



AHS ANNUAL REPORT ON RESEARCH AND INNOVATION

APRIL 1, 2012- MARCH 31, 2013

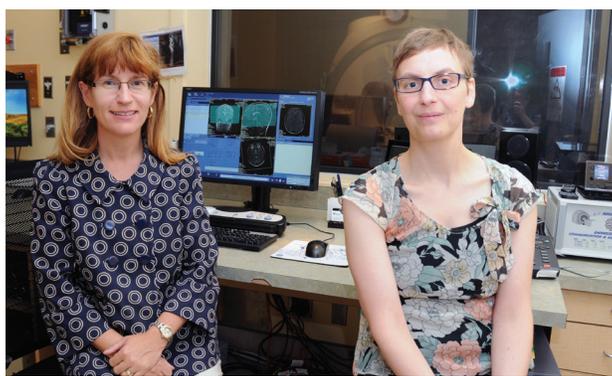


TABLE OF CONTENTS

1. MESSAGE FROM THE VICE-PRESIDENT	3
2. INTRODUCTION	4
3. CREATING A CULTURE OF RESEARCH AND INNOVATION IN AHS.....	4
3.1 Strategic and Operational Clinical Networks	4
3.2 Communities of Practice	7
4. BUILDING STRONG PARTNERSHIPS IN ALBERTA.....	8
4.1 SPOR Support Units	8
4.2 Alberta Clinical Research Consortium.....	9
4.3 Red Deer College/AHS Health Research Collaborative	9
4.4 Northern Alberta Clinical Trials and Research Centre	9
4.5 Multi-Stakeholder Projects.....	9
5. INCENTING RESEARCH OF THE HIGHEST VALUE TO AHS	10
5.1 President’s Excellence Award for Research	10
5.2 Alberta Partnership for Research and Innovation in the Health System	10
5.3 Central Zone Research Grants.....	11
5.4 MedStar Awards.....	12
5.5 Portal of Industry Engagement.....	11
6. BEING EFFICIENT WITH AHS RESOURCES	12
6.1 Ethics Harmonization Initiative	12
6.2 Alberta Cancer Research Ethics Committee.....	12
6.3 Intellectual Property	13
6.4 Open Data Model	13
6.5 Research and Privacy.....	13
7. BEING EFFECTIVE WITH AHS RESOURCES	14
7.1 Providing Training Opportunities	14
7.2 Managing Data	15
7.3 Assessing New Health Technologies.....	15
7.4 Translating New Knowledge.....	16
7.5 Measuring Research Activity in AHS.....	16
8. RESEARCH MAKES A DIFFERENCE IN THE LIVES OF ALBERTANS.....	18
8.1 Clinical Pathways for Asthma: President’s Excellence Award for Research	18
8.2 Researchers Study Potential Treatment for Multiple Myeloma	18
8.3 Research Aims to Tailor Treatment for Depression	19
8.4 Breakthrough Drug Protects Against Stroke Damage.....	20
8.5 AHS Doctors Perform Canada’s First Liver Cell Infusion	20
8.6 Groundbreaking Procedure Dials Down Blood Pressure	21
8.7 CAREN Changes Lives, Drives Rehab Research in First Year	22
8.8 Fighting Obesity with Technology	22
8.9 New Research Team to Protect Cardiac Health of Breast-Cancer Patients	23

1. MESSAGE FROM THE VICE-PRESIDENT

Research is a critical enabler within Alberta Health Services (AHS) to support health system improvement and sustainability and make Alberta a leader in health research. A tremendous amount of health research occurs every day in Alberta, across all care settings and involving all disciplines. The responsibilities of the AHS Research Portfolio are to support excellence in health research and innovation that improves the quality of health care, provide meaningful data that inform improvements in performance, assess health technologies that give the best outcomes for the investment, and advance the government's Alberta Health Research and Innovation Strategy. This 2012/2013 Annual Report highlights many of the efforts of AHS staff, researchers and clinicians across Alberta.

AHS seeks to create a culture of research and innovation. Embedding research within the six Strategic Clinical Networks and three Operational Clinical Networks is a key AHS strategic priority with the potential for wide-spread influence. This year saw the appointment of five Scientific Directors within these networks. The Scientific Directors engaged their network colleagues to champion a broad provincial health research agenda that addresses the health needs of each network's target populations.

This year, AHS and its partners within Alberta submitted an application to the Canadian Institutes of Health Research (CIHR) for a Support for People and Patient-Oriented Research and Trials (SUPPORT) Unit in Alberta. If granted, the funds will be used to develop platforms that will enable the creation, mobilization, and application of knowledge to improve patient health through enhanced data resources, methodological support, training, and state-of-the-art knowledge translation.

One of the ways AHS demonstrates our commitment to evidence-informed health care and encouragement to researchers is through the Annual President's Award for Research. As usual, our CEO received outstanding submissions for this award. Finalists are noted in this report. Also, AHS has developed the Alberta Partnership for Research and Innovation in the Health System, a new research program funded jointly by AHS and Alberta Innovates - Health Solutions.

Because quality data and analytic strength underpins efficient use of resources for health care delivery, AHS has identified optimizing our analytic capacity as a key undertaking. Analytic capacity in AHS has improved significantly and the members of our Data Integration, Measurement & Reporting department are being stretched like never before. A case in point is the "open data model", which will connect centralized administrative and clinical program-specific databases to enhance clinical performance measurement and provide analysts with access to wider and more comprehensive data than before.

A wide range of professional health organizations and associations, universities and colleges, and public, not-for-profit and private entities in Alberta all have roles to play in improving the health of Albertans. As an example, over 600 health research projects were opened in the province in 2012. Of these, a significant proportion is using AHS resources.

As always, there is much happening in Alberta over and above what is included in this report. I remain impressed by how well we work together to serve Albertans.

Thank you for all that you do!

Dr. Kathryn Todd
VP Research, Alberta Health Services

2. INTRODUCTION

Alberta's Health Research and Innovation Strategy (AHRIS) is co-led by Alberta Health and Alberta Enterprise & Advanced Education. It provides a high-level framework to guide health research investments and decision-making in the province over the next decade. Two high-level strategic priorities are identified: wellness at every age and innovative health service delivery. These priorities are supported by three pillars: highly skilled people, knowledge translation, and innovation platforms.

AHS shares responsibility for driving the strategy forward with Alberta Health, Alberta Enterprise & Advanced Education, Alberta Innovates-Health Solutions, and Alberta Innovates-Technology Futures. Each partner works closely with the universities and other key stakeholders on each of the actions identified in the Strategy.

The implementation of AHRIS is a significant undertaking, and for this reason, a cycle time of ten years was set for the achievement of the four outcomes identified in the Strategy: strategic focus, highly skilled people, knowledge translation, and innovation platforms.

In order to align the efforts of AHS with AHRIS, AHS adopted the following strategies to guide its actions over the next several years:

1. Aligning AHS with the Health Research Policy Framework in Alberta,
2. Creating a culture of research and innovation in AHS,
3. Building strong partnerships in Alberta,
4. Incenting research of high value to AHS,
5. Being efficient with AHS resources, and
6. Being effective with AHS resources.

This annual report groups the achievements of 2012-2013 according to the strategic components that they support.

3. CREATING A CULTURE OF RESEARCH AND INNOVATION IN AHS

Research and innovation are critical enablers within AHS. These activities support health system improvement and sustainability, and provide a foundation for making decisions based on evidence. A tremendous amount of health research and innovation occurs every day in Alberta, across all care settings and involving all disciplines. There are many areas that have cultivated a strong research and innovation ethic. With effective leadership, these areas have attracted individuals and resources to develop high performing teams that can take on difficult research problems. Spreading the culture of research and innovation into new areas remains a priority.

3.1 Strategic and Operational Clinical Networks

Strategic Clinical Networks (SCNs) and Operational Clinical Networks (OCNs) are clinically led, multidisciplinary groups whose scope and mandate is to design provincial and zone-specific strategic improvement plans. These plans will drive the achievement of targeted, measurable, and sustainable clinical and operational improvements in health and healthcare service delivery within the defined populations.

They are engines of innovation; bringing together physicians, clinicians, patients, researchers, staff, and partners across Alberta to develop evidence-based strategies to improve patient outcomes and to help AHS become the best and most innovative health service delivery entity in Canada.

AHS is embedding research and innovation within the SCNs and OCNs by sponsoring Scientific Directors in each network. The Scientific Directors engage their network colleagues to champion a broad provincial health research

agenda that addresses the health needs of the network’s target populations. The Directors are also accountable for the SCNs’ research grant activities, the production and publication of new knowledge, and, wherever possible, for translating that knowledge into action across the province in order to ensure that high-quality health care is available to all Albertans.

Six SCNs were launched on June 12, 2012. By September 2012, Scientific Directors were recruited in five of the networks (Table 1):

TABLE 1: SCN SCIENTIFIC DIRECTORS AND ASSISTANT SCIENTIFIC DIRECTORS		
SCN	Scientific Director	Assistant Scientific Director
Addiction and Mental Health	Dr. Peter Silverstone	Dr. Katherine Rittenbach
Bone and Joint Health	Dr. Linda Woodhouse	Dr. Leah Phillips
Cardiovascular Health and Stroke	Dr. Colleen Norris	Mr. Matt McEwan
Obesity, Diabetes & Nutrition	Dr. Jeff Johnson	Dr. Serena Humphries
Seniors’ Health	Dr. Jayna Holroyd-Leduc	Dr. Heather Hanson
Cancer Care	In Recruitment	TBD

Three Operational Clinical Networks were launched on January 5, 2013: Critical Care, Emergency, and Surgery. Like SCNs, each OCN has a membership model that is inclusive of care providers and staff within the service area in question, as well as internal partners and stakeholders, including key members in each of the Universities in the Academic Health Network. By mandate, each OCN is also encouraged to develop an embedded, provincial “research and knowledge translation team” that will be designed and supported to appeal to many university based researchers and educators. Expressions of Interest for the Scientific Directors of the three OCNs closed on February 1, 2013.

Some accomplishments by the SCNs and OCNs this past year include:

Seniors’ Health SCN

- Over 60 researchers throughout the province attended two stakeholder meetings.
- A peer-reviewed, grant-funded evaluation was performed on elder-friendly hospitals within the Calgary zone. The review showed that elder-friendly hospitals could effectively reduce restraint from 13-27% to 7-14%. Publication of these results is pending.
- An evaluation is underway of the “comfort rounds” project being piloted at the Foothills Medical Centre and the Rockyview General Hospital. “Comfort rounds” are intentional patient-focused rounds designed to address unmet care needs such as mobilization, hydration, nutrition, and pain. They also address patient orientation and safety issues in a collaborative approach to care that involves all team members. This initiative will be incorporated into the “Pathway to Home” program.
- Advance Care Planning and Goals of Care were evaluated and implemented across the province (jointly with the Cancer SCN).

Bone and Joint Health SCN

- A key project on hip and knee replacements within the province has already generated significant results. Wait times for surgery are trending toward the provincial target of 14 weeks, and shorter stays in hospital have freed up an estimated 32,000 bed-days, creating capacity for 8,625 surgeries.
- An innovative, evidence-based model was introduced for rapid and improved treatment of bone fracture caused by osteoporosis. More than 2,400 hip fractures, mainly among the elderly, occur annually in Alberta due to osteoporosis alone. Evidence shows that treating a hip fracture within 48 hours leads to good outcomes,

whereas failing to treat a hip fracture in an elderly person within 48 hours significantly increases the risk of death. The acute care phase of the new model has been adopted in almost all of the hospitals in Alberta that perform hip surgery. Improvement has been quick: Alberta has already moved to second place from fifth in Canada in meeting the benchmark of surgery within 48 hours of fracture. The SCN is now planning to introduce the prevention component and the post-acute phase comprising recovery and rehabilitation outside of hospital.

Addiction and Mental Health SCN

- Three Alberta-wide research networks were established: The Alberta Research Network in Addiction, the Alberta Research Network in Depression, and the Alberta Research Network in Youth.
- The Alberta Research Network in Depression initiated a randomized, controlled clinical trial of family physician interventions for depression in adults.
- A proposal submitted to the pan-Canada youth mental health network, TRAM (Transformational Research in Adolescent Mental Health), advanced to the second round of the granting process.
- Policy changes were recommended for emergency rooms in Calgary that would stop inappropriate routine toxicology testing and reserve requests for STAT processing of toxicology tests for those that are both necessary for patient care and where results are required urgently.

Surgery OCN: A Decision-Support Program for Technology Appraisal and Education

- An evidence-informed Decision-Support Program is being used when introducing new health technologies with respect to the health needs of their target populations. The Program's purpose is: a) to introduce new health technologies into practice in a safe, effective, and evidence-informed manner while considering operational impact factors and b) to engage and educate physicians and managers throughout the province in the use of research evidence for introducing new health technologies into practice.
- A series of research-based, interactive education workshops were developed to teach clinicians about how to apply research appraisal and innovation concepts to real surgical case scenarios. Their purpose is to provide real-world inquiry based education and engagement of clinicians, to bring research evidence to action, and to provide input for the further improvement of the appraisal and recommendation process.

Obesity, Diabetes and Nutrition SCN

- Development, implementation and evaluation of the Provincial Insulin Pump Therapy Program (IPT), which will be launched in June 2013. The evaluation will lead to the creation of a provincial Diabetes Insulin Pump Registry for tracking interventions and patient outcomes. The registry will enable research, evaluation and planning.
- Planning was initiated for the Enhanced Recovery After Surgery (ERAS) project, which is aimed at improving patient recovery time after surgery, reducing complications and decreasing hospital length of stay. Pilot sites in Edmonton and Calgary began to collect baseline data and prepared for implementation and support of the comprehensive research program.
- The Alberta Caring for Diabetes Project (ABCD) was completed by the ACHORD research group with positive results. The ABCD project involved two quality improvement interventions: 1) Depression screening and collaborative team care case management for diabetes patients (Team Care-PCN Depression Intervention) and 2) Lifestyle behavioural support intervention called Healthy Eating and Active Living in Diabetes (HEALD-PCN).
- Worked with the Office of Lab Utilization to improve lab testing policies for Hemoglobin A1c and Vitamin D testing in Alberta.

Cardiovascular and Stroke Health SCN

- Developed a report regarding Tri-council funding in the areas of Cardiovascular Health/Stroke in Alberta from 2008-2012.

- Identified over 120 members in its research community.
- Had engagement meetings in various formats (i.e.: going to Division meetings, meeting with Research groups, individuals) and actively sought opportunities for engagement.
- Provided a letter of support for the development of the Canadian Atrial Fibrillation Stroke Prevention Intervention Network.

3.2 Communities of Practice

Spreading the culture of research and innovation is a priority for AHS. One way to do this is through “communities of practice” – groups of individuals with common interests who gather to share information and experiences and offer support.

The Community of Research Exchange (CORE)

Previously called the “Research Community,” CORE is a provincial community of practice open to anyone involved or interested in research within and beyond AHS. The group’s primary goal is to facilitate the sharing and exchange of research knowledge and experience. Through CORE, AHS investigators build mutual support, mentorship, and collaborations within and beyond AHS. Regular meetings are held every 6-8 weeks and can be attended in person, through video conferencing, or audio conferencing. The Research Excellence Support Team supports this community of practice and its annual retreat.

In 2012-13, the focus of the CORE was on the knowledge translation needs of the AHS research community as identified by the membership at the annual retreat in June 2012. Over the year, the group learned about and discussed recent updates in areas such as ethics harmonization, privacy issues, new research-related policies, and training opportunities. Meetings also included educational sessions: for example, statistics, background on knowledge translation, the Centre for Health Evidence, and information on embedded research. CORE membership has grown to more than 165 members province-wide.

The Alberta Evaluation Network (AEN)

Since 2010, AEN has been serving as a meeting place to connect with people who are involved in health related program evaluation within Alberta. The network’s aims are to:

- Raise awareness of upcoming events and opportunities involving evaluation;
- Provide a forum for sharing ideas, exchanging information, networking, and learning; and
- Increase opportunities for collaboration both within AHS and with its partners.

AEN meets 10 times per year via teleconference and Microsoft Lync and currently has 136 members. It is facilitated through Survey and Evaluation Services of the Data Integration, Measurement & Reporting department of AHS’ Research Portfolio.

The Big Bang Research and Evaluation Forum 2012

On November 8, 2012, CORE and AEN jointly organized the event, “The Big Bang Research and Evaluation Forum” in Calgary. The purpose of this event was to:

- Provide a venue to enhance networking,
- Increase awareness of AHS-related research and evaluation activities and resources, and
- Improve collaboration between Survey and Evaluation Services and related Research Portfolios.

This event offered presentations from CORE, AEN, Research, the Strategic Clinical Networks, Survey and Evaluation Services, the Research Excellence Support Team, Health Technology Assessment and Innovation, Knowledge Translation, and Data Integration, Measurement & Reporting. Twenty-six poster presentations and lightning rounds on research and evaluation projects were also part of this event. Eighty participants registered, but inclement weather hindered travel from Edmonton. In total, 61 participated in the event. Feedback from participants was very favorable.

4. BUILDING STRONG PARTNERSHIPS IN ALBERTA

Multidisciplinary health research capacity in Alberta's universities and in the health system is significant, with health research taking place across a number of provincial programs and networks supported by a variety of national and provincial funding sources. Strong programs of basic and applied research exist in cancer, addiction and mental health, and population health, with a number of integrated groups, programs, centers, networks, and institutes. These collaborations between AHS, the universities, funders, patients, and community groups are essential for growing the research and innovation enterprise in Alberta.

4.1 SPOR SUPPORT UNITS

The Canadian Institutes of Health Research (CIHR) invited proposals for the development of a Strategy for Patient-Oriented Research (SPOR). The "Support for People and Patient-Oriented Research and Trials" (SUPPORT) Unit component of this competition called for projects focused on:

- Identifying the needs of patients and knowledge users and facilitating research that addresses these needs;
- Providing a critical mass of highly specialized and multidisciplinary methodological expertise in patient-oriented research and its application;
- Assisting decision makers and investigators to identify and design relevant research studies, conducting statistical analyses, managing data, teaching project management skills, and ensuring studies meet all relevant regulatory standards;
- Advancing methods and training in comparative effectiveness research and develop the next generation of methodologists; and
- Providing timely access to linked data and integrating existing or new databases¹.

A SPOR SUPPORT Unit proposal for Alberta was developed as a partnership among AHS, Alberta Health, Alberta Innovates-Health Solutions, Alberta universities, and others. Over this past year, leaders throughout the province came together to plan and implement the framework for seven support platforms that will facilitate the creation, mobilization, and application of knowledge to improve patient outcomes and health system performance and sustainability. An AHS/Alberta Academic Health Network² Resource Working Group has been instrumental in moving the development of the SPOR SUPPORT Unit application forward by coordinating meetings of the steering committee throughout the year and disseminating vital communication to and amongst stakeholders.

In December 2012, the proposal for an Alberta SPOR SUPPORT Unit was submitted to CIHR. The following seven support platforms are proposed with funding to be provided equally by AHS and CIHR:

1. Data Platforms and Services,
2. Methods Support and Development,
3. Pragmatic Clinical Trials,
4. Health Systems Research, Implementation Research and Knowledge Translation,
5. Consultation and Research Services,
6. Career Development in Methods and Health Systems Research, and

¹ <http://www.cihr-irsc.gc.ca/e/45859.html>

² A collaboration between AHS and the Faculties of Medicine of the Universities of Alberta and Calgary

7. Patient Engagement.

A final decision from CIHR is pending.

4.2 Alberta Clinical Research Consortium

The Alberta Clinical Research Consortium (ACRC)³ is a collaborative effort among AHS, the College of Physicians and Surgeons of Alberta, Covenant Health, the University of Alberta, the University of Calgary, and Alberta Innovates-Health Solutions. In 2012, these partner organizations signed a letter of commitment to achieve the ACRC's vision of "high quality, integrated, and efficient clinical research in Alberta." The consortium aims to reduce the barriers and streamline the processes for conducting clinical research in Alberta.

In 2012, working groups were formed for each of the three strategic priorities identified for ACRC:

1. Improve the efficiency of clinical research administrative processes across the province;
2. Standardize legal review guidelines for contracts and agreements related to clinical research; and
3. Develop provincial standards and opportunities for clinical research training.

The working groups completed work plans, devised tools, and drafted templates (i.e. budget templates, archiving standards, and feasibility checklists), which were presented at an ACRC meeting in June 2012 for review by all members. Focus groups have since had the opportunity to provide additional feedback. 2013 will be the year of implementation.

In November 2012, an ACRC forum took place with a variety of ACRC stakeholders, including government and industry, to hear updates and to discuss barriers to research.

4.3 Red Deer College/AHS Health Research Collaborative

The Red Deer College/AHS Health Research Collaborative⁴ is an applied research partnership that uses a collaborative between diverse team members and community stakeholders to co-create knowledge to address complex health issues. In the last year, 17 projects engaged 13 academics, 129 students, and over 120 health practitioners, decision makers, and stakeholders. An additional 272 participants received support to make evidence-informed decisions by attending knowledge cafés or training sessions.

4.4 Northern Alberta Clinical Trials and Research Centre

The Northern Alberta Clinical Trials and Research Centre (NACTRC) is a joint venture with AHS-Edmonton Zone and the University of Alberta. The Centre is independently supported by revenues earned through the administration of industry sponsored clinical trials. NACTRC helps to facilitate research from beginning to end, with services including administrative support, legal contract review, account set-up, assistance with navigation of Health Canada approval processes, education, re-investment, and operational approval. As outlined in Table 3, 495 studies were opened in 2012/13, with 1,647 clinical studies active.

In March 2012, NACTRC created an on-line submission process for legal documents for clinical research, enabling users to track the status of their contracts from submission to execution.

4.5 Multi-Stakeholder Projects

Measuring Patient Feedback in Continuing Care Project

This year, the Data Integration, Measurement & Reporting unit of AHS Research partnered with Alberta Health, the Health Quality Council of Alberta and the Seniors' Health Strategic Clinical Network to plan a three-year effort to collect feedback from residents and their families across service areas in the continuing care sector (long term care,

³ <http://www.aihealthsolutions.ca/acrc/>

⁴ http://rdc.ab.ca/about_rdc/research_and_innovation/applied_research_and_innovation/health/Pages/default.aspx.

supportive living, and home care). The outcome of this collaboration was a new Supportive Living Survey developed specifically for this population. The survey was pilot-tested in the fall of 2012 to determine the most appropriate data collection methodology and to refine the survey instrument. Provincial rollout of the survey began in February 2013, and data collection will be completed by July 2013.

Bariatric Surgery Project

The Health Technology and Assessment unit of AHS facilitated an operational and financial impact analysis for a bariatric surgery project coordinated by the Institute of Health Economics. The Institute conducted a health technology assessment of the project, which resulted in a policy from the Minister of Health to increase surgeries 10-fold over the next five years. AHS is now planning to improve bariatric surgery practice and outcomes surveillance, increase access and capacity for bariatric surgery, reduce regional variations in practice, and develop clinical criteria to ensure that limited resources for bariatric surgery are allocated to patients with the greatest clinical need and the most to gain from surgery.

Justice Solicitor General/Health Corrections Working Group

The Justice Solicitor General (JSG)/Health Corrections Working Group met with the Research Excellence Support Team every six weeks over the past year to discuss streamlining research processes between the two. JSG represents the Ministry of Justice and Solicitor General of Alberta, while Health Corrections is newly represented by AHS. The working group has discussed their evaluation framework, data collection and storage, data repository policies, handling requests for access to this vulnerable population, review of research requests, privacy, and AHS research agreements. The major achievement of this group this year is the connection and collaboration that exists for these two Alberta organizations concerning research within the sites and with this special population. The group will continue to meet as they develop policies and share procedures to protect the integrity of information created from research.

5. INCENTING RESEARCH OF THE HIGHEST VALUE TO AHS

AHS continues to build tools and approaches that recognize and encourage research and innovation by health professionals at all levels and care settings. AHS administers a variety of awards to recognize and fund outstanding research relevant to the health care system and is developing a program to match problems in health care with researchers and industries willing to solve them.

5.1 President's Excellence Award for Research

The President's Excellence Award for Outstanding Achievements in Research recognizes a project or initiative that harnesses the collective efforts of AHS staff and physicians together with research and academic partners. The partnership must be innovative, use collaborative problem solving or practice in the delivery of effective clinical care, and show how translation of knowledge gained from research has contributed to improved outcomes for staff and/or patients.

In this reporting year, finalists for the award were the Asthma Working Group, Autism Research Program Team, Edmonton Scoliosis Research Group, Glenrose Rehabilitation Spinal Cord Injury Team, and University of Calgary Liver Unit. Dr. Chris Eagle announced the winner in May 2013, which was the Asthma Working Group (see section 8).

5.2 Alberta Partnership for Research and Innovation in the Health System

This year, AHS and Alberta Innovates-Health Solutions each contributed \$2.5 million to establish a new funding partnership for research in innovative health services, the Alberta Partnership for Research and Innovation in the Health System (PRIHS). The partnership recognizes the need to create networks of health researchers and clinical practitioners that can generate solutions to improve sustainable quality and value for money in the health system.

Using its expertise and experience as a health care system, AHS will define research priorities to determine where these funds will best help to improve care. Alberta Innovates-Health Solutions will bring its knowledge and expertise to identify and fund research proposals of scientific merit and of value to AHS.

5.3 Central Zone Research & Education Grants

Research and Education Seed Funding Grants are awarded twice per year through AHS' Central Zone Research Office. This year, the successful applicants were:

- Carolyn Fleck-Prediger for “Diagnostic Screening for Conscious Awareness in Brain Injury & Disease” (May 2012 Seed Funding Grant)
- Leah Dagenais for the “MagStim Neuroscience Conference & Workshop” in Oxford England, May 12 and 13, 2012 (May 2012 Education Grant)
- Michelle Lamont for “Program Evaluation of the Pediatric Diabetes Clinic” (November 2012 Seed Funding Grant)
- Jean Anne Nichols for the “11th World Congress, World Association for Psychosocial Rehabilitation” in Milan, Italy on November 10, 2012 (November 2012 Education Grant)

5.4 MedStar Awards

AHS sponsored the University of Alberta's MedStar awards, which are given by the Faculty of Medicine and Dentistry to recognize the outstanding research accomplished by its graduate students and postdoctoral fellows. In 2012/13, six MedStar Awards were given to three graduate students and three postdoctoral fellows:

- Charlie Hsu and Hasan Uludag published a paper in *Biomaterials* that examined novel non-viral DNA delivery systems to cells and examined the uptake of lipid-modified cationic polymers to facilitate gene delivery. This has important applications for gene therapy.
- A study for which Yohannes Haile was the first author for a team study led by Fabrizio Giuliani published in the *Journal of Immunology* showed that human neurons are particularly susceptible to toxic molecules released by killer T cells of the immune system. This could suggest a novel approach for treatment of multiple sclerosis, which is thought to be immune-mediated.
- Silvia Pagliardini published a paper with members of the Centre for Neuroscience in the *Journal of Neuroscience* where she used a model system to examine sleep-related changes in respiratory control.
- Mahua Maulik and principal investigator Satyabrata Kar published a paper in *Human Molecular Genetics* that examined a mutant, a protein that seems to worsen the pathology associated with Alzheimer's disease in an animal model of Niemann-Pick type C disease.
- Lucas Cairo published a paper with Dr. Ptak and supervisor Dr. Richard Wozniak in the prestigious journal *Molecular Cell* describing how the movement of proteins into the cell nucleus is regulated by a specific protein as a cell divides.
- Jihong Lian published a paper with a team led by Dr. Richard Lehner in the journal *Hepatology* where they showed that deletion of a particular gene in the liver that regulates a specific step of lipid metabolism, decreases plasma lipid levels without causing severe hepatic steatosis.

5.5 Portal of Industry Engagement

The Portal of Industry Engagement is a program developed by AHS to provide an efficient and transparent process to facilitate evaluation and adoption of health innovations that address the unmet health needs and priorities of Albertans and the health care system. This work has been informed by discussions with AHS-Contracting, Procurement, & Supply Management, government, industry, and relevant stakeholders.

In March 2013, a “reverse tradeshow” was held at the Glenrose Hospital to identify opportunities to match clinical needs with innovators in the marketplace. Clinical staff in the area of assistive and rehabilitative technologies

identified issues and problems regarding the use of health technologies. University researchers, innovators and industry were invited to participate in an open discussion about how to work together to solve these challenges. Outcomes and lessons learned from the reverse tradeshow will be used to refine and plan for similar events in the future, with expanded participants and technologies.

6. BEING EFFICIENT WITH AHS RESOURCES

AHS is committed to directing its resources in ways to maximize research gain and to develop specific platforms of support (tools and processes) to streamline research. Progress on a number of specific initiatives was achieved this year.

6.1 Ethics Harmonization Initiative

The Health Research Ethics Harmonization Initiative⁵ aims to align and coordinate the provincial research ethics review system for the research ethics boards in Alberta – Alberta Cancer Research Ethics Committee for AHS, Community Research Ethics Board of Alberta for Alberta Innovates-Health Solutions, Health Research Ethics Board for the University of Alberta, Conjoint Health Research Ethics Board for the University of Calgary, Research Ethics Review Committee (RERC) for community physicians and Human Subject Research Committee for the University of Lethbridge.

Over the past year, accomplishments have been made on the four streams of activity identified by the Ethics Harmonization Implementation Steering Committee: Reciprocity and Common Templates, Integrated Platforms, Governance, and Strategic Needs Assessment:

- Draft health and clinical trial Informed Consent Form (ICF) templates have been developed for use by researchers within Alberta. The Council of Chairs approved the content, and the draft incorporates input from researchers, study coordinators, and potential study participants (public). An Informed Consent Working Group and a subgroup of clinical study coordinators met to work on the automation features for the clinical trials ICF template. Automation of the templates is underway now that an appropriate software solution has been identified.
- A Provincial Health Research Ethics Information System is being developed to enable the aggregation and analysis of administrative and statistical data from the health research ethics platforms on behalf of the research ethics boards. This information will also provide the ability to measure and monitor the achievement of goals and outcomes as identified in Alberta's Health Research and Innovation Strategy. An implementation plan has been drafted and reviewed by executive sponsors.
- A pilot study of ethics applications that require approval by more than one ethics board was completed. Based upon its success, a process for studies requiring multi-board approval is now in place.
- All ethics boards not already on an electronic platform plan to migrate to either the Institutional Research Information Services Solution (IRISS) or Research Ethics Management Online (REMO) platform. The Alberta Cancer Research Ethics Committee (AHS) and Community Research Ethics Board of Alberta (Alberta Innovates-Health Solutions) will be migrating to IRISS. A collaboration agreement has been drafted and a project charter has been approved. Migration will happen in the summer of 2013.

6.2 Alberta Cancer Research Ethics Committee

The Alberta Cancer Research Ethics Committee (ACREC)⁶ is one of the research ethics boards in Alberta and serves the cancer research community. The committee welcomed Dr. Glenys Godlovitch as its new Chair in August 2012. Dr. Godlovitch is working alongside the Associate Chairs, Drs. Raul Urtasun and Jackson Wu, to provide leadership and direction for review processes.

⁵ <http://www.aihealthsolutions.ca/eip/hreh/>

⁶ <http://www.albertahealthservices.ca/2323.asp>

Supported by the work of the Research Ethics Coordinators, the ACREC Office reviewed 162 new applications in 2012-13 (Table 2) and provided oversight for over 730 active projects. An ongoing priority for the Office is to increase the outreach with its research partners and the Cancer Care research community, working with them to identify and implement key process improvements. Additionally, the ACREC Office is actively participating and contributing to the Health Research Ethics Harmonization Initiative (see section 6.1).

TABLE 2: REVIEWS CONDUCTED BY THE ACREC OFFICE IN 2012-13

Review Type	Q1	Q2	Q3	Q4	TOTAL
Full Board Applications	26	22	23	25	96
Minimal Risk Applications	20	18	21	7	66
Full Board Amendments	16	13	14	11	54
Full Board Annual Renewals	59	34	53	36	182
Delegated Annual Renewals	85	48	63	57	253
Reactivations	6	2	2	8	18
Local Serious Adverse Events (SAEs) reported	92	106	99	81	378
TOTAL	304	243	275	225	1047

6.3 Intellectual Property

This year the Research Portfolio, with the support of AHS Corporate Policy and Legal Services, developed an Intellectual Property (IP) Procedures Manual⁷ for the IP Policy (#IM-10). These documents outline the rights and obligations of AHS and IP creators in the disclosure, ownership, transfer, commercialization, and revenue sharing of IP, while preserving openness and transparency through knowledge sharing and collaboration with partners. A dissemination plan and knowledge translation plan is underway.

The Health Technology Assessment & Innovation unit performs the due diligence on IP matters for AHS. Several major continuing and completed projects have been modeled through the procedures set forth in the IP Manual, including IP associated with the LINAC Magnetic Resonance Imaging System (joint ownership with University of Alberta), Medical Titration Application (joint ownership with the University of Alberta), and Systems and Methods for Diagnosing Strokes (inventor-owned).

6.4 Open Data Model

AHS is in the early stages of developing an “open data model” – a process to connect centralized administrative and clinical program-specific databases in order to enhance clinical performance measurement. The overall goal is to achieve better outcomes for patients by using data and analytics to identify improvement opportunities that will make the greatest impact.

This year, two pilot projects were completed to connect previously separate datasets and thus provide analysts with access to wider and more comprehensive data than before. The pilot projects allowed an assessment of variation in care practices across the province, as well as a better view of the linkage between patient outcomes and the processes of care. Further improvements of this model are planned, building on the lessons learned from the pilots.

6.5 Research and Privacy

In May 2012, a Research and Privacy Working Group was formed to develop standards and improve communications between AHS and the research community with regard to information management and privacy concerns. The Working

⁷ http://insite.albertahealthservices.ca/Files/cpd_prdapproved_ip_procedure_manual.pdf.

Group has members from the University of Alberta, University of Calgary, Alberta Health, the Research Portfolio, and the AHS Information & Privacy Office.

The first major issue is the need to work towards compliance with the Health Information Act with regard to research agreements. To address this, the AHS Information & Privacy Office developed a research agreement template and standard to provide guidance to researchers. The Working Group is developing a document which will provide advice to AHS researchers and collaborators on the research agreement template and process.

7. BEING EFFECTIVE WITH AHS RESOURCES

AHS is committed to being effective with its resources to achieve high quality research that will improve the health of Albertans. AHS seeks to develop its human resources by providing training opportunities, its information resources by making research data more accessible, and its financial resources and health outcomes by ensuring that new technologies are carefully assessed before resources are committed to them. As a way of measuring the strength of the research environment, AHS monitors the research activity occurring under its umbrella.

7.1 Providing Training Opportunities

CITI and Network of Networks (N2)

The Research Portfolio provides training opportunities to personnel working in or interested in research through the Collaborative Institutional Training Initiative (CITI). Currently, Canadian content CITI web-based training modules available to AHS-affiliated staff include: Good Clinical Practice (now recognized and accepted by 12 pharmaceutical companies), Responsible Conduct of Research, and Basic Biomedical Research Ethics. In this reporting year, two new courses have become available: The Transportation of Dangerous Goods and Basic Social and Behavioural Research Ethics. In the current year, 238 individuals associated with AHS have registered or received training in one or more of these courses.

The organization N2 (Network of Networks), of which the AHS Research Portfolio is a member, has developed and vetted the Canadian content of these CITI training modules. AHS' membership in N2 also provides a variety of tools and templates for investigators, such as Standard Operating Procedures.

Survey Design Resources

This year, the Data Integration, Measurement & Reporting department expanded AHS' online resource library by another half-dozen tools that educate and inform about survey design and evaluation processes. This library is available to managers and other healthcare providers across AHS via intranet and now includes more than a dozen tools across a wide range of topics, from determining survey sample sizes to creating logic models for evaluation planning. These resources will be supplemented by skills development workshops in 2013/14.

Research 101

As part of its ongoing mandate to mentor researchers at all levels, the Research Excellence Support Team has developed PowerPoint presentations called "Research 101" to address and answer common basic questions asked by AHS staff about research processes and methods. Staff can obtain standard and reliable information through these one-hour presentations.

Health Technology Assessment and Knowledge Translation 101

A series of educational events were held to outline how health technology assessment and knowledge translation is being applied within AHS. Participants included AHS staff, nursing students and residents in anesthesiology, and oncology (medical, radiation and surgical).

7.2 Managing Data

AHS is continuing on its journey to make performance and research data more accessible and timely for researchers and decision-makers while ensuring that proper approvals are in place.

Analytics and Performance Reporting

This year saw numerous provincial data sets added to AHS' data repository for reporting, improvements to data governance practices, and a strong push to get performance reporting and other business information into the hands of decision-makers quickly. To date, more than 50 dashboards have been published on the AHS intranet, a number that is expected to grow significantly in the future as the organization's analytic capacity matures.

Data Access for Researchers

AHS has developed a process to support researcher access to health system data under AHS' custodianship. Following the provisions as set out in the Health Information Act, this process ensures that all necessary approvals (including ethics) are in place, and also necessitates that a research agreement be structured and signed off between the researcher and AHS before any data are disclosed. The process also ensures that all requests are documented and administered through a central intake system so they can be tracked from start to finish.

7.3 Assessing New Health Technologies

The Health Technology Assessment & Innovation and Knowledge Translation units of AHS' Research Portfolio assist with assessments of new health technologies being considered for adoption within AHS. Projects completed or ongoing in this year include:

- Analysis of the use of transcutaneous bilirubinometry device (Minolta JM-103) for screening and diagnosis of neonatal hyperbilirubinemia in Alberta. The report was completed and some recommendations were made to AHS executives for implementing the Calgary bilirubinometry program in Alberta. A final decision is pending.
- Economic evaluation of Enhanced Recovery After Surgery (ERAS) for the Obesity, Diabetes & Nutrition Strategic Clinical Network;
- Cost-effectiveness of screening and treatment for perinatal depression and/or anxiety on child development outcomes for the Addiction and Mental Health Strategic Clinical Network;
- Cost-effectiveness of the Mind, Exercise, Nutrition, Do It (MEND) intervention to prevent overweight and obesity in children for the Obesity, Diabetes & Nutrition Strategic Clinical Network;
- A report on financial and operational impact assessment of magnetic growing rod and Shilla technique for early onset scoliosis in support of the Surgical Operational Clinical Network; and
- Implementation plans for a pilot project on renal denervation for resistant hypertension under the auspices of the Cardiac Health and Stroke Strategic Clinical Network. The project was province-wide, involving clinicians from both Edmonton and Calgary Zones and AHS research consultants.

Post-Policy Implementation Monitoring

For health technologies or projects that have received a Ministerial policy directive for implementation, AHS' Health Technology Assessment & Innovation unit is tasked with seeking, tracking, and reporting on AHS' implementation plan development, implementation strategy, and process through to completion. Since September 2012 (when a monitoring process was outlined), the Health Technology Assessment & Innovation unit has compiled and reported on AHS implementation of past policy decisions and currently is tracking implementation of Vitamin D, First and Second Trimester Screening, Bariatric Surgery, Portable Prothrombin Time Systems, and Transarterial Radioembolization policy decisions.

7.4 Translating New Knowledge

A new Knowledge Translation unit within AHS' Research Portfolio was formed in July 2012. This unit supports evidence-informed decision making through the exchange, synthesis, and application of knowledge to quickly capture the benefits of research. The unit recruited two Health Technology Assessment Analysts to provide support to the Strategic and Operational Clinical Networks in their health technology assessment and reassessment projects. Each analyst is currently assisting three Strategic Clinical Networks and one Operational Clinical Network to support evidence-informed decision making with respect to health technologies. The Analysts are also involved in the development of knowledge translation plans that will ensure the application of the results and recommendations from these technology assessment and reassessment projects.

7.5 Measuring Research Activity in AHS

Health research provides many direct and indirect benefits to Alberta patients, such as attracting external revenues, providing patients with access to promising new drugs, reducing drug acquisition costs for patients participating in trials, applying conclusions from research to patients not involved in trials, and attracting and retaining talented individuals to/in Alberta.

Figure 1 and Tables 3 and 4 provide a brief outline of some of the health research activity within AHS.

Because of the integrated research model with AHS' university partners, there is much health research occurring within the universities that is not included in this report. Section 8 provides selected examples of Albertans benefiting from research.

TABLE 3: NUMBER OF NEW RESEARCH PROJECTS APPROVED IN 2012			
Zone	No. of New Studies Approved	No. of Active Studies	
Edmonton Zone ^a	495	1647	
North Zone ^c	1	ND	
Central Zone ^c	5	~20	
South Zone ^c	11	ND	
Cancer Care ^d	134	724	
Cancer Studies by Region	Edmonton	74	437
	Calgary	34	207
	North	2	2
	South	0	1
	Multi-site	24	77
TOTAL	646	2391+	

^aStudies receiving AHS administrative approval by the Northern Alberta Clinical Trials and Research Centre.

^bStudies receiving ethics approval from the Conjoint Health Research Ethics Board.

^cData from Zone Research Committee.

^dAdult oncology studies receiving ethics approval through the Alberta Cancer Research Ethics Committee.

ND, no data. No data are available for the Calgary Zone.

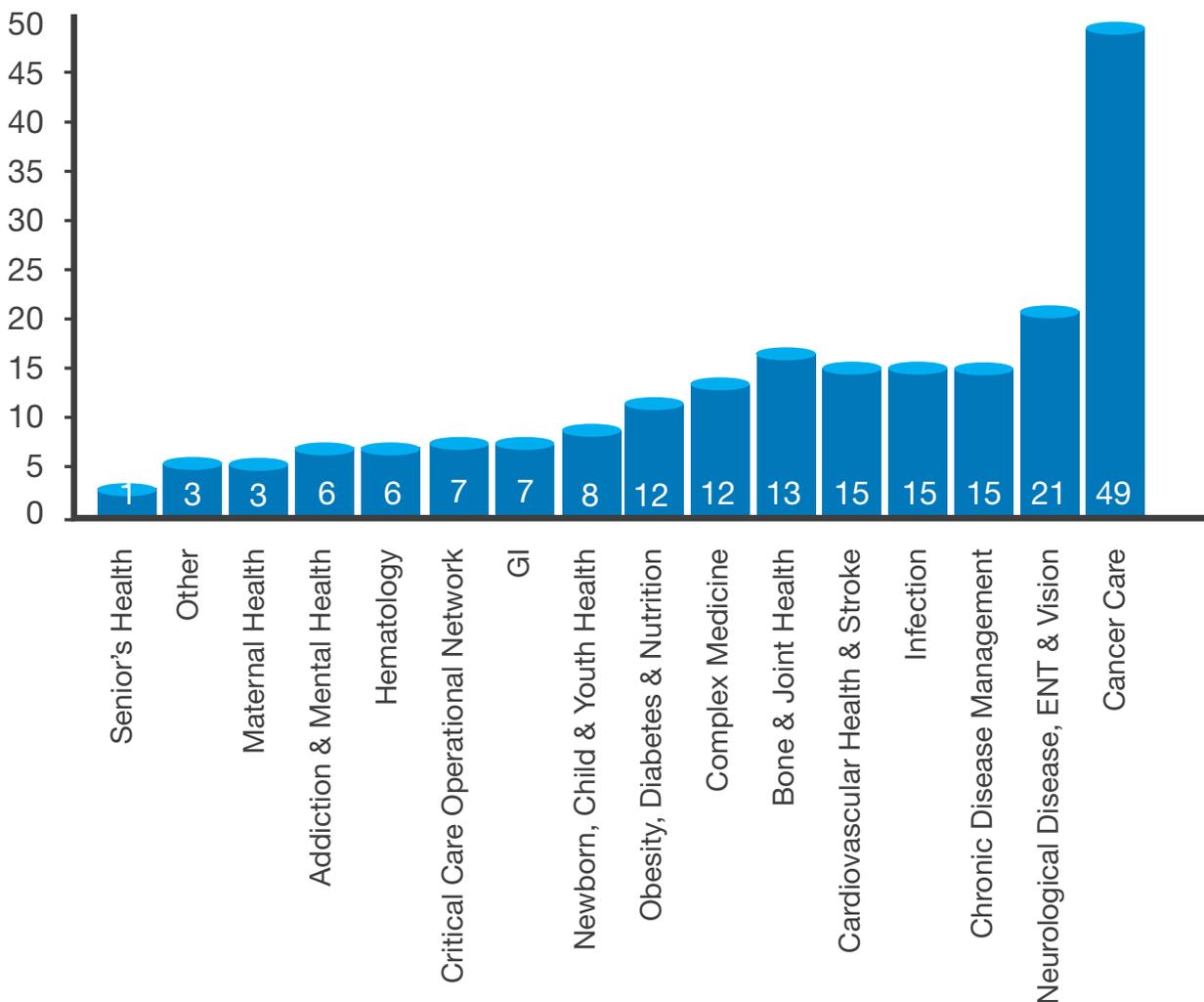
TABLE 4: AHS RESEARCH STUDIES OPENED IN 2012 BY SPONSOR TYPE ^a

Sponsor Type	Edmonton Zone	North Zone	Central Zone	South Zone	Cancer Care	Total
Cooperative Groups	3	0	0	0	19	22
Investigator-Initiated ^b	400	1	3	10	47	461
Industry	92	0	1	1	43	137
Other	0	0	1	0	25	26
TOTAL	495	1	5	11	134	646

^aNo data are available for the Calgary Zone

^bIncludes the following categories: Investigator-Initiated/Grant, Investigator-Initiated/Industry Sponsored, Investigator-Initiated/In-Kind Contribution, Investigator-Initiated/Internal and/or Contingency Funding, and Investigator-Initiated/No Funding.

FIGURE 1: CLINICAL TRIALS OPENED IN 2012



8. RESEARCH MAKES A DIFFERENCE IN THE LIVES OF ALBERTANS

The following examples show how research studies are making a difference in the lives of Albertans. These studies were chosen to reflect a variety of disciplines and geographic areas as well as both discovery and needs-based research.

8.1 Clinical Pathways for Asthma: President's Excellence Award for Research

The Asthma Working Group, a multidisciplinary provincial group within the Respiratory Clinical Network, is the recipient of the 2013 President's Excellence Award for Research. Its focus is developing, implementing and evaluating asthma clinical pathways. These clinical pathways guide clinicians in assessing and treating pediatric asthma, resulting in standardized, evidence-based care and better outcomes for pediatric patients and their families.

"It's a great honour for our team," says Dr. David W. Johnson, Asthma Working Group co-chair, Section of Pediatric Emergency Medicine, and professor with the Departments of Pediatrics and Pharmacology & Physiology, University of



Calgary, Faculty of Medicine. "AHS' emphasis on Strategic Clinical Networks has allowed us to improve care and make a difference on this scale."

The new pathways provide evidence-based treatment plans to emergency department/urgent care centre and inpatient clinicians, ensure family physicians are informed, and offer educational materials to families to aid in self-management. The team also developed online learning tools for health professionals across the province. Since the learning modules launched less than a year ago, nearly 300 AHS health care professionals have passed one or both asthma courses. These individuals are spread across 22 different facilities in all five zones. Asthma clinical pathways are currently established in rural and urban sites in the South Zone and Calgary Zone. The team's goal is to expand the pathways to the remainder of the province.

ABOVE: The Asthma Working Group – which includes about 30 members – is a multidisciplinary team focused on developing, implementing, evaluating asthma clinical pathways. The group received the President's Excellence Award for Outstanding Achievements in Research in May 2013.

8.2 Researchers Study Potential Treatment for Multiple Myeloma

Researchers at AHS-Cancer Care and the University of Calgary are looking at using a virus as a possible treatment for multiple myeloma – a cancer that affects blood cells. In a study published in *Clinical Cancer Research* and funded by grants from the Alberta Cancer Research Institute, scientists injected the reovirus – which occurs naturally in humans – into animal models containing human multiple myeloma cell lines.

Reovirus is a common virus that most people are exposed to in their lives but it does not result in significant illness. "When reovirus is given systemically, it travels to the bone marrow where the myeloma cancer cells reside, and specifically kills these cells not harming the normal cells. Reovirus has the ability to multiply within the cancer cells,



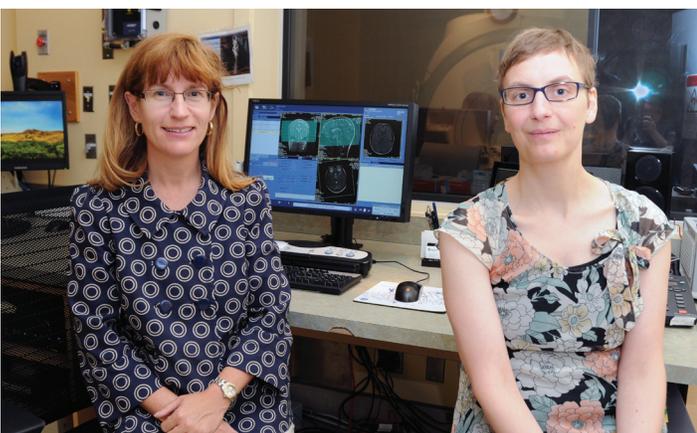
unlike chemotherapy drugs, which have a dose limitation due to side effects to the patient,” says first author, Chandini Thirukkumaran, PhD, assistant professor in oncology and member of the University of Calgary’s Southern Alberta Cancer Research Institute.

“We’re not into human trials with this yet but it’s certainly where we’re heading” says Dr. Don Morris, study co-investigator, AHS medical oncologist, and a member of the University of Calgary’s Southern Alberta Cancer Research Institute. Scientists hope this research lays the foundation for an early phase clinical trial using reovirus for the treatment of multiple myeloma. This same group of researchers has already started clinical trials using the reovirus on lung and prostate cancer.

ABOVE: Dr. Don Morris, right, and Chandini Thirukkumaran have authored a study that explores the use of a naturally occurring virus to attack tumours caused by a cancer that affects blood cells.

8.3 Research Aims to Tailor Treatment for Depression

Finding the most effective anti-depressant is a process that can prove time-consuming and frustrating for both doctors and their patients. It typically takes months of trial and error to arrive at the optimal prescription for individuals with debilitating major depression. A pilot study in Calgary aims to find out why people respond differently to anti-depressant medications and could one day help doctors to find the best drugs for individual patients sooner. Researchers are asking the question: “Is there a biological marker, or something that we might find in a blood test or a brain scan, that can help us select the best treatment options?”



In the study, patients with major depression will receive a Health Canada-approved anti-depressant for an eight-week period. Researchers will then analyze blood and urine samples to identify potential biomarkers. A biomarker is a biological feature, such as a gene or a protein, which can be measured to determine the state of a disease or treatment response in a person. Patients will undergo a magnetic resonance imaging (MRI) scan so researchers can learn more about how brain structure and function may be affected by depression and subsequently by medication. Researchers will also interview patients regularly to determine the effectiveness of the medication. The pilot study is part of a larger project known as the Canadian Biomarker Integration Network for Depression (CAN-BIND).

ABOVE: Research doctors Glenda MacQueen, left, and Stefanie Hassel are working together to find faster, more precise ways to determine the best treatment options for people with major depression.

8.4 Breakthrough Drug Protects Against Stroke Damage

A landmark study, led by Canadian researchers, has proven the safety and neuro-protective qualities of a new medication called NA-1. A study published in *The Lancet Neurology* showed a 50 per cent reduction in the amount of brain damage sustained through aneurysm repair in people who received NA-1, compared to those who received a placebo.

“The results of this clinical trial represent a major leap forward for stroke research,” says Dr. Michael Hill of the Calgary Stroke Program at Foothills Medical Centre and the University of Calgary’s Hotchkiss Brain Institute (HBI).

“There have been over 1,000 attempts to develop such drugs, which have failed to make the leap between success in the lab and in humans.” Hill, who is also a professor in the Department of Clinical Neurosciences, was the principal investigator of the multi-centre trial, which included more than 180 patients at 11 sites in Canada and three in the U.S. The drug was developed by Dr. Michael Tymianski at the Krembil Neuroscience Centre at Toronto Western Hospital.

NA-1 works by disrupting one element in a “biochemical cascade” that leads to tissue damage following stroke. Researchers caution that more clinical trials are needed and it could be three to five years before NA-1 makes its way into general use.



ABOVE: Dr. Michael Hill assesses patient Millie Nelles, who participated in a clinical trial that’s looking at the effectiveness of a new drug believed to protect against damage caused by stroke.

8.5 AHS Doctors Perform Canada’s First Liver Cell Infusion



Urea cycle disorder (UCD) is a rare genetic condition that can cause a life-threatening buildup of ammonia in the brain. Ammonia is naturally produced as the body uses protein but, for those with UCD, the process of converting ammonia to urea (a harmless substance that gives urine its yellow colour) does not work properly.

Nazdana, an infant from Portage La Prairie, is the first patient in Canada to receive an experimental and potentially life-saving form of therapy to improve the function of her liver after a diagnosis of UCD. Physicians at Alberta

ABOVE: Dr. Aneal Kahn performs the country’s first liver cell infusion on three-month-old Nazdana Jan at the Alberta Children’s Hospital, Calgary.

Children’s Hospital, led by medical geneticist Dr. Aneal Khan, successfully completed a series of liver cell transplants on Nazdana in November 2012.

“We have been monitoring Nazdana closely and are happy to report that she has tolerated the liver cell transplant well,” says Dr. Khan, who is also an assistant professor of medical genetics and pediatrics at the University of Calgary, and a member of the U of C-AHS Alberta Children’s Hospital Research Institute for Child and Maternal Health. “It’s a promising new bridge therapy that could improve the odds of Nazdana surviving until she is able to undergo a liver transplant.”

Nazdana’s procedures took place over six days in November at Alberta Children’s Hospital, with each infusion taking about an hour. It is part of a research trial sponsored by the biotechnology firm Cytonet LLC, which covered all costs for the procedures, hospitalizations, blood tests, and related expenses.

8.6 Groundbreaking Procedure Dials Down Blood Pressure

A groundbreaking medical procedure offers new hope for people who suffer from chronic high blood pressure. The CK Hui Heart Centre at the Royal Alexandra Hospital is the first facility in Western Canada to perform renal denervation, a minimally invasive operation designed to treat the most serious cases of chronic high blood pressure, also known as hypertension.

Research shows overactivity in the nerves along the renal arteries — the main blood supply to the kidneys — can lead to severe hypertension that responds poorly to conventional medications. Renal denervation is the process of using low-level radio frequency energy to deliberately neutralize selected nerves within the wall of the arteries of the kidneys to eliminate the root cause of the hypertension.



The first procedure was performed in early November 2012 by cardiologists Dr. Micha Dorsch and Dr. Keysun Ranjbar, along with their multidisciplinary team members: interventional radiologist Harnil Sidhu; Dr. Albert Yeung and Dr. Raj Padwal, who oversee the hypertension clinics at the Royal Alex and University of Alberta Hospital, respectively; and anesthesiologist Dr. Carolyn Hui. “The results from renal denervation are very impressive,” says Ranjbar. “The magnitude of the drop in blood pressure has been greater than with multiple medications.”

The pilot of this renal denervation procedure is made possible through the Royal Alexandra Hospital Foundation’s CK Hui Heart Centre Campaign. Community support helped raise \$8 million, of which \$5 million is designated for research and innovation funding.

ABOVE: Ludwig Kusiak, the first person in western Canada to undergo renal denervation, has his much-healthier blood pressure checked by his cardiologist, Dr. Keysun Ranjbar of the CK Hui Heart Centre at the Royal Alexandra Hospital in Edmonton.

8.7 CAREN Changes Lives, Drives Rehab Research in First Year

The only clinical virtual reality simulator of its kind in Western Canada is helping drive research at the Glenrose Rehabilitation Hospital. The CAREN (Computer-Assisted Rehabilitation Environment) is restoring mobility to wounded military personnel and a wide variety of civilian patients, and leading health professionals and technology leaders to explore new ways to help more patients. CAREN's split-belt-treadmill platform, motion hydraulics and circular surround screen can be programmed to create virtually any scenario or game imaginable as it delivers a rehab program precisely tailored to each patient's needs.

"We can replicate most anything you can dream up. We can span all ages and many conditions," says Darrell Goertzen, Technology Service Leader for Research and Technology Development. "We can bring in a 92-year-old, for example, and start CAREN off as a flat treadmill and project a nice park scene as she walks slowly. As she regains confidence, we can put some hills along the path. Bring in more distractions for cognitive issues. We can start out easy and just keep piling on the tasks as the therapists and clinicians see fit — to ramp it up to keep it fun and challenging." As well, sensors placed on patients are tracked by overhead cameras to give objective feedback and measure progress on gait, stride, speed, weight-shift, balance and more. A patient becomes part of the simulated environment, interacts with it and changes it through their body movements.



The CAREN at the Glenrose is the result of the hospital's partnership with the Department of National Defence. It can be used to rehabilitate Canadian Forces personnel and civilians with both physical and psychological injuries such as amputations, Parkinson's Disease, stroke, brain injuries, spinal cord injuries and cerebral palsy, as well as psychiatric disorders such as phobias and Post-Traumatic Stress Disorder. Canada's other clinical CAREN system is located in Ottawa.

To date, the \$1.5-million device has helped soldiers — as well as patients ranging in age from preschoolers to seniors in their 90s — and each month typically provides advanced rehabilitation to 30-40 patients, half of them new. The number and frequency of one-hour sessions varies based on patient needs.

ABOVE: A patient's movements are tracked by the CAREN simulator.

8.8 Fighting Obesity with Technology

When it comes to childhood obesity, much research has been done around the negative impact television, computers, video games and mobile technology are having on activity levels. Now researchers with AHS and the University of Alberta are embracing technology as a way to fight obesity. A new pilot project will engage parents through the use of iPads to learn more about supporting a healthy lifestyle for their child. The project is aimed at reaching families whose children may be slightly overweight, but not obese, to provide early interventions. Avoiding the need for more intensive and aggressive therapies will mean better outcomes for children and their families.

Dr. Geoff Ball and his team of researchers and decision-makers from AHS, Alberta Health and the University of Alberta are co-recipients of a Partnership for Health Systems Improvement (PHSI) grant from the Canadian Institutes of Health Research and Alberta Innovates — Health Solutions, worth \$440,000, which will be used to build the iPad application and develop ways to measure the effectiveness of the tool. The application will be developed in consultation with



health professionals and families, and the survey will be introduced in the fall of 2013. In total, the research team hopes to engage 100-150 families over the course of the study.

Ball hopes parents will find the iPad feedback objective and non-judgmental, making them comfortable to talk about their child's weight with their health-care team. "It's an easier segue into the conversation and puts the onus on the parents to talk about it and identify healthy weight as a priority. We hope the feedback from the iPad app provides insight they didn't have before," says Ball.

ABOVE: Dr. Geoff Ball, AHS Director of the Pediatric Centre for Weight and Health at Stollery Children's Hospital in Edmonton, holds an iPad which could become a key tool in the fight against childhood obesity.

8.9 New Research Team to Protect Cardiac Health of Breast-Cancer Patients

As many as one in five women who undergo chemotherapy for breast cancer may experience some degree of debilitation in heart function following treatment. New research on how best to protect the heart health of women being treated for breast cancer is underway at the Mazankowski Alberta Heart Institute, thanks to a \$300,000 grant from the University Hospital Foundation in partnership with the Allard Foundation.

An interdisciplinary team — led by AHS cardiologist, Dr. Ian Paterson, an associate professor of medicine at the University of Alberta — will establish a new clinic of specialists and researchers from cardiology, oncology, rehabilitation medicine, imaging and biomedical engineering. They will identify breast cancer patients at risk for heart damage as they develop strategies to prevent it.



With team members drawn from the Mazankowski Alberta Heart Institute, the Cross Cancer Institute and the University of Alberta, the team's approach is based on the belief that heart damage due to cancer treatment can be prevented by aggressively treating risk factors for heart disease.

The Cross Cancer Institute sees about 1,250 new breast-cancer patients a year. During this three-year clinical trial, breast-cancer patients will be invited to take part in a randomized study. Half will be referred to the new interdisciplinary clinic; the other half will receive the current standard of care, which involves visits with their oncologist and periodic cardiac ultrasounds.

ABOVE: Beth Allard-Clough, left, of The Allard Foundation, AHS cardiologist Dr. Ian Paterson, cancer survivor Brenda Goodkey, nurse practitioner Edie Pituskin and Dr. Mark Haykowsky, U of A Professor of Physical Therapy, launch a new research program that aims to protect the heart health of breast cancer patients at Edmonton's Mazankowski Alberta Heart Institute.

