

2016/17

Health Research in Alberta Health Services



Acknowledgment

This work would not have been possible without the advice and support of the following people:

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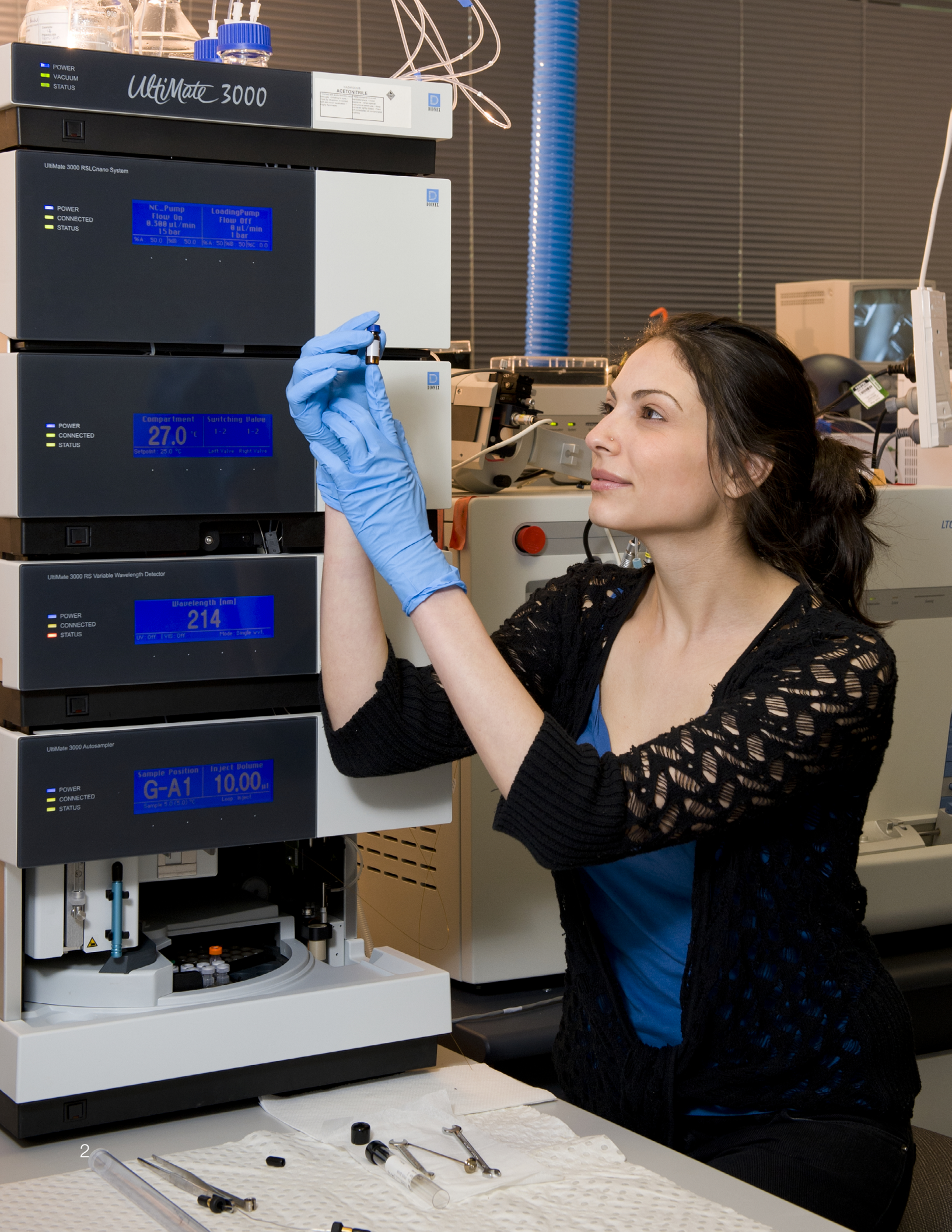
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UltiMate 3000

ACETONITRILE

POWER
VACUUM
STATUS

UltiMate 3000 RSLCnano System

POWER
CONNECTED
STATUS

NC_Pump	Flow On	0.300 µl/min	15 bar
LeadingPump	Flow Off	0 µl/min	1 bar
WA	50.0	50.0	50.0
WA	50.0	50.0	50.0

UltiMate 3000 RS Variable Wavelength Detector

POWER
CONNECTED
STATUS

Compartment	Switching Valve
27.0 °C	1-2 1-2
Setpoint: 25.0 °C	Left Valve Right Valve

UltiMate 3000 RS Variable Wavelength Detector

POWER
CONNECTED
STATUS

Wavelength (nm)
214
UV Off IVE Off

UltiMate 3000 Autosampler

POWER
CONNECTED
STATUS

Sample Position	Inject Volume
G-A1	10.00 µl
Sample: 4.123.01°C	Loop: Inject

Message from the President and CEO and the Vice President Research, Innovation and Analytics

It is with pride and excitement that we reflect on this year’s achievements in research and innovation at Alberta Health Services.

Together with staff, physicians, volunteers and academic partners, we are fostering an environment of creativity that is bringing continuing improvements to healthcare – and more importantly, to the lives of our patients.

We understand the value of creating, sharing and applying knowledge and evidence. It’s how we

learn as individuals and deliver better care to the Albertans we serve. Alberta Health Services is, and will continue to be, a learning organization.

Whether knowledge generation comes from front-line healthcare providers, our Strategic Clinical Networks, our People, Legal and Privacy colleagues, or our university-affiliated clinician-scientists, the fruits of patient-oriented research and innovation improve health outcomes for all of us. By leveraging the strength of a single unified health system, we

are able to spread these improvements throughout the province.

We invite you to take a moment to review some of the achievements in innovation and research made this past year by passionate individuals coming together for a common cause—they are well worth celebrating.

Dr. Verna Yiu
President & CEO

Dr. Kathryn Todd
Vice President Research,
Innovation and Analytics



Ingrid K.
RPN

Introduction

Alberta Health Services is Canada's largest fully integrated provincewide health system. Our staff, physicians and volunteers are responsible for delivering health services to more than 4.2 million people living in Alberta, as well as to some residents of Saskatchewan, B.C. and the Northwest Territories.

As a provincewide integrated healthcare system, we can share information, work seamlessly and provide standardized care to Albertans. Every interaction with Albertans—whether as patients, residents,

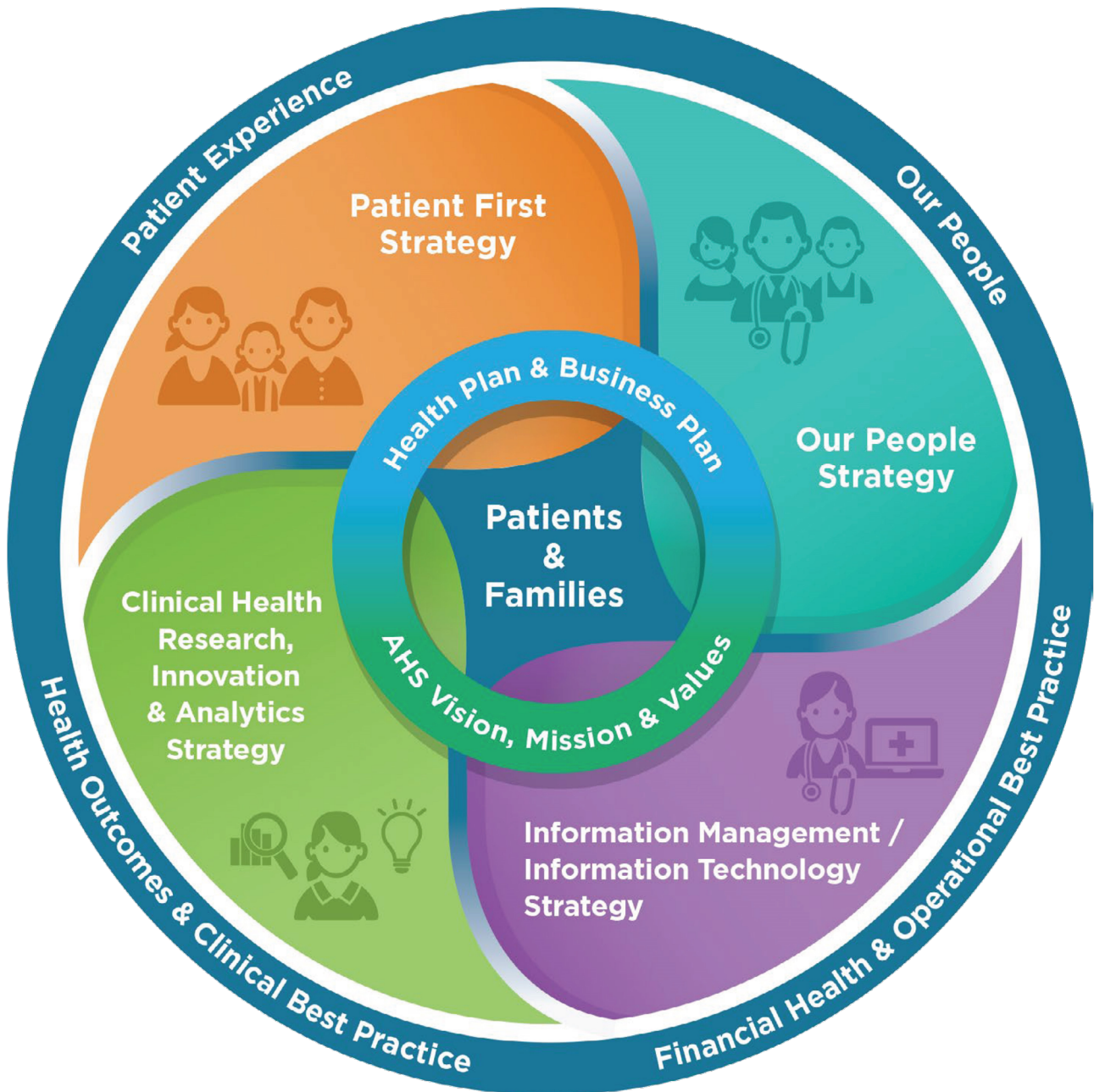
family members or members of the community—offers an opportunity to learn.

As a learning organization, AHS continually seeks ways to help our people create, acquire and use knowledge to deliver the best care to Albertans. Research – the ability to systematically study a problem – enables our healthcare teams to create the knowledge they need to achieve better health outcomes and improve the performance of the health system.

The AHS annual

report on health research highlights the achievements of health research activities at AHS in the fiscal year 2016/17. These research activities align with the AHS Strategy for Clinical Health Research, Innovation and Analytics 2015-2020. This Strategy outlines five strategic directions to better support our patients, healthcare professionals and partners in solving healthcare issues of importance to Albertans (see Page 8). AHS adopted the five priorities to further guide our actions and to deliver better care to Albertans, today and in the future.

AHS' Four foundational strategies





Innovation and Research Strategy

is just one of our four foundational strategies. Using the AHS Health Plan and Business Plan as a road map, AHS adopted these strategies to shape our actions to move the health system forward. The four strategies provide a coordinated approach. By working together, we can use our resources effectively and provide a greater collective impact on our goals.



Information Management/ Information Technology Strategy

aims to make the right information available to the right people at the right time across the health system, so that healthcare providers can rely on data to make meaningful decisions to improve healthcare for Albertans. Clinicians and patients across the province will have access to specific information about healthcare delivery, while researchers and healthcare leaders can use data to learn more about the system and make significant decisions.



Our People Strategy

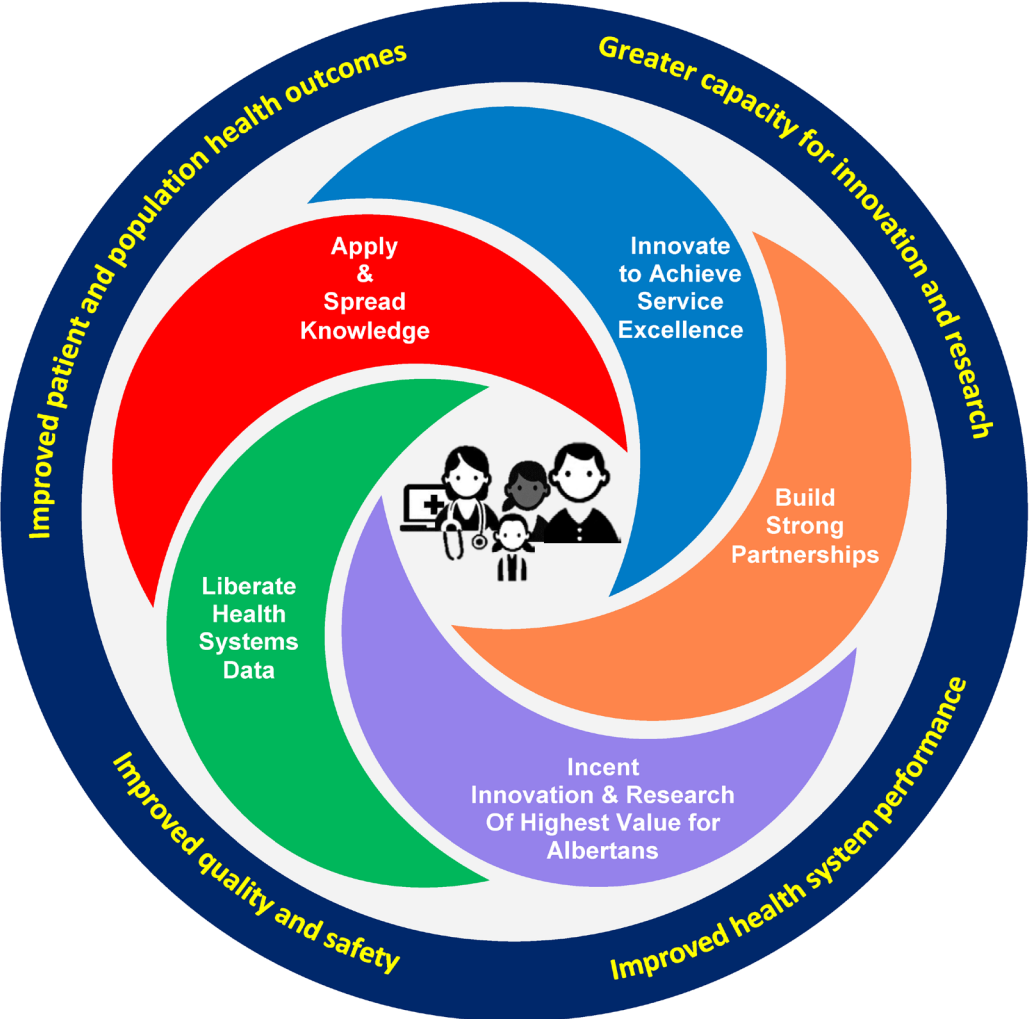
is about creating workplaces where people are safe, healthy and valued. Our People Strategy is putting needed supports in place for AHS' leaders and teams to improve workforce engagement and workplace health and safety. In healthcare, research shows the patient experience improves and adverse patient events decrease when workers are more engaged. Supporting our workforce to be engaged and knowledgeable is essential for creating research evidence, sharing knowledge and encouraging innovation.



Patient First Strategy

improves the patient experience by fully embracing a culture that places patients and families at the centre of all healthcare activities, decisions and teams. To ensure Albertans are true partners in their healthcare and support research that is relevant and appropriate to their needs, AHS will involve patients and the public in its research and innovation activities.

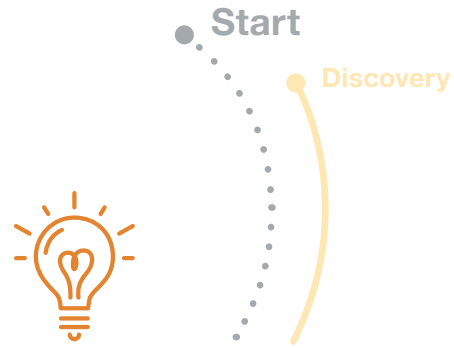
Our priorities and outcomes



The five priorities are interrelated and actively involve patients, staff and many partners in working together to improve health in Alberta. This report profiles the work and achievements of the AHS research community. It includes work undertaken within AHS, as well as between AHS and our valued research partners in the province. Stories throughout the report show the impact of research on our healthcare system and on Albertans.



Research journey



① Identify opportunities for better health outcomes

Whether it's a drug, tool or process, research starts with an idea to **make healthcare better** for Albertans.



② Plan the study

We create a team best suited to address the opportunity for improvement.

Next, we find funding options to carry out the study. Approval and safety processes are then put in place to protect and inform study participants.



③ Carry out the research

At this stage, **study participants are engaged** and the team carries out the research.

Research is the path to better patient experiences and health outcomes.

AHS is continually generating evidence through research, innovation and quality improvement to provide better healthcare and create a high-performing health system.

④ Assess if it works



We assess the study results and share our findings.

If it worked, we look at moving these findings into practice or we continue to build on our findings, still looking for ways to improve.



⑤ Select what is best

We select the best, most clinically relevant learnings and innovations from our research and tailor them to **address local needs before moving them into practice.**

Implementation

⑥ Implement the change and build on our findings

Once we've tailored our findings, **it's time to implement them** to improve the way AHS delivers healthcare.



Repeat

Patient engagement: Experiences of prenatal and postpartum patients

To get insight from patients and families on the performance of the Maternal, Newborn, Child and Youth Strategic Clinical Network and Alberta's health system, several meetings were held in fall 2016 with five groups of patient volunteers from prenatal classes

and postpartum classes, and patient/family groups to discuss their experiences. This information was qualitatively analyzed and will be used to inform discussions on indicators that truly capture important metrics for patients and families.

Contributors:

Alberta Children's Hospital Research Institute; Alberta Health Services; Stollery Children's Hospital Foundation

Read about: [Study looks at benefits of early exoskeleton use](#)

Community engagement to improve patient care

In the first year of the Canadian Institutes of Health Research Late Life Issues Team Grant, the Critical Care Strategic Clinical Network focused on community engagement. In the fall, they brought together local researchers, stakeholders, community members, volunteers, and patient and family advisors to collectively launch their forum. This priority-setting initiative solidified the commitment to patient-oriented research and refined the future direction of the research program. In the spring, a Café Scientifique event drew upon the expert perspectives of

former patients and their caregivers. Cafés Scientifiques are forums for conversation between the public and scientists. Typically, a panel of scientists presents topical research to a public audience, followed by questions and answers. This Café was different. The patients and family members were the experts. The doctors, nurses, healthcare administrators and scientists were the audience. These events provided opportunities to share healthcare experiences and to develop ideas for improving patient care.

Contributors:

Alberta Health Services

Person-centred care: What matters to Albertans

The Methods Hub hosted the 2017 Forum on Person-Centred Care: What Matters to Albertans. The goal of this forum was to learn about what is happening in Alberta to move person-centred care forward and provide opportunities to develop meaningful connections between over 100 healthcare providers, patients and families, community members, patient groups and researchers. The forum aimed to begin a conversation about how to work collaboratively towards person-centred care, and ensure that healthcare in Alberta reflects what matters most to Albertans. The forum included several roundtable discussions leading to recommendations around supporting family and patient-centred care at AHS.



Contributors:

Alberta Health Services; Ethno-Cultural Council of Calgary; IMAGINE – Citizens Collaborating for Health; O’Brien Institute for Public Health; PaCER Innovates – Patient and Community Engagement Research; University of Calgary

Learn about person-centred care initiatives in Alberta

Hear from patients, families and community members engaged in person-centred care activities and research

Share what matters to Albertans with respect to their care

EDGE Intelligent research management

EDGE is the research management tool adopted by AHS Provincial Research Administration (PRA) to manage, track and report on the department's various administrative processes. Using the EDGE tool, PRA is able to monitor and track research requests for AHS resources, and to accurately report work volumes and processing time. The data collected in EDGE will allow PRA to continually improve the efficiency of administrative processes, but will also allow AHS to understand the resource impact and support provided to health research projects.

For the first time since the creation of AHS, EDGE allowed PRA to manage the many resource requests, with over 1,100 reviews in the first year of structured processing of data. Armed with a better understanding of research volume, resource impact and workflow timelines, PRA is working with Alberta's research ethics boards within Alberta and the research administration teams at our partner institutions (University of Alberta and University of Calgary) to develop a coordinated, integrated and efficient approach to meet the resource demands of health research studies.



1,903
approved
research ethics
board requests for
access to patients
and AHS
resources

Contributors:

Alberta Health Services; University of Alberta; University of Calgary

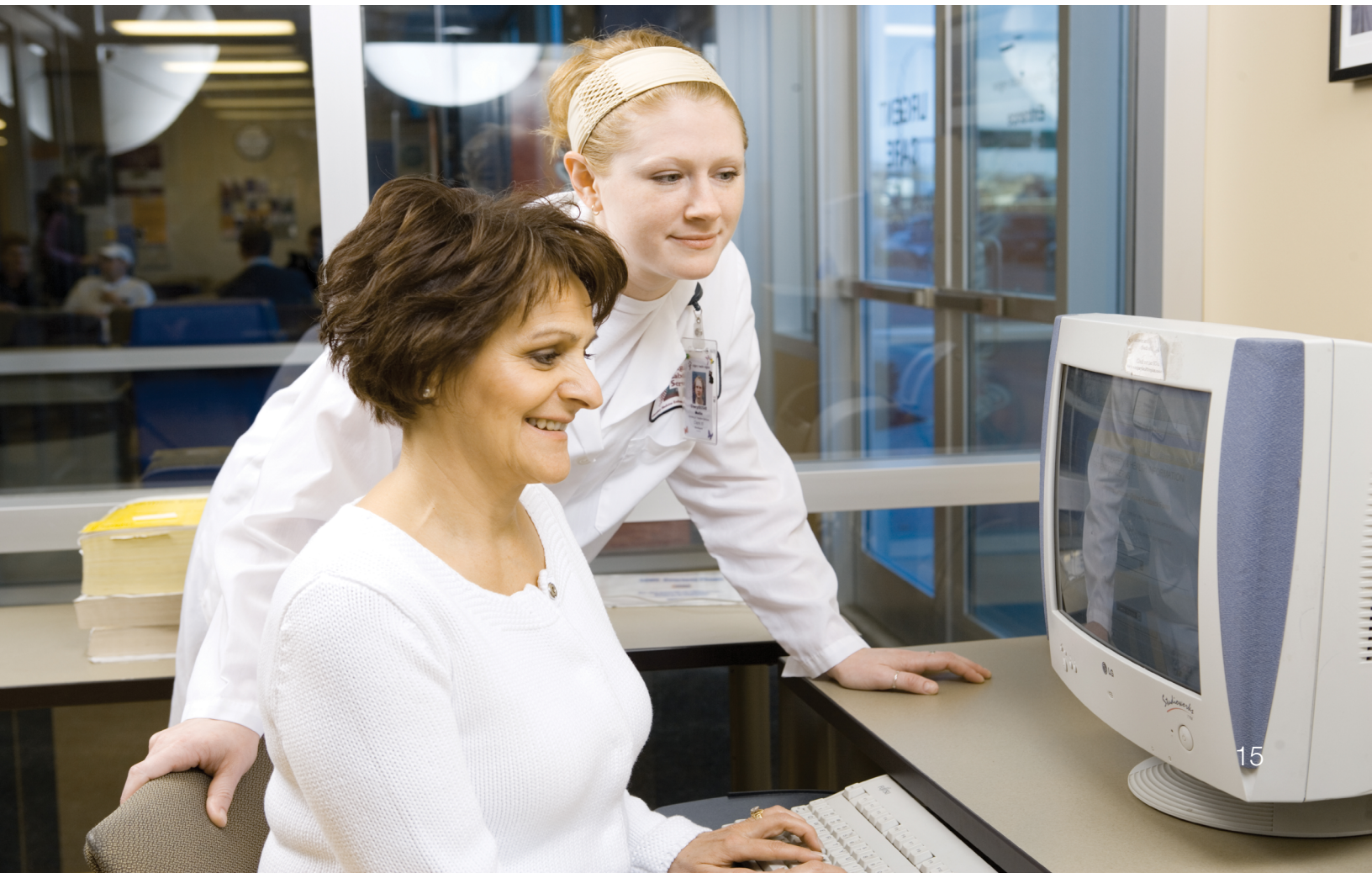
Redesignating ethics approval boards

The Government of Alberta redesignated the Conjoint Health Research Ethics Board (University of Calgary), Health Research Ethics Board (University of Alberta) and the Health Research Ethics Board of Alberta (HREBA, Alberta Innovates) to review studies involving health information. Researchers collecting, using and disclosing health information from AHS must obtain research ethics approval from the respective board. Redesignation of these boards helps ensure the privacy and protection of health information of the research participants. Cancer-related studies in the province now fall under one expert oncology board, the HREBA cancer committee. These studies were formerly reviewed by different ethics boards. Centralizing the reviews minimizes redundancy, promotes consistency, and saves time and costs.

Minimize redundancy, promote consistency, save time and costs

Contributors:

Alberta Health; Alberta Health Services; Alberta Economic Development and Trade; Alberta Innovates; College of Physicians and Surgeons of Alberta; Covenant Health; University of Alberta; University of Calgary



Surgical research, engagement and development (SEED) grant program

In 2016-17, the Surgery Strategic Clinical Network continued the SEED Grant Program. This program engaged scientists and clinician researchers to collaborate with the network to devise research proposals to help identify surgical research priorities in the province. Over the two program calls (April 2015 and March 2016), 67 proposals were developed and over \$80,000 of funding was provided to support pilot investigations with the potential

to significantly improve the quality of patient care. Research agreements were executed with both the University of Alberta and the University of Calgary to support facilitation of research from this program. In May 2016, a community of practice and a series of grant writing workshops were also launched to support junior investigators and new researchers.

Contributors:

Alberta Health Services; University of Alberta; University of Calgary

The impact of child abuse on the developing brain

This project studies the impact of child abuse on the developing brain. The goal is to use a scientific approach to understand which interventions work best to mitigate the impact of child abuse, to compare the impact of childhood sexual abuse to that of other forms of childhood trauma, and to understand why some children are more resilient than others. The study will include MRI scans to determine differences in structure and

chemistry between participants who have experienced child abuse and those who have not. Researchers will also take saliva samples to analyze DNA, which could indicate epigenetic changes caused by environmental influences such as stress. The planned longitudinal study will be one of the most comprehensive studies of child abuse victims ever conducted.

Contributors:

Alberta Health Services; Hotchkiss Brain Institute; Sheldon Kennedy Child Advocacy Centre; The Mathison Centre for Mental Health Research and Education

Research intake protocol for Alberta Bone and Joint Health Institute

The Bone and Joint Health Strategic Clinical Network provided expert consultation to the Alberta Bone and Joint Health Institute (ABJHI) in the development of a research intake protocol. This protocol provides a streamlined process to more efficiently respond to clinician-researcher requests related to the rich data repository at ABJHI, through the collaborative efforts of the

BJH SCN, ABJHI and Alberta's orthopedic surgeons. The [protocol for research requests](#) was made available in April 2017 and a review committee was established, with the BJH SCN as one of the committee members. From April to May 2017, 23 research requests were received. The initial response to this protocol has been very positive.

Contributors:

Alberta Bone & Joint Health Institute; Alberta Health Services

Read about: [Alberta Children's Hospital offers new procedure to ease pressure of hydrocephalus](#)

Identify the drug that alleviates opioid withdrawal in rodents

Neuroscientist Tuan Trang, PhD identified an important target in the spinal cord that is responsible for producing opioid withdrawal symptoms in rats and mice. He then discovered that an existing anti-gout medication is effective in reducing the severity of withdrawal symptoms. The study was published January 30, 2017, in Nature Medicine. The target, called pannexin-1, is located throughout the body, including in the brain and spinal cord. The researchers

tested an existing drug—in this case an anti-gout medication called probenecid—known to have non-selective pannexin-1 blocking effects. The drug is Health Canada approved, is relatively inexpensive and has few side effects. Importantly, the researchers also demonstrated that the drug did not affect the ability of the opioid to relieve pain. With such encouraging preclinical results, the researchers are now designing a clinical trial with the Calgary Pain Clinic.

Contributors:

Alberta Health Services; Hotchkiss Brain Institute

Aging in place innovation sandbox

Initial projects are focused on:

- Validity of measurements of home monitoring technologies
- Using visual analytics to evaluate activities of daily living
- Applications of speech recognition for aging in place
- Using digital tools to enhance patient-centred care
- Developing new technology for portable hydration monitoring

Contributors:

Alberta Health Services; University of Calgary

**Developing
and validating
innovations that
meet the needs
of older
adults**

Read about: [Cross Cancer research spurs dramatic improvement](#)

Research investment by Alberta's Tomorrow Project

Alberta's Tomorrow Project is investing \$3 million in eight projects to advance knowledge in cancer, chronic disease risk and the early detection of lung cancer. These projects were approved after June 2016, when ATP implemented procedures to facilitate researchers' access to its databases and biospecimen repository.

Contributors:

Alberta Cancer Foundation; Alberta Health; Alberta Health Services; Alberta Innovates; Canadian Partnership Against Cancer

**Investing
\$3M in
eight projects to
advance knowledge
in cancer and
chronic disease
risk**

Health outcomes improvement fund

The research by the Health Outcomes Improvement Fund is aimed at improving the health outcomes of Alberta's mothers, infants and children. Five large and 14 small grants were awarded in February 2017. The large grants focus on Maternal, Newborn, Child and Youth Strategic Clinical Network priority areas and include maternal mental health, pediatric concussion, telehealth in regional centres, performance indicators in acute care and transition from pediatric to adult chronic care.

Contributor:

Alberta Health Services



**Investing
\$3.1M over
three years to
support health
research in maternal,
newborn, child and
youth priority
areas**

Northern Alberta clinical trials and research centre

The centre is investing \$1.76 million in research in priority areas, including biological safety, bio-statistical modelling, protocol development, research data management, medical records access, Health Canada clinical trial applications, investigator and researcher training, as well as Summer Student Support and Clinical Investigator programs. In addition, the centre provided legal review and administration for 612 clinical studies.

Contributors:

Alberta Health Services; Northern Alberta Clinical Trials and Research Centre; University of Alberta



**Investing
\$1.76M in
research priority
areas, including
biological safety
and bio-statistical
modelling**

Using precision medicine for the most appropriate open heart surgery technique

The Stephenson Cardiac Imaging Centre performs some 3,800 cardiac magnetic resonance studies per year. A research registry—the Cardiovascular Imaging Registry of Calgary—has enrolled more than 6,000 patients in the past two years. Emerging studies have identified precision medicine targets associated with adverse outcomes in patients with structural heart disease. These findings will have implications for healthcare

professionals who implant cardiac electronic devices. In addition, the researchers are working to understand blood flow in the aorta of patients with bicuspid aortic stenosis. These four-dimensional flow patterns—coupled with histopathology taken at the time of operation—will allow surgeons to better plan the most appropriate open heart surgery technique.

Contributors:

Alberta Health Services; Libin Cardiovascular Institute of Alberta; National Institutes of Health; Stephenson Cardiac Imaging Centre; University of Calgary

Read about: [High-tech heart-valve fix heals seniors who are too weak for open-heart surgery](#)

Using technology to improve outcomes

Two studies are being conducted at the Peter Loughheed Hospital at the Limb Preservation Clinic. Both of these studies use products developed in Alberta.

The Orpyx study

involves insoles in shoes that alert the wearer when pressure is occurring on the foot, allowing for adjustments to decrease the areas of pressure and reducing risks and complications to the foot.

Contributors:

Alberta Health Services; Alberta Innovates; Exciton Technologies Inc.; Orpyx

The Exciton study

involves a new type of wound dressing that has shown to be effective in treating wound infection and is cost-effective. The dressing has government approval and is now available for use.

A close-up photograph of a baby lying on its stomach, looking up and to the right. The baby is wearing a white long-sleeved shirt and light-colored pants. The background is softly blurred, showing what appears to be a person's legs in khaki pants.

Carry out the research

\$8-million grant brings precision medicine to children with arthritis

The study will develop novel tests of specific immune and genetic markers and determine individualized therapy for children living with arthritis. The goal of the project is to treat children more rapidly, efficiently and with fewer side effects. So far, the researchers have discovered five distinct subtypes of the disease, which activate particular proteins in the body that can be detected through an inexpensive biomarker kit.

Contributors:

Alberta Health Services; Canadian Institutes of Health Research; McCaig Institute for Bone and Joint Health; University of Calgary

The strategies targeting osteoporosis to prevent recurrent fractures

Osteoporosis results in low trauma fragility fractures (broken bones), impairs quality of life, and can lead to loss of independence, and even death. It affects 250,000 Albertans: 25% of women and 12% of men over the age of 50. There are 22,000 osteoporotic fractures and 2,400 hip fractures each year in Alberta. The strategies targeting osteoporosis to prevent recurrent fractures (STOP Fractures) study team is generating evidence to improve the detection and treatment of

osteoporosis. This includes assessing the risk of osteoporosis in patients over 50 who have fractured a bone, investigating bone quality through mineral-density testing and treating bone health where appropriate. This research study continues to collect arm's-length evaluative data on two provincial secondary fracture prevention initiatives. The findings have been integrated into the decision-making process to improve how these programs are delivered to Albertans.

Contributors:

Alberta Bone and Joint Health Institute; Alberta Health Services; Alberta Innovates; University of Alberta; University of Calgary

Childhood immunization in Indigenous communities

The Cancer Strategic Clinical Network collaborates in a health services project funded by the Canadian Institutes of Health Research that provides a complete and accurate measurement of immunization coverage in children in two Alberta First Nations communities, and identifies

the barriers and supports to childhood immunizations in these communities. This project provides information to guide decision-makers to improve immunization access and uptake by developing culturally appropriate solutions.

Contributors:

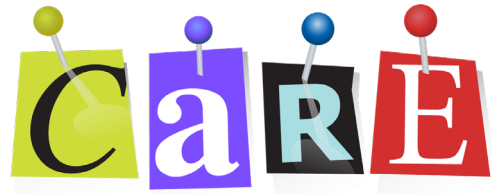
Alberta Health; Alberta Health Services; Canadian Institutes of Health Research; Alberta First Nations Information Governance Centre; University of Alberta

Carry out the research

CaRE research project

The CaRE research project is investigating the use of technology to support caregivers of people with dementia. An online [caregiver support website](#) and a related application for use on smartphones and tablets place practical evidence-informed supports and resources at the fingertips of caregivers of people with dementia.

These resources will alleviate the burden placed on caregivers and improve their quality of life. The support application is currently being evaluated in an online randomized controlled trial, which caregivers can join through the website.



Contributors:

Alberta Health Services; Alzheimer Society – Alberta and Northwest Territories; Canadian Institutes of Health Research

Read about: [Antipsychotic toolkit now available nationwide](#)

Writing intervention therapy technique to help pregnant women manage stress

Following the Fort McMurray fires of 2016, medical researcher David Olson developed a writing intervention therapy technique to help women who were pregnant during the evacuation to manage and lower their stress, as stress puts their children at risk for negative birth outcomes. Staff at the Women

and Children's Health Research Institute rapidly responded to Olson's request for support and helped push the project forward. Given the nature of the study, many people and resources had to come together quickly in order to respond at the right time to help with the long-term effects of the wildfires.

Contributors:

Alberta Health; Alberta Health Services; Alberta Innovates; Canadian Red Cross; Stollery Children's Hospital Foundation; Women and Children's Health Research Institute



Read about: [Not wearing a sling can speed up patients' return to mobility](#)

Studying cancer causes 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. The department held \$3.29 million in external grant funding, and CEPR scientists published 57 papers in scientific journals and had 25 oral and poster presentations at scientific conferences.

Contributors:

Alberta Health Services; Alberta Cancer Foundation; Cancer Epidemiology and Prevention Research; Cross Cancer Institute; University of Alberta; University of Calgary

\$3.29M
in funding,
publishing 57
scientific papers
and having 25
oral and poster
presentations

Appropriateness and choosing wisely

A pilot project to reduce the use of routine electrocardiograms in various in-patient areas at the Foothills Medical Centre was completed. Eliminating routine ECGs from order sets and creating education around the utility of testing has averted some 10,000 ECGs per year in the Calgary region. This has resulted in no growth or a slight decline in the 240,000 tests performed per year. The group will expand this project to the other adult sites. The Libin Cardiovascular Institute has also begun three distinct research projects that will evaluate the use of non-invasive cardiac imaging in patients with myocardial infarctions.



Contributors:

Alberta Health Services; Canadian Institutes of Health Research; Libin Cardiovascular Institute of Alberta

Alberta open-access cancer research biobank

The Alberta Cancer Research Biobank (ACRB) provides specimens to researchers who study cancer prevention, prognosis and treatment. The ACRB also supports the collection and storage of samples for independent Albertan research groups, and offers logistics, environmental monitoring and inventory management for over two million aliquots of human biospecimens for clients.

Contributors:

Alberta Health Services; Alberta Cancer Research Biobank; Alberta Cancer Foundation; Canadian Breast Cancer Foundation

Collection of samples from 40 types of cancer donated by over 26,000 participants to assist researchers in studying cancer

Measuring body fat using BMI alone may miss serious health problems

A McCaig Institute study found that individuals between the ages of 40 and 69 who were classified as having normal BMI actually had a greater than 50% chance of being reclassified as overweight or obese when body fat accumulated in specific locations of the body was measured. These people may be at risk for obesity-linked health problems, such as arthritis, cancer, diabetes and heart disease. However, based on their BMI classification, they would not be identified as such, and they

might miss health strategies to avert life-threatening health problems. The problem may affect almost one-third of middle-aged Canadians. Women have a higher risk of a missed diagnosis. The findings are published in the Canadian Journal of Public Health. The publication highlights the need for developing and implementing new strategies to accurately measure body composition in primary care settings to identify those who can use preventive strategies.

Contributors:

Alberta Health Services; McCaig Institute for Bone and Joint Health

Read about: [Calgary man first in world to undergo gene therapy for inherited Fabry disease](#)

Elder-friendly approaches to the surgical environment (EASE)

The EASE study has successfully completed its baseline data collection and intervention phase. Data to date have resulted in three key publications that have been used to share early findings with clinicians and researchers interested in making surgical recovery more elder-friendly. The major findings from the study are expected in

the coming months, and we anticipate that routine geriatric consultation and joint care of older acute surgical patients will be associated with improved health outcomes following surgery. The elder-friendly changes to care are also anticipated to result in better patient satisfaction with care and improvements in patient quality of life.

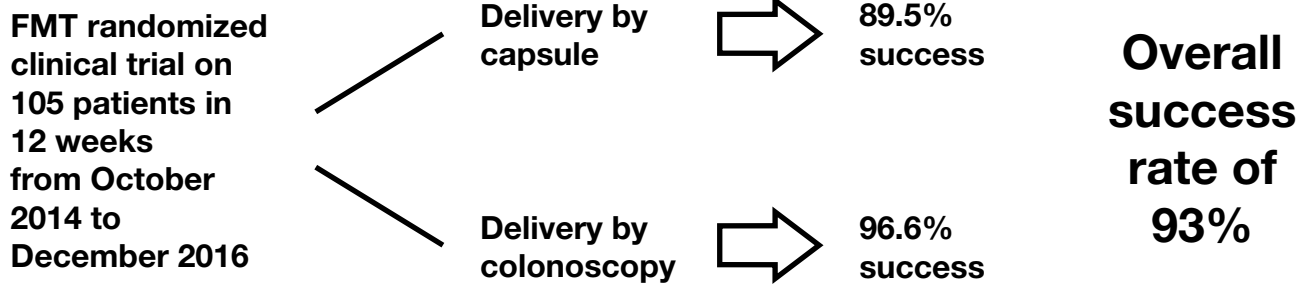
Contributors:

Alberta Innovates; Alberta Health Services

Fecal microbiota transplantation for treatment of recurrent clostridium difficile infection

Clostridium difficile infection (CDI) has increased in incidence, severity and mortality in the past decade. Even with antibiotic therapy, about 20-30% of CDI patients will experience a recurrence of the infection. Fecal microbiota transplantation (FMT) has

become an effective treatment for recurrent CDI. Since 2013, the FMT team in Alberta Health Services has treated more than 600 Albertans with an overall treatment success rate of 93%.



FMT treatment delivered by capsule is successful, safe, cost-effective and preferred by patients

Outstanding achievement in innovation and research excellence



President's Excellence Awards

Contributor:

Alberta Health Services

Implementing neuromuscular training program in youth soccer

The results of a randomized controlled trial study by the McCaig Institute has shown that implementing a neuromuscular training program in youth soccer as a group could result in a 38% reduction in injury rate and can cut healthcare costs by 43% or \$2.7 million in one season of soccer. Researchers have started to work very closely with

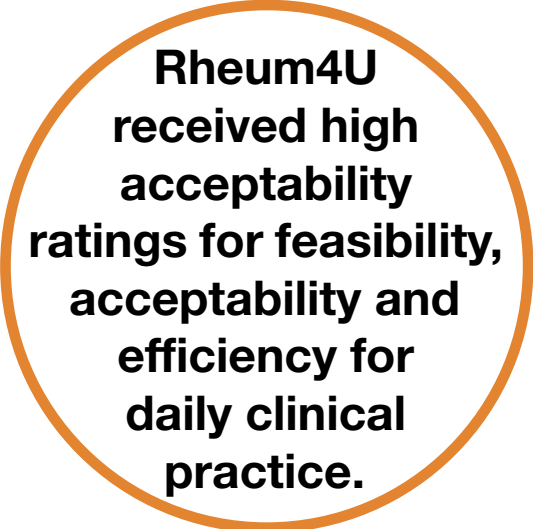
community partners, local, national and international soccer associations, and educators in order to create a way to best roll out and evaluate neuromuscular training programs. The ultimate goal of researchers is to reduce the risk of injury in youth sport and recreation by 20% by 2020.

Contributors:

Alberta Health Services; Alberta Innovates; McCaig Institute for Bone and Joint Health; Fédération Internationale de Football Association

Developing Rheum4U: A web-based tool to capture patient health data

Rheum4U captures patients' health data, including their reported outcomes. At the first phase of a multi-phase project, Rheum4U was piloted in two adult rheumatology clinics to evaluate its feasibility, acceptability and efficiency for patients, physicians and allied health professionals in daily clinical practice. Rheum4U has received high acceptability ratings. Researchers are now reviewing the feedback to improve the tool and adopt it into clinic processes.



**Rheum4U
received high
acceptability
ratings for feasibility,
acceptability and
efficiency for
daily clinical
practice.**

Contributors:

Alberta Health Services; McCaig Institute for Bone and Joint Health; University of Calgary

Select what is best

ICU transfer tool

Research shows that transitions of care between the intensive care unit and other hospital in-patient units are complex and result in vulnerable moments in the care of our sickest patients. With input from clinicians, quality improvement, nurses, researchers and IT professionals, the Critical Care Strategic Clinical Network

multidisciplinary team is conducting research to develop and pilot test an electronic transfer tool. The goal is to improve the efficiency, timeliness and quality of information in the ICU transfer. This tool will be implemented, evaluated and refined, resulting in a customizable provincial ICU transfer tool.

Contributor:

Alberta Health Services

Read about: [A lifeline for Indigenous mothers](#)

Towards building the world's first image guided radiotherapy system

The image guided radiotherapy (IGRT) project is developing the world's first IGRT system using MR guidance. The project is led by Dr. Gino Fallone and Dr. Brad Murray. These researchers at the department of Medical Physics at the Cross Cancer Institute have built a prototype medical linear accelerator and coupled it to a magnetic resonance imaging system (MR or MRI) for real-time guidance of radiotherapy treatments.

**Researchers
are building a
prototype medical
linear accelerator
and coupling it to an
MRI system for real-
time guidance of
radiotherapy
treatments.**

Contributors:

Alberta Health Services; Cancer Research Institute of Northern Alberta; Cross Cancer Institute; University of Alberta

Stem cells and the treatment of osteoarthritis

Through hosting a workshop, attended by patients, clinicians, researchers and decision-makers, the Bone and Joint Health Strategic Clinical Network generated a knowledge synthesis in the form of a [white paper](#) on the emerging issue of stem cells and their application in the treatment of osteoarthritis. Some physicians have put the white paper in their waiting rooms for patients to view. It is now being compiled for a peer-review submission, and is also the starting point for several communication tools that are

currently being developed by the Stem Cell Communication Implementation Committee. A world-renowned expert in this field, Dr. Frank Barry, commented that the white paper is *a powerful and effective statement which addresses the issues that are most prevalent and unresolved in the field*. Currently, a small group is working with the College of Physicians and Surgeons to develop guidelines and monitoring mechanisms. At this point, the focus of the project is on safety and efficacy.

Contributors:

Alberta Health Services; McCaig Institute for Bone and Joint Health; University of Alberta; University of Calgary

Read about: [Cooling device protects brains of newborns at risk during transport](#)

Improve cancer and chronic disease prevention and screening

The assistant scientific director of the Cancer Strategic Clinical Network served as chair of the advisory committee of the BETTER WISE Project, as the Cancer SCN has helped implement an innovative intervention aimed at improving cancer and chronic disease prevention and screening (CCDPS) in the primary care setting. This intervention proactively targets patients to attend an individual CCDPS intervention provided by a healthcare professional, the Prevention Practitioner.



Contributors:

Alberta Innovates; Alberta Health Services; University of Alberta

Select what is best



Implement the change and build on our findings

Calgary Allied Mobile Palliative Program

Identifying that homeless people, or those living with addictions or mental health challenges often meet the end of their lives on the street or under a bridge, the Calgary Allied Mobile Palliative Program (CAMPP) was initiated to send a palliative care physician and a nurse to where the need is. CAMPP intends to provide, for those facing their last days of life, a death without pain, and with dignity in a warm, safe place.

Contributors:

Alberta Health Services; O'Brien Institute of Public Health

Connect to care intervention

This project intends to improve the transitions of care for people with complex issues living in poverty. It will improve linkages between acute care and community resources in the health, housing, social services and justice sectors. Two nurses and four health navigators provide direct, intensive case management support for these patients, who are referred to the program by acute care or community partners.

Contributors:

Alberta Health Services; Alpha House; Calgary Urban Project Society Health Education Housing; University of Calgary

Read about: [AHS hospitals make national top-research list](#)



Implement the change and build on our findings

Choosing Wisely campaign

The Emergency Strategic Clinical Network has been engaged in the Choosing Wisely campaign in emergency medicine. The ESCN was involved at a national level with generating the top-10 list of tests, treatments and procedures to avoid in emergency medicine. The ESCN has also been involved at the provincial and local levels with implementing strategies to improve the efficiency of care delivery. The goal is to improve the delivery of evidence-based care through avoiding unnecessary tests (e.g., CT scans for benign headaches and minor trauma; chest radiographs for asthma), improve the safety of care and improve stewardship of scarce healthcare resources.



Contributors:

Alberta Health Services

Read about: [Telehealth connects patients with specialists across Alberta](#)

Family advisors with critical care

Critically ill and trauma patients face many life-changing challenges, and navigating treatment can feel overwhelming for families in an already stressful situation. Family members of critically ill patients face shock, disbelief and disorientation. In this project, the focus is on training patients and family

members to become family advisors with critical care, provincially and in the Calgary zone. The advisors work on teams striving to ensure the environment in ICU is the best it can be for everyone involved—patients, families and ICU providers.

Contributors:

Alberta Health Services; O'Brien Institute of Public Health; PaCER Innovates – Patient and Community Engagement Research; University of Calgary

Implement the change and build on our findings

Improve provincial stroke outcomes through rapid treatment of acute stroke with alteplase (tPA)



Reduced time from arrival at hospital to the start of treatment from 68 to 36 Minutes by February 2017

- The treatment resulted in no or minor disability for patients.
- All 17 stroke centres in Alberta participated.
- Each site had an interdisciplinary team.
- Door to needle (DTN) time reduced in all hospital types.
- The treatment saved considerable cost to the health system.



Endovascular reperfusion Alberta initiative

Endovascular therapy (EVT) has emerged as the dominant strategy to treat acute stroke, dramatically reducing death, disability and long-term care costs. The Endovascular

Reperfusion Alberta (ERA) initiative is launching to improve access to EVT across the province for eligible patients with acute ischemic stroke.

ERA will:

Implement a pre-hospital transportation and communication triage algorithm

Route EVT eligible patients, either directly to a Comprehensive Stroke Centre (CSC) or by way of a Primary Stroke Centre (PSC)

Facilitate system changes in the organization and coordination of stroke care in the province

Improve access to EVT for all eligible acute ischemic stroke patients from across Alberta to align with recommended standards of care and to improve patient outcomes

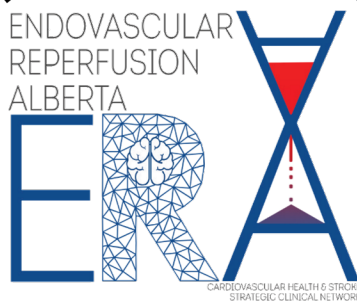
Read about: [Alberta Stroke Care Among Fastest in World](#)

Implement the change and build on our findings

Approximately 400 patients per year with acute ischemic stroke in Alberta would be eligible for this therapy (in 2015, approximately 200 Albertans received EVT).

Acute ischemic stroke inflicts sizable morbidity and mortality on approximately 5,000 Albertans per year, and the cumulative financial cost of stroke in the first year is estimated at \$370M.

For patients who received EVT vs. standard care in the ESCAPE Trial: Overall positive outcomes increased from 30% to 55%. The overall mortality rate was reduced from 2 in 10 patients, for standard treatment of care, to 1 in 10 patients—a 50% reduction.



ERA is a provincial strategy for increasing access to Endovascular Therapy (EVT) for patients with acute ischemic stroke.

For patients with large vessel occlusion, intravenous thrombolytic therapy with tissue plasminogen activator (tPA) is the most common treatment in Alberta for acute ischemic stroke. However, EVT provides much greater rates of revascularization and good outcomes when compared to IV tPA alone.

ERA has worked with partners to revise EMS triage, transport and communication pathways to include (a) a validated field test and (b) field communication with a stroke neurologist and transport physician to determine best transportation for best patient outcome.

Additional considerations will be given for rapid transportation of patients to Alberta facilities from communities not currently being served in a timely manner. This includes B.C. and Saskatchewan communities bordering Alberta.

Within the available timeframe, this project aims to:

1. Increase proportion of patients eligible for EVT that are transported to CSCs for treatment.
2. Implement triage, communication and transport protocols providing coverage to 100% of the Albertan population.
3. Increase number of PSCs able to provide 24/7 CTA access for the assessment of EVT eligibility.
4. Target median 'door-in-door-out' (DIDO) time at PSCs of less than 45 minutes, with 90% within 60 minutes.
 - a. includes target median DTN time of 30 minutes (via QuICR).
5. Increase proportion of patients repatriated closer to home for stroke unit equivalent care within 48 hours of EVT once the patient is stabilized (via RAAPID).

The ERA Operations Committee reports to the Acute Stroke/TIA Expert Working Group of the Cardiovascular Health and Stroke Strategic Clinical Network. The committee includes partners from across the health system and works to achieve the goals and objectives as outlined in the charter.

Contributors:

Alberta Health Services; University of Calgary

Implement the change and build on our findings

Enhanced recovery after surgery

Enhanced Recovery After Surgery (ERAS) is an international evidence-based way of providing care before, during and after surgery. ERAS guidelines are focused on nutrition, mobilization, fluid management, and pain and symptom control in the

preoperative, intraoperative and post-operative periods. ERAS helps patients prepare and involves them in their care and surgical recovery, resulting in shorter hospital stays, fewer complications and fewer return visits to hospital.

**An
average
\$3.80
return
for every \$1
invested**

**Net
health
system
savings of
\$1,768 per
patient**

Read about: [Alberta home to Canada's first stroke ambulance](#)



Implement the change and build on our findings

ERAS Guidelines have now been developed and published for head and neck cancer surgery, breast reconstruction, gynecologic oncology and major gynecology. All three of these guidelines have been published internationally. The guidelines are being implemented in a number of collaborating centres. The potential is huge to establish a global shared common baseline of clinical outcomes data that will inform clinical care and facilitate a learning community of practice around the world.

The Surgery Strategic Clinical Network leads the implementation of these ERAS guidelines at the provincial level, in collaboration with the ERASAlberta team. These efforts led to two peer-reviewed publications – one on the effect of the guideline implementation and the other on the economic evaluation of the multisite implementation. The results suggest that adopting the ERAS colorectal guideline improves patient outcomes (e.g., reduced complications), and was cost-saving (e.g., reduced length of stay).

Contributors:

Alberta Health Services; Alberta Innovates

Two new evidence-based ERAS guidelines for head and neck cancer surgery and breast reconstruction

Two publications on the effect of the guideline implementation & the economic evaluation of the multi-use implementation

Read about: Canada's first nurse practitioner-led outpatient trauma clinic cares for patients from bedside to post-discharge


**Implement the change and
build on our findings**

Research-based policy changes and improvements in population health

In 2013, based largely on research by Alberta Children's Hospital Research Institute (ACHRI)/University of Calgary researchers, Hockey Canada introduced a policy change delaying the introduction of body checking to age 13 (Bantam level). In a recent article in the British Journal of Sports Medicine, ACHRI researchers showed that implementation of the policy resulted in a 64% reduction in concussion risk (and a 50% reduction in the

risk of any injury) among 11- and 12-year-old Peewee players in Alberta. This can be extrapolated to a decrease of over 4,800 concussions nationally, with major savings in associated health costs. The study illustrates how evidence-informed policy changes by sporting organizations can result in significant improvements in population health, as well as substantial socio-economic benefits, by preventing concussion and other injuries.


50%
**Reduction in risk
of other injuries**


64%
**Reduction in
concussion risk**


4,800
**Fewer annual concussions
each year in Canada,
resulting in major savings
in healthcare costs**

Contributors:

Alberta Children's Hospital Research Institute; Alberta Health Services; Hockey Canada; University of Calgary

Implement the change and build on our findings

Provincewide heart disease and stroke reduction program

The R_xEACH Study was a provincewide heart disease and stroke reduction program where pharmacists worked with at-risk patients and their family physicians to provide cardiovascular (heart and blood vessel) care, including providing medication therapy management review and education, prescribing medication and ordering laboratory tests, and conducting monthly followup visits. This randomized trial identified a large number of patients with previously unknown kidney disease and showed a 21% reduction in the risk of heart disease and stroke in only three months.

Pharmacists play a key role in reducing cardiovascular events

↓ **20%**
Reduction in smoking

↓ **21%**
Reduction in risk for heart disease and stroke



↓ **0.92%**
Improvement in glycemic control

↓ **9.37mm Hg**
Reduction in systolic blood pressure

↓ **0.20 mmol/L**
Reduction in LDL cholesterol

Contributors:

Alberta Health Services; Epicor Centre; Interdisciplinary Chronic Disease Collaboration; University of Alberta; University of Calgary

Implement the change and build on our findings



Coordinated care team for socially vulnerable patients with complex care needs

The Ward of the 21st Century is working on the project: Coordinated Care Team for Socially Vulnerable Patients with Complex Care Needs. The goal of the project is to help coordinate care for socially vulnerable homeless and low-income people in Calgary to improve healthcare and mental healthcare, housing opportunities, addiction services, quality of life, community engagement and overall health for socially vulnerable individuals. The project is expected to

produce substantial cost savings to the system by diverting emergency department presentations to primary care. This would reduce acute care admissions, increasing the uptake of routine preventative and chronic illness care, and improving adherence to medications and mental health and addiction treatments. Overall, this project has immense potential to improve the care quality and efficiency for socially vulnerable, high-needs patients in Alberta.



Improve adherence to medications and mental health and addiction treatments, reduce acute care admissions, and increase the uptake of routine preventative and chronic illness care for socially vulnerable patients with complex care needs

Contributors:

Alberta Health Services; Ward of the 21st Century; University of Calgary

Read about: [World-renowned researcher brings stroke-rehab technology to Glenrose Rehabilitation Hospital](#)

Implement the change and build on our findings

Conservative kidney management

Conservative Kidney Management (CKM) is planned, comprehensive, person-centred care for patients with stage 5 chronic kidney disease who are unlikely to benefit from dialysis. CKM excludes dialysis, and instead integrates supportive care principles with interventions to delay progression of kidney disease and minimize complications.

CKM includes:

- Treating the symptoms of kidney disease
- Preventing or minimizing problems
- Protecting and maintaining the remaining kidney function
- Providing supportive medical and psychosocial care
- Helping plan for the future



Contributors:

Alberta Innovates; Alberta Health Services; Covenant Health; University of Alberta; University of Calgary

[Read about: Scoliosis patients safer with new diagnostic technology at Stollery Children's Hospital](#)

Evidence decision support program (EDSP)

The Surgery Strategic Clinical Network leverages research and innovation to assess adoption or de-adoption of technology or innovations. The SSCN has implemented EDSP to help identify, prioritize, evaluate and recommend new technologies for possible introduction into the healthcare system. Unlike traditional large-scale health technology assessment (HTA) organizations, the EDSP collects and integrates local data

with published HTA reports. This helps to ensure better applicability of HTA report recommendations to meet local needs. The scope of the program's impact is varied and includes impact on hospital/operating room budgets, clinical practices, patient outcomes monitoring, training and credentialing. The EDSP continues to evolve as stakeholder engagement and input focuses on the practicality of adopting new technology.

Contributor:

Alberta Health Services

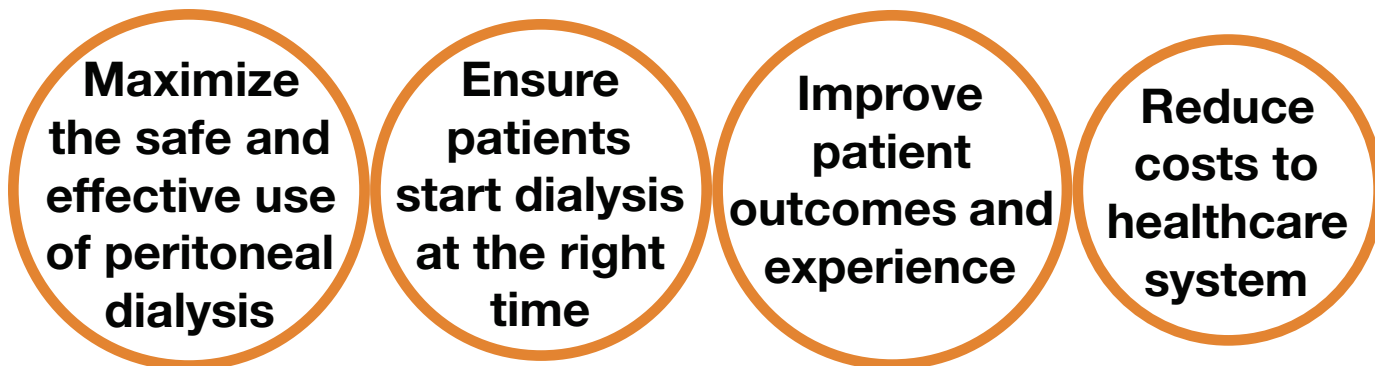
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Starting dialysis on time at home on the right therapy (START)

The START Project is a provincial initiative that aims to address the increasing demand for dialysis by maximizing the safe and effective use of peritoneal dialysis and decreasing the inappropriate initiation of dialysis in outpatients.

Implementing the START project

	Before Oct 2015 – Sept 2016	After Oct 2016 – Mar 2017	
Patients receiving PD within six months of starting dialysis	25%	34%	↑ 9% Increase
Outpatients starting dialysis earlier than guidelines suggest	16%	8%	↓ 8% Decrease



Contributors:

Alberta Health Services; Epicor Centre; Interdisciplinary Chronic Disease Collaboration; University of Alberta; University of Calgary

Implement the change and build on our findings

Diabetes foot care clinical care pathway

Failure to carry out diabetes foot screening can lead to risk of ulceration and amputation. Research has shown that it is the least followed recommended care component of routine diabetes checkups. Since the development of the pathway, more primary care networks across the province now do annual foot assessments for people with diabetes. This assessment identifies if the person's feet are at risk for developing a ulcer, which addresses the individual patient's needs before they get a wound or sore on their foot. High-risk foot teams/wound clinics engaged in the Diabetic Foot Care Clinical Pathway now see people with diabetes for assessment when they do not have a foot wound.

Annual foot screening for people with diabetes to reduce the risk of developing foot ulcers before getting a wound or sore on the foot

Contributors:

Alberta Health Services; Canadian Institutes of Health Research

[Read about: Sisters team up to boost diabetes research](#)



We are grateful for the vision, passion and knowledge researchers, administrators, reviewers and patients bring to the pursuit of research and innovation at Alberta Health Services. Our thanks to all for making these projects and healthcare progress possible.

