

# Alberta's Health Research and Innovation Strategy





# MINISTERS' MESSAGE

## Message from



**Honourable  
Doug Horner  
Minister of Advanced  
Education and  
Technology**



**Honourable  
Gene Zwozdesky  
Minister of Health  
and Wellness**

On behalf of government, we are pleased to present *Alberta's Health Research and Innovation Strategy*. This strategy sets out Alberta's health research agenda for the coming decade to ensure our considerable investments in research align with our priority—to improve the health of Albertans.

As a result of past investments in health research, Alberta's researchers have made significant discoveries—discoveries that have benefited Albertans, and people around the world. Our world-renowned research community is well-positioned to continue its leadership role and contribute to Alberta's economy. This strategy maps out an approach to health research that will improve the wellness of Albertans. The strategy will also increase opportunities for economic growth and help to enhance the responsiveness and quality of our health system.

We need to further examine the “why” and “how” in issues such as child and maternal health, mental health and addictions, environmental health and chronic and infectious disease. These issues can only be addressed through a health research and innovation system that includes a diverse group of highly-skilled people working collaboratively in supportive and stable environments.

The priorities and actions outlined in this 10-year strategy will build on our position as a world-class leader in the field of health research and reflect Alberta's long-standing commitment to scientific excellence, while making important steps toward the improved health and well-being of Albertans.

*Original signed by*

Doug Horner  
Minister

*Original signed by*

Gene Zwozdesky  
Minister

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# SETTING THE STAGE

## **Health research and innovation can change the lives of Albertans.**

The health research and innovation system of tomorrow goes beyond the conventional image of researchers toiling away in search of life-saving cures. It will be a system that builds on traditional areas of health research, in which Alberta-based researchers have contributed to outstanding discoveries. It will bring together researchers from long-established health research areas with those in the fields of social sciences, engineering, agriculture and food, nanotechnology and more. It will engage health care providers, administrators, policy-makers and Alberta's innovators to address the changing health needs of Albertans.

The primary questions at the heart of the strategy are how do we ensure: that the research community that is already hard at work in Alberta continues to thrive, that the research conducted contributes to Alberta's health priorities, that it improves health service delivery, that it is appropriate given the role Alberta-based researchers play nationally and internationally, and finally, that it helps develop a thriving knowledge-based economy?

In developing the strategy, the Government of Alberta consulted extensively with the health research and innovation stakeholder community. People and organizations involved in all aspects of health research in Alberta gave freely of their time and offered valuable ideas through forums, priority-setting workshops and one-on-one interviews.

The strategy maps out an integrated, results-oriented approach to health research and

“Harnessing the power of the exceptional health research and innovation happening in Alberta is going to help us find more world-class solutions to health challenges faced by jurisdictions around the world.”

**Doug Horner,**  
*Minister of Advanced Education  
and Technology*

innovation that will improve health outcomes for Albertans, increase the efficiency and effectiveness of the health system and create economic benefits for the province. Over the next ten years, the strategy will influence the Government's funding allocations and inform decisions made by agencies and private sector organizations engaged in health research in Alberta.

## **What do we mean by health research?**

The term “health research” often brings to mind images of biomedical laboratory experiments or clinical trials for new medications, diagnostic or imaging techniques. Indeed, these elements are vital components of the health research enterprise, but the term health research encompasses much more. Taken very broadly, health research covers all of the types of research relevant to the understanding or betterment of human health.<sup>1</sup>

<sup>1</sup> Roger Palmer. “Inventory of Health Research and Innovation in Alberta.” 2009

Health research is multidimensional and can be categorized in a variety of ways. This strategy uses the Canadian Institutes of Health Research (CIHR)<sup>2</sup> pillars for categorizing health research:

- **Biomedical research** – is essentially laboratory research with the goal of understanding normal and abnormal human functioning, at the molecular, cellular, organ system and whole body levels, including development of tools and techniques to advance this goal; and developing the new therapies or devices that improve health or the quality of life of individuals, up to the point where they are tested on human subjects.
- **Clinical research** – is research for the purpose of improving the diagnosis and treatment (including rehabilitation and palliation) of disease and injury and improving the health and quality of life of individuals as they pass through life stages.
- **Health services research** – is research centered on improving the efficiency and effectiveness of health professionals and the health system, through changes to practice and policy. Health services research is a multidisciplinary field of scientific investigation that studies how social factors, financial systems, organizational structures and processes, health technologies and personal behaviours affect access to health care, the quality and cost of health care and ultimately, health and well-being.

- **Population and public health research** – is research for the purpose of improving the health of the Canadian population, or of defined sub-populations, through a better understanding of the ways in which social, cultural, environmental, occupational and economic factors determine health status.

This strategy recognizes that considerable research is being conducted in other fields that are highly relevant to human health. Research in the social sciences, environmental protection, biological science and technology, various branches of engineering, nanotechnology, agriculture and food, information and communications technologies (ICT) and other areas can also be characterized as health research to the extent that they have health-related applications. The complexity of today's health system demands research that transcends traditional domains.

## Health research in Alberta

The Government of Alberta has undertaken a number of initiatives that have created a window of opportunity and provided the impetus for the development of a new health research and innovation strategy. Two of them, in particular, are of direct relevance to the strategy:

- **Vision 2020: The Future of Health Care in Alberta** – This report describes Alberta's plan for health care, focusing on health system transformation and improving health services. Health research and innovation are required to help translate this new direction into necessary changes in systems, processes, diagnostics, treatments and delivery.

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<sup>2</sup> Canadian Institutes of Health Research. 2009/10 CIHR General Grants and Awards Policies.

“With one health system and one research system, Alberta is uniquely positioned to capitalize on advances in health research.”

**Gene Zwozdesky,**  
*Minister of Health and Wellness*

- **Alberta Innovates** – This new framework for provincially funded research and innovation organizations focuses research and innovation efforts on provincial priorities through reorganization of Alberta’s research and innovation system and clarifies roles and mandates for each of the organizations that comprise this system.

Together, these initiatives set the stage for a coordinated, aligned and forward-looking health research and innovation system for Alberta (Appendix A).

In addition, a number of other Government of Alberta initiatives, which impact key determinants of health, will help inform the provincial health research and innovation agenda (Appendix B).

At the heart of what differentiates Alberta from other Canadian jurisdictions are the development of integrated and coordinated provincial structures for health service delivery, post-secondary education and the advancement of research and innovation. These structures include:

- **Alberta Health Services** – a single provincial health service provider organization to serve the health needs of all Albertans.
- **Campus Alberta** – a framework that strengthens links among Alberta’s post-secondary institutions by establishing principles for delivering seamless learning opportunities for Albertans.
- **Alberta Innovates** – the province’s new research and innovation system, whose long term objective is to create one of the most vibrant and productive innovation environments in the world.

These structures place Alberta in a unique position to make significant advances in health through a pioneering approach to health research. The relationships and synergies among them form the basis of a strong, productive health research and innovation system. *Alberta’s Health Research and Innovation Strategy* will strengthen the connections and relationships among all of these structures.

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The estimate includes research program and infrastructure funding, construction, estimated R&D in Alberta health biotechnology companies, and clinical trials and salaries/honoraria prorated for research.

## Alberta's health research and innovation system

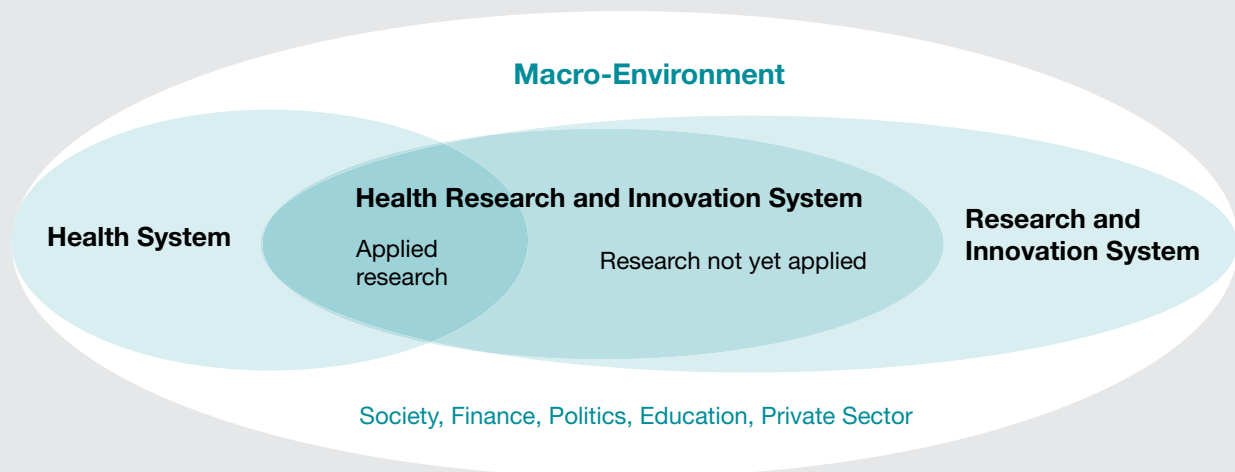
Alberta's health research and innovation system encompasses the people, institutions and activities that are engaged in generating and applying high-quality knowledge that can be used to promote, restore or maintain health. This system includes not only researchers and research funders, but also health professionals, policy makers, health organizations, entrepreneurs and industry.

Health research and innovation produce significant benefits. Research and innovation activities attract investment that approaches \$500 million annually.<sup>3</sup> This investment provides employment and income for world-class

researchers, supports staff and students; generates commercialization opportunities; improves health outcomes for Albertans; and helps to improve the efficiency and effectiveness of health service delivery.

As illustrated in Figure 1, health research and innovation in Alberta occurs at the intersection of two complex systems – the health system and the research and innovation system. This intersection creates a multitude of opportunities for collaboration across research disciplines. Multi-disciplinary, cross-sectoral research teams create synergies that can lead to significant advances in clinical and population health outcomes.

**Figure 1: Health, Health Research and Innovation, and Research and Innovation Systems**



<sup>3</sup>Roger Palmer. Inventory of Health Research and Innovation in Alberta (2007/08).

Source: Adapted from World Health Organization, 2004. World Report on Knowledge for Better Health: Strengthening Health Systems. Adapted from Pang T et al. Knowledge for better health – a conceptual framework and foundation for health research systems. Bulletin of the World Health Organization, 2003, 81:815-830.



These systems are interdependent and exist within an environment that includes education, training and continuous professional development. Health research and innovation are the means through which new knowledge is produced to bring about improvements in the health system. In turn, health system priorities create demand for the knowledge, products and services produced by health research and innovation. These close linkages enhance the health system, create economic development opportunities and ultimately, improve health outcomes.

One way in which research and innovation efforts are already impacting the health system is through rapid changes in technology. Additional technological advancements on the horizon have the potential to revolutionize the health system and diversify Alberta's economic base. For example:

- Advances in the fields of genomics, proteomics and metabolomics are changing how clinical services are delivered by making possible “personalized medicine” with more person-specific tools for preventing, diagnosing and treating disease.

- Advances in nanotechnology are leading to changes in diagnosing disease through developments such as the “lab-on-a-chip” (LOC), tiny glass or polymer chips that integrate one or several laboratory functions on a single chip of only millimeters to a few square centimeters in size. LOC devices are being used as research tools in pharmacy, biotechnology, health care and ecology.
- Advances in ICT have led to implementing electronic health records and new ways of delivering health care, such as telehealth, to rural and remote communities.

Research and innovation stimulate change and generate economic opportunities in other ways. Research into the underlying factors that determine health – such as socio-economic status, culture and gender – provide policy makers with the information they need to develop sound economic and social policy for the improvement of population health and wellbeing. Research into health system processes and structures can lead to improvements in individual health outcomes, reshape the delivery of health services and create economic development opportunities.



## The need for an Alberta Health Research and Innovation Strategy

Over many decades, Alberta's health system and Alberta's research and innovation system have tended to evolve along parallel, but separate tracks. While there was some overlap between these systems, the linkages tended to be issue-specific, and research investments and expertise were at times centred in very specific areas. This specialization did not always facilitate the broader cross-disciplinary research required to meet the health needs of Albertans and the priorities for the health system in the province.

A number of challenges need to be addressed in order for the health research and innovation system to fully contribute to the health system:

- **Greater alignment is required.** Health research needs to be aligned with the health needs of Albertans and with the strategic priorities set out for Alberta's health system in Vision 2020 and other significant strategic initiatives. The province needs a culture and practice of health research that actively engages health service providers, policy makers and the general public.
- **There is a need for greater focus.** As a relatively small player in the global context, Alberta needs to focus its research efforts in those areas where it can achieve excellence and make a substantial contribution to achieving better health outcomes and a better health system. Strategic health research that supports the priorities of the health system is crucial. Alberta's research efforts should also maximize social and economic benefits and facilitate national and international collaboration with other researchers.
- **Health research should be viewed from a broader perspective.** Health status or well-being is determined from the intersection of a number of factors – economic, social and environmental. A deeper, more robust understanding of these determinants of health will generate health improvements at the individual and population levels. A holistic view of health research will generate innovative service delivery, policies and practices that extend beyond the health system and will be key to achieving better health outcomes at the individual and population levels.
- **Knowledge must be more effectively translated into action.** Realizing system, economic, individual and community benefits from investments made in health research and innovation is crucial. Effective and efficient translation of knowledge into effective policy, practice, products, applications and services requires that the health system and the health research and innovation system have a culture that facilitates the uptake and application of knowledge. With the new structures that have been created in Alberta, the opportunity exists to establish new mechanisms that will embrace the uptake and application of knowledge.
- **Health systems need to embrace and adopt technological change.** As a result of accelerating advances in technology platforms such as genomics, biotechnology and nanotechnology, the health system itself is undergoing significant change. Technological change is a key factor in understanding both medical expenditure growth and recent dramatic improvements in the health of people with serious illnesses. Research is needed to understand the causes and consequences of technological change and also to understand what adaptations are required to clinical protocols and service delivery methods as technology advances.

# PRESENTING A BLUEPRINT FOR ACTION



## Vision

Albertans' quality of life will improve as a result of knowledge created and applied by an integrated, world-class health research and innovation system.

## Mission

To fuel health research and innovation in Alberta through well-aligned and focused investment in research discoveries and their application to improve health, social and economic outcomes for Albertans.

## Guiding Principles

- > Alignment with priorities for Alberta's health system.
- > Accountability with clear and specific objectives for research investment.
- > Improved balance among the various domains of health research.
- > Collaboration with other Canadian and international research communities.
- > Stability and sustainability of Alberta's health research and innovation system.

*Alberta's Health Research and Innovation Strategy* provides a strategic vision and clear direction for health research and innovation in Alberta for the coming decade and beyond. This strategy is intended to:

- provide a strategic approach to health research investment, through a focus on priorities where Alberta can make significant contributions;
- capitalize on strengths Alberta has established through past investments, ensuring Alberta's health research and innovation system remains robust; and
- encourage the effective translation of knowledge in all areas of policy and practice, in order to capture the benefits of Alberta's investments in health research for Albertans.



## Strategic Priorities

Two broad themes form the basis for the strategic priorities for *Alberta's Health Research and Innovation Strategy*:

- **wellness at every age, and**
- **innovative health service delivery.**

The health system and the health research and innovation system aim for a common future state in which:

- Albertans have improved health outcomes;
- Alberta's health care system is more accessible and responsive; and
- Alberta's economy benefits from diversified opportunities for economic growth.

Alberta's ability to achieve these long-term outcomes will be influenced by a number of driving forces, many of which are identified in *Vision 2020: the Future of Health Care in Alberta*. These include:

- the increased burden of chronic disease and disability associated with an aging population;
- the growing prevalence and rapid global transmissions of communicable diseases;
- the increasing expectations of more-informed consumers of health services;
- the growing voice of disadvantaged and vulnerable population segments; and
- the disproportionate claim on public funding and resources by the health sector compared to other key sectors such as education, infrastructure, environment and social services.

These driving forces, combined with the capacity of the health research and innovation system, set the stage for concerted action on key health research priorities of direct relevance to Alberta. By addressing these forces through strategic investment decisions in health innovation, Alberta will make substantial progress in achieving its long-term health research outcomes.



## Wellness At Every Age

Health and wellness is defined as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity".<sup>4</sup>

Wellness is a shared responsibility between individuals, families, communities, and governments. In Alberta, there is a need for increased emphasis on promoting wellness, preventing and treating illness, and addressing the factors that create barriers to good health. On average, two out of three Albertans, or just over 60 per cent of Albertans, report that they consider their health to be very good or excellent, with this percentage decreasing with increasing age. The following sub-priorities (described in more detail in Appendix C) take into consideration the broad Alberta context, as demonstrated by the drivers that impact Alberta's health system. Research in these areas, appropriately balanced among the four research pillars, will have the greatest impact on improving health, independence and quality of life at every age:

- child and maternal health;
- mental health and addictions;
- chronic disease;
- infectious disease;
- health promotion;
- vulnerable populations;
- injury prevention, acute care and rehabilitation; and
- environmental health.

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<sup>4</sup>Preamble to the Constitution of the World Health Organization.



## Innovative Health Service Delivery

Albertans expect that as a result of government investments, the health research and innovation system will continue to develop new technologies and new diagnostic and treatment procedures.

Albertans also expect health research to improve access to timely, affordable and quality health care. Following the creation of Alberta Health Services – a single health service provider organization for the entire province – the province is better positioned to be at the forefront of research into the operation of the health system and the delivery of services. Alberta also has the advantage of an ethnically and geographically diverse and stable population, a single-payer health system, an emerging electronic health record system and a strong health sciences community.

The pressures on the health system to meet the changing health needs of the population create challenges. At the same time, they provide an opportunity for health research to guide the development and implementation of innovative policies and practices for improvement in the health system and in service delivery. Research in this domain will focus on areas (described in more detail in Appendix C) such as:

- effectiveness and efficiency of primary health care systems;
- chronic disease management support systems;
- innovative delivery models; and
- personalized medicine.

# TAKING ACTION

Addressing the strategic priorities requires highly skilled people and innovative platforms, models and mechanisms. New relationships need to be forged that will integrate health research and innovation across research and policy domains. Once new discoveries have gone through a rigorous approval process, they need to be rapidly translated into policy, practice and health service delivery models. Together, these needs form the core enabling outcomes of *Alberta's Health Research and Innovation Strategy*. The enabling outcomes and accompanying actions are only the starting point for guiding provincial investments in the upcoming years. The role of government is primarily as a facilitator and a funder. To achieve the vision and outcomes identified in the strategy, government is relying on the research community, partners and stakeholders (Appendix D) to develop these areas further through additional actions.

## Strategic Focus

A focus on addressing emerging health and health system challenges through focusing on areas of need while capitalizing on areas of strength.

### Actions:

- Move, over time, to focus research program investments in the following areas of strategic priority:
  - wellness at every age, and
  - innovative health service delivery.

### Actions:

- Establish knowledge transfer expertise in “research-intensive” hospitals and primary care service delivery organizations.
- Enhance cross-disciplinary research and innovation in areas of strategic priority through team research grants programs.
- Explore the development of an Alberta academic health sciences centre concept to increase informed health service delivery planning and to facilitate the intricate linking of education, research and clinical practice that takes place in both academic and the service delivery settings.
- Enhance research capability in emerging areas that have direct application potential to health policy, practices, services or products.

## Highly Skilled People

A critical mass of highly talented researchers, innovators, and entrepreneurs throughout the health research and innovation system with diverse backgrounds to tackle present and emerging health challenges and generate significant advances in wellness and health systems.

- Recruit and retain world-class health system, product design, management and research talent to Alberta.
- Participate in national and international networks that will enable Alberta to benefit from global advancements in health.

# Knowledge Translation

A culture of shared inquiry and knowledge translation at all levels of the health and health research systems, directed at delivering innovative policies, programs, practices, products and services that address Alberta's strategic health research and innovation priorities.

## Actions:

### PRACTICE AND POLICY

- Establish knowledge translation programs in support of innovation and implementation of best practices within service delivery organizations, including clinical practice.
- Foster strong relationships between researchers and users of health research, with particular emphasis on growing the culture of evidence-informed decision-making within the decision and policy-making processes of the health system.
- Ensure use of research evidence in making policy decisions on health technologies, services and health system issues by taking actions such as expanding Alberta's health technology assessment capacity and coordination.

### COMMERCIALIZATION

- Accelerate the movement of discoveries and new applications into commercial products and services by:
  - developing partnering opportunities among organizations, including industry, committed to the development of commercially viable health products and services;
  - attracting and retaining entrepreneurial talent with experience in commercializing health research opportunities; and
  - establishing a health innovation office to accelerate the movement of research to the marketplace.

### HEALTH LITERACY

- Engage the public in discussions on health research and technology advances and challenges, bringing in talented researchers, industry leaders, ethicists and thought leaders to support public awareness, engagement and debate on various health research and technology challenges.
- Support strategic and operational research into factors that will result in sustained, effective behaviour change in individuals, in order to improve or maintain health status.



# Innovation Platforms

A technological and organizational environment conducive to discovery and knowledge development that will help fuel innovation.

## Actions:

- Enhance Alberta's clinical trials program and address barriers by improving the process for the recruitment of patients and by developing a streamlined research ethics review process.
- Establish a provincial biobanking system with clear standards of practice for the collection, storage, labeling and accessing of biological samples.
- Develop and implement an "Alberta Genomics for Health" plan in support of the emerging field of personalized medicine/health.
- Improve Alberta's health informatics capability by:
  - building on existing informatics and biocomputing capability in support of health systems research and advances in personalized medicine/health;
  - improving the collection of and access to anonymized health care data and information to enable research into areas of strategic priority and policy issues;
  - supporting the linkage of health data with other data on education, income, and housing to support research into the social determinants of health; and
  - building on and sustaining the Alberta Health Research Database.
- Enhance targeted technology and product development programs to support innovative preventative, diagnostic and therapeutic technologies and health products.
- Support centres of excellence and networks in critical disciplines that support the emergence of innovative health policy, practice, services and products.



# ASSESSING SUCCESS

*Alberta's Health Research and Innovation Strategy* deals with many long-term and complex factors that influence how a sustained investment in research can result in benefits to the health of Albertans, the performance of the health system and broader social and economic benefits. In terms of individual and population health, the potential benefits include improved health status as a result of advances in prevention, patient treatment and public health. Potential benefits to the health system include impacts on health service delivery through advances in accessibility, efficiency and effectiveness of services. Finally, economic benefits may include the advantages stemming from healthier Albertans as well as economic returns from commercialization of health research into applications, services, treatments and products.

Developing appropriate measures for the long-term performance and impact of the health research and innovation strategy comes with challenges, in part because:

- long-term impacts of health research such as improved health and wellness are difficult to measure through conventional methods;
- linkages between specific research findings and long-term benefits such as wellness are difficult to track, as there can be many intervening factors;
- knowledge is developed in incremental stages, sometimes making the “start point” difficult to discern; and
- attribution of new knowledge to a particular source can be difficult as, increasingly, new knowledge is the result of coordination between multiple researchers and research agencies.

In comparison with the long-term health and economic outcomes, the enabling outcomes that frame the actions more easily allow for development of appropriate measures and targets (Table 1). An update on returns to the provincial health research investment will be provided on an annual basis.

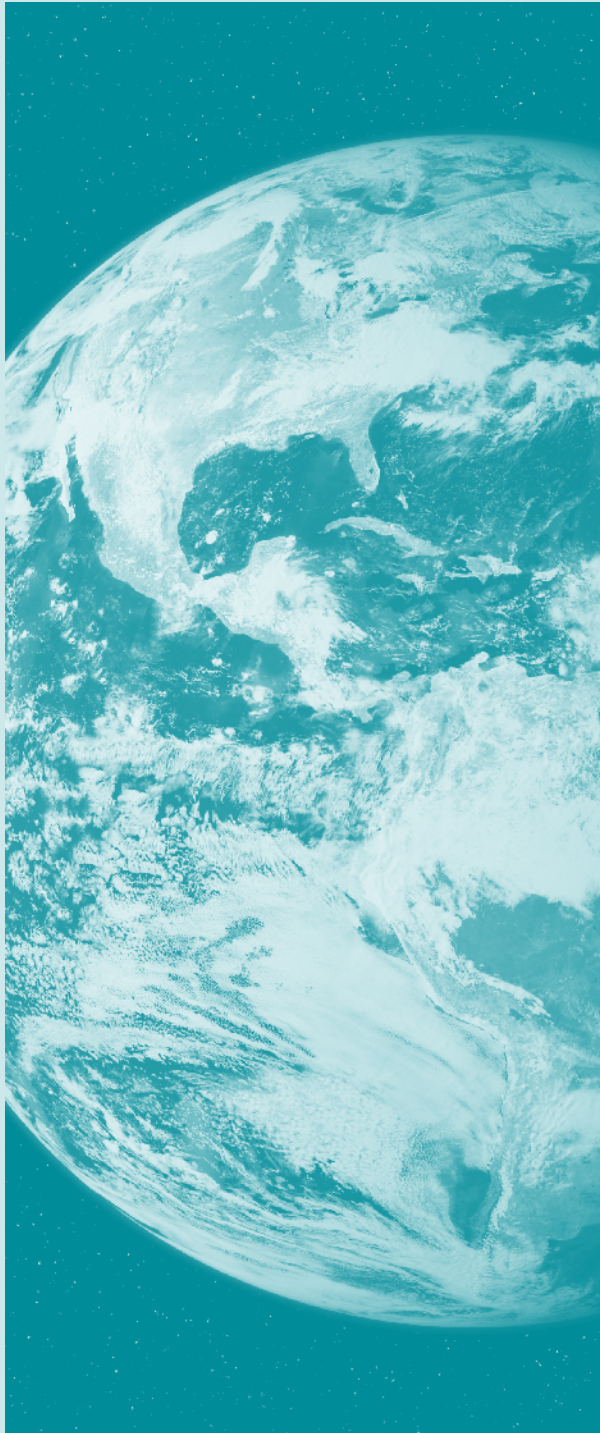


**Table 1. Sample performance measures for Alberta's Health Research and Innovation Strategy.**

Enabling Outcomes	Measures
<b>Strategic Focus</b>	<ul style="list-style-type: none"> <li>• Amount of health research funding spent in areas of strategic priority</li> </ul>
<b>Knowledge Translation</b>	<ul style="list-style-type: none"> <li>• Number of formal knowledge translation initiatives</li> <li>• Number of health technology assessments conducted</li> <li>• Technology licenses and company start-ups associated with local biomedical and medical device discoveries.</li> </ul>
<b>Highly Skilled People</b>	<ul style="list-style-type: none"> <li>• Number of interdisciplinary teams participating in health research in areas of strategic priority</li> <li>• Number of graduate students and post-doctoral fellows in specified disciplines in Alberta</li> <li>• External peer-reviewed research funds attracted to Alberta from national and international sources</li> </ul>
<b>Innovation Platforms</b>	<ul style="list-style-type: none"> <li>• Number of clinical trials and Health Technology Assessments in priority research areas</li> <li>• Number of researchers using relevant health data to support established provincial research priorities</li> <li>• Number of established centres of excellence</li> </ul>



# CREATING A HEALTHY FUTURE



Jurisdictions throughout the world are facing significant challenges that impact the health and well-being of their citizens. Widening socio-economic disparities, global pandemics, rapid technological change, escalating health care costs and stressed, overworked health-care delivery systems are just a few of these challenges. At the same time, and in response to these challenges, the global research community is producing new insights into health and illness as part of human development. The insights gained from these advances result in new approaches to long-standing problems and emerging challenges. Building on past investments and the critical mass of world-class health research excellence in Alberta, [Alberta's Health Research and Innovation Strategy](#) positions Alberta to continue to be at the forefront of health research, innovation and discovery.

## **What will be different in 10 years?**

Using a long-term, strategic approach to health research investment focused on areas of strategic priority for Alberta, [Alberta's Health Research and Innovation Strategy](#) sets the stage for:

- individuals and communities, regardless of age, location or diversity, to obtain optimal health outcomes;
- innovation in health service delivery, ensuring Albertans have access to the right services, at the right time, in the right location and by the right provider; and
- economic opportunities resulting from successful commercialization of health related applications and products that can be implemented domestically and exported to markets around the world.

# APPENDICES

## **APPENDIX A –**

Alberta's Health Research  
And Innovation System

## **APPENDIX B –**

Related Government  
of Alberta Initiatives

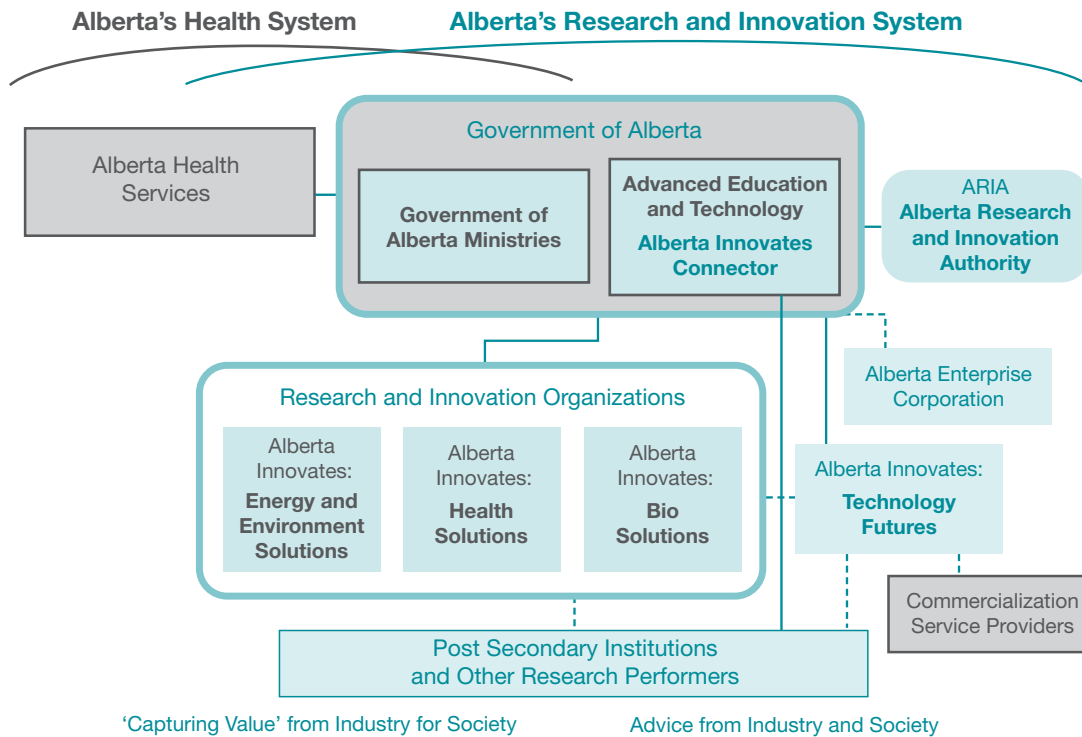
## **APPENDIX C –**

Strategic Priorities

## **APPENDIX D –**

Key Partners

## Appendix A – Alberta’s Health Research and Innovation System



On January 1, 2010, the ARIA and Regulation came into force to implement a new framework for provincially funded research and innovation organizations. The right side of the diagram above shows the configuration of the provincially funded research and innovation system, all of which participates in health research and innovation.

The left side of the diagram represents the health system within Alberta, as represented by Alberta Health Services (AHS). AHS is tasked with coordinating the delivery of health supports and services across the province. Research participation is a critical strategic priority for AHS.

## Appendix B – Related Government of Alberta Initiatives

Following is a partial listing of Government of Alberta initiatives that have a connection to Alberta's Health Research and Innovation Strategy. Further information on each of these may be obtained from the Government of Alberta website: [alberta.ca](http://alberta.ca) and searching on the appropriate keywords.

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### **A Foundation for Alberta's Health System, Report of the Minister's Advisory Committee on Health (2010)**

This report calls for the development of a new legislative framework for Alberta's health system and effective mechanisms for promoting evidence-informed practices in the delivery of healthcare.

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### **Active Alberta, A Recreation Policy Discussion Document (2009)**

This document envisions Albertans enjoying a high quality of life, improved health, strong communities and personal fulfillment through participation in recreation, sport and active living opportunities.

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### **Alberta Active Living Strategy (1998)**

The strategy recognizes that physical inactivity represents a major health risk and identifies 23 recommendations for increasing levels of physical activity.

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### **Alberta Immunization Strategy 2007-2017 (2007)**

This document explains a 10-year strategy to increase immunization rates in Alberta. The strategy contains seven evidence-based innovative directions to achieve the goal of fewer cases of vaccine-preventable diseases.

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### **Alberta Injury Control Strategy (2003)**

The strategy focuses on "Making Alberta the Safest Place to Live" through engaging Albertans in making injury issues a priority, reducing the frequency and severity of injuries in Alberta, and reducing the impact of and improving the outcomes for those affected by injury.

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### **Alberta Pharmaceutical Strategy (2008)**

This document describes a provincial strategy to make drug coverage in Alberta more accessible, affordable, efficient and therapeutically effective.

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### **Building and Educating Tomorrow's Workforce (2006)**

This document outlines the Alberta government's 10-year labour force strategy. The strategy aims for more workers, educated and trained people, and innovative and safe work places.

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### **Alberta's Action Plan for Bringing Technology to Market (2008)**

The action plan identifies a range of nine coordinated actions to increase the number of new companies in emerging advanced technology sectors.

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### **Continuing Care Strategy, Aging in the Right Place (2008)**

This strategy aims to improve health and personal care service options for seniors and persons with disabilities by enhancing supports to help them live within the community.

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**Growing Our Future, An Integrated Life Sciences Strategy for Alberta (2003)**

This strategy outlines how Alberta can create a broader, more diversified economy and build on the research and innovation happening in important sectors, such as agriculture, energy, environment, forestry, health, and information and communications technology.

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**Health Workforce Action Plan, Addressing Alberta's Health Workforce Shortages (2007)**

This nine-year plan, a collaboration between Alberta Health and Wellness, Alberta Advanced Education and Technology and Alberta Employment and Immigration, outlines 19 key initiatives to address Alberta health workforce issues. Key recommendations include creating a health career and skills assessment network, increasing clinical training capacity and attracting health professionals working abroad.

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**Healthy Alberta School Communities (HASC) Strategic Plan (2007)**

This plan, a joint initiative of Alberta Education and Alberta Health and Wellness, provides a comprehensive school health approach to support the development and implementation of health promotion strategies in school communities.

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**Healthy Kids Alberta! Strategy (2007 – 2017)**

This 10-year government strategy involves 17 ministries identifying ways to work together to promote the wellness of all Alberta children and youth (ages 0 – 18 years). The strategy focuses on four areas of wellness: achieving healthy weights by encouraging healthy eating and promoting active living; supporting healthy birth outcomes; enhancing early childhood development; and building resiliency.

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**Making the Food-Health Connection—An Alberta Framework for Innovation (2008)**

This framework provides a vision for Alberta where Albertans benefit from producing and eating food that makes them healthier and Alberta businesses participate in the global marketplace for health food products.

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**Vision 2020, The Future of Health Care in Alberta (2008)**

The strategy, Vision 2020, sets a new direction for Alberta's health system, providing direction on how to improve the delivery of services across the entire health continuum, including public health, primary, acute and continuing care, delivery of pharmaceuticals, ambulance services, health system governance and accountability.

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## Appendix C – Strategic Priorities

### I. WELLNESS AT EVERY AGE

Health and wellness is defined as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." It is a shared responsibility between individuals, families, communities, and governments. In Alberta, there is a need for increased emphasis on promoting wellness, preventing and treating illness, and addressing the factors that create barriers to good health. On average, two out of three Albertans, or just over 60 per cent of Albertans, report that they consider their health to be very good or excellent, with this percentage decreasing with increasing age. The following sub-priorities take into consideration the broad Alberta context, as demonstrated by the drivers that impact Alberta's health system. Research in these areas, across the four research pillars, will have the greatest impact on improving health, independence and quality of life at every age in the province.

#### Child and maternal health

In 2006-07, approximately 85 per cent of Alberta's children demonstrated healthy social and emotional development. While this indicates that many of Alberta's children are healthy and doing well, the province can do better. Many children are exposed to preventable risks, such as parental poverty and mental health problems. In addition, clinicians and policy makers are increasingly aware that health "develops" during childhood and there is a critical need to not just maintain but optimize the health of children. Decades of brain research document the role of early experience in determining emotional well-being and lifelong learning; longitudinal epidemiologic studies identify early childhood origins of adult disease;

and demographic analyses show that many health and social disparities have their origins in early childhood. Early health is clearly tied to later disease burden and disability, educational outcomes and social attainment.

Research is needed into all aspects of children's health, development and well-being, including nutrition and physical activity, asthma, diabetes, mental health and injury prevention. Research into maternal health is also a priority, as it impacts the development and well-being of the fetus and newborn child. Last but not least, research is needed into those initiatives that best improve the health, development and education of young children. This research needs to extend beyond the health system to improvements in education, family support and the neighborhoods in which children grow up.

#### Mental Health and Addictions

Substance abuse resulting in addiction is a significant burden on the Alberta economy in terms of both direct impacts on health care and criminal justice costs and indirect impacts through its indirect toll on productivity. A 2002 study estimates that abuse of tobacco, alcohol and illegal drugs cost Canadians about \$40 billion. The cost to Alberta was \$4.4 billion.

Mental health issues often deeply impact not only the individual but also their family, friends and community. They also affect more people than imagined. Estimates indicate that at least one in three Canadians will experience a mental health issue at some point in their life, and one in five Canadians will experience a mental health problem over the course of a year. These rates do not account for those individuals who do not seek treatment but still struggle with mental health issues. With an aging population, mental

health issues in older individuals are expected to increase. A recent report estimates the prevalence of dementia in Canada will more than double in the next 30 years with costs increasing 10-fold, if no changes are made.

The interplay between mental health and addictions is significant. For example, over 50 per cent of adolescent patients seen in psychiatric clinics use substances; and people with anxiety disorders are two to five times more likely to have a problem with drugs or alcohol. Further research is needed on how the two disorders co-occur and are intertwined through neurological mechanisms and how they can be treated using an integrated and unified approach.

Despite the huge impact on individuals and the economy, investments in mental health and addiction research have been small in comparison with investments in other health issues. Progress in neuroscience research has allowed for new interventions and the broad range of allied health professionals who work with patients have helped to translate new knowledge into better care. However, there is a significant need for additional research into the underlying causes, diagnoses and treatments for mental health issues and substance use disorders, as well as increasing awareness, understanding and public policy initiatives so that more people get the treatment and support they need.

### **Chronic disease**

As Alberta's population ages, the burden of chronic disease is increasing and becoming more widespread. Chronic diseases such as cancer, cardiovascular disease and stroke have a major effect on quality of life and also account for the majority of premature deaths in Alberta. The range of chronic diseases also includes metabolic disorders (diabetes and obesity), neurological

diseases and bone and joint diseases. A number of risk factors have been associated with chronic diseases, some of which cannot be modified by lifestyle changes. However, most chronic diseases share common preventable risk factors that can be modified or controlled by changes in lifestyle. These factors include tobacco use, substance abuse, physical inactivity and being overweight. Increases in numbers of overweight and obese people are rising trends due to unhealthy eating and physical inactivity patterns.

### **Infectious disease**

Infectious or communicable diseases result from exposure to infectious organisms, either bacterial or viral. Tremendous progress has been made in the development of vaccines that have virtually eliminated illnesses like polio, smallpox and whooping cough in North America. However, sexually transmitted diseases are on the rise in Alberta, infectious diseases such as hepatitis continue to spread, tuberculosis and staphylococcus are returning in new forms that resist standard treatment and sepsis (a severe, life-threatening condition in which the immune system is overwhelmed) continues to be a major cause of death in Canada. In addition, new challenges are emerging, such as avian flu and H1N1.

Research into infectious diseases leading to improved diagnostics and treatments is needed, as well as, research into understanding how the immune system may be compromised by infection.

### **Health promotion**

In order for individuals to be as healthy as possible and achieve their fullest potential, they need to be able to influence and take control of the factors in their life that impact their health. These factors are otherwise known as the

determinants of health and include such things as shelter, education, food and nutrition, income, gender and culture. A stronger research base needs to be developed to assist in demonstrating that effective health promotion activities have a significant impact on the sustainability of the health system and beyond. Evidence is needed to support health promotion efforts to show:

- how building and using community capacity leads to the prevention of chronic disease;
- how multifaceted versus single intervention approaches optimize the opportunity to influence change;
- how urban and natural environments impact health, including eating and activity patterns; and
- how health promotion can be best implemented to change behaviour with eating and activity patterns and other risk factors that lead to chronic disease.

Evaluation research is also needed to determine the effectiveness of new and existing health promotion programs.

### **Vulnerable populations**

Alberta has one of the highest life expectancies in the world, however, many Albertans (about 40 per cent) suffer from poor health throughout their lifetime. Reducing inequities in access to fundamental determinants of health (for example, literacy, access to education, food, housing, safe living and working conditions, health services) is thought to have the potential to yield health benefits similar in magnitude to those that would accrue from reductions in lifestyle risk factors for the major chronic diseases. There is an urgent need for research to document and analyze disparities across subpopulations in Alberta

and to test, evaluate and identify the most appropriate interventions to reduce these disparities.

Vulnerable populations at risk for compromised health status include children and youth in disadvantaged circumstances, people with disabilities, Aboriginal peoples, immigrants and refugees, certain minority groups, people who are homeless or living in poverty, the elderly, unpaid caregivers and people with substance use problems.

### **Injury prevention, acute care and rehabilitation**

Injuries lead to substantial losses of productivity and personal and family hardship and are a major cost burden on the health system. However, despite being preventable, they continue to be a leading cause of mortality, morbidity and disability in Alberta. Alberta has one of the highest injury rates in Canada, with unintentional and intentional injuries a leading cause of death for Albertans aged 44 and under. In 2006:

- 1,727 Albertans died from injuries (more than four injury deaths per day);
- 51,280 Albertans were admitted to hospital due to injuries (more than 140 admissions a day); and
- 433,129 Albertans visited emergency departments due to injuries (1,187 injury visits a day).

Research is needed across the continuum of medical care to reduce the human and economic costs of injury. Epidemiological research is needed to determine injury causes, and research is also needed into the acute care and rehabilitative care of trauma patients, in the hospital setting and home.

## Environmental health

People's health and the health of the environment are inextricably linked. Air, water, food and also the microbial agents, chemicals, and radiation which people come into contact with have a significant effect on health. Particular populations that are more vulnerable to environmental effects include children, the elderly and people with pre-existing health conditions. Examining the complex relationship between human health and the environment will help to better understand the natural history of environmentally related diseases and to develop ways to prevent environmentally-linked health issues.

In Alberta's resource-based economy, environmental health research is of particular significance in maintaining and creating healthy environments and addressing community health concerns. Alberta is a leader in environmental health sciences; however, concentrated efforts and resources are still required to understand and address environmental risk factors and to promote health and well-being by preventing and controlling diseases and deaths associated with the environment. Examples of priority research include exposures to multiple environmental risk factors and complex mixtures, exposure assessment and risk analysis, biomonitoring technology, the effectiveness of environmental health interventions, and the integration of environmental data into health information systems.

## II. INNOVATIVE HEALTH SERVICE DELIVERY

Albertans expect that as a result of government investments, the health research and innovation system will continue to develop new technologies and new diagnostic and treatment procedures. Albertans also expect health research to improve access to timely, affordable and high-quality health care. With the creation of Alberta Health Services, the province is better positioned to be at the forefront of research into the operation of the health system and the delivery of services. Alberta also has the advantage of an ethnically diverse and stable population, a single-payer health system, an emerging electronic health record system, and a strong health sciences community.

The pressures on the health system to meet the changing health needs of the population create challenges, but also provide an opportunity for health research to guide the development and implementation of innovative policies and practices for improvement in the health system and in service delivery. Research in this domain will focus on such areas as:

- addressing issues of effectiveness, efficiency, and the appropriate adoption of new technologies in primary health care services;
- building improved chronic disease management and support systems;
- generating new care delivery models that address service gaps, in areas such as mental health and addiction, and respond to the needs of a geographically dispersed and culturally diverse population; and
- developing future health service delivery systems that incorporate the benefits of personalized medicine and health maintenance.

## Appendix D – Key Partners

Key stakeholders and associated functions in Alberta’s health research and innovation system include:

Stakeholder	Research Function
<b>Alberta Advanced Education and Technology (AET)</b>	Coordinates the provincially funded research and innovation system, including health research, provides training and education and facilitates the movement of discoveries into the marketplace.
<b>Alberta Health and Wellness (AHW)</b>	Provides overall direction to the health sector, determines provincial health research and innovation needs and provides the living laboratory for health research.
<b>Other Government of Alberta ministries</b>	Develops the value-added sectors associated with their mandates. This role includes determining research and innovation needs, designing and managing their research and innovation programs, and delivering programs and services – many of which directly or indirectly impact the health of individuals and populations.
<b>Alberta Innovates corporations (AI)</b>	Delivers on the vision, mission and outcomes for <i>Alberta’s Health Research and Innovation Strategy</i> .
<b>Alberta Health Services (AHS)</b>	Delivers provincial health care and integrates research within health services.
<b>Post-secondary institutions</b>	Educates and trains; creates and disseminates knowledge; identifies and communicates institutional research and innovation priorities.
<b>Health philanthropic organizations</b>	Funds research and innovation in alignment with their organizational mandates.
<b>Industry</b>	Develops new, commercial products, programs, services and treatments.
<b>Research organizations and other performers</b>	Develops data, plans and funds research activities, networking and exchange of information.
<b>Health professional associations</b>	Sets standards and best practices for use of evidence and knowledge translation.

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