Ontario have access to additional treatment options. And, Dr. Ingeborg Zehbe and her team were awarded TBRRI’s first CHRI operating grant for their work in an Aboriginal population.

The Institute is indebted to the vision, hard work and determination of outgoing CEO Michael Power as well as he takes on a new role with a major medical firm, and heartily welcome Dr. Michael Wood as the CEO of TBRRI. I am fortunate to work with dedicated and passionate colleagues who push the limits of research as we work to develop cutting-edge technology to detect and diagnose disease to enhance the healthcare of people worldwide.

Keith Jobbitt, BA, LLB
Chair of the Board, TBRRI

Message from the Chief Executive Officer

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Michael Wood, PhD
Chief Executive Officer, TBRRI
Vice President Research, Thunder Bay Regional Health Sciences Centre
2011 - 2012 Goals and Accomplishments

**EMPLOYMENT/ RECRUITMENT/ LEADERSHIP**
Establish a scientific program that is recognized for excellence internationally.
Two new scientists, Dr. Lawrence-Dewar and Dr. Wu, recruited.
New Director of Research Operations, Dr. Michael Campbell, recruited.

**TANGIBLE SUCCESS**
Within 3-5 years, ensure that at least one technology is co-developed with industry partners and enters clinical trials.
Dr. Alla Raznik received $100,000 MaRS Innovation PoP Grant for Mammmography Using New Generation X-ray Light Valves - Clinical Prototype.
XLV Diagnostics Inc. received $200,000 in new financing from OICR and partners.
TBRRI, Sunnybrook Research Institute (SRI) and MaRS Innovation HTX provided $750,000 in funding through the Technology Acceleration Program to Tornado Medical Systems Inc., a TBRRI spinoff company, to support the commercialization of Dr. Kim’s research.

**TRANSLATIONAL FOUNDATION**
Build a foundation for translational research at the Thunder Bay Regional Health Sciences Centre.
Thunder Bay participates in the Ontario Institute for Cancer Research (OICR) High Impact Clinical Trials Program - Genomics Cohort Study for Ontario Clinical Trials.
Dr. Ingeborg Zehbe won a 2011 CQCO Quality and Innovation Award for the Aboriginal Human Papillomavirus (HPV) Screening Trial.
New Director of Clinical Trials, Sandra Stoger, recruited.
New Master Research Agreements with industry partners under development.

**ECONOMIC GROWTH**
Work actively with local, regional, provincial, federal and industry partners to build health research and commercialization capacity in Northwestern Ontario.
Provincial funds of $8M support H/D xenon polarizer platform to revolutionize HP gas MRI non-invasive imaging.
New Director of Business Development and Commercialization, Scott Gillis, recruited.
Thunder Bay Chamber of Commerce Award for Not-for-Profit Excellence.
TBRHSC named one of Canada’s Top 40 Research Hospitals.
Janet Northan, Director, Government Relations, appointed to Thunder Bay Chamber of Commerce.

**SUSTAINABILITY**
Ensure that TBRRI is scientifically and financially sustainable by 2012.
$9.4 million in funding secured for cyclotron facility and radiopharmacy.
Cancer Care Ontario established a satellite office at TBRRI facility.
Dr. Ingeborg Zehbe receives $600,000 CIHR grant to support cervical screening research study focused on Northwestern Ontario First Nations women.
Secured over $14M in scientific research grants since 2007.
79 scientific publications in peer-reviewed journals.

**New Medical Biophysics Graduate Program to be launched in 2013**

**Economic Growth**
Work actively with local, regional, provincial, federal and industry partners to build health research and commercialization capacity in Northwestern Ontario.
Provincial funds of $8M support H/D xenon polarizer platform to revolutionize HP gas MRI non-invasive imaging.
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**Tangible Success**
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New Master Research Agreements with industry partners under development.

**Economic Growth**
Work actively with local, regional, provincial, federal and industry partners to build health research and commercialization capacity in Northwestern Ontario.
Provincial funds of $8M support H/D xenon polarizer platform to revolutionize HP gas MRI non-invasive imaging.
New Director of Business Development and Commercialization, Scott Gillis, recruited.
Thunder Bay Chamber of Commerce Award for Not-for-Profit Excellence.
TBRHSC named one of Canada’s Top 40 Research Hospitals.
Janet Northan, Director, Government Relations, appointed to Thunder Bay Chamber of Commerce.

**Sustainability**
Ensure that TBRRI is scientifically and financially sustainable by 2012.
$9.4 million in funding secured for cyclotron facility and radiopharmacy.
Cancer Care Ontario established a satellite office at TBRRI facility.
Dr. Ingeborg Zehbe receives $600,000 CIHR grant to support cervical screening research study focused on Northwestern Ontario First Nations women.
Secured over $14M in scientific research grants since 2007.
79 scientific publications in peer-reviewed journals.
Thunder Bay’s medical cluster is hot and getting hotter with groundbreaking for the new cyclotron facility scheduled in the fall of 2012. With funding commitments from all levels of government ($3.9M Government of Canada, $4M Province of Ontario, $1.5M City of Thunder Bay), the Thunder Bay Regional Research Institute (TBRRI) cyclotron project has a green light to go ahead. Site selection is made, drawings are being completed, and the project is moving forward at full speed.

NOT ALL CYCLOTRONS ARE CREATED EQUAL

Cyclotrons used in hospitals produce F-18 FDG, the isotope needed for Positron-Emission Tomography (PET) imaging. The Thunder Bay cyclotron, a TR-24 from Advanced Cyclotron Systems Inc. in Richmond, BC, is a high energy cyclotron capable of making common PET isotopes plus a full spectrum of Single Photon Emission Computed Tomography (SPECT) isotopes such as Tc-99m, Ga-67, Cu-64 and I-123.

In addition to fueling an important radiopharmacy operation to produce medical isotopes for use in diagnostic testing at Thunder Bay Regional Health Sciences Centre, the cyclotron will allow scientists like Dr. Chris Phenix to conduct world-leading research to discover new and better radiopharmaceuticals that will aid in earlier detection of diseases, identifying where cancer cells have spread, and targeting drug delivery to tumours. Cyclotron production can help ensure the future growth and diversity of nuclear medicine in Canada and facilitate research and innovation.

“It is very clear that the future of healthcare is tied to enhanced diagnostics. We’re moving away from anatomical images using CT and MRI scanners which take pictures of bone and muscle, to imaging techniques like PET that literally seek out and light-up the area of disease and identify disease function at the cellular level.”

Dr. Christopher P Phenix, TBRRI Scientist
WHAT IS A CYCLOTRON?
A cyclotron is a machine that makes short-lived radioisotopes for medical imaging. A cyclotron takes hydride atoms (the same as hydrogen atoms that make up water but with a negative charge) and accelerates them to very high speed. When they have enough energy (the TR-24 can accelerate a hydride atom to about 68,000 km/second, or just under a quarter of the speed of light), the atoms are directed at a target. In much the same way that the cue ball transfers its energy to a pool ball and sends it on its way, the now positively charged hydrogen atom (proton) knocks out a neutron in the target material to produce a new radioactive element to be used for patient care and research.

“This is an excellent opportunity for Thunder Bay to take a lead position in the production of medical isotopes for Canada and North America.”

Dr. Michael Campbell, TBRRI Director of Research Operations.
Dr. Phenix’s group works in probe and biomarker exploration where one of their focus areas is breast cancer. About 30% of breast cancer patients have too much of a receptor protein that comes from the HER2 gene. Patients who overproduce this protein have higher disease recurrence rates and poor prognosis because these proteins control molecular signals that regulate cell growth and survival.

A therapeutic antibody has been developed – Herceptin – that is able to bind to the HER2 proteins and slow or stop the aggressive breast cell growth. Because Herceptin has been associated with cardiac toxicity, it is extremely important that breast cancer patients are tested for HER2 to assess prognosis and to determine suitability for Herceptin therapy because for women with HER2-negative tumours, the risks of Herceptin clearly outweigh the benefits.

Dr. Phenix and his team are creating new custom radioactive probes to discover why some women never respond to Herceptin therapy and to determine why those that do eventually become Herceptin resistant. The probes will enter the body, find the HER2 target biomarker, and light up on PET/CT scans. The precise imaging information will help determine which breast cancer patients will respond well to therapy. Hopefully, understanding overexpression of receptor proteins in breast cancer will apply to research in ovarian, stomach, and uterine cancer – where the same overexpression occurs.

**“Molecular medicine is exciting. It allows scientists and clinicians to target disease at the very fundamental root of biology – at the molecular level.”**

*Dr. Chris Phenix*

Creating custom radioactive probes

**It’s been a winning year for Dr. Ingeborg Zehbe and her research team**

Dr. Zehbe was the primary investigator in the first pilot study to systematically address human papillomavirus (HPV) testing based on self-sampling in Aboriginal women in Northwestern Ontario. In December 2013 Dr. Ingeborg Zehbe and her team were recognized for their pivotal work by a Cancer Care Ontario Quality & Innovation Award – one of only four in the province. The annual awards recognize the development of bold new processes, products, or programs that enhance cancer care in Ontario.

Following the successful pilot study that found self-sampling was an embraced screening strategy, the Canadian Institutes of Health Research (CIHR) awarded funds of $600,000 to support expansion of the study to include 1000 women living on-reserve in ten Robinson-Superior First Nations communities.

In the expanded study, Engaging First Nations Women in Cervical Cancer Screening: Assessing Factors Related to Screening and Uptake of Self-Sampling, Dr. Zehbe and her research team will help determine culturally safe approaches to promote increased participation in cervical cancer screening and determine whether a self-sampling test could become a viable screening strategy for First Nations women who live in rural and remote communities.

“Our research focuses on Aboriginal women because they have a 73% higher incidence of cervical cancer compared to women in the rest of Ontario,” says Dr. Zehbe, “and Aboriginal women are twice as likely to die from cervical cancer. We hope this study will increase women’s curiosity and knowledge about screening, not just for cervical cancer, but for other types of cancer that can be screened and detected early, such as breast and colorectal cancer.”

Dr. Zehbe’s project is a stellar example of good partnerships: the interdisciplinary study combines the expertise of cancer biologists, virologists, epidemiologists and medical anthropologists from several Canadian universities including University of British Columbia, University of Manitoba, University of Ottawa and Northern Ontario School of Medicine. The team also includes members of TBRRI and public health care workers from First Nations communities in the region.

**DISCOVERY FUND FUELS GLOBAL IDEAS**

The Thunder Bay Regional Health Sciences Foundation has a dedicated Health Sciences Discovery Fund which supports bright scientists like Dr. Zehbe. Foundation Chair, Brian McNiven, says, “Generous donations to our Health Sciences Discovery Fund can advance medical research here in Northwestern Ontario, and around the world.”

**“Generous donations to our Health Sciences Discovery Fund can advance medical research here in Northwestern Ontario, and around the world.”**

*Dr. Ingeborg Zehbe*

Creating custom radioactive probes

**It’s been a winning year for Dr. Ingeborg Zehbe and her research team**
Revolutionizing non-invasive imaging

HP gas MRI breathes deep for new look at lungs

These are the words of Dr. Mitchell Albert, recently recruited scientist at the Thunder Bay Regional Research Institute (TBRRI), Joint Lakehead University/TBRRI Research Chair, and Professor of Chemistry at Lakehead University. Albert co-invented a powerful new diagnostic technology – hyperpolarized (HP) gas MRI. Since last year, Dr. Albert has assembled and is leading a team who are taking this breakthrough method to the next level by developing new technology that will improve imaging for asthma, Chronic Obstructive Pulmonary Disease, cystic fibrosis, pulmonary embolism, lung and breast cancer, stroke, atherosclerosis, and diseases of the brain.

In a nutshell, HP gas MRI uses the process of hyperpolarization to manipulate xenon gas atoms to enhance MRI signal by 100,000 times. This technique can produce images that delineate, in great detail and clarity, physiological changes occurring in body tissue, including the lungs and brain, which have traditionally resisted conventional MRI. HP gas MRI is non-invasive, avoids the use of ionizing radiation, and is tremendously valuable to medical science.

“I get excited when I can see how this technique can inform treatment decisions for patients,” says Dr. Albert. “When I was still working in the United States I had the opportunity to image a 5-year-old girl with cystic fibrosis who couldn’t perform the only diagnostic test available to her – a pulmonary function test. So we used HP gas MRI and learned that this little girl, who wasn’t being treated for her disease because her clinicians thought she was asymptomatic, actually had symptoms and needed treatment.”

The ability to visualize lung function with HP gas MRI gave the girl’s doctors more information so they could start treatment to improve the quality and length of her life. It’s experiences like this that spur researchers to keep looking for better and more innovative ways to meet unmet clinical needs.

Hyperpolarized MRI imaging is poised to become a main-stream diagnostic method to detect, diagnose, and optimize treatment of lung disease, as well as other applications for stroke and cancer.

“I once had a professor, Dilip Balamore at SUNY, who told me I should look at xenon gas because it had interesting properties that were not fully understood. His advice has borne fruit in unexpected ways — with persistent pursuit, a new diagnostic technology has emerged.”
Mitchell Albert, PhD
TBRRI Scientist – Advanced Detection Devices

EDUCATION
BSc Experimental Psychology, State University of New York, 1985
PhD Physical Chemistry, State University of New York, Stony Brook, 1993
Research Fellow in Radiology, University of New York, Stony Brook, 1993

APPOINTMENTS AND AFFILIATIONS
Professor Chemistry, Lakehead University
Joint TBRRI/Lakehead University Research Chair

RESEARCH FOCUS
Dr. Mitchell Albert, co-inventor of hyperpolarized (HP) gas MRI, is transforming diagnosis and treatment of breathing diseases such as asthma, COPD, cystic fibrosis, and lung cancer, as well as other diseases including cancer, stroke, and diseases of the brain. HP gas MRI technology is currently used in research labs, but existing MRI scanners can easily be adjusted to measure xenon and helium, making this technology readily and widely available.

Dr. Albert joined the faculties of TBRRI and Lakehead University in May 2011, his research group focuses on developing HP-3He and 129Xe MRI to image alveoli of the lungs. In addition, his group has been developing the use of HP 129Xe MRI to image stroke, to probe for brain injury using xenon biosensors that permit imaging of the distribution of perivascular baroreceptor nerve endings (PBR) in the brains of living animals, and to image breast tumors using specific anti-tumor antibodies.

“We need more Mitch Alberts to strengthen the Collaborative Health Research Partnership and to advance health research at TBRRI and Lakehead.”
Dr. Rui Wang, Lakehead University’s Vice President of Research, Economic Development, and Innovation.

New imaging technique is changing thinking around lung diseases

HP gas MRI technology is currently used only in research labs, but existing MRI scanners can easily be adjusted to image xenon and helium, making this technology readily and widely available once it is approved for use. The potential medical and economic impacts of HP gas MRI are immense.

Thunder Bay Respirologist Dr. Birubi Birman is enthusiastic about the future prospects this research offers for her patients. “HP gas MRI can produce high-quality images that reveal physiological processes that we couldn’t see before. This will be a great help in testing and evaluating new treatments.”

Both Dr. Albert and Dr. Birman are excited by the possibility of testing new drugs that can more accurately target and treat affected areas in the lung. With HP gas MRI, researchers can see immediately if a new drug is having the desired effect, opening air passagesways for instance, so that beneficial drugs can make the move to market more swiftly.

Cancer is currently the leading cause of death in Canada, stroke is third, and chronic lower respiratory disease is fourth. Advances in imaging technology that can better detect and assist in more effective treatment of these conditions will have significant benefits to our society. Dr. Albert is collaborating with oncologists to optimize radiation treatment for lung cancer using X-ray beam guidance, colorectal cancer screening using HP gas MRI, and breast cancer screening using molecular biosensors that can be imaged with HP xenon MRI. These techniques provide detailed physiological information about how well therapy is working so that oncologists can tailor treatment plans that are more targeted and can spare healthy tissue.

What is the upshot of all this hard work? Earlier detection, better treatment plans, and improved patient outcomes. TBRRI is transforming patient care at TBRHSC as researchers and clinicians work together to develop diagnostic tools and treatments that save lives.

Research transforms patient care

Ontario leads the pack in HP gas MRI

Dr. Albert is one of an estimated 12 researchers globally who are devoted to the study of HP gas MRI, and Ontario is fortunate enough to have three of these top scientists living within its borders. While several locations are performing excellent research – Universities of Virginia and Wisconsin (US), University of Sheffield (UK), University of Mainz (Germany), and others – no region in the world is as fortunate as Ontario to host such a concentration of scientific excellence.

Don’t think the government hasn’t noticed. With Ontario as the “go-to” place for HP gas MRI, the province recently awarded $1M in funding to offset the cost of establishing a platform to conduct research & development in Thunder Bay. Support was provided for the purchase of a state-of-the-art xenon polarizer to help develop the new technology, translate good ideas to clinical trials, and ultimately commercialize products such as smaller scale HP gas MRI products for broad distribution in Canada and world-wide.

We need more Mitch Alberts to strengthen the Collaborative Health Research Partnership and to advance health research at TBRRI and Lakehead.

Ontario leads the pack in HP gas MRI

Canada is the only country in the world where commercialization of HP gas MRI is taking place – a unique position that has resulted in the province being named the World’s HP Polarization Capital.

Mitch Albert did.

Lakehead University + TBRRI work together

Fostering world-class healthcare research

Dr. Mitch Albert, the first-ever tenure-track research chair of the Lakehead University/TBRRI Collaborative Health Research Partnership, has a foot firmly planted on each side of Oliver Road. He inspires and recruits students in his position as Professor of Chemistry at Lakehead University, while pursuing research as a scientist at Thunder Bay Regional Research Institute. This dual position is the mark of a community committed to building an environment where research and innovation can thrive.

Northwestern Ontario businesses, organizations, and leaders are embracing a burgeoning research, innovation and knowledge-based economy. The rest of the country is beginning to wonder - what in the world is going on up here? Our response: come see for yourself. Mitch Albert did.
Nurturing good ideas
labours of the mind
have value

“What is intellectual property? It is a good idea inspired by an unmet patient need that becomes an invention. We patent scientists’ discoveries to ensure positive impact for patients and the Institute. TBRRI’s sustainability depends on achieving return on investments that support the work of our scientists.”

Scott Gillis, TBRRI Director of Business Development and Commercialization

Paving the way for sustainability
Scott Gillis, TBRRI’s new Director of Business Development and Commercialization, is dedicated to ensuring that research results lead to positive impact and technologies in Thunder Bay and globally. By partnering with industry and investors, TBRRI is striving to bring science and technology from the lab to mainstream by licensing discoveries to companies and creating spinoff companies in Thunder Bay.

TBRRI capitalizes on specialized business expertise through its membership in MaRS Innovation, a non-profit commercialization agent supported by the Government of Canada. TBRRI is the only partner outside the Greater Toronto Area and joins 16 members working in the Ontario life sciences industry including the likes of Sunnybrook Health Sciences Centre, Sick Kids, and University Health Network – three of the top ten research hospitals in Canada.

We know that successful commercialization depends on strong leadership, sufficient capitalization, good partnerships, a strong business plan, and the resources necessary for bringing the innovation to market. TBRRI is working in tandem with MaRS Innovation right now to ensure these elements are in place to bring Dr. John Rowland’s X-ray Light Valve (XLV) technology to market. XLV has the potential to provide lower-cost x-rays to masses of people around the world who do not have access now.

“It is my goal to pave the road for our scientists, the institute, and our region to benefit – socially and economically,” says Gillis. “Our focus is sustainable economic development in Thunder Bay and Northwestern Ontario that will lead to improved community outcomes. We are doing good things – and good things take time.”

Commercializing a world of discovery
TBRRI shares MaRS Innovation’s vision of maximizing the commercial and social return on research investments made by member institutions. Together, MaRS Innovation’s members are converting great science into commercially viable products and services that make a significant contribution to Canada’s economic outlook and the quality of life of Canadians and others around the world. As MaRS Innovation accelerates commercialization of leading technologies, Ontario is able to attract and retain top talent; strengthen its innovation capacity and competitiveness; create, grow, and retain companies; and incite investment from a variety of sources. On average, its 16 member institutions bring 300+ disclosures to MaRS Innovation annually – a number similar to MIT and Stanford, two US research powerhouses.

Creations of the mind

HOW DOES ESTABLISHING A PATENT LEAD TO COMMERCIALIZATION?
The word patent originates from the Latin patere, which means “to lay open.” This form of intellectual property grants a set of exclusive rights to an inventor or their assignee for a limited period of time in exchange for the public disclosure of an invention. During this time, the patent holder can invest in research & development that increases the possibility of technological advances or breakthroughs and bring them to market without danger of exploitation by other parties.

The word patent originates from the Latin patere, which means “to lay open.” This form of intellectual property grants a set of exclusive rights to an inventor or their assignee for a limited period of time in exchange for the public disclosure of an invention. During this time, the patent holder can invest in research & development that increases the possibility of technological advances or breakthroughs and bring them to market without danger of exploitation by other parties.
Our modern diet is causing modern diseases. High-fat, high-sugar foods create many problems within our bodies. Metabolic syndrome—a combination of disorders including hypertension, diabetes, and obesity—is rising dramatically. Nearly one billion people around the world have hypertension and 250 million people live with type 2 diabetes. By 2025, global numbers are expected to increase by over 50%.

Nobody really understands how metabolic syndrome happens, but Dr. Lily Wu has some theories. She believes that when the body processes high-fat, high-sugar foods, it makes side-products like methylglyoxal (MG). MG has been linked to diabetes and might also be a cause of hypertension. Dr. Wu and her team are also investigating a possible connection between hypertension and peroxisome proliferator-activated receptor gamma, a type of protein that regulates glucose and fatty acids. Dr. Wu and her team are working to determine how metabolic syndrome works, and then find ways to treat and prevent it.

Until a short while ago, Dr. Wu conducted her investigations at the University of Saskatchewan. She is now in Thunder Bay and is taking advantage of the collaborative research opportunities at TBRRI and a full professor in the Department of Health Sciences at Lakehead University.

“I was seeking new opportunities to expand my research scope and interests, with an emphasis on bridging laboratory bench research with clinical bedside practice by developing and applying novel biomarkers for different disease situations,” Dr. Wu says. She will collaborate with cardiac care professionals like Dr. Chris Lai to bring new treatments and screening approaches to patients through new clinical trials. Coming from Saskatoon, Dr. Wu appreciates the stellar access to water that living on Lake Superior’s north shore offers. But Dr. Wu hasn’t had much leisure time lately—this summer, she hopes to have time to read for pleasure with Steve Jobs’ biography high on her list. Thunder Bay’s lifestyle was a definitive draw for Dr. Wu, but the dynamic research community, partnership opportunities, and ready access to a growing clinical trials program at TBRRI and TBRHSC were the clinchers.

Dr. Wu is happy in her new place. “My joint position at TBRRI and Lakehead University creates an opportunity environment for my research and gives me excellent access to bright, passionate students.”

Dr. Lily Wu
Creative, collaborative, caring

Dr. Jane Lawrence-Dewar came to Thunder Bay because, she says, “the right ingredients are in place here for a successful research program that allows enormous opportunity for collaboration and partnership.” She adds that “with NOSM, Lakehead University, the Health Sciences Centre, TBRRI, and a number of spinoff companies working to commercialize research, I feel that Thunder Bay has a lot to offer a young researcher like myself. From what I’ve seen so far, the work environment is excellent and dedication to patient care and patient need is very high.”

Neuroscientists like Jane Lawrence-Dewar are gaining a deeper understanding of the brain through Functional Magnetic Resonance Imaging (fMRI) and the pace is furious; each day almost 10 new publications appear in medical and scientific journals around the world. This evolutionary imaging technique is rapidly influencing the practice of medicine at many hospitals, especially in neurology and neurosurgery.

Lawrence-Dewar’s research plan at TBRRI will use fMRI to understand how brain reorganization during stroke rehabilitation leads to motor recovery. Her ultimate goal is to use this knowledge to develop better targeted rehabilitation methods and tools for patients who have suffered a stroke.

People are coming to appreciate that fMRI is for mental health like x-rays are for broken bones. fMRI studies have demonstrated, for example, that real physical changes take place in the brain during the treatment of depression. Once technology is in place, TBRRI, Lakehead University, and Northern Ontario School of Medicine researchers can use the fMRI research & development platform to advance their work in areas such as brain injury, pain control, neurosurgical procedures, mental health and addictions, youth suicide, and more.

Local neurologist Dr. Ayman Hassan, is very pleased to welcome an fMRI specialist to Thunder Bay. “Dr. Lawrence-Dewar’s research will offer opportunity to learn more about improving patient outcomes with more targeted treatment options and therapies. It will be good to have a researcher like Jane as a member of the team.”

She’s only just arrived but already Jane is pleased and surprised by her new home, “One misconception I had about Thunder Bay was the size. I thought Thunder Bay was much smaller. What I really enjoy is the small town feel of Thunder Bay in terms of the friendliness of the residents and proximity to nature, but the city still has many amenities that you find in a larger city. I think my family will be happy here.”

Dr. Lawrence-Dewar will guide include:
• The role of observational learning (mirror neurons)
• Visuomotor adaptation following stroke
• Changes in the neural networks of stroke patients, following rehabilitation

TBRRI continues to attract outstanding research talent
New scientist focuses on fMRI to target stroke rehabilitation
Dr. Jae K. Kim

Working to improve surgical outcomes for women with breast cancer

Clinician Scientist Dr. Kim is working on the Tumour Margin Project, a new method to help determine tumour margins in the operating room to improve lumpectomy success rates. Although lumpectomies are less invasive than mastectomies for treating breast cancer, it is difficult for a surgeon to tell the difference between tumour and healthy tissue in the breast. A high number of women (10-60%) have to undergo a second surgery to remove cancer cells that are left behind.

Dr. Kim’s optical technique will help surgeons determine – while the patient is still on the operating table – whether the entire tumour has been removed. This new technique has the potential to reduce the number of women who need to undergo a second surgery by literally tens of thousands every year in North America alone. It will also likely shorten the time to radiation therapy for many patients after lumpectomy. Thunder Bay women will be among the first to have access to this new technology that will change the way breast cancer surgery is performed – and it’s happening in Ontario.

In November 2013, HTX provided $750,000 in funding through the Technology Acceleration Program to Thunder Medical Systems Inc., a TBRRI spinoff company, to support the commercialization of Dr. Kim’s research. The device is called the Tumour Margin Assessment Machine (MAM). HTX is a provincially supported company that helps emerging and established Ontario-based companies to develop, produce, and commercialize innovative health technologies.

HTX’s funding is part of a $3.7M project which includes funding support from the Northern Ontario Heritage Fund Corporation and in-kind contributions from the School of Biomedical Engineering at the University of Toronto.

The Tumour Margin Project, a new method to help determine tumour margins in the operating room to improve lumpectomy success rates.

Dr. Kim, TBRRI’s first clinician scientist, works as a TBRRI scientist and a Radiologist at TBRHSC, performing diagnostic radiology at TBRHSC and medical research at TBRRI. Dr. Kim is an expert in cardiovascular imaging, musculoskeletal imaging, and magnetic resonance angiography. He is an advocate of the unique patient-centred research focus of TBRRI and a strong promoter of research that leads to commercialization for patient benefit. His research specializes in the detection and characterization of cancer using MRI and optical techniques. Currently, Dr. Kim is working on a new method to help determine tumour margins in the OR to improve lumpectomy success rates. His optical technique will help surgeons determine – while the patient is still on the operating table – whether the entire tumour has been removed. His Tumour Margin Project will build on technology that uses high resolution optical sensing to provide a much clearer distinction between healthy and cancerous tissue in the breast.

Dr. David Kisselgoff

Clinician Scientist interested in teaching, research and clinical care

What brought a leading-edge medical scientist and clinician, originally from the mountainous Ural region of Russia and a practicing radiologist with several academic positions at teaching hospitals in Jerusalem, to Northwestern Ontario?

Opportunity, opportunity, opportunity.

Dr. David Kisselgoff, originally from Chelyabinsk, Russia, known for its steel production, hockey teams and high level education centres, moved his family across the globe to advance patient care through clinical care, research, and teaching. Through a partnership and joint appointment with the Thunder Bay Regional Health Sciences Centre, the Northern Ontario School of Medicine, Kisselgoff is able to split his time between clinical radiology, imaging research, and teaching.

“It’s a very exciting and unique opportunity to be involved in research, academics and clinical care as one position. It’s challenging, and also very rewarding,” said Kisselgoff, who loves the natural beauty of Thunder Bay combined with the advanced healthcare, research and academic facilities found here.

Dr. Kisselgoff has a special interest in imaging of the musculoskeletal and cancer, particularly MSK ultrasounds and peripheral nerve imaging; general and abdominal imaging, and using guided procedures including bone and soft tissue biopsy. His research focuses on MRI guided HIFU treatment for disease and cancer, as well as applications related to Diffusion MRI techniques in whole body imaging of cancer patients.

Dr. Kisselgoff, the first clinician scientist to hold a joint appointment at TBRRI, TBRHSC, and the Northern Ontario School of Medicine, is working on an improved Mobile Radiography Unit which would significantly increase the quality of mobile radiography unit imaging. The improved system would offer superior information to physicians, especially useful when patients need to be treated quickly such as trauma or ICU patients.

He is interested in use of high field MRI, and his current research is focused on improving patient experience and reducing financial cost to the healthcare system.

Dr. Kisselgoff has led a significant amount of research and development focusing on the application of mobile radiography units in hospitals. His research has focused on the development of mobile radiography units for the use in hospitals and clinics, with the goal of improving patient outcomes and reducing costs. His work has been published in numerous scientific journals and has been recognized with several awards and grants.
Dr. John Rowlands
Taking the world by storm – again

In Thunder Bay, Dr. John Rowlands will forever be known as TBRRI’s Founding Scientific Director. But he was world-renowned long before that, inventing a flat panel detector that is used around the world in digital radiography. And, if all goes as planned, his greatest invention is yet to come.

X-Ray Light Valve (XLV) is a revolutionary new way to produce X-rays that are much higher quality at a fraction of the cost. This makes the technology ideal for rural and remote communities, not to mention developing countries. “Right now we use bulky cumbersome machines to produce digital X-ray images,” Dr. Rowlands said. “By comparison, XLV technology, instead of the cost to manufacture, it produces a better image, and it allows more people to have access to digital X-rays.”

Currently, the technology is being developed for use in mammography but the ultimate goal is to use it for all types of radiography – an X-ray for the people – in emerging countries like India and China. “When I traveled to India it had a profound impact on me,” Rowlands said. “I have been working in this field for 30 years and this is an opportunity to provide X-rays to the masses, many of whom do not have access now. Inventing X-Ray Light Valve technology is one thing, but to benefit people around the world it needs to be tested and then developed into a finished product. XLV Diagnostics, the spin-off company resulting from this innovative research, will bring XLV to market, tapping into the $1 billion spent globally for mammography, and a staggering $10 billion spent in general radiography.

XLV Diagnostics, supported by TBRRI, Sunnybrook Research Institute (SRI), Ontario Institute for Cancer Research (OICR), and MARS Innovation, has recently received $200,000 in new financing from OICR and the other shareholders.

“This new company is helping to bring XLV to the next phase of commercialization,” Rowlands said. “The idea is based on real patient need.” And it’s all happening here, in Thunder Bay.

Ala Reznik, PhD
TBRRI: Scientist – Advanced Detection Devices

Dr. Alla Reznik performs research in advanced photodetectors making possible new x-ray and gamma-ray detector applications. She works in collaboration with Drs. Rowlands and Rubel, TBRRI; Dr. S. Baranavski, Philips University, Murburg, Germany; Dr. S. Kasap, University of Saskatchewan, Dr. K. Harim, University of Waterloo and industrial partner NHK Science and Technical Laboratories (Japan), Philips Research Labs (Germany), ANRAD Corporation (Canada), and Weinberg Medical Systems (USA). Dr. Reznik is working on the development of novel high-gain avalanche amorphous selenium (a-Se) photodiodes for use in Position Emission Tomography (PET) technology using small-animal and breast-dedicated PET imagers. Her research is supported by ORF-RE Round 3 and Round 4 grants with in-kind contributions from ANRAD ($100k) and Weinberg Medical Systems ($60k). Dr. Reznik and her group are focused on improving imaging in the PET technology and development of the first prototypes of a solid-state a-Se photodetector with medical-grade readout. This is a significant breakthrough in the PET technology.

Early detection of breast cancer improves chances for survival. But mammography can be uncomfortable, to say the least. That, coupled with worries of radiation-induced breast cancer from annual mammography, might be a deterrent to screening for some women. Dr. Alla Reznik is hoping to change that. She recently received almost $100,000 from MARS Innovation to develop a prototype mammography unit that will use new-generation X-Ray Light Valves (XLV) with avalanche multiplication gain. If successful, this will both improve current breast cancer diagnostic capabilities and reduce radiation exposure by up to ten times. More importantly for women, it will be far more comfortable than current digital mammography techniques requiring breast compression.

This project is the next step in what has been a long and successful career for Dr. Reznik. As a PhD student, Dr. Reznik saw first-hand what a difference advanced imaging detectors make when she was working with an experimental imaging technique that found a cancer that conventional tests had missed. Even though she never met the patient, Dr. Reznik says that she was touched by the experience, knowing that the imaging technique potentially saved the patient’s life. Since then, Dr. Reznik has investigated the properties of wide band-gap semiconductors, and she is an expert in photodiode devices for x-ray and gamma-ray detector applications. Broadly, her current goal is to improve sensitivity of advanced radiation imaging detectors to detect and diagnose cancer earlier, starting with breast cancer. She joined TBRRI in 2008, is a Canada Research Chair in Physics of Molecular Imaging, and an Assistant Professor of Physics at Lakehead University.

“As a researcher I have a couple of inventions, and this makes me happy because I know that my inventions will result in better diagnoses of different diseases for the benefit of Canadian healthcare,” Dr. Reznik says. “But, if I’m ever in the position to say I have a true discovery, I’ll truly feel that my life was worth something.”
Random act of kindness comes to Cathy Pineau

Cathy Pineau has been living with cancer for 14 years. She was first diagnosed with Stage III ovarian cancer in spring of 1998 (ovarian cancer is often diagnosed at an advanced stage because it is relatively slow-growing and has few, if any, symptoms). After surgery and six courses of chemotherapy, Cathy felt lucky to have an eleven year remission.

At the end of Cathy’s initial treatment she offered the chance to be a part of a clinical trial. Cathy says, “I jumped at the chance because I had read that people in treatment trials had better experiences because of how closely they were monitored.” Dr. Margaret Anthes supervised Cathy’s follow-up and provided excellent care and great moral support.

Cathy has great praise both for Clinical Trials and for our Regional Cancer Centre, which in my opinion is one of the best in the province, followed me every 3 months, then 6 months, and eventually, after 10 years of close follow-up, I still receive annual check-ups even though the trial ended years ago.”

During those years of remission Cathy resumed her work as manager of the Lakehead Regional Family Centre, welcomed three grandchildren, and began gardening with a passion. “Gardening is so beneficial both mentally and physically,” Cathy says with enthusiasm. “How much my passion for gardening kept me cancer-free is impossible to say, although I know for certain that I am physically and spiritually stronger because of it.” Her garden reflects her spirit and care: it has been enjoyed on Thunder Bay garden tours and been featured as a contest winner in Gardening Life magazine.

Despite her cancer recurring in May 2009, Jim and Cathy continued to travel to Arizona around her chemotherapy treatments because, Cathy says, “I want treatment, but I still need to live. You have to balance having a life and I made the decision to travel even though cancer was still present. Some time ago, I read an article about a woman living with breast cancer that said ‘We don’t choose how we’re going to die, but we can choose how we are going to live,’ and I’ve made that my own creed.”

“l hope that I will have the chance to participate in another clinical trial when and if my current chemo ends,” says Cathy, “both as a chance to give back to the Cancer Centre and selfishly, to perhaps improve the chances of extending my life.”

A good sign to take home to Cathy

While still in Arizona, Jim and his brother went for a walk – the walk that Cathy and Jim took every day, about 4 miles on lakeside trails. On the way back, Jim spied something hanging from a branch and knew, before he reached up to retrieve it, that it was a Ben’s Bell.

BEN’S BELLS

In memory of their beautiful two year old Ben who died suddenly, parents Jeanette and Dean and their 6-year old son Matthew began to make clay wind chimes in their Tucson backyard with friends. Clay Therapy was helping, so Ben’s Bells have made their way throughout their community. Hung on lakeside trails, on bike paths, and in parks, the bells contained a simple message: take one home and pass on the kindness.

They say that people don’t just find a Ben’s Bell, the bell finds its own way to a person who makes Tucson a kinder place – simply by being kind.

To date, over 26,919 Ben’s Bells have been released but they are not for sale. The only way to get a Ben’s Bell is to find one or to be “belled.” Each week a person who makes Tucson a kinder place is belled with a Ben’s Bell: they are a gentle, beautiful way to remind people how much power they have to make the world a better place – simply by being kind.

Why do people participate in clinical trials?

When asked to identify the largest barrier to increasing patient participation in clinical trials, Director of Clinical Trials Sandra Stoger replied, “People simply aren’t asked.” Her advice? “Don’t hesitate to ask your primary care provider about clinical trials – they’re voluntary, you can choose to leave at any time, and participants may experience many benefits.”

CLINICAL TRIALS:
• Build a process called informed consent that teaches people about their condition or disease
• Give participants access to intensive monitoring and follow-up
• Support the advancement of research by expanding knowledge since anyone, including people in good health, can participate in clinical trials
• Make promising new treatments accessible that are not yet widely available to the public
• Offer gravely ill people the chance to get relief where other treatments have failed
• Provide an opportunity for patients to play a more active role in their healthcare

CORE TEAM
Clinical Lead: TBRHSC Chief of Oncology Dr. Dimitrios Vergidis
Scientific Lead: TBRRI Scientist Dr. Laura Curiel
Administrative Lead: TBRRI Patient Engagement Management Lead: TBRRI Director of Clinical Trials Sandra Stoger
Medical Director, Translational Research Program Dr. Christopher Lai

Therapy is a process called informed consent that teaches people about their condition or disease. It is truly a herald of good things to come. Even without Jim’s careful transport of his bell, Ben’s Bells have made their way to Canada. You can find out more about spreading kindness at www.bensbells.org.
Dr. Laura Curiel and Dr. Samuel Pichardo
Removing the barrier of distance in a shared vision of future healthcare

On November 10, 2010 Sunnybrook Health Sciences Centre and Thunder Bay Regional Health Sciences Centre launched the world’s first dual-site High Intensity Focused Ultrasound (HIFU) surgery centre. The two mirror facilities pair a Philips 3T magnetic resonance imaging (MRI) device with focused ultrasound technology. HIFU is based on the groundbreaking work of Dr. Kullervo Hynynen, director of Imaging at Sunnybrook Research Institute and a Canada Research Chair in Imaging Systems and Image-Guided Therapy. Leading the research at Thunder Bay Regional Health Sciences Centre are Dr. Laura Curiel and Dr. Sam Pichardo, together with radiologist Dr. Neety Panu and obstetrician and gynecologist Dr. Andrew Simon.

The first clinical trial for HIFU conducted in Toronto and Thunder Bay evaluated the safety of using a Philips MRI-guided focused ultrasound system for treating uterine fibroid: noncancerous tumours affecting up to 50% of women of childbearing age.

WHAT DOES THIS MEAN FOR PATIENTS?
Uterine fibroid treatment is an outpatient incision-less procedure that requires no general anaesthetic. Patients go home the same day, and can quickly return to family and work. Sites in Thunder Bay and Toronto are working to bring HIFU access to patients across the province in the near future.

WHAT’S NEXT?
Teams of clinicians and researchers at both Ontario sites are progressing toward trials in breast, bone, head and neck, and rectal cancer. While this work is still at the research stage, the road to patient implementation is getting shorter. HIFU treatment of prostate cancer is an approved therapy in many countries including Canada, and MRI-guided HIFU is an approved therapeutic procedure to treat uterine fibroids in Asia, Australia, Canada, Europe, Israel and the United States.

WHAT IS HIFU SURGERY?
High-Intensity Focused Ultrasound is a highly precise medical procedure that applies MR-guided high-intensity focused ionic energy to heat and destroy damaged tissue. This scalpel-less surgery is revolutionizing medicine as a non-invasive way to destroy tumours. Ultrasound energy is applied to a specific target in the body, such as a tumour, where it uses heat to cause cell death and destroy the tissue. MRI is the “map” used to identify the target, plan the treatment, guide application of the focused ultrasound, and to immediately determine if treatment was successful.

Laura Curiel, PhD
TBRRI Scientist – Imaging Guided Interventions

EDUCATION
BEng Electronic Systems, Instituto Tecnologico y de Estudios Superiores de Monterey, Estado de Mexico, 1995
MSC Biomedical Engineering, Universite de Lyon I Claude Bernard, Lyon, France, 1997
PHD Imaging and Systems, Institut National de Sciences Appliquees, Lyon, France, 2001

APPOINTMENTS AND AFFILIATIONS
Adjunct Professor, Electrical and Computer Engineering, Lakehead University
TBRHF Research Fellow

RESEARCH FOCUS
Dr. Curiel’s research is centered in High Intensity Focused Ultrasound (HIFU) therapy. HIFU has the potential for minimally invasive treatments that selectively destroy or interact with cells located in a targeted zone. Her research activities comprise three different directions: new therapeutic devices design, ultrasound lesion formation study, and treatment monitoring.

Her collaborative work with Philips Healthcare, TBRHSC, and Sunnybrook Health Sciences Centre led to the first-ever HIFU clinical trials testing the efficacy of the device by ablating uterine fibroids under MRI guidance at Thunder Bay Regional Health Sciences Centre. Dr. Curiel is working to develop HIFU therapy for other disease sites such as prostate and ovaries. This includes investigation of bioeffects, design of new therapeutic devices, and exploration of different monitoring to achieve the safest and most effective treatment result. During previous research work, Dr. Curiel designed and tested new HIFU probes for prostate cancer, used modeling to improve clinical outcomes, and clinically evaluated elastographic imaging techniques for HIFU treatment evaluation and lesion formation control.

Her research is based on patient need and she is committed to continued improvement of HIFU as a therapeutic approach with the ultimate aim of translating her research results to clinical practice. Dr. Curiel has collaborative infrastructure for performing clinical HIFU treatments in an open research environment that will encourage development of new devices within the hospital structure and multiply collaboration opportunities for patient benefit.

Samuel Pichardo, PhD
TBRRI Scientist – Imaging Guided Interventions

EDUCATION
BEng Electronic Systems, Instituto Tecnologico y de Estudios Superiores de Monterey, Estado de Mexico, 1995
MSC Imaging and Systems, Institut National de Sciences Appliquees, Lyon, France, 2001
PHD Imaging and Systems, Institut National de Sciences Appliquees, Lyon, France, 2005

APPOINTMENTS AND AFFILIATIONS
Adjunct Professor, Electrical and Computer Engineering, Lakehead University

RESEARCH FOCUS
Dr. Pichardo’s research is centered on the use of high intensity focused ultrasound (HIFU) to propose minimally invasive therapies for specific site diseases. Focused ultrasound can concentrate energy inside tissue using a non-invasive energy delivery. Dr. Pichardo’s previous work includes using focused ultrasound to treat superficial venous insufficiency and prostate cancer, new modalities for treatment and imaging of brain tumours, and minimally invasive treatment of atrial fibrillation.

At TBRRI, Dr. Pichardo explores new applications of HIFU for the treatment of cardiovascular and immunology-related diseases. His collaborations with colleagues at TBRRI and abroad include projects focusing on treatment options for cancers, new materials and electronics for HIFU, and treatment planning software development.

He is particularly interested in developing research that balances a good understanding of the basic effects of ultrasound in tissue, laboratory experimentation, and clinical validation. He works alongside colleagues to establish a multidisciplinary environment to encourage and expedite translation of basic research into clinical reality.

Dr. Pichardo is constantly looking for better modeling tools to help scientists and clinicians have more accurate prediction and control of therapy. TBRRI has in-house high-performance computing tools fully dedicated to test new models. Effects that are mainly investigated include cavitation, sound propagation in heterogeneous media, thermal effects, and non-linear effects.
Dr. Oleg Rubel
Developing complex computer simulations for material design

What if the Wright brothers had the ability to design a computer model of their airplane before they built and tested it? Not only would this reduce the trial and error required (not to mention danger to their lives), but it would also reduce time and costs. Of course, that wasn’t possible in 1903. But it is possible in 2012. Dr. Oleg Rubel and his team are trying to do just that by developing new sensitive imaging technologies using very complex computer simulations.

On a basic level, image scanners have two main parts: an energy source – like X-rays, for example – and a way to capture that energy - film, or more likely digitally. But what if there was a new material out there that is so sensitive, you could reduce the amount of X-rays needed to get a high-resolution image? That would be safer for patients but developing and testing this new sensitive material the old-fashioned way would take years and be very expensive. Dr. Rubel hopes to do most of that trial and error in a computer simulation, saving time and money. This new approach would be an invention in itself, and could be the start of a computer-aided material design group in Canada. Dr. Rubel earned his first degree in Engineering at the Zaporozhye State Technical University in his home country of Ukraine. He took a strong interest in research, and went on to earn his doctorate in Material Science. Following graduation, he researched a wide range of projects at Philips University in Marburg, Germany. After working with TBRRI during a joint venture, Dr. Rubel eventually joined the TBRRI team in 2008 in Thunder Bay where he can also pursue his teaching passion as an Adjunct Professor at Lakehead University.

“Research is not an individual discipline,” he said. “We need to share our ideas and encourage strong students in order to enhance our position as pioneers and build the knowledge base in our area.”

Dr. Wely Floriano
Computer technology helps break ground in cancer prevention

Dr. Wely Floriano wears many hats. She is a member of the Biofuelling Research Initiative, a TBRRI scientist, and a SHARCNET (Shared Hierarchical Academic Research Computing Network) Research Chair who, in one of her projects, uses SHARCNET computational tools to study proteins related to the human papilloma virus (HPV).

Because the HPV virus can eventually lead to cervical cancer in some women, Floriano’s work aims to discover an optical imaging probe that would allow cervical cancer to be detected early – before the disease fully develops. The probe is a fluorescent compound that could detect and target a protein – produced by HPV – that acts as a biomarker for cervical cancer. After applying the fluorescent probe, a colposcopist could image the cervix with a low-light or high resolution camera attached to a colposcope to identify tissue at high risk of developing cancer.

“Using a probe to identify high-risk areas prior to development of the cancer is important for improving prognosis for treatment, and will allow doctors to provide preventative treatment for patients,” says Floriano. “An optical imaging probe that could detect cervical cancer would be a major advancement in preventing HPV-related cervical cancer.”

Her first step is finding a fluorescent chemical compound that can detect the target protein. Using a computer program, Floriano screens a large database of chemical compounds against the target protein to determine which chemical compounds interact most effectively. Successful compounds are then tested experimentally to confirm target protein binding. Using a combination of computational and lab work, an experimentally confirmed “hit” can be developed into an imaging probe.

Floriano’s research team uses sophisticated computer programs to learn more about chemical compounds and how they can be applied to advance modern medicine. “Starting research projects with a computational approach is fast and efficient,” says Floriano. “Initial lab work can be time consuming, but with computer technology, only the most promising compounds need to be tested experimentally.”

SHARCNET provides researchers with access to sophisticated computational resources typical to large pharmaceutical companies, so Dr. Floriano and others can tackle major medical projects that have significant benefits for large populations, like a non-invasive risk assessment test for cervical cancer in HPV patients.

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SUMMER SCHOOL OF MEDICAL IMAGING 
& SEMINAR SERIES

For the third summer, TBRRI is launching another exciting edition of the Summer School of Medical Imaging. Students from Lakehead University, Northern Ontario School of Medicine (NOSM), and TBRRI enroll in a truly multidisciplinary learning environment.

From June to August 2012, scientists will deliver expert talks aimed at summer and graduate students that will cover a wide range of topics in medical imaging. As part of the series, students present their research projects — a valuable opportunity to gain presentation experience and feedback. Several high-profile speakers from other institutions across Canada will also present.

TBRRI STUDENTS HELP BRING DISCOVERY TO LIFE

Every year more than 10 graduate level students are attracted to Lakehead University for the opportunity to work with TBRRI scientists as they pursue careers in medical sciences. PhDs and post-doctoral fellows often begin their scientific careers at the Research Institute. In addition to research grant funding, economic development funding programs such as those offered by NOHFC and FedNor have allowed TBRRI to create more than 50 hands-on, developmental opportunities for high school, undergraduate and graduate students.

TBRI SPONSORS NORTHWESTERN ONTARIO REGIONAL SCIENCE FAIR

In May, 150 students from Thunder Bay and the surrounding region participated in the Northwestern Ontario Regional Science Fair. The Fair provides an important platform for students to share their discoveries and innovations with local professional and academic experts.

TBRI AND LAKEHEAD UNIVERSITY HOST THE GAIRDNER FOUNDATION LECTURE

TBRI joined Lakehead University to celebrate some of the most intriguing research and innovation initiatives taking place during the City of Thunder Bay proclaimed Research and Innovation Week including the third annual Gairdner Foundation Lecture. Dr. Robert Heglele, Director, Blackburn Cardiovascular Genetics Laboratory, London Regional Genomics Centre at Roberts Research Institute, is a geneticist interested in heart disease and diabetes with a particular interest in northern populations, presented Diabetes: Nature or Nurture? High school students came from around the region for a morning talk as part of the Gairdner’s student outreach program, while clinicians, researchers and others heard Dr. Heglele at a professional lecture in the afternoon. This presentation is part of the acclaimed Gairdner Foundation National Program which aims to communicate the work of medical researchers to others. Recent Canada Gairdner awardees, along with awardees from years past, visit universities across Canada to deliver expert lectures to youth and others.

LAKE SUPERIOR MEDICAL IMAGING WORKSHOP

In September 2011, TBRRI hosted its second International Workshop on Advanced Technologies for Radiation Medical Imaging. Co-chaired by Dr. John Rowlands and Dr. Alla Reznik, the workshop encourages partnerships to design, develop, and commercialize the next generation of medical technologies and imagining detectors. The workshop attracted 45+ participants from Canada, the United States, and Europe.

TBRI HOSTS ITS FIRST CIHR CAFÉ SCIENTIFIQUE: HOW TO STAY YOUNG?

In January 2012, TBRRI hosted its first Café Scientifique - a free public event that provides expert insight into health-related issues of popular interest, provokes questions, and provides answers. How to Stay Young? Novel Approaches to Aging highlighted Canadian research that shows we may be able to slow the rate at which we age by modifying our life styles and reducing exposure to environmental factors that promote aging.

SCIENTIST WINS PRESTIGIOUS NEW AWARD FOR HIS INSPIRING WORK WITH STUDENTS

Samuel Pichardo, TBRRI scientist, was awarded the Mark Poznansky Student Mentorship Award for demonstrating outstanding enthusiasm for student engagement. Since 2009, Dr. Pichardo has trained and mentored many students at TBRRI. The award is sponsored by RBC Royal Bank and provides $25,000 toward the stipend of a graduate student, post-doctoral fellow, or other full-time research trainee. “These students will become the scientists of tomorrow, so it’s very exciting to work with them now,” says Dr. Pichardo.

INSPIRING CAREERS IN MEDICAL RESEARCH

On September 23, 2011, TBRRI, the Ontario Genomics Institute, and Lakehead University teamed up to host Careers in Medical Research. The event attracted over 100 local high school students who participated in table discussions and interactive activities.
Health Sciences Discovery Fund: A Tradition of Local Research

What is healthcare without research?

The Thunder Bay Regional Health Sciences Foundation – through the gifts of our generous donors – helped establish medical research in Thunder Bay, funding lab space and providing grants for our scientists. In a very short time, our world-class and innovative research community has grown from a few scientists to 14 as of 2012.

Scientists like Dr. Ingeborg Zehbe, who has been a researcher here since before TBRI was formed. The Health Sciences Foundation (then the Northern Cancer Research Foundation) provided Dr. Zehbe with a grant in 2006 to investigate the role of tumour viruses in the development of cancer, using HPV and cervical cancer as the model.

Her work has led to developing what is essentially a home HPV self-screening test for First Nation women, who either do not have access to Pap smear services or who may not feel comfortable taking the test. This is especially important since First Nations women have a 73% higher incidence of cervical cancer compared to women in the rest of Ontario.

The Health Sciences Discovery Fund continues the tradition, and every donation helps. Together, we are creating the future of healthcare.

Funders and Partners

COLLABORATION FOR SUCCESS

TBRII works hand-in-hand with crucial key partners including corporate member organizations, academic, healthcare, industry and research partners. Together we bring discovery to life and move molecular imaging and advanced diagnostic care forward. Bringing new advances to patients is our mutual mission.

Dr. Roxanne Deslauriers, PhD
Director of Research, Institute for Biodiagnostics
Adjunct Professor in Chemistry, University of Winnipeg
Adjunct Professor in Physiology, University of Manitoba

Dr. Fred Gilbert, MSc, PhD
Former President and Vice-Chancellor, Lakehead University
Former Board Chair, Northern Ontario School of Medicine
Advisory Council of Nuclear Waste Management Organization

Michael Gourley, BSc
Former Partner, PriceWaterhouse-Coopers LLP
Chair, Independent Review Committee of Sentry Select Capital Corporation
Former Deputy Minister of Finance, Deputy Treasurer and Deputy Minister of Economics, Province of Ontario

Keith Jobbitt, BA, LLB
Chair of the Board, Thunder Bay Regional Research Institute
Lawyer, Shaffer Jobbitt Law Firm
Former Chair of the Board, Thunder Bay Regional Hospital

Don Caddo, FCA
Former President, Caddo Consulting
Former Chair of the Board, Thunder Bay Regional Health Sciences Centre

Dr. Michael Julius, PhD
Vice President of Research, Sunnybrook Health Sciences Centre

Robert Paterson, OLSI, KLJ, LLB (Hon)
Chair and Director, Thrylocast Ltd.

Dr. Gary Polonsky, DEd
Founding President, University of Ontario Institute of Technology

Dr. Gordon Porter, M.C., FRCS (C)
VP Medical and Academic Affairs, Thunder Bay Regional Health Sciences Centre

Dr. Roger Strasser, MD
Member of the Order of Australia
Dean, Chief Executive Officer, and Professor of Rural Medicine, Northern Ontario School of Medicine

Dr. Rui Wang, MD, PhD, FAHA
Vice-President Research, Economic Development & Innovation
Professor of Biology, Lakehead University

Dr. Michael Wood, PhD
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