

APRIL 1, 2014 - MARCH 31, 2015



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AHS ANNUAL REPORT ON

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# RESEARCH & INNOVATION



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## 1. MESSAGE FROM THE PRESIDENT & CHIEF EXECUTIVE OFFICER, AND THE VICE-PRESIDENT, RESEARCH, INNOVATION & ANALYTICS

Research creates the foundation for guiding and improving the health care that Alberta Health Services provides to Albertans.

Within these pages you'll see that our clinician-researchers, staff, and many partners at universities and research institutes around the province continue to generate new evidence that helps drive improvements in the health system.

In the past year, we engaged with members of our staff and with our partners, stakeholders and patients in the development of a five-year strategy to support clinical health research, innovation and analytics. You'll hear more about the strategy in the months ahead, but this year's research annual report is already organized around the five priorities identified in the strategy.

Also of note this year are developments with our Strategic Clinical Networks, which are engines of innovation designed to improve patient care and health system performance. This year we launched the Maternal Newborn Child and Youth SCN and in the months ahead we'll be launching a new Kidney SCN.

The Partnership for Research and Innovation in the Health System (PRIHS), a collaboration between Alberta Innovates – Health Solutions and Alberta Health Services, continues to fund research projects aimed at improving health outcomes for patients across Alberta. In 2014/15, another 10 teams of researchers from around the province received funding totalling about \$7.2 million.

We invite you to take a look at some of the research and innovation highlights of the past year – achievements that are making a difference in the lives of our patients.

**Vickie Kaminski**, President and CEO

**Kathryn Todd**, Vice-President, Research, Innovation & Analytics

## 2. INTRODUCTION

This report highlights the achievements of clinical health research activities at Alberta Health Services (AHS) in the fiscal year 2014/15. The past year's research activities align with the *AHS Strategy for Clinical Health Research, Innovation and Analytics 2015 - 2020*. This five-year strategy sets out five strategic priorities to better support our health care professionals and our partners in solving health care issues of importance to Albertans. AHS is adopting the five strategies to further guide our actions and to deliver better care to Albertans, today and tomorrow.

### **Our Strategic Priorities:**

1. Build strong partnerships
2. Incent research and innovation of highest value to Albertans
3. Liberate health systems data
4. Apply and spread knowledge
5. Innovate to achieve service delivery

This report profiles the work and achievements of the AHS research community with respect to these five strategies. It includes work undertaken within AHS and between AHS and our valued research partners in the province. Stories throughout the report show the impact of research on our health care system and on Albertans.

## ALBERTA HEALTH SERVICES' SUPPORT TEAMS

### Alberta Cancer Clinical Trials (ACCT)

Clinical Trial Units, Tom Baker Cancer Centre and Cross Cancer Institute

### Analytics (Data Integration, Measurement and Reporting)

Clinical Zone Analytics  
Data and Reporting Services  
Survey and Evaluation Services  
Strategic Analytics  
Project Management and Administration

### Innovation and Research Operations

Research Administration  
Research, Planning and Performance  
Provincial Health Technology and Innovation  
SCN Health Technology Assessment and Adoption

### Knowledge Management

Knowledge Management Infrastructure  
Knowledge Management Practice Support and Education  
Knowledge Resource Service  
Clinical Project Support Services

### Major Initiatives

### Northern Alberta Clinical Trials and Research Centre (NACTRC)

### Research and Priorities Implementation

Engagement, Education and Capacity  
Workforce Research and Evaluation  
Evaluation Services  
Research Facilitation  
SCN Scientific Directors

## STRATEGIC CLINICAL NETWORKS

Addiction & Mental Health  
Bone & Joint Health  
Cancer  
Cardiovascular Health & Stroke  
Critical Care  
Diabetes, Obesity & Nutrition  
Emergency  
Maternal Newborn Child & Youth  
Respiratory Health  
Seniors Health  
Surgery

## OUR PARTNERS

- Alberta Children's Hospital Research Institute (ACHRI)
- Alberta Clinical Research Consortium (ACRC)
- Alberta Transplant Institute (ATI)
- Calgary Centre for Clinical Research (CCCR)
- Canadian VIGOUR Centre (CVC)
- Covenant Health Research Centre (CHRC)
- Hotchkiss Brain Institute (HBI)
- Institute for Reconstructive Sciences in Medicine (iRSM)
- Libin Cardiovascular Institute of Alberta
- Mazankowski Alberta Health Institute
- O'Brien Institute for Public Health (OIPH)
- Snyder Institute for Chronic Diseases
- Strategy for Patient-Oriented Research (SPOR)
- Strategic Pipeline to Accelerate Research into Care (SPARC)
- Southern Alberta Cancer Research Institute (SACRI)
- W21C (Ward of the 21st Century)
- Women and Children's Health Research Institute (WCHRI)

## 3. BUILDING STRONG PARTNERSHIPS IN ALBERTA

In 2014/15 Alberta Health Services facilitated and supported significant health research. Through strategic partnerships, AHS has increased its capacity for quality health research that takes place in Alberta. Much of this is through provincial programs, networks, and research institutes in academic centres or hospital settings, supported by a variety of national and provincial funding sources. AHS has established partnerships with many of these organizations through collaboration on research projects, human resources and funding opportunities.

### 3.1 STRATEGIC CLINICAL NETWORKS

Strategic Clinical Networks (SCNs) are groups of experts working together to make health care experiences better for Albertans. These teams improve patient care and the performance of the health system. They include doctors and other health care professionals, researchers and academic partners, community groups, government and patients.

SCNs map out the best care options for Albertans based on clinical evidence. These options are translated into clinical care pathways, a key tool to promote organized and effective patient care. The pathways outline the patient's journey across the care continuum – from primary care, to acute and community care and back to primary care.

The SCNs embed university-based researchers within the health system, giving researchers a better understanding of key health challenges facing Albertans and a stronger ability to apply their knowledge to inform care.

By working closely with frontline clinicians and others who deliver care, SCNs allow researchers, innovators and funders to align their efforts with the priorities of AHS and its patients.

The SCN research unit builds partnerships that foster health research capacity and supports prioritized applied clinical research, health services, systems and policy research, as well as population and public health research.

There are currently 11 SCNs within AHS, including the Maternal Newborn Child & Youth SCN created in 2014/15. A Primary Health Care SCN and Kidney SCN are expected to launch in the next year.

#### 3.1.1 ADDICTION & MENTAL HEALTH SCN

- **EMPATHY:** The EMPATHY Project was a school-based universal screening and resiliency intervention project that in partnership with the Red Deer Public School District. It established a novel template for bringing mental health into schools – screening more than 4,000 youth for mental health concerns. The program ran for two school years and is now in the analysis phase. Results are expected in 2015 and 2016.
- **Adult Depression Clinical Trial:** This trial compared a) standard treatment b) an online intervention and c) an Alberta-developed clinical pathway. Analysis showed that all interventions were equally effective in the environment of the trial, which was run in family practice settings and had mental health supports available through the Primary Care Network. The final analysis of the economic impact of each intervention is ongoing.



#### Brain scans used to tailor treatment for alcohol abuse

People living with alcoholism are benefiting from clinical research that uses brain imaging and drug therapy to better understand how microscopic changes in brain connectivity relate to alcohol dependence and recovery.

<http://www.albertahealthservices.ca/news/features/2014/Page10672.aspx>

### 3.1.2 BONE & JOINT HEALTH (BJH) SCN

- The network's Provincial Research Advisory Committee developed strategic plans to help the BJH SCN focus its research efforts on three priority areas:
  - **Health System Management**, including wait times for services, referral and central intake systems, multidisciplinary team care, innovative technologies in surgery, operational management and economic evaluation.
  - **Prevention** of osteoarthritis, osteoporosis, pain, acute and chronic knee problems, low back pain and rheumatoid arthritis.
  - **Knowledge Translation and Education** related to bone and joint health, including the appropriateness of treatments and service.



#### 'Sound' idea a breakthrough in safer scoliosis care

Groundbreaking local research in ultrasound imaging means children with scoliosis can now receive accurate monitoring without the need of X-ray exams, a safe procedure that nevertheless exposes patients to small amounts of ionizing radiation.

<http://www.albertahealthservices.ca/news/features/2014/Page10000.aspx>

### 3.1.3 CANCER SCN

- **Creating, Implementing and Disseminating Knowledge:** The Cancer SCN provides hands-on and financial support for the development of competitive research funding proposals focused on closing the gaps in health services delivery and transitions of care. In 2014/15, a total of 16 applications were received and eight were funded.

Seed grant-funded projects:

- Characterizing Cancer-associated Malnutrition in Early Stage Colorectal Cancer Patients Undergoing Surgery (Dr. V. Baracos)
- Long-Term Follow-Up of Adult Survivors of Childhood Cancer: Bridging the Gap Between Oncology Care and Primary Care (Dr. J. Giese-Davis)
- Decision Tools for Chemotherapy in Estrogen Receptor Positive Breast Cancer Patients (Dr. J. Hugh)
- Operating Room Science Point of Care Diagnostics (Dr. T. McMullen)
- Risk and severity of Radiation Induced Brachial Plexopathy with hypofractionated or conventional radiation therapy for node-positive breast cancer (Dr. I. Olivotto)



#### Clinical trials offer hope to patients

When Frank De Bortoli was diagnosed with inoperable pancreatic cancer, he wasn't expected to live much longer than six months. That was in 2010.

<http://www.albertahealthservices.ca/news/features/2014/Page9926.aspx>

- NOVEL 2 (Oncology): Nurse practitioner care in Alberta: Evaluation of quaLity, Value and Outcomes (Dr. E. Pituskin)
- Maxilla Reconstruction: The Impact of Surgical Planning and Reconstruction Guides on Speech and Swallowing Outcomes in Head and Neck Cancer (Dr. J. Reiger)
- Custom External Breast Prostheses for Patients with Partial or Full Mastectomies Using a Digital Pathway: a Pilot Study (Dr. G. Wilkes)



## Study shows clear new evidence for mind-body connection

For the first time, researchers have shown that practicing mindfulness meditation or being involved in a support group has a positive physical impact at the cellular level in breast cancer survivors.

<http://www.albertahealthservices.ca/news/features/2014/Page10627.aspx>

- **Maximizing Funding Opportunities:** The Cancer SCN is working with provincial and national partners to champion grassroots-driven (i.e., clinician- and patient-identified) research questions that address gaps in quality cancer care throughout the patient and family journey. In 2014/15, the Cancer SCN hosted a town hall meeting that was delivered from the Cross Cancer Institute and Tom Baker Cancer Centre and broadcast to all associate cancer centres and other AHS facilities. More than 100 participants learned about the SCN's vision for grassroots research.
- **Developing an Academic Cancer Health Services Research Program:** The Cancer SCN is creating mentorship opportunities between interested cancer clinician researchers and experienced health services researchers in order to increase capacity in this area.

### 3.1.4 CARDIOVASCULAR HEALTH & STROKE SCN

- **Stroke Action Plan:** Stroke unit care is a multidisciplinary model proven to prevent death, disability and reduce costs. In Alberta, stroke unit care access is only offered to 52% of patients, largely in urban centres. There are unique issues in delivering stroke care in rural and small urban centres, making organized stroke unit care difficult. Only 14% of stroke patients currently receive intensive stroke rehabilitation on discharge.



## Local pharmacies a key ally in reducing vascular disease

Many Albertans at risk of developing cardiovascular diseases now have improved access to screening and management at their local pharmacies thanks to a new province-wide research program.

<http://www.albertahealthservices.ca/news/Page10879.aspx>

The Cardiovascular Health & Stroke SCN developed a model for rural and small urban centres by integrating three service delivery methods into current stroke practices:

- 1) Stroke Unit Equivalent Care
- 2) Early Supported Discharge
- 3) Community Rehabilitation

Results from this model show a decreased acute care length of stay, increased number of patients with improved care, improved patient/provider satisfaction, and the achievement of similar outcomes to inpatient rehab.

- **PICC lines and Deep Vein Thrombosis:** The SCN studied whether an association exists between cutting or trimming peripherally inserted central catheters (PICCs) and the development of deep vein thrombosis (DVTs). A statistically significant difference was found between patients in the trimmed group who developed a DVT (9.82%) and patients in the group in which PICCs were not trimmed (1.95%), suggesting that altering the reverse-taper PICC by cutting or trimming the tip before insertion may be associated with increased DVTs. Further study is required to determine whether PICCs should be reduced in length or whether there is an appropriate method of trimming the catheter to ensure its stability after insertion.

### 3.1.5 CRITICAL CARE SCN

- **Identifying and Evaluating ICU Capacity Strain:** Alberta's growing population is projected to have a sustained increase in the demand for health services, especially in service areas with limited resources such as intensive care units (ICUs). Currently, ICUs in Alberta routinely operate at or near full capacity and have a limited ability to accommodate critically sick patients. Accordingly, the demand for access to ICU services is high; however, the supply remains limited. This mismatch in demand and supply creates enormous strain on Alberta's health care system.

In response to this growing problem, the Critical Care SCN embarked on a multi-phase research project investigating the causes of strain on ICU capacity in Alberta to improve the access to ICU services, and, in turn, to improve the quality of care and outcomes for patients. The project entails:

- Conducting focus groups, interviews and surveys to ask health care providers, decision-makers, patients and families to help us identify and understand the causes of ICU capacity strain.
- Studying ICU level and patient level data to understand how the strain on ICU capacity impacts patient care and the quality of care ICUs are able to deliver in Alberta.
- Identifying aspects of ICU care where the SCN may be able to improve access and efficiency and test strategies in a simulation model to identify potential impacts of system changes.

To-date, 138 health care providers from 11 Alberta ICU units and 16 patient/family representatives have attended focus groups and provided valuable insight on the causes and impacts of capacity strain. Information from these sessions will be used to guide the content of a province-wide survey that will be administered to all ICU stakeholders to further identify and understand ICU capacity strain. In addition, the SCN has collected ICU and patient level data to study the association between capacity strain and quality of care of ICU patients.

- **Daily Care Practices of Critically Ill Patients:** Health care systems routinely struggle to make optimal use of evidence, resulting in suboptimal patient care (overuse, underuse and misuse of therapies). While large amounts of scientific evidence are generated, implementation into patient care can take many years. The Evidence-Care Gaps project is designed to identify and close these gaps in ICU health care, to improve health care quality and value for money.

To-date, over 1,100 ICU healthcare providers have participated in the project's surveys, and 32 ICU patient and family members participated in interviews and focus groups to identify opportunities for improvement. A list of patient care practices was identified, and includes both clinical (e.g., delirium screening) and patient and family centered priorities (e.g., family presence and effective communication).

Currently, the project team has operationalized the top clinical priorities and patient and family priorities and is conducting an audit of eight practices. The audit, which involves data from medical charts, eCritical, and AHS administrative databases, will be completed by September 2015.



## 3.1.6 DIABETES, OBESITY & NUTRITION SCN

- **Bariatric Care:** The Partnership for Research and Innovation in the Health System (PRIHS)-funded project Bariatric Care and Rehabilitation Research Group (BCRRG) aims to improve rehabilitation and patient care for severely obese patients. To-date, the BCRRG found that hospital stays and post-surgical rehabilitation of severely obese adult cardiac surgery patients are twice those of non-obese patients.
- **Gestational Diabetes:** The SCN is engaging patients and clinicians in identifying research priorities in gestational diabetes. Ten research priorities were identified that are important to women and their care providers, which can be disseminated to researchers, funders and health care organizations.



### Resistance is frugal

David Hewgill donated his body to science last spring – and is he ever glad he did. The 72-year-old began training with resistance bands as part of a pilot study and has lost 40 pounds and six inches from his waist.

<http://www.albertahealthservices.ca/news/Page10814.aspx>

## 3.1.7 EMERGENCY SCN

- **Solutions for Rising Pediatric Mental Health Care:** Emergency departments (ED) in Alberta are seeing more and more complex pediatric patients with mental health issues. Due to chronic specialized mental health service shortages, the ED is often the ‘safety net’ that catches pediatric patients in need of this type of help. U of A researchers examined two things: 1) the effectiveness of ED-based management strategies for assessing and treating pediatric mental health patients, and 2) the impact of specialized mental health services delivered in outpatient, primary care, community and school settings on ED use by children and adolescents for mental health emergencies. The reviews revealed promising evidence for the use of a specific mental health screening tool to predict admission to inpatient psychiatric care. Other recommendations are also currently being disseminated to EDs throughout the province.
- **Understanding the Reasons for Emergency Visits:** ED use is increasing across Canada, including in Alberta. It has increased overcrowding and has contributed to increasing waiting room congestion and prolonged times to see physicians. SCN researchers interviewed 4,000 patients in seven AHS-Edmonton Zone emergency departments. The study revealed a high proportion of patients proactively make efforts to avoid ED visits but many have no primary care physician. A low proportion of patients call the Health Link line in an effort to avoid their ED visits. Patients who make efforts to avoid ED visits are typically older males with family physicians. The majority of patients felt the ED was their best option for care. Recommendations from this study are under development, and further research is underway to better understand linkages to family physicians.

## 3.1.8 MATERNAL NEWBORN CHILD & YOUTH (MNCY) SCN

- **Family Integrated Care (FICare) in Level II Neonatal Intensive Care Units (NICUs):** Alberta has one of the highest preterm birth rates in Canada. These infants have longer hospital stays, more hospital readmissions, and usually require additional health, education and social services throughout their lives. The FICare group was awarded a PRIHS grant to implement an innovative model of care with parents playing an active role in the care of their preterm infants while in the NICU. Similar programs in Sweden and Canada have been shown to accelerate infant

weight gain and reduce morbidity (including infection); improve parental confidence and reduce distress; and shorten hospital length of stay for infants. FICare has the potential to change the way care is administered in Alberta's NICUs.

- **Youth Sport and Recreational Injury Prevention:** Sport and recreation are important for the health of Alberta's youth, but are also the leading causes of injury in adolescents, affecting approximately 35% of youth in Alberta annually. The MNCY SCN investigated some interventions to help prevent injuries in sports with high participation rates (e.g., hockey, skiing, and snowboarding). Additionally, the study is focusing on introducing injury prevention training into junior high school physical education programs to provide the greatest opportunity for injury reduction.
- **Prediction and Understanding of Resilience in Albertan Families (PURLS):** The PURLS team developed a method for assessing child resilience to enable early identification and referral of children with low resilience to appropriate services after a disaster. This study leverages past investments in the *All Our Babies* cohort of over 3,000 children by using data collected before and after the 2013 Calgary floods. No other birth cohort worldwide has collected data about childhood pre- and post-natural disaster, providing the PURLS team with an opportunity not possible elsewhere. The PURLS study will generate evidence about child and family resilience and foster its translation into policy/practice using maternal and child mental health care strategies successful at the national level in the UK and Australia.

### 3.1.9 RESPIRATORY HEALTH SCN

- **Order Set for Chronic Obstructive Pulmonary Disease (COPD):** Order Sets are conveniently grouped medical orders that work to standardize diagnosis and treatment. The COPD working group developed a standardized admission order set to improve care of COPD patients being admitted to hospital. Following a pilot project at the Peter Lougheed Hospital, early results indicate that order set usage rose to 60% of all eligible patients. Further, hospital stays for COPD patients who received the order set are one day shorter as compared to those who did not receive it. Work is now underway to spread the order set across AHS facilities.
- **Alberta Childhood Asthma Pathway (ACAP):** In response to inconsistent approaches in hospital admissions and care for children with asthma, the ACAP was created to guide the treatment of childhood asthma in inpatient, urgent care and emergency settings. As of April 2015, the evidence-based pathway was rolled out provincially within 105 sites and included online, in-person and Telehealth training for staff. To-date, more than 1,900 clinicians have completed the online training modules. Evaluation is in progress, but early results indicate increased use of appropriate inhaler medication, and well-adopted use of a standardized asthma severity assessment tool. Additionally, an asthma data dashboard workbook has been created for all ages, which includes 10 measures to facilitate ongoing monitoring.



#### Patient care protocol speeds recovery after tracheotomy

Thanks to a new Alberta Health Services clinical care pathway, patients in Calgary who have had a tracheotomy are now able to start their recovery from the procedure in less than half the time it once took.

<http://www.albertahealthservices.ca/news/releases/2014/Page10549.aspx>

## 3.1.10 SENIORS HEALTH SCN

- **Elder-Friendly Care in Acute Care:** One-third of elderly patients develop new cognitive and functional disabilities unrelated to what caused their hospital admission. The Elder-Friendly Care initiative promotes evidence-informed interventions including comfort rounds (also known as intentional nursing rounds), delirium detection and least-restraint use to improve patient experience and outcomes. The goal of the project is to implement and evaluate an elder-friendly care initiative, initially at the four adult acute care hospitals in Calgary with funds from a Calgary Zone QI Grant. More than 15 inpatient units are actively implementing and collecting data. Early results suggest that documentation and observed completion of comfort rounds have improved by 8% and 5% respectively.
- **Elder-friendly Approaches to the Surgical Environment (EASE):** Currently, complication rates in older surgical patients are triple that of younger patients. The EASE study introduces elder-friendly practices to better support older surgical patients, with the aim of reducing complications and returning patients to their normal routine sooner. This initiative includes: locating all older acute abdominal surgical patients on a single unit; an interdisciplinary care team including a geriatrician; implementing elder-friendly care practices; and early discharge planning. This initiative is currently being implemented and evaluated using funds from an Alberta Innovates Health Solutions Partnerships for Research and Innovation in the Health System (PRIHS) grant.

## 3.1.11 SURGERY SCN

- **Enhanced Recovery After Surgery (ERAS):** ERAS is a series of evidence based pre-, intra- and post-operative clinical practices proven to reduce surgical complications and support early patient recovery. Funded by a PRIHS grant, the Surgery SCN is examining the early implementation approach and impact of implementing ERAS guidelines to multiple surgical sites across a broad range of specialties.
- **Evidence Decision Support Program (EDSP):** The Surgery SCN's EDSP is a collaborative process with clinicians to make evidence-informed decisions about whether, and under what conditions, adoption of innovations should be implemented (see page 32).

## 3.2 HIGHLIGHTING OUR RESEARCH INSTITUTES

### 3.2.1 ALBERTA CHILDREN'S HOSPITAL RESEARCH INSTITUTE (ACHRI)

ACHRI is a multi-disciplinary partnership among AHS, the University of Calgary and the Alberta Children's Hospital Foundation. ACHRI's membership encompasses a diverse community of scholars – more than 90 full and 140 associate members – in the university's faculties of Arts, Education, Kinesiology, Medicine, Nursing, Science, Social Work and Veterinary Medicine. The institute also collaborates with the new Maternal Newborn Child & Youth Strategic Clinical Network.

Research occurs around three priority themes: Genes, Development and Health; Behaviour and the Developing Brain; and Healthy Outcomes. ACHRI's spectrum of research interests spans basic science, health promotion, disease prevention, and innovations in diagnosis, treatment and rehabilitation. External research funding of full members exceeded \$25 million in 2014/15.



#### Taking a run at teen depression

When teens are depressed, the seriousness of the situation can reach beyond normal adolescent mood swings or sadness.

<http://www.albertahealthservices.ca/news/features/2014/Page10551.aspx>

### Research highlights:

- Identification of new genetic disorders in multiple patients presenting with rare disorders of unknown etiology using genomics and informatics platform technology
- Being an international leader in liver cell transplantation for rare metabolic disorders
- Providing national research leadership in pediatric stroke, concussion, epilepsy and neurodevelopmental disorders
- Influencing a change of policy on helmet use and body contact in youth sports to improve child safety
- National recognition for simulation research and education that saves lives through improved resuscitation skills
- Improving the prevention and management of childhood obesity
- Improving the developmental outcomes of children by enhancing the health of mothers



### How teens with autism learn

As a parent of twin boys with autism, Linda MacInnis knows full well the challenges of trying to navigate the system and find meaningful programming for her sons.

<http://www.albertahealthservices.ca/news/Page10846.aspx>

### 3.2.2 ALBERTA CLINICAL RESEARCH CONSORTIUM (ACRC)

ACRC is a provincial collaboration among the partner organizations of AHS, Alberta Innovates – Health Solutions (AIHS), Covenant Health, the College of Physicians and Surgeons of Alberta, the University of Alberta and the University of Calgary. ACRC has a vision of high quality, integrated, and efficient clinical research for Alberta and aims to reduce the barriers to clinical health research, assist with better utilization of resources, and ensure a vibrant clinical research environment.

In this last year, ACRC partner organizations:

- Developed [www.researchalberta.ca](http://www.researchalberta.ca) to guide researchers through clinical research administrative processes. This one-stop shop is a directory of resources available within the organizations for clinical health research. It includes:
  - A researcher toolbox that assists investigators in developing and conducting studies, including a protocol template, internal costing template, standard operating procedures, and a laboratory manual.
  - Access to the ACRC glossary to promote consistent definitions and use of terms across the province.
  - A single roadmap agreed upon by the partner organizations that outlines the required research processes from study start to close.
- Launched a pilot project for an online research management system, known as EDGE, with the support of AHS, Covenant Health, and the Information Stewardship Office. When implemented provincially, the EDGE-Alberta system can capture all clinical health research studies that occur through the ACRC partner organizations. In its pilot phase, EDGE-Alberta will be used internally for research administrators to efficiently manage research agreements.

- Provided provincially accessible, Health Canada-compliant online training through CITI-Canada, with courses in Good Clinical Practice, Research Ethics, and Responsible Conduct of Research and Transportation of Dangerous Goods.
- Hosted ACRC Clinical Health Research Conferences in Edmonton and Calgary where study coordinators, administrators and investigators shared information about challenges in clinical health research, best practices, and legislative changes.

ACRC continues to engage nationally with other provinces and initiatives on improving access and enhancing a robust clinical research environment in Alberta.

### 3.2.3 ALBERTA TRANSPLANT INSTITUTE (ATI)

ATI aims to increase access to transplantation, improve long-term graft survival and enhance the quality of life of transplant recipients. The institute brings together multiple organ and cell transplant programs (kidney, liver, heart, lung, islet) across Alberta to:

- Improve outcomes for patients
- Prevent deaths by making transplantation more accessible
- Train and attract the next generation of transplant scientists

Research highlights:

- **Portable *Ex Vivo* Organ Perfusion:** *ex vivo* organ perfusion is a revolutionizing technology for storing, transporting, sustaining and repairing donor organs for transplantation. In March 2015, Dr. James Shapiro, director of the University of Alberta Clinical Islet and Living Donor Liver Transplant programs, performed the first liver transplant in North America using this emerging technology that keeps the donor organ in a normal physiologic state and functioning while being transported to the transplant centre. In a partnership between the ATI and the Canadian National Transplant Research Program (CNTRP), Dr. Shapiro used the portable *ex vivo* liver perfusion device, OrganOx Metra, developed and built by University of Oxford collaborators and to-date used clinically only in the UK. For this and four subsequent liver transplant procedures, the Metra device maintained good condition during transport by pumping oxygenated-blood and nutrients through the liver. This technology is also showing promise for the ability to repair and rehabilitate damaged organs while on the device. *Ex vivo* perfusion has the potential to substantially increase the viability of donated livers for transplant beyond today's cold storage standard of 8 – 10 hours, thus allowing transport from distant sites. This creates greater access to transplantation due to a larger window for coordinating complex transplant surgeries. Dr. Jayan Nagendran continues to move forward the clinical use of *ex vivo* perfusion of donor lungs, allowing access to life-saving transplants for patients who would otherwise have died in our Critical Care Units. For heart transplantation, in which specific physiologic issues render *ex vivo* perfusion additionally complex, Dr. Darren Freed continues to make dramatic progress in pre-clinical models, setting the stage for advancement into clinical work.



#### Edmonton surgeons perform groundbreaking liver surgery

Surgeons at the University of Alberta Hospital have become the first transplant team in North America to use a leading-edge technology that extends the viability of donor livers prior to transplantation.

<http://www.albertahealthservices.ca/news/Page11187.aspx>

- **Cellular Therapy to Suppress Rejection:** An innovative development in the field of new therapeutic strategies for transplantation is the clinical use of special immune cells called ‘regulatory T cells’ (or ‘T-regs’) to suppress immune responses that cause transplant rejection and autoimmune disorders. Major challenges in the development of cellular therapy with T-regs are the limited availability of T-regs and the stability of these cells. New research performed by the lab of Dr. Lori West, director of ATI and CNTRP, has explored an entirely new T-reg source: discarded thymus tissues from children who undergo heart surgery. A recently published study demonstrated that discarded thymuses are a source of large quantities of potent and stable T-regs. Cell manufacturing and therapy protocols are now being developed to isolate and expand thymus T-regs for therapeutic purposes in transplant patients. The next challenge involves developing protocols for clinical trials.
- **Glycomics in Transplantation:** Glycomics is the study of the role of carbohydrates and carbohydrate-containing biomolecules in biological systems. With the launch in February 2015 of GlycoNet, a national research consortium led by Dr. Todd Lowary from the University of Alberta, research is moving forward together with ATI/CNTRP to explore the role of glyconanotechnology in transplantation and regenerative medicine.

### 3.2.4 CANADIAN VIGOUR CENTRE (CVC)

An academic research organization comprised of internationally recognized leaders in cardiovascular medicine and clinical investigation at the University of Alberta, the CVC specializes in managing clinical trials of cardiovascular therapies from study design through to manuscript publication. The CVC also offers research services in the areas of thought leadership, health economics, biostatistics, clinical trials monitoring, processing and analysis of electrocardiographic data and financial management.

Research highlights:

- **Clinical Trials:** 10 industry and grant-funded projects currently underway and 133 principal investigators participating in CVC-managed trials.
- **Publications:** More than 50 publications resulting from the CVC’s body of research.
- **International Lectures and Presentations:** More than 25 lectures and presentations delivered by CVC faculty in countries throughout the world, including Spain, Germany, Australia, Saudi Arabia and the United States.
- **Mentoring:** 12 trainees pursuing research opportunities with the CVC faculty.
- **Acute Coronary Syndrome Symposium:** Hosting the 20<sup>th</sup> annual symposium “New Concepts in Acute Coronary Syndromes: Beyond 2000,” held in Vancouver in conjunction with the Canadian Cardiovascular Society and Congress.
- **CVC Clinical Trials Colloquium:** Hosting the second annual CVC Clinical Trials Colloquium in Banff, Alberta, in collaboration with the ACC Rockies meeting, bringing together representative investigators and study coordinators from 16 sites across the country.

### 3.2.5 COVENANT HEALTH RESEARCH CENTRE (CHRC)

The CHRC promotes innovation, facilitates inquiry, develops partnerships, and integrates research into practice. This year, the CHRC focused on working with its partners through the Alberta Clinical Research Consortium to reduce barriers and streamline processes for conducting clinical research.

Research highlights:

- Produced the 10th annual Covenant Health Research Day event held at the Grey Nuns Community Hospital, bringing together staff and practitioners from Covenant Health and participants from 14 other organizations across Alberta and Saskatchewan
- Awarded \$49,339 in seed and research grants to 11 different projects
- Recognized excellence in nursing research by sponsoring the Advancement of Nursing Research Award, awarded to Dr. Deb White for her research work in nursing management and leadership
- Reviewed and approved 105 research studies across Covenant Health sites

## 3.2.6 HOTCHKISS BRAIN INSTITUTE (HBI)

The HBI, which celebrated its 10<sup>th</sup> anniversary in October 2014, is a research partnership between AHS and the University of Calgary. HBI members – scientists and clinicians specializing in brain and mental health research – are involved with the Addiction & Mental Health SCN, Cardiovascular Health & Stroke SCN and Seniors Health SCN. The HBI’s mission is to inspire discovery and apply knowledge towards innovative solutions for neurological and mental health disorders.

In February 2015, the HBI was announced as leader of the University of Calgary’s campus-wide Brain and Mental Health research strategy. The institute’s 130 members, along with a team of nearly 600 professional staff scientists and trainees, drive progress towards the HBI’s vision of healthy brains for better lives.

Research highlights:

- **ESCAPE Stroke Trial:** An international study led by HBI researchers showed a dramatic reduction in disability and deaths from stroke. Researchers used a clot retrieval procedure called endovascular treatment to treat ischemic stroke patients, resulting in a 50% reduction in mortality and a dramatic improvement in disability outcomes.



### The great ESCAPE

Stroke patients are benefiting from a revolutionary new clot retrieval procedure called Endovascular Treatment (ET) that has been shown to dramatically improve outcomes for patients after an acute ischemic stroke. Three Calgary-based AHS researchers led an international randomized trial that showed ET reduced mortality rates by 50 per cent – from two in 10 patients to one in 10 patients. The procedure also increased positive outcomes from 30 per cent to 55 per cent. In many cases, rather than sustaining major neurological disability, patients went home to resume their normal lives.

<http://www.albertahealthservices.ca/news/Page10967.aspx>

- **New Neuromuscular Disease Network:** The HBI, in partnership with CIHR and Muscular Dystrophy Canada, launched the Canadian Neuromuscular Disease Network to enhance the delivery of clinical care for neuromuscular patients, improve training and research collaborations and provide patients and their families with improved access to information.
- **New Treatment for Depression:** AHS neurosurgeons and HBI members launched a new experimental treatment for depression using deep brain stimulation. Participants in the study suffer from depression that has been resistant to other forms of treatment. Deep brain stimulation is proving effective to treat many of these patients, and researchers are gaining new insights into the neural pathways involved in depression.
- **Brain Cancer Clinical Trial:** Researchers at the HBI, working in partnership with the Southern Alberta Cancer Research Institute, discovered a new drug therapy that shows promise in prolonging the life of patients with glioblastoma, the most aggressive type of brain cancer. The research findings are being used to launch a human phase I/II clinical trial in 2015.

- **Men's Mental Health:** A new Canada-wide research project is addressing men's mental health in the workplace. The HBI-led multidisciplinary team received a \$1.9 million grant from the Movember Foundation for their work, which investigates ways to identify, prevent and reduce male depression.
- **Honours for Research Excellence:** Researchers at the HBI have been honoured for their significant contributions to brain and mental health research. V. Wee Yong, PhD, was named as a fellow to the Royal Society of Canada; Matthew Hill, PhD and Dr. Bijoy Menon were named to Avenue Calgary's list of Top 40 Under 40; and Carolyn Emery, PhD, and Nathalie Jetté, PhD, were elected to the Canadian College of New Scholars, Artists and Scientists.

### 3.2.7 INSTITUTE FOR RECONSTRUCTIVE SCIENCES IN MEDICINE (IRSM)



#### Experimental treatment shows promising results for depression

From the time he was diagnosed with depression at age 11, Jared spent much of his life just trying to cope with mental illness.

<http://www.albertahealthservices.ca/news/features/2014/Page10653.aspx>

The iRSM is an internationally recognized clinical and research institute focused on medical reconstructive sciences. iRSM is a joint initiative of the University of Alberta, Covenant Health and AHS, and is based at the Misericordia Hospital in Edmonton.

Over the past year, iRSM has supported 21 clinical studies that span work across four platforms of research: regenerative medicine; surgical design and simulation; outcomes and analytics; and implantable bone conduction hearing solutions.

Research highlights:

- **Regeneration of Nasal Cartilage Project:** This collaborative research initiative between iRSM, the Department of Surgery in the Faculty of Medicine and Dentistry, and the Ingenuity Lab at the University of Alberta, is comprised of researchers who are studying new ways to grow and seed 3D-printed scaffolds that can be used in facial reconstruction after intervention for head and neck cancer. This research was funded by the Mickleborough Interfacial Bioscience Research Program through the Alberta Cancer Foundation.
- **Alberta Reconstructive Technique:** The Cancer SCN Seed Funding Program is supporting the iRSM surgical design and simulation research that was developed to assess the outcomes of a novel surgical procedure, the Alberta Reconstructive Technique (ART). ART surgeries are simulated and surgical guides are designed and printed using 3D CAD/CAM and printing technology. iRSM, in collaboration with their partners in the Department of Surgery in the Faculty of Medicine and Dentistry, is one of six centres globally who are using this procedure. iRSM recently held a training program with delegates from the Mayo Clinic, Peking University, and the National Cancer Institute of Chile learning the ART.
- **Mickleborough Interfacial Bioscience Research Program:** This program, through the Alberta Cancer Foundation, is funding research in the area of functional outcomes. Speech, chewing and swallowing outcomes after treatment for head and neck cancer will be assessed by an international network of clinicians and researchers. The Head and Neck Research Network, which is headquartered in Edmonton and currently consists of centres in the USA and Finland, will use this funding to expand its projects to other centres globally.



- **Implantable Hearing Aids:** Research into completely implantable bone conduction hearing aids intended for patients with outer or middle ear diseases or disorders has been funded by The Oticon Foundation for three years. This research will assess the feasibility of new implantable devices, as well as how to maximize patient gain from them.

### 3.2.8 LIBIN CARDIOVASCULAR INSTITUTE OF ALBERTA

The Libin Cardiovascular Institute is an entity of AHS-Calgary Zone in the University of Calgary, which manages and coordinates cardiovascular research, education, and patient care in Calgary. The institute boasts some 175 members dedicated to excellence in cardiovascular care delivery, research, and education. It also works cooperatively with the Cardiovascular Health & Stroke SCN. The institute focuses on the following priorities:

- **Heart Health Services Research:** Epidemiological studies evaluating the impact of cardiovascular risk factors on outcomes. These include community surveillance of hypertension, diabetes, and dyslipidemia and a focus on the impact of chronic kidney disease on vascular outcomes.
- **Sudden Cardiac Death (SCD) and Electrophysiology:** Studies ranging from new drug discovery in the basic science laboratory, novel genetics studies of mechanisms of SCD to randomized clinical trials such as REFINE-ICD to determine optimal patient care.
- **Vascular Dynamics:** Libin scientists explore the basic science of blood vessel function, atherosclerosis development, studies of vascular health in humans, and care delivery in patients with myocardial infarction.
- **Heart Failure:** Key studies are undertaken to evaluate novel therapies to improve heart function and care delivery in these domains.

Through support from AHS and the SCNs, Libin members have been involved in a PRIHS grant that evaluates remote monitoring of cardiac devices. Other members are using the APPROACH database to develop new methods for delivering care to patients who have atrial fibrillation and congestive heart failure.



#### World's smallest pacemaker

In an Alberta first, a medical team at Foothills Medical Centre (FMC) is now implanting the world's smallest pacemaker, which offers shorter recovery times and a lower risk of infection for patients with heart rhythm disorders.

<http://www.albertahealthservices.ca/news/features/2014/Page10725.aspx>

#### Research highlights:

- Libin members published more than 400 manuscripts in the last year with peer-reviewed funding in excess of \$20 million.
- New research initiatives have been implemented in the Stephenson Cardiac Imaging Centre, including a new large collaborative grant to evaluate the effect of cancer therapy on heart function.
- Ongoing health promotion and disease prevention work through the vascular risk reduction project of the SCN.
- Congenital heart disease transition from pediatric to adult care. New initiatives are looking at systems of care and ongoing work with the cardiac genetics program.



### Researchers seek genetic cause for fainting

For Angel Redisky and her family, an effective treatment for fainting can't come too soon. During her fainting episodes, which occurred about every 10 days, Redisky has wound up with bruises, cuts, rug burns and, once, she even broke a wall in a bathroom at work when she struck her head. She'd be unconscious for a few minutes.

<http://www.albertahealthservices.ca/news/Page11450.aspx>

## 3.2.9 MAZANKOWSKI ALBERTA HEART INSTITUTE

Cardiac Sciences is a research leader, with research activities resulting in 160 peer-reviewed publications, 21 review papers and 19 peer-reviewed grants in the past academic year. Approximately \$7 million of funding was received as a result of clinical trial activity in the Edmonton Cardiovascular Zone with over 40 new clinical trials being registered from Mazankowski Heart Institute faculty. In 2014, supported by the University Hospital Foundation, the heart institute issued a competitive research grant for the Averback Research award for \$1 million (focused on cardiovascular genetic research).



### Opening the door to research of the future

A team of Edmonton researchers aiming to improve the outcomes of heart transplant patients through gene therapy has won the University Hospital Foundation's \$1 million Gerald Averback Medical Research Award in cardiovascular gene therapy, genomics and vascular biology

<http://www.albertahealthservices.ca/news/features/2014/Page10633.aspx>

### Cardiac Research

- The Grey Nuns Community Hospital is actively involved in clinical cardiology research. In addition to being the highest enroler in Canada for the ongoing ODYSSEY-OUTCOMES trial, the Grey Nuns team recently published the IMPROVE-IT trial, which monitors 40 patients and collects seven years of data to support the study. Within 2014, two peer-reviewed papers and four abstracts were accepted for publication.
- The Mazankowski Atrial Fibrillation Program, led by Dr. Rupinder Sandhu, is a new program aimed to address challenges seen with prompt assessments, diagnoses, and initiation of anticoagulation therapies that significantly impact the prevention of embolic stroke. This research will support the development of a process of care to enhance positive outcomes for this patient population.
- REMCON-STEMI-Remote Ischemic Preconditioning in ST Segment Elevation Myocardial Infarction (STEMI), led by Dr. Kevin Baaney and Dr. Robert Welsh, is a novel trial looking at the effects of remote ischemic preconditioning (protecting tissue against the detrimental effects of acute ischemia-reperfusion injury) in patients with STEMI (the deadliest form of heart attack) undergoing primary percutaneous transluminal coronary angioplasty (a procedure to open up blocked coronary arteries). Preliminary data showed there is a potential benefit to patients for a variety of metabolic factors.

### Cardiac Surgery

The cardiac team actively collaborates on a variety of surgical research areas including thoracic transplantation, infant myocardial preservation and neurodevelopment outcomes following infant cardiac surgery. Most of the cardiac surgeons are involved in clinical studies including national and international collaborative prospective randomized studies. The division's research funding has grown significantly over the past four years and is now at about \$18 million.

- **Mazankowski Cardiovascular Intensive Care Unit:** The CVICU at the Mazankowski Alberta Heart Institute has been actively involved in local, national and international research studies.
- **Northern Alberta Cardiac Rehabilitation Program:** The Mazankowski Alberta Heart Institute, the Faculty of Medicine and Dentistry and the University Hospital Foundation (UHF) announced a Request for Proposals in the area of cardiovascular rehabilitation in November 2014. The UHF, the funder of the competition, received a donation from the Jim Pattison Foundation to support research in cardiac rehabilitation to be conducted at the heart institute and the University of Alberta.
- **Cardiac Sciences Research Day:** The annual Cardiac Sciences Research Day is sponsored by the Mazankowski Alberta Heart Institute to highlight research occurring at all levels within the institute. In 2014, two visiting professors delivered presentations on cardiac rehabilitation and basic mechanisms of myocardial embryology and development. Awards were distributed to authors with the most notable clinical and basic sciences research presentations. Numerous presentations were successfully published as peer-reviewed publications.



## System stops heart attacks before they happen

Damage to heart muscle can be prevented by injecting a clot-buster to abort a heart attack before it happens, ideally during a patient's ambulance ride to hospital, according to new research by local cardiologists recently published in the Canadian Journal of Cardiology.

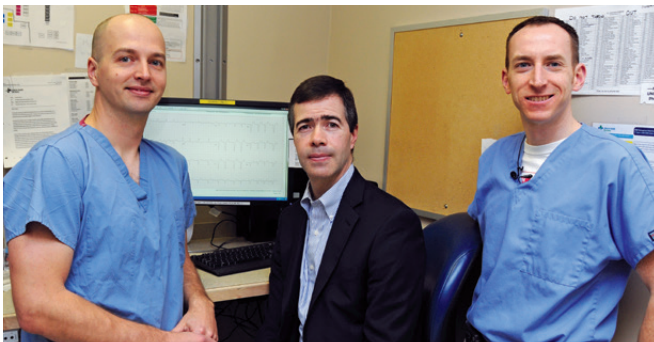
<http://www.albertahealthservices.ca/news/Page10899.aspx>

### 3.2.10 THE O'BRIEN INSTITUTE FOR PUBLIC HEALTH (OIPH)

With a vision of better health and health care, OIPH aims to inform the public health agencies and health systems tasked with making and keeping Albertans healthy. It does so by focusing its research on enhanced health systems performance, improved population health and innovative tools and methods for public health.

AHS leaders contribute to OIPH's governance structure and working committees. One-third of OIPH's membership is comprised of AHS employees.

OIPH was critical in the creation and delivery of a survey that helped inform Calgary city council's decision to legislate electronic nicotine delivery systems (ENDS), also known as e-Cigarettes. OIPH funding and supplied research enabled the formulation and implementation of the survey, which has been hailed as one of the main factors behind city council amending Calgary's smoking bylaws to include vaping.



## New heart attack test could improve care, decongest EDs

A new research study underway in the emergency department at Foothills Medical Centre shows promise for speeding up the diagnosis of patients who arrive with heart attack symptoms.

<http://www.albertahealthservices.ca/news/Page11121.aspx>

Additionally, OIPH has been central in bringing the discussion regarding hypertension, and its dietary factors, to the fore. This summer OIPH stepped up its effort when its researchers released findings that pegged the annual economic cost of the disease in Alberta at \$1.4 billion, and estimated the national economic cost is likely \$13.9 billion. Furthermore, OIPH researchers believe that in five years, unless measures are implemented to curb current trends, the cost of hypertension at the national level will top \$20 billion.

### 3.2.11 SNYDER INSTITUTE FOR CHRONIC DISEASES

The Snyder Institute is leading in the areas of inflammation and host-microbial interaction, and how they impact chronic inflammatory diseases, particularly autoimmune diseases. The vision of the Snyder Institute is to become a global leader in chronic inflammatory disease research. The institute has 100 basic science and clinical investigators (50/50) working side-by-side to make discoveries and translate these discoveries to transform the lives of people suffering from chronic inflammatory diseases.

Research highlights:

- **Live Cell Imaging (LCI) Facility:** Part of a core integrated strategy to provide state-of-the-art imaging infrastructure and support cross-disciplinary collaboration in the fight against chronic diseases. LCI has evolved as a global leader in imaging, in the visualization of disease progression and the translation of novel insights into therapeutic interventions.
- **TAMARATT Lung Suite:** Alberta's largest respiratory suite is a unique centre for translating basic research into new approaches for patient care. Equipped with state-of-the-art radiographic and diagnostic technology, this facility allows researchers to perform studies ranging from investigation into basic disease processes to testing of new drugs/clinical trials.
- **Nicole Perkins Microbial Communities Core Labs:** This platform supports research for cystic fibrosis (investigating microbial diversity associated with airway infections), sepsis (developing improved diagnostic methods for this critically ill group of patients), gastrointestinal diseases (understanding microbial changes associated with disease) and vaccine research (understanding impact of vaccines on the normal microbiota).
- **Phenomics Core:** Examining diseases such as Inflammatory Bowel Disease in genetically modified animals.
- **Western Microbiome Centre:** A \$25-million transformational program to study the role of microbiome in infection, inflammation and chronic diseases in a changing environment.

### 3.2.12 SOUTHERN ALBERTA CANCER RESEARCH INSTITUTE (SACRI)

SACRI is a partnership between the University of Calgary's Cumming School of Medicine and CancerControl Alberta - AHS. Its mission is to create a community for innovative cancer research and training. Physicians and scientists at the University of Calgary, Tom Baker Cancer Centre and Alberta Children's Hospital are developing and improving cancer treatments based on innovative science and research evidence.

Research highlights:

- **Cancer Biomarker Discovery and Implementation:** SACRI researchers are working on advancements in the fields of genomics, proteomics, metabolomics, digital pathology, pharmacokinetics, and computational analysis to uncover biomarkers that will allow cancer patients to be treated for the individual characteristics of their disease.
- **Experimental and Applied Therapeutics:** Effective cancer research programs combine the study of the etiology of cancer, at both a molecular and cellular level, with a clinical understanding of cancer progression and response to treatment.
- **Cancer BRIDGES survivorship team:** SACRI researchers are helping Albertans living with and beyond cancer by creating a survivor's network and testing out discharge care plans across the province.

## 3.2.13 W21C (WARD OF THE 21<sup>ST</sup> CENTURY)

W21C is a research initiative between the University of Calgary’s O’Brien Institute for Public Health and AHS. W21C works with researchers, health care professionals, government and industry experts to bring new ideas, prototypes and health care products for testing in pre-clinical and clinical environments. W21C strives to fulfill its research, education and innovation mandate of improving patient safety and quality of care for present and future generations. In the past year, W21C undertook 47 different projects.

Research highlights:

- **iDECIDE:** This national, multicenter intervention study is aimed at improving the quality and quantity of end of life communication and decision-making for hospitalized, elderly patients. W21C is currently gathering feedback from patients and family members at Foothills Medical Centre (FMC) to assess a variety of tools for end of life planning. In the next phase of work, W21C will evaluate the feasibility of implementing the selected tools at FMC.
- **Human Factors Evaluation of Simulated Ebola Virus Disease Patient Scenarios:** AHS Infection Prevention and Control contracted W21C to evaluate risks associated with health care workers managing Ebola Virus Disease patients. W21C Human Factors partnered with the AHS Ebola Response initiative and evaluated a series of simulation scenarios and provided feedback to AHS Infection, Prevention and Control on risks and recommendations for quality improvement. Multiple recommendations have already been implemented including a re-design of instructional materials and altering the configuration of equipment for donning and doffing.
- **Partnership in the Development of a Patient-Centred Care Planning E-tool:** As part of W21C’s AIHS – Collaborative Research and Innovation Opportunities Team grant, W21C recently partnered with the O’Brien Institute for Public Health’s Patient and Community Engagement Research (PACER) program to conduct a series of focus groups with chronically ill patients to better understand the daily experience and supports available for managing their care. Focus groups with care teams are currently underway to understand their approach to the development and maintenance of care plans for patients with multiple and complex chronic diseases. Computer science and information visualization experts are going to use the results from both groups to create a prototype of the care planning e-tool for iterative testing and development.

## 3.2.14 WOMEN AND CHILDREN’S HEALTH RESEARCH INSTITUTE (WCHRI)

WCHRI supports research excellence dedicated to improving the health and lives of women and children. Founded in 2006 with the partnership of the University of Alberta, AHS, Stollery Children’s Hospital Foundation and Royal Alexandra Hospital Foundation, WCHRI is the only research institute in Canada to focus on women’s, children’s and perinatal health. Our partnerships promote collaborative, inter-disciplinary cohesive approaches to addressing children and women’s health needs, for maximum impact in the lab, the clinic and the hospitals for all Albertans.



WCHRI research projects improve women and children’s health and well-being

Dr. Samina Ali, a pediatric emergency physician in Edmonton, has found that children’s pain is often undertreated in hospital emergency departments, and she is currently testing two common pain relievers in treating the pain of children with suspected fractures in hospitals, addressing a significant gap in pediatric drug research. See the full story on page 28 of the WCHRI Annual Report.

[http://www.wchri.org/sites/default/files/WCHRI\\_AnnualReport\\_2014-15.pdf](http://www.wchri.org/sites/default/files/WCHRI_AnnualReport_2014-15.pdf)

### Research highlights:

- More than \$3.2 million in research grants were awarded through a number of programs, including two new programs that promote research integration in hospitals. The Research Capacity Building Program is funding four research teams at the Stollery Children's Hospital over a two-year period. The Clinical Research Seed Grant was awarded to 16 research projects in genetics, congenital heart disease, special needs, sleep apnea, pediatric obesity and others at the Stollery Children's Hospital and Lois Hole Hospital for Women that can rapidly translate into improved patient care.
- Close to 100 undergraduate, graduate and post-graduate trainees were supported through studentships, research grants and travel grants as part of WCHRI's ongoing investment in the next generation of researchers.
- WCHRI's Support Platform for Integrated Research provided support to more than 140 research projects as it continued to grow and develop in providing high-calibre, affordable research support services for researchers in data management, research coordination, biostatistics, qualitative and community-based research and knowledge translation.
- Research Day attracted a record number of researchers, students and stakeholder participants as 200 abstracts were presented in research areas focused on complex diseases of childhood, women's health and complicated pregnancy outcomes.
- Membership grew to more than 400 leading researchers committed to women and children's health.

WCHRI has targeted four goals for development and research focus: integration of research into hospitals and communities, healthy development, children's health and wellbeing and lifelong women's health.



### Checking in on the mental health of to-be moms

Prenatal depression and anxiety can seriously impact moms-to-be and their babies. Dr. Dawn Kingston developed an on-line tool for screening and treating prenatal depression and anxiety, and it's already being used to help the one in 10 expectant women who suffer from these conditions in Alberta. See the full story on page 24 of the WCHRI Annual Report.

[http://www.wchri.org/sites/default/files/WCHRI\\_AnnualReport\\_2014-15.pdf](http://www.wchri.org/sites/default/files/WCHRI_AnnualReport_2014-15.pdf)

## 3.3 CLINICAL RESEARCH ACTIVITY IN AHS

### 3.3.1 RESEARCH ADMINISTRATION

In November 2014, the Provincial Research Administration team was fully assembled to establish a streamlined, provincial platform to facilitate clinical research projects that require access to AHS clinical areas, patients, data repositories and information technology (IT) infrastructure. A core service of the team is to facilitate direct or indirect access to AHS data repositories for research purposes as a secondary use of the data system.

The AHS Provincial Research Administration team works in partnership with Alberta's clinical research intake centres (Northern Alberta Clinical Trials and Research Centre at the University of Alberta; Calgary Centre for Clinical Research at

the University of Calgary; CancerControl Alberta) to streamline administrative requirements for the launch and conduct of ethically approved clinical research project.

In partnership with the Alberta Clinical Research Consortium (ACRC), AHS Research is implementing a platform research management system called Edge to streamline administrative processes. The new platform will help collect, manage and share administrative documents needed to access AHS resources.

### 3.3.2 RESEARCH PROJECTS AND REVENUE

A tremendous amount of health research and innovation occurs every day within AHS. In 2014/15, Alberta’s primary Research Ethics Boards\* (REBs) approved approximately 1,150 clinical health research projects that requested access to AHS resources. The REBs indicate there are between 3,000 and 3,500 active research projects underway that have used or continue to use AHS resources for their research work, including access to patients, staff, data, clinical operational areas, or facilities.

\* Primary REBs include Health Research Ethics Board (University of Alberta), Conjoint Health Research Ethics Board (University of Calgary), HREBA (Health Research Ethics Board of Alberta (housed at Alberta Innovates – Health Solutions).

Our university partners hold the majority of funds for researchers. Per our agreement with the University of Alberta, AHS holds and administers industry sponsored funds for clinical research on behalf of their researchers. AHS also holds industry sponsored funds for clinical research conducted at the Tom Baker Cancer Centre in Calgary. Table 1 summarizes the types of funding held and administered by AHS on behalf of researchers between 2012 and 2015.

TABLE 1: RESEARCH REVENUE						
	Other Grants (Including Industry) <sup>a</sup>	Other - Provincial Government <sup>b</sup>	Donations <sup>c</sup>	Investment Income <sup>d</sup>	Other Revenue <sup>e</sup>	Total Revenue
2012	\$25,205,480	\$6,142,446	\$10,670,151	\$87,107	\$4,963,087	\$47,068,271
2013	\$24,350,375	\$3,861,107	\$10,226,494	\$52,123	\$6,420,125	\$44,910,224
2014	\$ \$30,651,987.19	\$7,616,346	\$ \$8,212,484.48	\$35,852	\$ \$4,055,576	\$ \$50,572,245.67
2015	\$29,465,181.52	\$4,279,903.10	\$6,528,094.68	\$44,986.77	\$4,805,784.17	\$45,123,950.24

Source: AHS Finance Revenue

<sup>a</sup> Includes industry-sponsored studies such as pharmaceutical trials

<sup>b</sup> Any Alberta ministry or agency excluding Alberta Health

<sup>c</sup> Donations for research purposes

<sup>d</sup> Interest income held for funding

<sup>e</sup> All other revenues not including those in the other categories

### 3.3.3 NORTHERN ALBERTA CLINICAL TRIALS AND RESEARCH CENTRE (NACTRC)

In 2014/15, NACTRC approved 475 new clinical studies. The majority of the research was Outcomes (29%), Qualitative (19%) and Drug (17%). AHS Site/Area approvals for the Edmonton Zone totaled 1,342 with a median turnaround time of four business days.

NACTRC reinvested \$1.4 million to support research in the Edmonton Zone such as medical records, Health Canada applications, research coordinator training courses and programs including Summer Student Support and the Clinical Investigator Program.

### 3.3.4 ADULT ONCOLOGY

There have been several advancements in adult oncology research for 2014/15. Research highlights:

- **Alberta's Tomorrow Project (ATP):** Based in CancerControl Alberta at AHS, this project will see a research team following the health of 50,000 individuals for up to 50 years in an effort to pinpoint the causes of cancer.
- **Cancer Epidemiology and Prevention:** The Department of Cancer Epidemiology and Prevention Research (CEPR) of CancerControl Alberta studies the underlying causes of cancer and means of cancer prevention. Led by Dr. Christine Friedenreich, the CEPR department held \$2.69 million in external grant funding in 2014/15 and an additional \$2.37 million in external funding from collaborative projects. CEPR scientists published 30 papers in scientific journals over the past year and had 23 oral and poster presentations at scientific conferences.
- **Alberta Cancer Clinical Trials:** The Clinical Trials Units (CTUs) at CancerControl Alberta-AHS are building an efficient and sustainable clinical trial system to increase the number of clinical trial participants.
  - The Tom Baker Cancer Centre CTU is the top recruiting centre in Canada and one of the top centres in North America. Recently, Lexicon completed a pivotal Phase 3 clinical trial of oral telotristat etiprate to treat carcinoid syndrome. If approved, telotristat etiprate would be the first oral treatment successfully developed for carcinoid syndrome and the first addition to the standard of care in more than 16 years.
  - At the Cross Cancer Institute, the local principle investigators and members of the CTU team were recognized for being amongst the top accruing sites for the following clinical trials:
    - 15 patients for the trial “Combined Nivolumab and Ipilimumab or Monotherapy in Untreated Melanoma”
    - 93 patients for the trial “Regional Nodal Irradiation in Early-Stage Breast Cancer”
    - 12 patients for the trial “Elotuzumab Therapy for Relapsed or Refractory Multiple Myeloma”

### 3.3.5 CALGARY CENTRE FOR CLINICAL RESEARCH (CCCR)

The CCCR is a clinical trial and epidemiology coordination facility. As the first completely integrated clinical trial centre in Calgary, it facilitates and streamlines the processes of large clinical trials. In addition, the CCCR supports health investigators within AHS, the Faculty of Medicine's research institutes and other faculties at University of Calgary (U of C).

CCCR enables clinicians and scientists to collaborate more efficiently on clinical research and to bring the most innovative ideas directly to patients, rapidly applying laboratory findings to develop cutting edge treatment solutions.

At the CCCR, legal services for clinical trials is coordinated to provide a single, simplified legal review process for both AHS and the U of C, supported by a team of contract, finance and clinical trial administration specialists. The CCCR model for clinical trial process has substantially decreased contractual and administrative process delays.

## 4. INCENTING RESEARCH AND INNOVATION OF THE HIGHEST VALUE TO ALBERTANS

### 4.1 ALBERTA PARTNERSHIP FOR RESEARCH AND INNOVATION IN THE HEALTH SYSTEM (PRIHS)

PRIHS is a partnership between Alberta Innovates – Health Solutions (AIHS) and AHS aimed at improving health outcomes for patients across Alberta. This partnered funding opportunity supports networks of health researchers and clinical practitioners across the continuum of care, with an emphasis on population health and community and primary care. The goal is to reassess potentially inefficient activities within the health system and identify sustainable solutions to improve overall quality of care and value for money in the health system.



The objectives of PRIHS are to:

- Support SCN research and innovation activities that focus on (re)assessing technologies, services and processes in Alberta’s health system with the aim of improving care efficiency
- Enable AHS to make evidence-informed clinically appropriate changes to the health care system
- Build capacity for health research activities
- Encourage collaboration of research and innovation activities between Alberta’s academic institutions, SCNs and AHS operations in order to achieve measurable and sustainable impacts in the health system

In 2014/15 AHS and its university partners were successful in securing 10 PRIHS project grants for a total of just under \$7.2 million over the next three years. Table 4 shows a list of the successful award recipients.

**TABLE 2: SCN AWARD RECIPIENTS**

Strategic Clinical Network	Principal Applicant (Institution)	Co-Principal Applicant(s) (Institution)	Project Title
Addiction & Mental Health; Emergency	Salvalaggio, Ginetta (U of A)	McCabe, Christopher (U of A) Wild, T. Cameron (U of A)	Enhanced Multidisciplinary Care for Inner-City Patients with High Acute Care Use
Addiction & Mental Health; Maternal, Newborn, Child & Youth Health	Greenshaw, Andrew (U of A)	Jonsson, Egon (Institute of Health Economics) Salmon, Amy (U of A)	Prevention of Fetal Alcohol Spectrum Disorder (FASD) by the Use of Technology
Cardiovascular Health & Stroke; Critical Care;	Mushahwar, Vivian (U of A)	Dukelow, Sean (U of C)	Evaluating the Economic Impact and Quality of Care of the Smart-e-Pants
Diabetes, Obesity & Nutrition; Seniors Health		McCabe, Christopher (U of A) Zygun, David (U of A)	Innovation for Pressure Ulcer Prevention
Emergency; Respiratory Health	Stickland, Michael (U of A)	Leigh, Richard (U of C) Rowe, Brian (U of A)	Developing and Assessing the Effectiveness of a Post-discharge Care Pathway to Reduce Emergency Department Re-visits and Hospital Re-admission Rates for Patients with COPD
Emergency	Rowe, Brian (U of A)	Holroyd, Brian (U of A) Ospina, Maria (AHS) Pryce, Cathy (AHS)	Development, Implementation and Evaluation of the Impact of a Choosing Wisely List of Tests and Interventions for Emergency Departments in Alberta
Emergency	Lang, Eddy (U of C)	Bullard, Michael (U of A) Ghosh, Subrata (U of C) Hebert, Marilynne (U of C) Innes, Grant (U of C) Kaplan, Gilaad (U of C) McRae, Andrew (U of C) Novak, Kerri (U of C) Van Zanten, Sander (U of A)	Reassessment of Clinical Practices for Patients Presenting to the Emergency Department with Upper Gastrointestinal Bleeding
Kidney	Davison, Sara (U of A)	Fassbender, Konrad (U of A)	Development, Implementation and Evaluation of a Provincial Kidney Conservative Care Clinical Pathway
Maternal Newborn Child & Youth Health	Lodha, Abhay (U of C)	Aziz, Khalid (U of A) Benzies, Karen (U of C)	Family Integrated Care (FiCare) in Level II NICUs: An Innovative Program in Alberta

**TABLE 2: SCN AWARD RECIPIENTS**

Strategic Clinical Network	Principal Applicant	Co-Principal Applicant(s)	Project Title
		Shah, Vibhuti (U of T)	
Primary Care; Seniors Health	Majumdar, Sumit (U of A)	Beaupre, Lauren (U of A) Hanson, Heather (AHS) Juby, Angela (U of A) Kivi, Paul (AHS)	Strategies Targeting Osteoporosis to Prevent Recurrent FRACTURES (STOP Fracture Study)
Respiratory Health	Cave, Andrew (U of A)	Grimshaw, Jeremy (U of O)	Primary Care Pathway for Childhood Asthma

AHS: Alberta Health Services, U of A: University of Alberta, U of C: University of Calgary, U of O: University of Ottawa, U of T: University of Toronto

## 4.2 HEALTH TECHNOLOGY ASSESSMENT AND INNOVATION (HTAI)

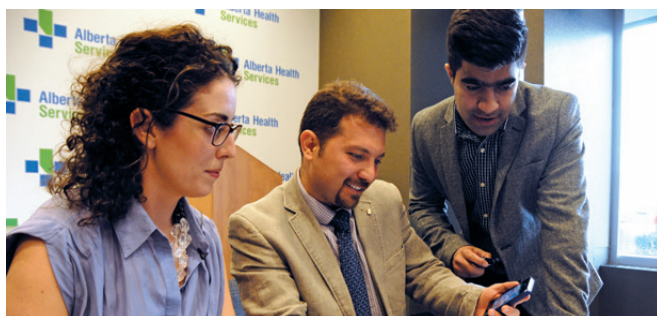
### 4.2.1 ALBERTA HEALTH TECHNOLOGY DECISION PROCESS

Technology is a rapidly evolving and dynamic aspect of health care. Clinicians are motivated to stay current with the pace of technological innovation in order to provide the best care to patients. Gathering and assessing the evidence to inform whether the promise of new technologies can be realized is a key function needed within the health system. Recently, the Director of Health Technology Assessment and Innovation (HTAI) was appointed to the Board of Directors of Health Technology Assessment International, a global scientific and professional society for all those who produce, use, or encounter health technology assessment (HTA).

The Deputy Minister of Health manages the Alberta Health Technology Decision Process, a comprehensive approach to review and assess the impact of new technologies on quality, service and financial resources. For example, the deputy minister recently made a decision to publicly fund OncoType DX, a diagnostic test for breast cancer that predicts how the cancer will respond to treatment.

### 4.2.2 LOCATOR DEVICE PROJECT

The Locator Device Project successfully investigated the usability of wearable GPS locator technology to improve the safety and quality of life for dementia patients who are at risk of wandering and becoming lost. A study of wearable locator technologies, including a watch or shoe insert, was undertaken in Calgary and Grand Prairie. Based on its initial success, the number of participants was doubled to provide 40 clients and their caregivers the opportunity to trial a device. Initial results indicated that the device can improve the independence in the activities of daily living and the patients' communication with caregivers. Further steps are being considered by AHS to facilitate broader access and use of wearable locator devices.



New GPS technology helps support independence

A collaborative research project is using GPS technology to locate Albertans with cognitive impairment who have wandered or are lost.

<http://www.albertahealthservices.ca/news/features/2014/Page10067.aspx>

### 4.2.3 INTELLECTUAL PROPERTY (IP)

In consultation with inventors and clinical champions, HTAI assessed 25 innovations based on

- Value to patients/AHS in addressing clinical need
- Improvement in quality of care to patients
- Potential linkage with SCN priorities
- Operational feasibility
- Market readiness
- Funding requirements

HTAI reviewed and assessed the innovations for IP implications and commercialization, such as exploring licensing opportunities and/or creating of spin-off companies.

This year, AHS was successful in translating the IP to commercial use for its proprietary antibodies against cancer-causing proteins invented by AHS researcher Dr. Michael Wienfeld. The IP was licensed to a major international life science company Merck Millipore Corp. The company is currently testing the product for utility and commercial application.

### 4.3 HEALTH TECHNOLOGY ASSESSMENT AND ADOPTION (HTAA)

AHS is committed to promoting innovation through its partnerships with the SCNs. The SCN HTAA supports the SCNs with evidence-informed decision-making for new and existing health technologies. The team's three key achievements this year:

- **Health Technology Assessment on rTMS:** Repetitive Transcranial Magnetic Stimulation (rTMS) is a non-invasive, safe and effective treatment option that could potentially help restore the quality of life in those suffering from treatment-resistant depression in Alberta. To assess the clinical and economic value of this technology, the SCN HTAA supported the Addiction & Mental Health SCN in facilitating the provincial review of rTMS, which is currently pending ministerial approval.
- **CNESH Top 10 New and Emerging Technology Watch List for 2015:** The Canadian Network for Environmental Scanning in Health (CNESH) annually selects game-changing technologies nominated from across the country to create a Top 10 New and Emerging Technologies Watch List. The SCN HTAA team assisted the Cardiovascular Health & Stroke SCN in nominating eight health technologies. Two were selected from more than 50 submissions across Canada and around the world: Electrically Stimulated Underwear for Pressure Ulcers (Smart-e-pants) and Remote Monitoring for Cardiac Devices.
- **Air-oxygen misconnection events in hospital settings:** The SCN HTAA team was invited as a Canadian delegate at the International Organization for Standardization (ISO) meeting to bring awareness to air-oxygen misconnection events in hospital settings. ISO is looking to develop a series of standards to guide the engineering of connectors to minimize the number of air-oxygen misconnection incidents. As a result of the meeting, newly designed air-oxygen connectors are anticipated to become available to the Canadian market.

### 4.4 STRATEGY FOR PATIENT-ORIENTED RESEARCH (SPOR) AND SPARC

Alberta's SPOR Support for People and Patient Oriented Research and Trials (SUPPORT) Unit is working to transform patient-oriented research through the development of the SPOR SUPPORT Unit's seven core functions or platforms:

1. Data Platforms
2. Methods Support and Development
3. Knowledge Translation
4. Pragmatic Clinical Trials

## 5. Career Development in Methods and Health Services Research

## 6. Consultation and Research Services

## 7. Patient Engagement

The foundation of the Alberta SPOR SUPPORT Unit is collaboration and partnership. It is jointly funded for five years by the Canadian Institutes of Health Research and Alberta Innovates - Health Solutions (AIHS). Representatives from AHS, the universities of Alberta, Calgary and Lethbridge, the Academic Health Network, Alberta Health and AIHS form the Steering Committee. The goal of the Alberta SPOR SUPPORT Unit is to increase the quantity and quality of patient-oriented research in the province, and to contribute nationally to the SPOR networks.

Year 2 focused on addressing the administrative barriers associated with developing standard policies, procedures and processes for each support platform. To ensure effective, long-term and sustainable results, several meetings have taken place with AHS, Government of Alberta - Department of Health, Institute of Health Economics and the four major universities to facilitate SPOR SUPPORT implementation. Their key accomplishments during this period were centered on their extensive needs assessment and stakeholder consultation, which has supported a carefully developed process and planning for the ongoing work of the core functions.

Stakeholder consultations are part of SPOR's process in developing strong cross-sectoral partnerships. The first Partners Forum, held in October 2014, provided education and awareness about the strategy. This is the first step towards culture change and transformation of the continuum from research to impact.

Patient Engagement and Training core functions are building cross-sectoral partnerships through the development of provincial advisory groups. These advisory groups will be composed of key stakeholders to assist in developing future strategic directions of the platforms.

The Data Platform, funded by SPOR and housed in AHS, has been able to complete over 30 data request projects by leveraging the AHS data stores and providing timely access to usable data. Providing rapid support for proposal feasibility studies means SPOR has been able to improve the quality of research proposals going forward for funding and demonstrate the feasibility of the study. With additional analyses, the results from direct data access requests will result in articles published in the medical literature for wider dissemination. Through data provided by Alberta's SPOR SUPPORT Unit, researchers and clinicians can understand variability in care and can work to reduce it and provide an improved quality of service for patients.

## 5. LIBERATING HEALTH SYSTEM DATA

### 5.1 DIAGNOSTIC IMAGING (DI) SHARED DATA MODEL

The AHS Department of Analytics collaborated with Clinical Support Services to integrate DI data from multiple information systems into a single province-wide source of information. The data are completely normalized (e.g., consistent field names, formats, definitions) and include all DI modalities (CT scans, x-rays, MRIs, ultrasounds, etc.). As a result, the DI department is now able to manage its own data and perform all analytical and reporting tasks to support clinician-driven quality improvement efforts.

One example of this is a research study looking to enhance the appropriateness of CT exam orders by emergency department physicians for minor traumatic head injuries and possible blood clots in the lung. According to DI clinical leadership, this new data capability is a powerful tool for the department to better understand its operations and how staff interact with referring clinicians and patients; it allows staff to deploy resources and serve patients more effectively.

## 5.2 SHIFT TO ZONE DECISION SUPPORT TEAMS (DST)

The South Zone piloted the use of a DST, which embeds analytics, quality improvement and finance practitioners with zone operations teams to implement and evaluate change.

Projects tackled by these teams vary in scope. For example, one DST used information provided by Analytics to plan and monitor implementation of the alcohol withdrawal policy, where providers identify patients at risk for alcohol withdrawal while in hospital to reduce and manage withdrawal symptoms.

Provision of demand data enabled another DST to engage in rigorous surgical service planning. This team is conducting a case costing review to identify additional opportunities for efficiency.

DST members have reported increased satisfaction, awareness, ease of access to, and sharing of information. Ready access to data was identified by team leads as key to keeping physicians engaged in quality improvement. The DST model has been adopted within the South Zone and is being spread to other zones.

## 5.3 APPROPRIATE USE OF ANTIPSYCHOTICS IN LONG-TERM CARE FACILITIES

This initiative, sponsored by the Addiction & Mental Health and Seniors Health SCNs, aims to ensure antipsychotic medications are only used when clinically appropriate. Analytics played a key role in developing the evaluation, designing and reporting key performance indicators, as well as collecting and analyzing data from stakeholders. Since implementation, the potentially inappropriate use of antipsychotics in long-term care facilities has decreased more than five per cent, meaning that hundreds of patients have safely been removed from these medications without any negative impacts. This work was recognized in AHS as the winner of this year's President's Excellence Award for Outstanding Achievement in Quality Improvement.

# 6. APPLYING AND SPREADING KNOWLEDGE

## 6.1 RESEARCH PRIORITIES AND IMPLEMENTATION (RPI)

The RPI department consists of strategic teams within AHS that have a system-wide mandate to enable the highest standards of research and evaluation, and to ensure that high quality knowledge is used to inform system sustainability, better practice and improved health outcomes for Albertans. RPI teams include:

- **Workforce Research and Evaluation (WRE):** Conducts joint research and evaluation projects to help design services that make better use of health care providers and create more continuity of care for patients. Two examples are:
  - **Physician Assistant (PA) Demonstration Project:** AHS is introducing PAs to improve the quality of patient care. WRE evaluated how PAs deliver care and the difference they make to patients. The results are promising and show that PAs create better continuity of care and quicker access for patients. Also, patients are highly satisfied with the care they receive from PAs.
  - **Comparative Policy Analysis:** Team-based primary health care is good for patients but it is not clear how to build strong teams. Recent WRE policy research recommends that policymakers focus on aligning different parts of the health system, finding better ways to pay teams, giving resources to help people work better in teams, and collecting better information on the effect of team-based care. These lessons are being shared across Canada.

WRE also led the development of a Research Impact Assessment Plan and key performance indicators for RPI. RPI will use the plan and indicators to review the productivity and achievements of RPI on an annual basis. It will further help to inform a broader audience about the impact of the research RPI supports.

- **Engagement, Education and Capacity (EEC):** Develops and delivers research learning opportunities with academic and health institution partners. Through the research arm of the Strategic Clinical Networks (SCNs), EEC advocates for scientific rigour, best practice and advancement of research priorities within AHS. Last year, the assistant scientific directors led the development of a research performance measurement framework to capture the research productivity of the scientific arms of the SCNs.

Key performance indicators, based on the Canadian Academy of Health Sciences framework, have already demonstrated the positive impact of research in AHS across the following domains:

- Advancing Knowledge
- Research Capacity Building
- Informing Decision-Making
- Broad Economic and Social Impacts

In order to share ideas, develop expertise, and collaborate on new strategic health care initiatives, the scientific arms of the SCNs provided competitive funding opportunities to Alberta health researchers. These Early Career Seed Funds, Early Project Seed Funds, Mini Grants, Knowledge Translation and Dissemination Awards, and Research Studentship and Trainee grants supported 20 researchers and trainees across SCNs.

The SCN's Assistant Scientific Directors led a Summer Brown Bag Series on health research methods. This collaboration between AHS, the University of Alberta and the University of Calgary reached more than 50 students, research assistants, physicians and health professionals involved in research.

- **Evaluation Services (ES):** Supports all aspects of evaluations. The work helps to inform decision-making for AHS executives, SCNs, management and service providers to improve health care practice and patient care. Last years' ES highlights:
  - Conducted 38 evaluations for AHS clients and five Primary Care Networks. The work resulted in 78 reports that will inform decisions on planning, practice improvement and patient care.
  - Provided leadership in an AHS collaborative to advance ethical responsibility and oversight for non-research projects within AHS. Planning has involved representatives across three AHS portfolios: RIA, Quality and Clinical Supports, and Programs and Services. Once implemented, the processes will ensure evaluation and quality improvement projects have the necessary supports to work within the highest ethical standards.
  - **Led the establishment of RPI business standards for research and evaluation practice including:** decision support guides for a cost-recovery and shared services business model; records retention; safeguarding evaluation and quality improvement data; and a cost estimate guide. These business standards will be adopted by RIA and beyond and help support high quality research and evaluation practices.
- **Research Facilitation (RF):** Provides consultation and support for research and innovation projects. They assist researchers in developing more successful funding and ethics proposals, and helps them navigate the AHS system from pre-submission to post-award.

RF worked in collaboration with provincial partners to refine the research study development and initiation processes within AHS (AHS Research Roadmap). This initiative improves the start-up time and enhances the quality of the research conducted within AHS. The implementation of the Roadmap will ultimately provide patients with more timely access to research opportunities.

RF was built to foster innovation by assisting the SCNs in designing and conducting high quality health services research. In the last year, the team grew to include four biostatisticians and four senior data analysts. RF team members support the SCNs and assist each network in designing and conducting high quality health services research. In 2014/15, staff supported 93 projects, 48 of which were directly endorsed by SCNs, and were authors of 42 peer-reviewed published papers.

- **Knowledge for Change:** Helps teams perform world-class research that brings patients the best care possible by providing service, research and teaching activity for health care providers, researchers and staff across Alberta.

Knowledge for Change helps the health system use research to perform better through its active involvement in service projects (more than 80 consults since its inception in May 2014). These projects are led by health care teams interested in finding better ways to plan and deliver health care within AHS. This important work touches patients and changes systems.

Knowledge for Change also changes conversations by teaching researchers, health care providers, trainees and staff how to build relevant knowledge that benefits patient health and experiences (28 sessions). Education and coaching helps teams do high quality work, and can generate important information about how people and systems improve.

- **Evidence Decision Support Program (EDSP):** Introduces new health technologies into practice in a safe, effective, and evidence-informed manner while considering operational impact factors. EDSP also engages and educates physicians, managers and leaders throughout the province in the use of research evidence for introducing new health technologies into our local context.

EDSP worked on several key provincial initiatives:

- Carried out a provincial nomination process to identify emerging practices of highest priority to address gaps in surgical services and inform a provincial approach to support new and retiring practices for provincial surgical services planning.
- Developed a provincial Robotic Assisted Surgery (RAS) re-evaluation plan to assess the clinical, financial and overall value of a robotic surgery program in AHS.
- Received funding from Alberta Innovates – Health Solutions, Knowledge to Action grant program to build capacity within the SCNs for developing skills in knowledge translation practices.

## 6.2 KNOWLEDGE MANAGEMENT (KM) ACTIVITIES

The KM department builds enterprise capacity and individual capability for evidence-informed decision-making by focusing on the pillars of effective knowledge management (people, process, technology and content). KM supports creation, sharing, and application of information and knowledge to improve performance and outcomes.

Knowledge Resource Service (KRS) – Operates 17 library sites and virtual library services that provide equitable province-wide access to quality information and knowledge resources. KRS provides evidence literacy education and evidence review in support of innovation and research. In 2014/15:

- website use, pages viewed and services requests increased 50% from the previous year
- 336 evidence literacy sessions were conducted
- 32,187 documents were delivered and 3,181 literature search requests were completed
- access to Point of Care tools; synthesized evidence guides for decision-making at the point of care (Nursing Reference Centre, Rehabilitation Reference Centre, DynaMed) was made available via the website

Clinical Project Support Service (CPSS): Provides direct and consultative project management services enterprise-wide to strengthen and accelerate clinically-oriented projects, research and innovation. In 2014/15 the CPSS team supported 24 projects including:

- **Safe Surgery Checklist (SSC):** a provincial priority to improve the quality and safety of surgical care for patients in Alberta. Led by the Surgery SCN, this multiyear project achieved 92% provincial compliance with SSC policy and established a rigorous and sustainable audit process for outcomes reporting.
- **Care after Death (CAD):** Within the Calgary Zone, the CAD team developed a comprehensive suite of processes, policies, procedures and educational resources to empower best practice in the care of the deceased patient and family, and ensured a dignified, individualized, compassionate journey through the grief process.

**Knowledge Management Practice Support & Education (KMPSE)** - Delivers targeted education and direct consultation in the use of knowledge management best practices. For example, In 2014/15, KMPSE actively supported:

- **Patient First Strategy (PFS):** critical groundwork for the PFS including a literature review and collection and analysis of data acquired from 300 representatives of 24 stakeholder groups (including patients, families, clinicians, the Aboriginal Wisdom Council, Health Advisory Councils, Children and Youth Advisory Council, and SCNs).
- **Transition of Youth to Adult Care Symposium:** a knowledge exchange event involving representatives from the Stollery Children's Hospital, adult care, Northern Alberta, and national leading pediatric sites. Symposium attendees shared expertise and knowledge about the structure and operations of youth-to-adult care transition programs in order to improve care and outcomes for Alberta's children and youth.
- **Communities of Practice (CoPs):** expansion of CoP resources including use of technology to enable virtual CoPs and establishment of a CoP specifically for people learning about, and facilitating, CoPs (e.g. Cancer Care Navigators CoP, Pediatric Social Workers CoP, Business Analyst CoP).

**Knowledge Management Infrastructure (KMI)** – Optimizes user experience with technology platforms and tools (e.g. SharePoint (SP), repositories, activity databases, etc.) to meet business needs and priorities that enable system-wide collaboration and effective information and knowledge capture, store, and share. Products developed and implemented by KMI in 2014/15 include:

- **Emergency SCN:** technology templates to facilitate knowledge creation in support of the Clinical Information System project
- **Analytics Reference Catalogue:** a virtual home for more than 3,000 resources that allows for easy find and search of content in support of data analyst business operations
- **Communities of Practice (CoPs):** a common technology platform that connects and enables individuals within CoPs to share and collaborate enterprise-wide
- **Safe Surgery Checklist (SSC):** an on-line learning/training module that supports consistent and systematic auditing of SSC compliance
- **Medical Staff Engagement in Quality:** a technology platform to assist physicians in easy find, search and share about quality initiatives

## 7. INNOVATING TO ACHIEVE SERVICE EXCELLENCE

### 7.1 PRESIDENT'S EXCELLENCE AWARD FOR OUTSTANDING ACHIEVEMENTS

The President's Excellence Awards honour and recognize the exceptional AHS staff, physicians and teams who live our AHS values and who demonstrate innovation, collaboration and patient focus. This year the winners were:

- **President's Excellence Award for Outstanding Achievements in Quality Improvement:** Appropriate Use of Antipsychotics (AUA) for Long Term Care (LTC)
- **President's Excellence Award for Outstanding Achievements in Research:** Alberta Perinatal Stroke Program (APSP)
- **President's Excellence Award for Outstanding Achievements in Innovation:** Strategic Clinical Networks (SCN)

The winners were selected from nearly 80 nominations and exemplify the highest standards in innovation, collaboration and patient-centred care.



## 7.2 PLATFORMS FOR INNOVATION

### 7.2.1 MAJOR INITIATIVES

AHS created the Major Initiatives Portfolio (MIP) as a catalyst to accelerate the organization's ability to embrace and make good use of investments in research, innovation and analytical approaches. The group's goals are to help clinical operations and provincial programs solve big problems and, in so doing, help teams become measurably better.

The MIP works in collaboration with other key health system stakeholders to improve quality and disseminate innovations. In this past fiscal year MIP focused its analytic and methodological expertise to support the Cross Cancer Institute (CCI), the Surgery SCN and Edmonton Zone's Eastwood Triple Aim team.

Research highlights:

- **Linac-MR Operational Value Modelling:** The MI team worked with experts in the radiation oncology department at the Cross Cancer Institute to forecast the operational impact of the Linac-MR, a device being developed at the CCI to improve the accuracy of radiation therapy delivery. The team built a statistical model of patient flow in the department, showing that the Linac-MR could greatly increase treatment capacity without expanding the centre's infrastructure.
- **Forecasting the Future Benefit of a Clinical Innovation:** The MI team used advanced analytical techniques to show that a set of innovative clinical protocols successfully helped patients recover from their colorectal surgery more quickly, and, in so doing, freed up costly hospital beds. The MI team presented senior decision-makers with a break-even analysis showing the fiscal gains to be expected as the protocols are implemented more broadly to benefit more Albertans.
- **Triple Aim Analysis:** The MI team helped the Edmonton Zone's Eastwood Triple Aim (TA) team measure the impact their community based interventions had on the rate of emergency department use for the 1,778 high-needs clients enrolled in the program. The work of the MI team helped shape the TA team's three-year plan for measuring the overall impact of the initiative on population health outcomes, patient experience and health care costs.

### 7.2.2 GLENROSE REHABILITATION HOSPITAL (GRH) RESEARCH AND TECHNOLOGY DEVELOPMENT TEAM

Achievements of the Research and Technology Development team at GRH in Edmonton include:

- **Industrial Research Program Award:** This year, the Innovation and Research Operations team received its second National Research Council – Industrial Research Program Award. This award increases the team's industry contacts and helps it collaborate with the private sector while contributing to the development of the province's rehabilitation technology industry.
- **Innovators Workshop:** This workshop and networking event at the GRH connected the innovation community to technology development activities and opportunities at the hospital, informed the community on ways to facilitate easier engagement with the GRH and other partnering organizations, and showcased clinical challenges at the GRH that need technological solutions.
- **Research Competition:** With the generous support of a donor to the GRH Foundation, a competition solicited proposals that might lead to improved function of persons with dementia. Drs Angela Juby and Marilyn Cree from GRH submitted the successful proposal, aiming to determine if a ketogenic diet – one that includes a product from refined coconut oil – improves cognition, behaviour and function in people with Alzheimer's disease. This award of \$125,000 marks the highest single award that the foundation and the Glenrose have made to date.

