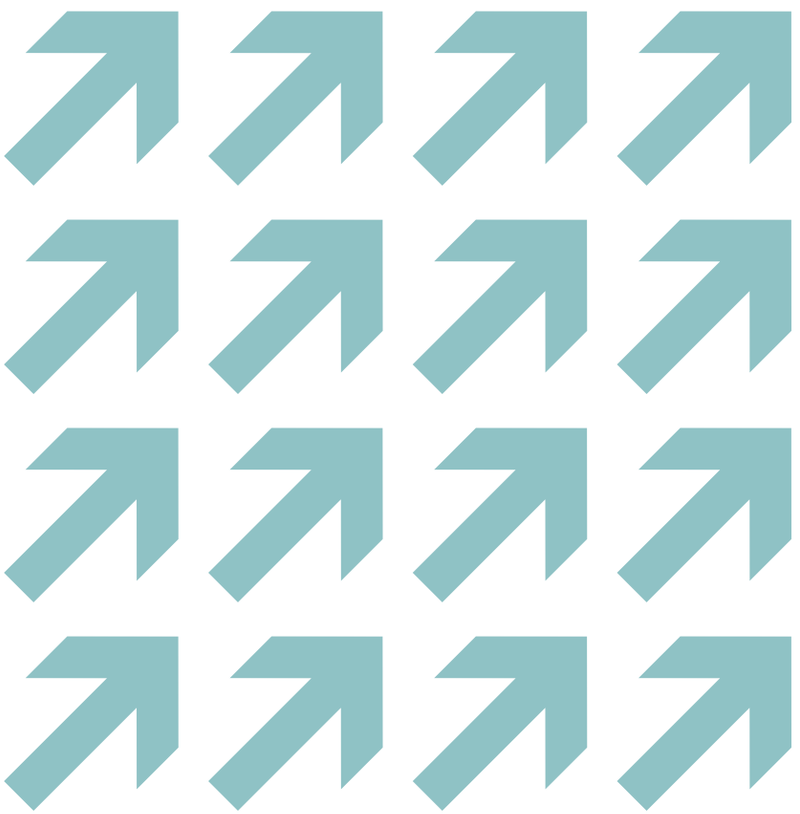
MOVING FORWARD

CANADIAN INSTITUTES OF HEALTH RESEARCH ANNUAL REPORT 2010–11

CIHR IRSC



Canadian Institutes of Health Research
Instituts de recherche en santé du Canada

Canada

MOVING FORWARD

CIHR is the Government of Canada's agency for health research. Its mandate is to "*excel, according to internationally accepted standards of scientific excellence, in the creation of new knowledge and its translation into improved health for Canadians, more effective health services and products and a strengthened Canadian health-care system.*"

For the past 10 years, the Canadian Institutes of Health Research (CIHR) has supported better health and health care for Canadians. As the Government of Canada's health research investment agency, CIHR enables the creation of evidence-based knowledge and its transformation into improved treatments, prevention and diagnoses, new products and services, and a stronger, patient-oriented health-care system. Composed of 13 internationally recognized Institutes, CIHR supports more than 14,100 health researchers and trainees across Canada.

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Also available on the Web in PDF and HTML formats

Cat. No. MR1-2011E-PDF
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All people profiled in this annual report have agreed to their appearance in it and approved their individual stories.

WHO WE ARE

13

INSTITUTES SPANNING 4 RESEARCH THEMES

SPENDING BY THEME

475
Biomedical: $475 million
(up from $161 million in 2000–01)

58
Health systems / services: $58 million
(up from $5 million in 2000–01)

129
Clinical: $129 million
(up from $27 million in 2000–01)

91
Social / cultural / environmental / population health: $91 million
(up from $9 million in 2000–01)

Applicants for CIHR funding are requested but not required to indicate the primary theme of their research. As such, the figures above do not reflect an additional $213M in CIHR investments for which no primary research theme was identified.

14,139

NUMBER OF RESEARCHERS / TRAINEES SUPPORTED IN 2010–11

279

NUMBER OF PARTNERS IN 2010–11

47
Academic

9
Private

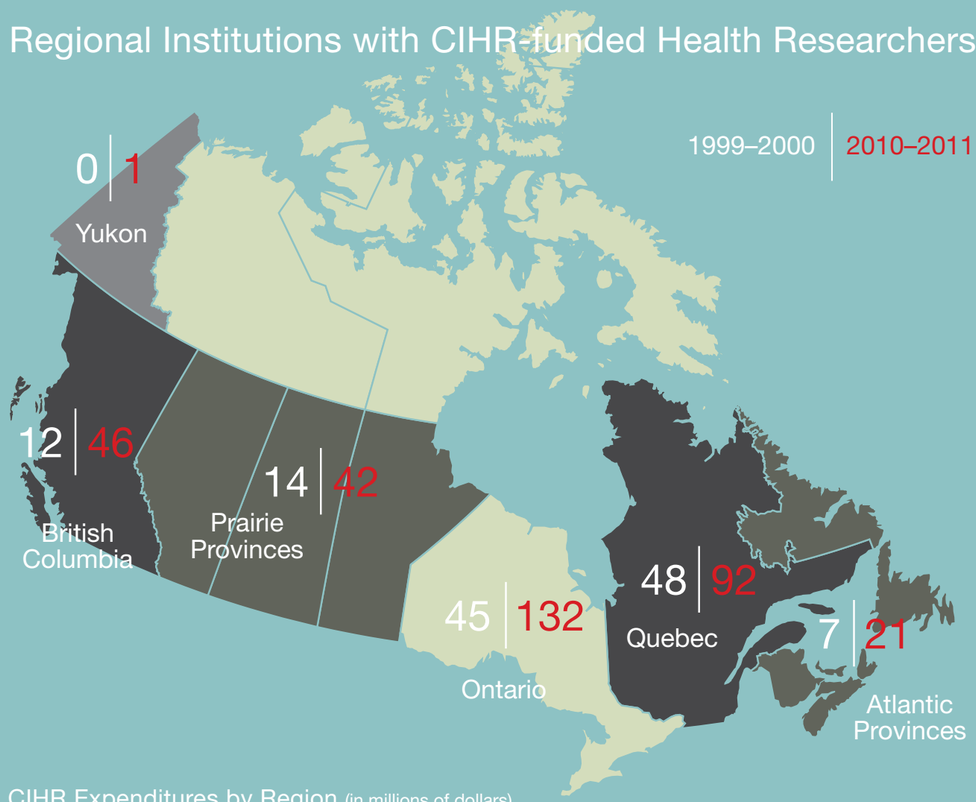
61
Public

45
International

117
Volunteer

WHERE WE'VE BEEN

Regional Institutions with CIHR-funded Health Researchers



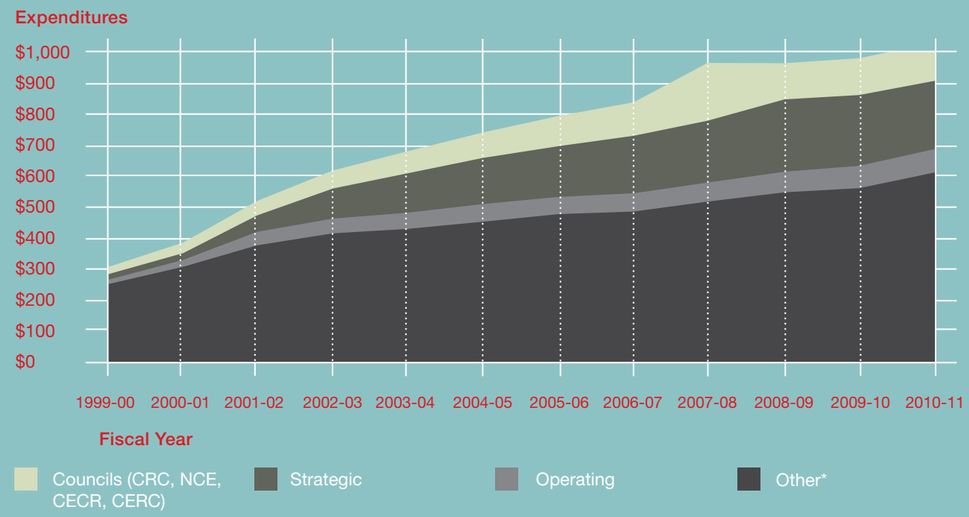
CIHR Expenditures by Region (in millions of dollars)

British Columbia $25 | $125	Ontario $114 | $350	Atlantic Provinces $9 | $29
Prairie Provinces $48 | $98	Quebec $88 | $241	

Excludes Direct Payments. Excludes Operating Expenditures and Partner Contributions. Source: CIHR funding database.

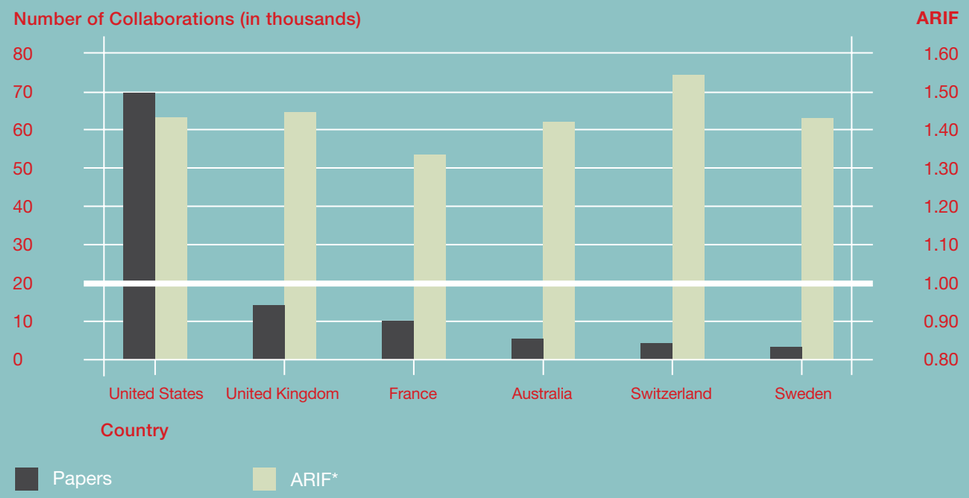
Funding by Program Type 1999–2000 / 2010–11

Including CRC, CECR, and NCE (in millions of dollars)



* Other includes: Open Competitions, Ethics, and Knowledge Synthesis and Exchange.

Impact of Collaborations with Canada 1985–2008

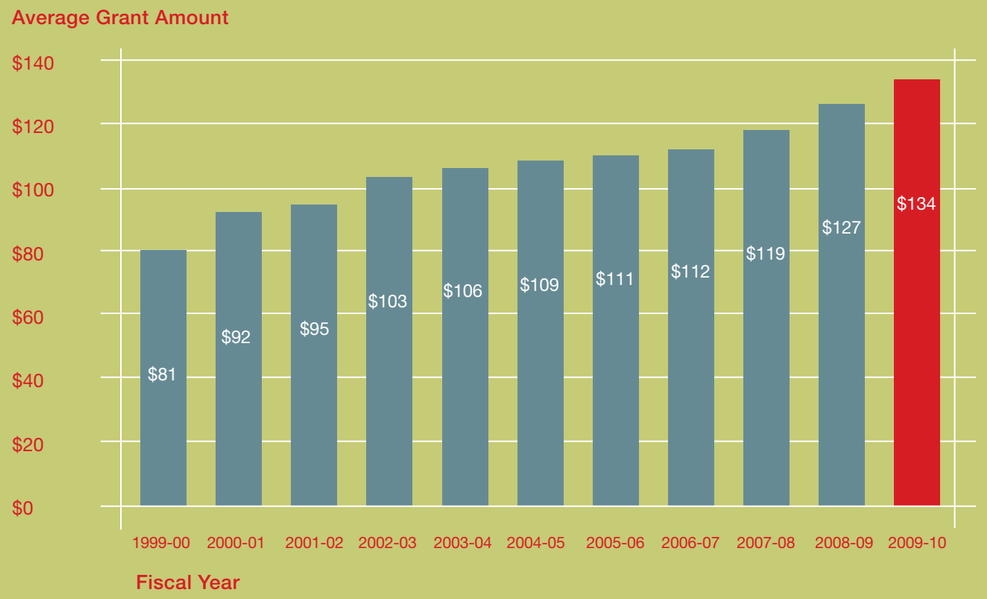


* Average Relative Impact Factor (ARIF) is an indicator of the quality of journals in which research results are published.

WHERE WE'RE GOING

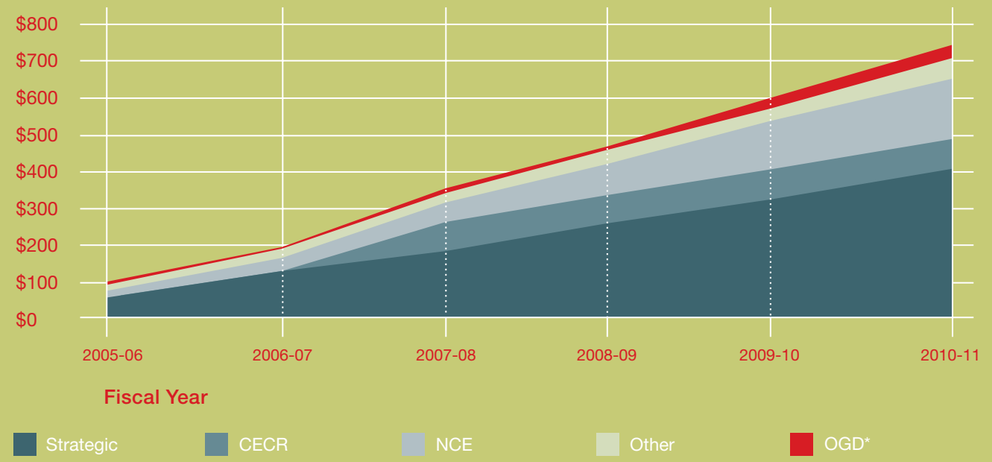
Average Grant Amount 1999–2000 / 2009–10*

Open Operating Grant Program (in thousands)



* Average amounts based on the average funding for the first fiscal year of grants awarded (at the time the results are adjudicated by Research and Knowledge Translation Committee / Scientific Council).

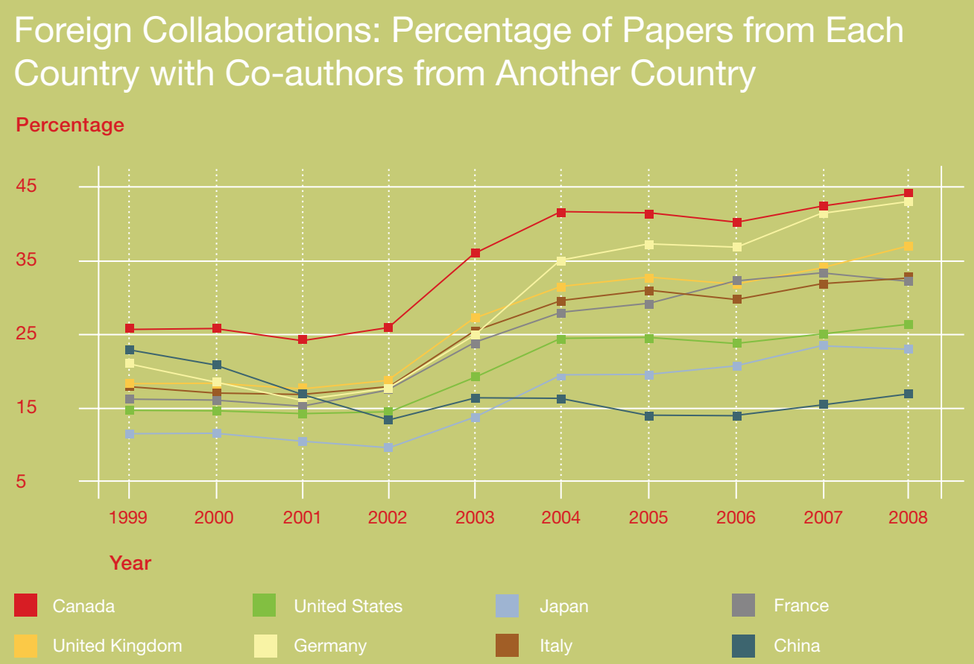
Cumulative Total Funds Directly Leveraged by CIHR Investments Since 2005–06 (in millions of dollars)



* The other government department OGD partner contributions* are contributions from federal government departments/agencies and are included in CIHR's expenditure budget. The OGD contributions are transferred to CIHR's appropriation through Annual Reference Level Update (ARLU) and the Supplementary Estimates processes.

Partner Contributions on flow-through fund programs (Networks of Centres of Excellence, Centres of Excellence for Commercialization and Research) are not leveraged funds.

Foreign Collaborations: Percentage of Papers from Each Country with Co-authors from Another Country



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PRESIDENT'S MESSAGE

The past year has been a remarkable one for the Canadian Institutes of Health Research (CIHR). In 2010–11, we celebrated our 10th anniversary and began our second decade as the major federal agency responsible for health research in Canada.

While justifiably proud of what was accomplished in those first 10 years, we passed that significant signpost without slowing down. In fact, CIHR is now moving forward at a stronger pace than ever, energized by a five-year strategic plan crafted in 2009–10 after extensive consultations conducted across the country.

Health Research Roadmap clarified the directions CIHR will pursue: investing in world-class research excellence, addressing health and health system research priorities, accelerating the capture of health and economic benefits of health research, and achieving organizational excellence. Our first annual *Three-Year Implementation Plan and Progress Report*, released in 2010, outlined how we are tracking progress as we pursue those goals. Some of our landmark achievements for 2010–11 are outlined in this annual report.

In terms of investing in world-class research excellence, we increased our investments in our flagship open grant competition program, recognizing the importance of supporting a broad-based research enterprise. We also launched, in collaboration with the other two federal granting councils, a new post-doctoral fellowship program — the Banting Fellowships. These prestigious fellowships will help talented Canadian researchers complete their training in the most favourable conditions and will serve as a magnet to attract the world's best young health scientists to Canada.

To address health and health system research priorities, we have begun to deliver on the five *Roadmap* priority areas, thereby addressing some of the major health challenges currently facing Canadian society. We launched, following extensive consultations with stakeholders, a comprehensive Strategy for Patient-Oriented Research to tackle our decreasing competitiveness in clinical research and to foster a closer integration of research and care. We established a national Drug Safety and

HEALTH RESEARCH ROADMAP **CLARIFIED THE DIRECTIONS CIHR WILL PURSUE: INVESTING IN WORLD-CLASS RESEARCH EXCELLENCE, ADDRESSING HEALTH AND HEALTH SYSTEM RESEARCH PRIORITIES, ACCELERATING THE CAPTURE OF HEALTH AND ECONOMIC BENEFITS OF HEALTH RESEARCH, AND ACHIEVING ORGANIZATIONAL EXCELLENCE. OUR FIRST ANNUAL *THREE-YEAR IMPLEMENTATION PLAN AND PROGRESS REPORT,* RELEASED IN 2010, OUTLINED HOW WE ARE TRACKING PROGRESS AS WE PURSUE THOSE GOALS.**

Effectiveness Network, to take better advantage of the unique databases provided by our universal health-care system. Finally, we entered into several international agreements to support research partnerships on the global threat posed by Alzheimer's disease.

To accelerate the capture of health and economic benefits of health research, we launched PubMed Central Canada, a free digital archive that now provides patients, students, researchers and entrepreneurs with access to an ever-growing repository of peer-reviewed publications. We also strengthened our support for the Canadian Cochrane Centre and the worldwide Cochrane Collaboration, whose reviews are the gold standard for evidence-based decision making in health and health care.

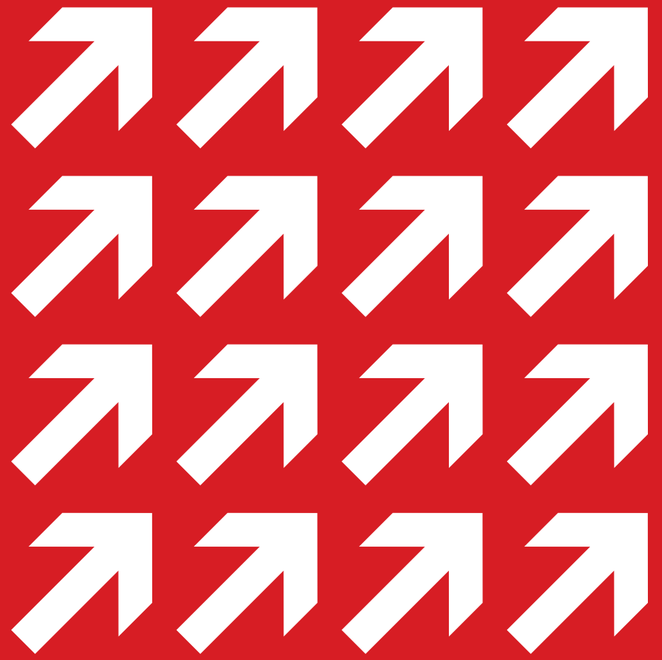
As for achieving organizational excellence, each of the 13 Institutes has gone through a rigorous process of self-assessment in preparation for the International Review Panel's evaluation of how CIHR has met its goals over the past five years. The exercise of examining priorities, setting out key initiatives and cataloguing outcomes has helped each Institute focus on ensuring that Canadians' investments in health research continue to accrue benefits.

Finally, CIHR has been diligent in advising the Minister of Health on emerging health issues, such as the proposed involvement of venous malformations in patients with multiple sclerosis, and in responding to emerging threats such as the shortage of medical isotopes for medical imaging.

We have used the current CIHR Annual Report to demonstrate who we are, where we've been, and where we're going. In sum, I feel that CIHR begins its second decade on sure footing. We are following our *Roadmap* and meeting our milestones. And we are moving forward, working to improve Canadians' health and Canada's health-care system.

Alain Beaudet, MD, PhD
President, Canadian Institutes of Health Research

INVESTING IN WORLD-CLASS RESEARCH EXCELLENCE



A WORLD OF EXCELLENT IDEAS

CIHR IS COMMITTED TO EXCELLENCE IN HEALTH RESEARCH. BUT WHAT DOES "EXCELLENCE" MEAN? HOW IS IT MEASURED? AND, MOST IMPORTANT, HOW IS IT NURTURED AND SUSTAINED?

Excellence in research takes many different forms:

➔ breaking down, studying and analyzing a health risk, such as tobacco use, and transforming the knowledge gained into a health promotion tool to reduce the incidence of smoking;

➔ having communities identify health needs and developing the tools and the means to meet those needs;

➔ bringing the perspectives and insights of many different disciplines to bear on creating and perfecting a simple and elegant solution to a complex problem;

➔ delving into the social and biological forces that shape who we are; and

➔ transforming findings into real-life programs and policies.

While the specific expression of excellence may differ, the means of achieving it remain the same: identifying and investing in the best and strongest ideas and empowering dedicated individuals and robust, talented, diverse teams to maximize the potential of those ideas.

CIHR-SUPPORTED RESEARCHERS: INTERNATIONAL AWARD WINNERS 2000–10

2005 LASKER AWARD FOR BASIC MEDICAL RESEARCH

James Edgar Till and Ernest Armstrong McCulloch, Ontario Cancer Institute: for explaining the function of hematopoietic (blood-based) stem cells and providing the theoretical underpinning for bone marrow transplantation.

2008 KYOTO PRIZE IN BASIC SCIENCES

Anthony Pawson, the Samuel Lunenfeld Research Institute of Toronto's Mount Sinai Hospital: for proposing and proving the concept of adapter molecules, thereby establishing a basic paradigm in intracellular signal transduction and contributing significantly to the subsequent development of the life sciences.

GAIRDNER INTERNATIONAL AND WIGHTMAN AWARD RECIPIENTS

2011 – Michael Hayden, University of British Columbia for identifying genes for rare disorders and advancing understanding of genetic and molecular pathways leading to Huntington's disease.

2010 – Calvin Stiller, University of Western Ontario and Ontario Institute for Cancer Research for pioneering work in transplantation and diabetes, and as a remarkable entrepreneur and builder of private and public institutions that enriched the research landscape.

2009 – David Sackett, McMaster University for leadership in the fields of clinical epidemiology and evidence-based medicine.

2008 – Alan Bernstein, Global HIV Vaccine Enterprise for outstanding contributions as a scientist, research institute director and as the inaugural President of CIHR.

2008 – Nahum Sonenberg, McGill University for pioneering discoveries in cellular translation of genetic information.

2008 – Samuel Weiss, University of Calgary for the discovery of adult neural stem cells in the mammalian brain.

2006 – Allan R. Ronald for leadership in developing the specialty of clinical infectious disease in Canada and for exceptional international contributions in Africa.

2005 – Endel Tulving, Rotman Research Institute of Baycrest Centre in Toronto for pioneering research in the understanding of human memory.

2005 – Brenda Milner, McGill University for pioneering research in the understanding of human memory.

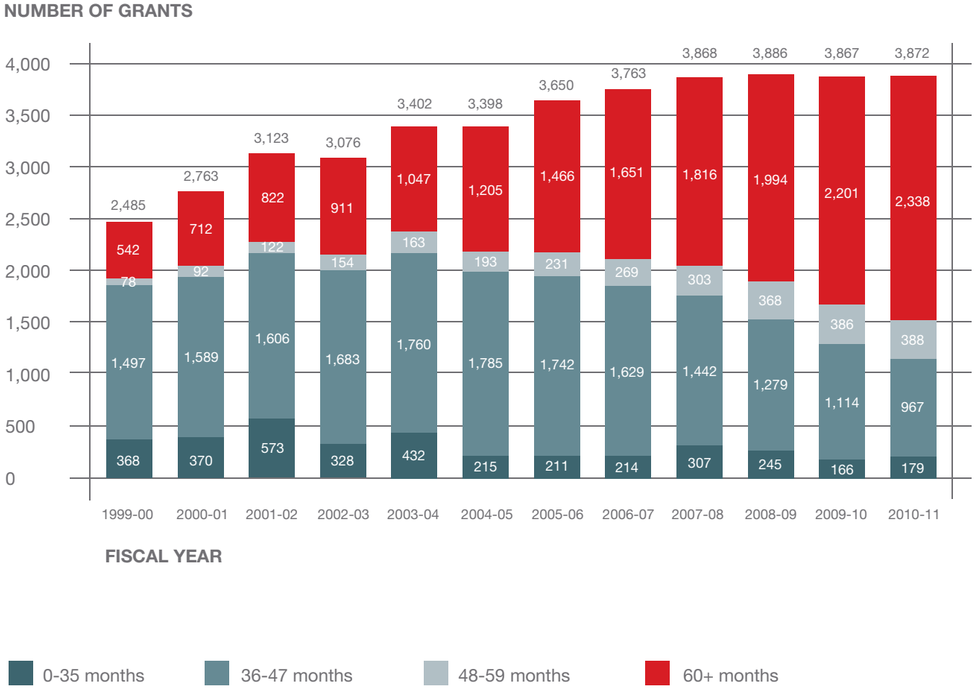
2001 – Henry Friesen, University of Manitoba for leadership in the field of medical research.

2000 – Jack Hirsh, McMaster University for contributions to the diagnosis, prevention and treatment of thromboembolic disorders.

NUMBER OF GRANTS BY DURATION RANGE

(in months)

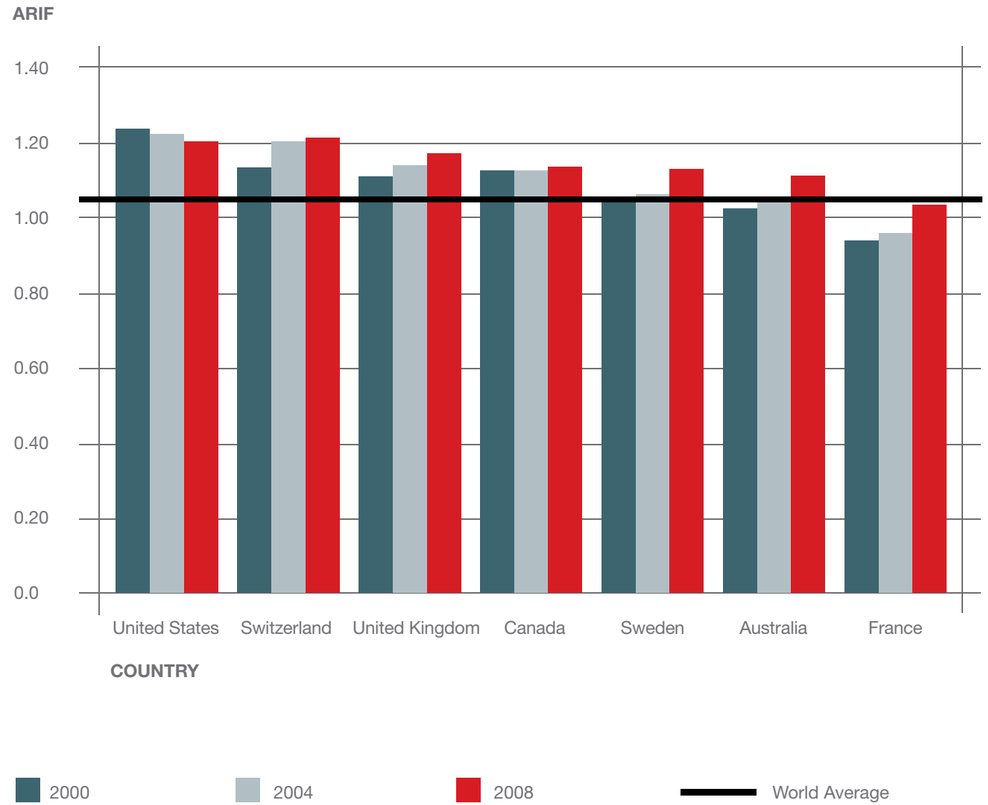
CIHR's open operating grants program remains the primary vehicle through which we invest in excellence. This program provides the foundation for researchers in a variety of disciplines to express their passion and their creativity. It creates the environment within which a broad spectrum of ideas can take shape and flourish. While we can't support every great idea, the open operating grants program provides a broad scope of investment in a number of critical research areas and positions our best and our brightest minds to explore and implement their ideas. As the following chart illustrates, not only has the number of grants grown substantially since 2000, but the duration of investigations has also increased — indicating greater depth of research.



AVERAGE RELATIVE IMPACT FACTOR IN SELECTED OECD COUNTRIES

(2000 to 2008)

Average Relative Impact Factor (ARIF) is an indicator of the quality of journals in which research results are published. The following chart shows Canada stands among the leaders in OECD countries.

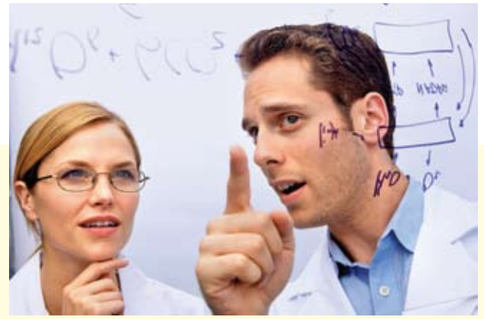


THE BANTING FELLOWSHIPS

ENCOURAGING THE BEST IN THE WORLD

Fine tuning a preclinical PET-CT scanner.

Courtesy of the Sherbrooke Molecular Imaging Centre of the Étienne Le Bel Clinical Research Centre.



IN JULY 2010, THE GOVERNMENT OF CANADA UNVEILED A BOLD NEW PROGRAM TO ATTRACT AND RETAIN THE BEST YOUNG RESEARCHERS IN THE WORLD AND SPOKE OF THE IMPORTANCE OF GIVING PROMISING SCHOLARS FINANCIAL SUPPORT.

"To remain at the forefront of the global economy, we must invest in the people and ideas that will produce tomorrow's breakthroughs," said Prime Minister Stephen Harper. "The Banting Postdoctoral Fellowships will give scholars in research institutions across the country the support they need to explore and develop their ideas to their fullest potential."

Within a month of the Prime Minister's announcement, CIHR, in collaboration with the two other councils, began promoting the program across Canada and around the world. Named after the Canadian who discovered insulin, the Banting Fellowships is the first tri-council funding program in which CIHR is the lead. The first cohort of 70 Banting Fellows, divided equally between CIHR and the two other granting councils, the Natural Sciences and Engineering Research Council (NSERC) and the Social Sciences and Humanities Research Council (SSHRC), was selected in March 2011.

Building on the success of the Vanier Canada Graduate Scholarships program, which was launched in 2008 to attract and retain the world's best doctoral students, the Banting Fellowships will enable Canada's best postdoctoral fellows to conduct innovative research at institutions in Canada or around the world. It will also attract the world's best postdocs to Canada to pursue great work here. Valued at $70,000 a year for two years, these prestigious fellowships will be awarded yearly to young investigators with exceptional track records and leadership potential.

"The Banting Fellowships have quite quickly become Canada's most prestigious and sought-after award for postdoctoral researchers," said CIHR President Dr. Alain Beaudet. "As of 2012, we will have 140 of the top young minds in research bringing innovative new approaches to discovery and application."

Dr. Suzanne Fortier, President of NSERC, said the Fellowships program "makes Canada a first-class destination for the world's best and brightest scientists and engineers at a pivotal time in their careers." SSHRC President Dr. Chad Gaffield agrees. "In a time of increasing efforts to understand human thinking and behaviour, these fellowships will enhance our knowledge of people and will help to develop the talented leaders needed across all sectors of society."

CIHR-SUPPORTED POSTDOCTORAL FELLOWSHIPS BY THE NUMBERS

750

new and existing CIHR postdoctoral fellowships supported through direct awards.

1,200

postdoctoral fellowships supported indirectly, through grants.

170

postdoctoral fellowships to be awarded in 2011–12, up from the previous level of **140**.

658

eligible applications received in 2010 for **70** Banting Postdoctoral Fellowships awards.

$21M

budgeted for postdoctoral fellowships over five years in 2010–11, up from **$12 million** in 2007–08.

FORMER POSTDOCS ADVANCE NEW DIABETES TREATMENT

Researchers at the **University of Calgary** are conducting a pilot study of a new treatment for diabetic neuropathy, a debilitating and painful nerve condition that strikes about 50% of people with diabetes. **Dr. Douglas Zochodne** said encouraging results from years of animal tests have led to the early-stage clinical trial of intranasal delivery of insulin. **Drs. Lawrence Korngut** and **Cory Toth**, both former CIHR-supported postdoctoral trainees in Dr. Zochodne's lab and now his colleagues, lead the work. The idea behind the therapy is to deliver insulin directly to neurons in the peripheral and central nervous system, where it can assist them in stabilizing blood sugar levels.

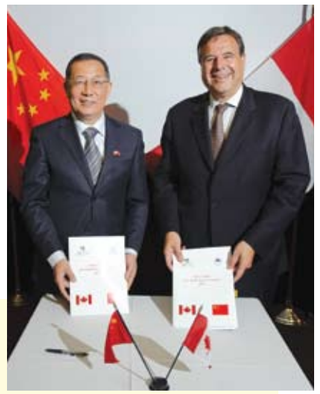
Dr. Jordan Guenette performing breathing test.

POSTDOCTORAL FELLOW THROWS NEW LIGHT ON IMPACT OF EXERCISE FOR WOMEN

Women are less likely to develop diaphragm fatigue during exercise than men are, according to a groundbreaking study by **Queen's University** postdoctoral fellow **Dr. Jordan Guenette**. Because the diaphragm is the primary muscle involved in breathing, there are important clinical implications to understanding its fatigue characteristics. However, because previous studies have been conducted in men, little is known about how the diaphragm functions and responds to exercise in women. Dr. Guenette's study, which was carried out while he was at the **University of British Columbia** and published in the *Journal of Applied Physiology*, is the first to use the most accepted and validated methods to characterize diaphragmatic function in women during exercise and to compare responses between sexes. Contrary to his initial hypothesis, men were more likely than women to develop diaphragm fatigue during exercise.

CANADA–CHINA COLLABORATION

CONNECTING COLLEAGUES OCEANS APART



Professor Shen Yan, Vice-President of National Natural Science Foundation of China, and CIHR President Dr. Alain Beaudet.

BEGINNING WITH SMALL STEPS, CANADA AND CHINA HAVE NOW MADE HUGE STRIDES IN INTERNATIONAL COOPERATION IN HEALTH RESEARCH.

In October 2010, CIHR and the National Natural Science Foundation of China (NSFC) renewed a five-year agreement to support joint health research projects. Initiated in 2005, this dynamic partnership has already co-funded 89 joint research projects which will result in a total CIHR investment of almost $11 million. The renewal will further support up to 45 new research projects for an additional CIHR commitment of approximately $10 million.

The year 2010 also marked the creation of six $1-million joint research teams that are working on three-year collaborative projects to tackle major health problems affecting both countries. The teams are up and running as a result of CIHR's agreement with China's Ministry of Science and Technology. The teams, which will develop long-term institutional partnerships, will receive a maximum of $1 million in co-funding.

McGill University's Dr. Mark Wainberg said his Canada–China project, Development of New Strategies to Target HIV Replication and Stimulate anti-HIV Post-Exposure Immunity, builds on an established relationship and likely will lead to further collaborations and, potentially, the development of new drugs.

"We have been in long contact with Dr. Qi Jin (the team's Chinese Principal Investigator) and have a collaborative relationship in place based on mutual cooperation and respect," said Dr. Wainberg. "We're going to China in the next six months to further build up the relationship. It will move forward from there with more interchanges and more people coming over from China. I hope that the progress will be

very palpable. If we could take advantage of some of their natural herbs and put some of them through our screening assays, ideally we will be able to help them to get on the bandwagon with new drug development."

University of British Columbia neuroscientist Dr. Weihong Song, who played a key role in the signing of the original Canada–China memorandum of understanding, is enthusiastic about the program:

"The program was very well received by both sides, in Canada and in China. The initial grants were almost like seed money, they helped establish new international collaborations that otherwise would not have happened. Now researchers in China and Canada are actively looking for partnerships on the other side of the ocean. It means we can communicate with each other, exchange personnel and exchange ideas. We can start new adventures. This is real research collaboration."

To apply for program funding, Canadian and Chinese researchers submit identical applications to CIHR and NSFC for initial external reviewing. A joint Canada–China peer review committee then selects grant recipients. Although the grant money provided for the three-year projects was initially small — $30,000 a year from CIHR for each Canadian participant, with China funding its participant for a similar amount — the program was quite popular. "There were over 100 partners applying in the first round," said Dr. Song. The yearly awards have since been increased to $75,000. But it isn't about the money, according to China's Dr. Kun Xia, Deputy Director, State Key Laboratory of Medical Genetics of China at Central South University. It's about collaboration:

"As a researcher, I know collaboration is very important, but it is not easy to establish a real collaboration. Sometimes, there is only simple communication between the collaborators. This CIHR-China program actually provides a good opportunity to establish a close collaboration, because it is based on research projects. In addition, based on the research findings, it is possible to establish more projects between the collaborators. This is very important to accelerate the collaboration between Canada and China."

CANADA–CHINA COLLABORATIONS BY THE NUMBERS (2005–11)

89

Canada–China joint health research projects funded since 2005 which will result in a total of almost **$11 million** in CIHR investment.

6

Canada–China collaborative teams in health research funded during 2010–11, for a total of **$2.9 million** in CIHR investment.

150+

journal articles published by Canadian and Chinese researchers during 2005–11, arising from collaboratively funded projects.

INTERNATIONAL INVESTMENT COLLABORATIONS BY THE NUMBERS

International expenditures have grown twofold, from

5.5% to 10%

of the total CIHR budget since 2000.

Approximately

3,300

grants and awards with international linkages have been funded.

WATERLOO RESEARCHER WARNS OF CHINA'S TOBACCO EPIDEMIC

A tobacco epidemic is raging in China, where more than 50% of men smoke and approximately 1 million smokers die of tobacco-related diseases each year. The 20-country International Tobacco Control (ITC) Project, led by **Dr. Geoffrey Fong** of the **University of Waterloo**, recently published a supplement of 11 articles reporting on its findings in China in the journal *Tobacco Control*. One article reported that Chinese cigarettes have levels of lead, cadmium and arsenic three times higher than Canadian cigarettes. This constitutes a global public health concern, because exports of Chinese cigarettes continue to increase.

GLOBAL HEALTH RESEARCH STRATEGY

MAKING A STRONGER IMPACT

FROM DEVELOPING DRUGS TO DEFEAT PARASITIC DISEASES IN AFRICA TO EXAMINING THE HEALTH CONSEQUENCES OF SLASH-AND-BURN LAND-USE PRACTICES IN BRAZILIAN RAINFORESTS, GLOBAL HEALTH RESEARCH PRESENTS UNIQUE OPPORTUNITIES TO ENGAGE A RANGE OF DISCIPLINES AND SECTORS — PUBLIC, PRIVATE AND CHARITABLE — TO ADDRESS COMPLEX HEALTH AND HEALTH SYSTEMS PROBLEMS.

While investing in global health research has always been a key component of CIHR's scientific agenda, 2010–11 marked a significant step forward in strengthening this commitment. CIHR produced a Global Health Research Strategy to increase the impact of current and future initiatives. The Strategy strives to:

- integrate and incentivize global health across CIHR; and
- foster and support external partnerships that target research priorities.

"CIHR's position statement on global health research will help guide and bring greater policy coherence to our global health research, capacity building and knowledge translation investments involving Canadian and low- and middle-income country collaborations," said Dr. Nancy Edwards, Scientific Director of CIHR Institute of Population and Public Health and CIHR Global Health Champion.

Having set goals in place ensures that CIHR's interdisciplinary investments in global health align with the strategic directions set out in the 2009–14 *Health Research Roadmap*. Importantly, the Global Health Research Strategy builds on the progress already made.

For example, the Canadian HIV Vaccine Initiative (CHVI) — a collaboration between the Government of Canada and the Bill & Melinda Gates Foundation — represents Canada's contribution to the Global HIV Vaccine Enterprise. CIHR, in partnership with the Public Health Agency of Canada, the Canadian International Development Agency, Health Canada and Industry Canada, leads the Advancing Basic Science funding stream. Working with CIDA, CIHR launched a $17-million CHVI Large Team Grant in 2010–11 to fund four partnerships between Canadian researchers and their counterparts in low- and middle-income countries.

CIHR – TOOLS FOR GLOBAL HEALTH RESEARCH

CANADIAN HIV VACCINE INITIATIVE

GOAL
To develop a safe, effective, affordable and globally accessible HIV vaccine.

PARTNERS
The Bill & Melinda Gates Foundation, Canadian International Development Agency, the Public Health Agency of Canada, Industry Canada and Health Canada.

CIHR INVESTMENT
With CIDA, CIHR launched a $17-million Large Team Grant in 2010–11 to fund four Canada/international partnerships. Canada is investing up to $111 million, and the Bill & Melinda Gates Foundation is contributing up to $28 million through 2017.

GLOBAL ALLIANCE FOR CHRONIC DISEASE

GOAL
To fight chronic non-communicable diseases.

PARTNERS
United States National Heart, Lung and Blood Institute, Fogarty International Center and National Institute of Mental Health; the United Kingdom's Medical Research Council; Australia's National Health and Medical Research Council; China's Academy of Medical Sciences; the Indian Council for Medical Research; the Medical Research Council of South Africa; and the Qatar Biomedical Research Institute.

CIHR INVESTMENT
CIHR will contribute $2.5 million of the $5-million Canadian commitment to the Alliance's initial $22-million research program.

GLOBAL HEALTH RESEARCH INITIATIVE

GOAL
To improve maternal and child health, respond to emerging infectious diseases and strengthen health systems in regions throughout the world.

PARTNERS
The International Development Research Centre, the Public Health Agency of Canada, Health Canada and the Canadian International Development Agency.

CIHR INVESTMENT
Approximately $22 million of the $71-million total by 2015.

GRAND CHALLENGES IN GLOBAL HEALTH INITIATIVE

GOAL
To discover and develop scientific breakthroughs for preventing, treating and curing diseases that kill millions of people each year in developing countries.

PARTNERS
The Bill & Melinda Gates Foundation, the Foundation for the National Institutes of Health, Grand Challenges Canada and the Wellcome Trust.

CIHR INVESTMENT
Since 2005, CIHR has contributed $5.65 million of the $458 million total in grants to scientists from 33 countries.

GRAND CHALLENGES CANADA

GOAL
To support the best minds in the world in a collaborative search for solutions to global challenges.

PARTNERS
The International Development Research Centre. Host: the McLaughlin-Rotman Centre for Global Health.

CIHR ROLE
Grand Challenges Canada is the delivery mechanism for the $225-million Development Innovation Fund announced in the 2008 federal budget. By administering international peer reviews, CIHR evaluates grant applications and ensures excellence in Grand Challenges Canada projects.

INTERNATIONAL RESEARCH INITIATIVE ON ADAPTATION TO CLIMATE CHANGE

GOAL
To advance knowledge, shape policy and programs, mentor students and facilitate networks in adaptation to climate change.

PARTNERS
The International Development Research Centre, the Natural Sciences and Engineering Research Council and the Social Sciences and Humanities Research Council.

CIHR INVESTMENT
Up to $3 million of a total of $15 million.

CANADA-HOPE SCHOLARSHIP PROGRAM

GOAL
To connect promising individuals from low- and middle-income countries with mentors in the Canadian research community and expose them to some of the best science, laboratories and training environments in Canada.

PARTNER
Sanofi-Aventis.

CIHR INVESTMENT
CIHR has matched a $1.7-million grant from Sanofi-Aventis.

STOPPING EMERGING INFECTIOUS DISEASES IN SRI LANKA BEFORE THEY START

Identifying the emergence of infectious diseases — 75% of which arise from animals — is a critical step in protecting health. By building the capacity of local researchers in Sri Lanka to track potential health threats, **University of Calgary** researcher **Dr. Craig Stephen** said he is seeing "tangible changes in policy, practices and perspectives within a comparatively short timeframe." Dr. Stephen leads a Teasdale-Corti team investigating veterinary public health practices as part of a global response to emerging diseases. "Because the Global Health Research Initiative has an explicit capacity-building goal, it really helped us to focus on action-oriented research, which is the ethos of global health. I don't care as much about publishing the paper as I care about effecting change in the groups that we came to help, and the Teasdale-Corti Team Grants program is very supportive of that perspective." His team is developing innovative, front-line methods of surveillance for emerging diseases. "The work we've done … has formed the foundation of a fundamental change in how Sri Lanka mobilizes its livestock surveillance."

SLEEPING SICKNESS TREATMENT COULD SAVE THOUSANDS OF LIVES

Human African trypanosomiasis — better known as "sleeping sickness" — takes 30,000 lives each year, and is the work of a parasite predominantly found in the developing world. Until now, there has been no effective treatment. But scientists at the United Kingdom's **University of Dundee** and **University of York**, working in collaboration with the CIHR-supported **Structural Genomics Consortium** (SGC) in Toronto, have reported in Nature that they have found a potential new drug target for the blood-borne parasite. "Our funders from the public and private sector have supported this project for years and we are delighted to see it come to fruition," said **Dr. Aled Edwards**, Chief Executive at the SGC.

GLOBAL HEALTH RESEARCH INITIATIVE MILESTONES 2000–11

$71M

invested by all partners for approved research programs (2001–15).

10+

research programs (such as Teasdale-Corti) funded since 2001.

129

global health research projects funded.

1,000+

research networks established (including **257** Canadian researchers).

62

Canadian research institutions and universities participating.

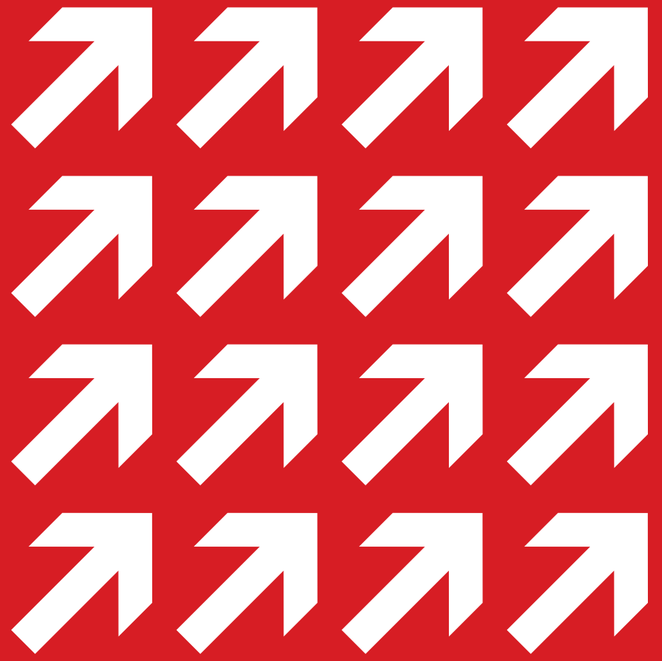
67

countries involved.

339

research settings in Canada, Africa, Asia, the Middle East, Latin America and the Caribbean.

ADDRESSING HEALTH AND HEALTH SYSTEM RESEARCH PRIORITIES



A STRATEGIC APPROACH THAT ADAPTS TO CHANGE

CIHR'S MANDATE CALLS FOR IT TO BE A STRATEGIC AND PROACTIVE AGENCY, FOCUSED ON AREAS OF GREATEST IMPORTANCE TO THE HEALTH AND WELL-BEING OF CANADIANS.

To help guide the organization in fulfilling its mandate, CIHR's *Health Research Roadmap* established key strategic directions for the years 2009–14, including the need to address health and health system research priorities. Within that strategic direction are five priorities:

- enhance patient-oriented care and improve clinical results through scientific and technological innovations;
- support a high-quality accessible and sustainable health-care system;
- reduce health inequities of Aboriginal peoples and other vulnerable populations;
- prepare for and respond to existing and emerging threats to health; and
- promote health and reduce the burden of chronic disease and mental illness.

Investments in health research are the result of careful consideration of where Canada, relatively small in terms of population and the size of the health research enterprise, can have the biggest impact globally. By concentrating on areas of Canadian expertise, CIHR invests in discoveries that translate into better health products, smarter health services and more prudent health policies. Strategic planning ensures that Canadians get the most benefits from investments in health research.

CIHR must also respond to emerging threats and challenges. Whether the issue is pandemic influenza, the provision of isotopes for medical imaging or the consideration of new developments in treating chronic diseases, CIHR uses its unique ability to bring together the best researchers in Canada and focus their attention on emerging threats to provide value to Canadians.

Dr. David Hammond, Assistant Professor, Department of Health Studies at the University of Waterloo and winner of Canada's Premier Young Researcher Award 2010, discusses his work evaluating the effectiveness of tobacco control measures.

STRATEGY FOR PATIENT-ORIENTED RESEARCH

REMOVING BARRIERS TO IMPROVE HEALTH AND HEALTH CARE

HIV/AIDS researcher Dr. Jonathan Angel and his team at the Ottawa Hospital Research Institute.

Fred Scrivens of Birch Hills, Saskatchewan, benefitted from the Rural and Remote Memory Clinic created by CIHR-funded researcher Dr. Debra Morgan of the University of Saskatchewan.

ULTIMATELY, HEALTH RESEARCH IS ABOUT ENABLING PEOPLE TO BE HEALTHY. HOWEVER, TRANSLATING RESEARCH FINDINGS INTO BETTER CLINICAL PRACTICES, MORE EFFECTIVE HEALTH PRODUCTS AND EFFICIENT SERVICES — CLEAR BENEFITS FOR PATIENTS — IS OFTEN AN OVERWHELMING CHALLENGE. OBSTACLES IN THE RESEARCH-TO-CARE CONTINUUM CAN PREVENT PATIENTS FROM GETTING ACCESS TO NEW AND INNOVATIVE THERAPIES.

Through the Strategy for Patient-Oriented Research (SPOR), CIHR is removing impediments to the application of evidence-based advances in diagnostics, treatments and devices in order to improve Canadians' health and Canada's health-care system.

CIHR's work on the strategy began with the distribution of a discussion paper in 2010 and the launch of nationwide consultations with clinician and non-clinician researchers, health professional associations, health charities, nursing groups, provincial and territorial governments and funding agencies, federal government officials and industry representatives.

The consultation process culminated in the final strategy document, which the President's Advisory Board released in early 2011, and the creation of a SPOR steering committee

consisting of representatives from major stakeholders in the public and private sectors. Health charities, other health funders and several provinces have welcomed the initiative.

"We need to increase the investments that we're putting into the evaluation of interventions and services," said Dr. Paul Hébert, a senior scientist at the Ottawa Hospital Research Institute who has conducted a number of groundbreaking studies in critical care. He championed the SPOR initiative and served as special advisor to the President for its development. "CIHR can lead in that, but it can't do it on its own. SPOR is an attempt to get all of the stakeholders aligned under one vision. If it achieves that vision, Canadians will see better health care."

One of the key tasks SPOR has taken on is overcoming the daunting challenges involved in conducting multicentre clinical trials. For years, obstacles such as inadequate funding, an absence of a common contracts template to engage industry partners and overly complicated ethics review processes have stymied researchers. SPOR plans to clear the path by supporting thematically organized clinical research networks that, along with identifying research priorities and establishing clinical protocols, will provide national platforms to undertake clinical trials. The first such network, a national imaging clinical trials network, has just been launched.

HOW MANY PATIENTS ARE TOO MANY?

How many patients can a family physician manage while continuing to provide high-quality care? CIHR-funded researcher **Dr. William Hogg** of the **University of Ottawa** and his colleagues are undertaking a comprehensive review of how Ontario's family doctors are serving their patients. Using anonymous health-care data, the researchers are measuring quality based on criteria such as the degree to which patients receive recommended care to prevent illness. "For example, we can tell whether a patient is diabetic and whether they've received a particular blood test that is indicated for patients with that disease," said Dr. Hogg. The goal is to find the tipping point at which quality of care begins to suffer. "People need to know this in order to craft the health-care system so that the incentives are in the right place," said Dr. Hogg, who credits colleague **Dr. Simone Dahrouge** as the powerhouse behind the study.

FINDINGS SHOW PROMISE AGAINST DEMENTIA PROTEIN

University of Alberta researchers have shown that beta amyloid, a protein that destroys brain cells and is associated with dementia, may be susceptible to a compound developed to prevent destruction of insulin-producing cells in diabetes. Since making their initial findings in rodents, **Drs. Jack Jhamandas** and **David Westaway** and their research teams have performed electrophysiological and cell culture studies to test the compound's ability to overcome beta amyloid cell destruction in human neurons. They found that "apparently it does," said Dr. Jhamandas. Demonstrating these findings in human brain tissue is important because rodents, which are usually used to study neurodegeneration, do not develop Alzheimer's disease. The results were published in the *American Journal of Pathology*.

THE DRUG SAFETY AND EFFECTIVENESS NETWORK

ANSWERING THE BIG QUESTIONS

HOW SAFE ARE OUR PHARMACEUTICALS? WHILE CLINICAL TRIALS TEST THE SAFETY AND EFFECTIVENESS OF ANY NEW DRUG, THESE EVALUATIONS USUALLY OCCUR IN CONTROLLED SETTINGS WITH SPECIFIC PATIENT GROUPS. THINGS ARE DIFFERENT WHEN A DRUG ENTERS THE "REAL WORLD."

Until recently, no single organization in Canada had the responsibility for conducting real-world or post-market research into drug safety. Through a partnership with CIHR and Health Canada, the Drug Safety and Effectiveness Network (DSEN) is filling that gap.

DSEN will generate new evidence to weigh the safety risks of drug products against their therapeutic benefits. The Network will contribute to building the knowledge base needed for the safe and optimal prescribing and use of drugs within the health-care system.

Led by Executive Director Dr. Robert Peterson, DSEN began by striking a steering committee to set priorities, creating a coordinating office and beginning to build a virtual network of linked "collaborating centres" for post-market pharmaceutical research. In the fall of 2010, DSEN issued a request for applications for a collaborating centre on observational studies. After review by a panel of international experts, CIHR awarded the Canadian Network for Observational Drug Effect Studies, or CNODES, $3.5 million in annual funding for five years.

"CNODES brings together a pan-Canadian representation of expertise in broad collaboration to address a very important area of research," said Dr. Peterson. "Such a collaboration will constitute the basis for success of CNODES in filling knowledge gaps of importance to the Canadian health-care system. Collaborations of this nature are essential components of the CIHR/DSEN program."

Two more collaborative centres structured around other analytical methodologies will be established in 2011–12.

"This is what we've been trying to do for years," said Dr. Samy Suissa, McGill University's internationally respected pharmacoepidemiologist and CNODES' leader. "We already have the expertise in Canada — world-renowned expertise — but it was always individuals working separately. Now we will form a single Canadian entity working together and using cutting-edge methods to look at major drug-related questions of public health interest to Canadians and the rest of the world."

With research teams operating in eight centres across Canada, CNODES has begun investigating whether high doses of statins, which are prescribed to millions of Canadians to control cholesterol levels, are associated with kidney failure. "That is a question we can't study individually because each dataset is not sufficiently large on its own to identify the necessary number of high-dose statin users," said Dr. Suissa. "But by pooling the resources and the data from several provincial databases across Canada, such as the Régie de l'assurance maladie du Québec and the Ontario Health Insurance Plan, and using state-of-the-art methods, we'll be able to rapidly answer that question."

The overarching idea of DSEN is to bring investigators and information users together so that post-market drug research addresses identified information gaps. Partnerships with other organizations, such as the Canadian Institute for Health Information and the Canadian Agency for Drugs and Technologies in Health, will further expand DSEN's capacity.

"This initiative has allowed us to have this collaboration, something we wanted to do for a long time but didn't have the means to do," said Dr. Suissa. "DSEN is the means."

DSEN CATALYZES RESEARCH INTO DRUG SAFETY

In January 2009, the Government of Canada committed $32 million to DSEN, to be allocated incrementally over its first five years, followed by $10 million annually in subsequent funding. From that initial funding, DSEN has already launched 14 one-year "Catalyst" research projects, worth $1.3 million:

1. *Using Genomics to Address Drug Safety in Children with Traumatic Injury: An Innovative Approach to a Common Problem.* Principal Investigator: **Dr. Samina Ali, University of Alberta**.

2. *Use of Short and Long-Acting Beta2-agonists During Pregnancy and the Risk of Congenital Malformations.* Principal Investigator: **Dr. Lucie Blais, University of Montreal**.

3. *Assisted Reproduction Techniques and the Risk of Major Congenital Malformations: The AtRISK study*. Principal Investigator: **Dr. Anick Bérard, CHU Sainte-Justine of Montreal**.

4. *Real-World Effects of Bisphosphonates: Using Innovation to Link Datasets (REBUILD) - Phase I*. Principal Investigator: **Dr. Suzanne Cadarette, University of Toronto**.

5. *Vincristine-Induced Peripheral Neuropathy in Children with Cancer*. Principal Investigators: **Drs. Bruce Carleton and Michael Hayden, University of British Columbia**.

6. *Population Incidence of Serious Cardiovascular EventS and Medications for Attention Deficit Hyperactivity Disorder (PISCES)*. Principal Investigator: **Dr. Colin Dormuth, University of British Columbia**.

7. *A National Electronic Network for Rapid Assessment of Drug Safety and Effectiveness*. Principal Investigator: **Dr. Anne Holbrook, McMaster University**.

8. *The Neonatal Safety of Breastfeeding During Maternal Use of Opioid Analgesics*. Principal Investigator: **Dr. Gideon Koren, The Hospital for Sick Children**.

9. *An Observational Study of Cardiovascular Events Amongst Children and Adults Using Drugs to Treat ADHD*. Principal Investigator: **Dr. Mitchell Levine, McMaster University**.

10. *The Feasibility of Using Community Pharmacists in Focused Surveillance for Drug Safety and Effectiveness: A Case Study of Anti-Hypertensives in Pregnancy*. Principal Investigators: **Drs. Carlo Marra and Larry Lynd, University of British Columbia**.

11. *Exposures to and Outcomes of Prescription Drug Use During Pregnancy: a Population-Based Data Linkage and Analysis*. Principal Investigator: **Dr. Steve Morgan, University of British Columbia**.

12. *Post Market Drug Safety and Effectiveness of Atypical Antipsychotics in Children With Disruptive Behaviour Disorders, Mood Disorders and Developmental Disorders*. Principal Investigator: **Dr. Tamara Pringsheim, University of Calgary**.

13. *The Use of Atypical Antipsychotic Agents and the Risk of Breast Cancer*. Principal Investigator: **Dr. Samy Suissa, Jewish General Hospital of Montreal**.

14. *Safety of Pregnancy Exposure to Antidepressants*. Principal Investigator: **Dr. Shi Wu Wen, Ottawa Hospital Research Institute**.

CHRONIC DISEASE

AN INTERNATIONAL EFFORT TO SAVE LIVES

Global Alliance for Chronic Diseases signatories. Standing: Dr. Depei Liu (China), Dr. Warwick Anderson (Australia), Dr. Abdallah Daar (University of Toronto), Dr. Stig Pramming (Oxford Health Alliance), and Dr. Leszek Borysiewicz (UK). Seated: Dr. Elizabeth Nabel (USA) and Dr. Alain Beaudet (Canada).

Within the next decade, an estimated 388 million people worldwide could die of largely preventable conditions such as cardiovascular diseases (heart disease and stroke), several cancers, chronic respiratory conditions and type 2 diabetes.

To reduce those staggering numbers, CIHR has joined five of the world's foremost health agencies in forming the Global Alliance for Chronic Disease. The six agencies from Canada, Australia, China, India, the United Kingdom and the United States collectively manage about 80% of all public health research funding across the globe. South Africa and Qatar have since joined the Alliance.

In 2010, Alliance leaders drafted a core request for applications to fund research projects to address the critical problem of hypertension. Their goal is to provide joint funding opportunities for intervention and implementation research, with special consideration given to how such interventions could affect vulnerable populations in low- and middle-income countries and Indigenous populations in developed countries including Canada.

Canada is a main player in the hypertension research initiative, and several Canadian partners have joined forces with CIHR in this international endeavour. These include International Development Research Centre, Grand Challenges Canada, the Heart and Stroke Foundation of Canada and the Canadian Stroke Network. "CIHR's effort to work at an international level to be more effective in the management of risk factors is commendable, and we are happy to join forces in this international effort," said Dr. Antoine Hakim, CEO and Scientific Director of the Canadian Stroke Network.

THE ISOTOPE CRISIS

A RAPID RESPONSE TO AN URGENT SITUATION

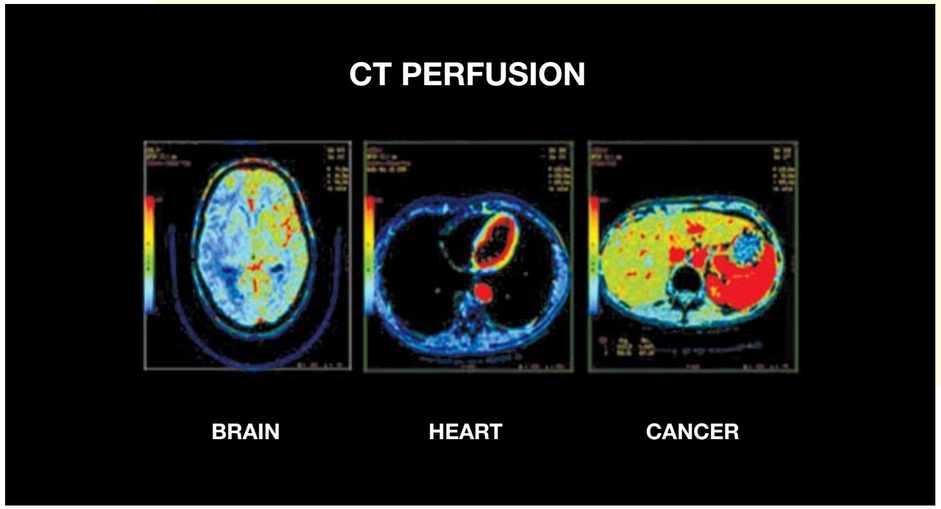


Photo courtesy of Robarts Research Institute, University of Western Ontario.

IN THE WAKE OF THE BREAKDOWN OF THE CHALK RIVER REACTOR FACILITY, CIHR, WITH THE INSTITUTE FOR CANCER RESEARCH IN THE LEAD, HAS BEEN QUICK TO RESPOND TO THE URGENT NEED TO FIND OTHER RELIABLE SOURCES OF ISOTOPES FOR MEDICAL IMAGING.

Working in partnership with the Natural Sciences and Engineering Research Council (NSERC), in June 2009, CIHR launched an accelerated request for applications to speed the development of replacements for Techetium-99 or to support research on alternative means of production of this isotope. Within months, seven 2-year projects, with a total budget of $5.4 million, were under way across Canada.

Building on that momentum, CIHR and NSERC joined forces to organize a Medical Imaging Workshop in late 2009 that convened leading national and international researchers in the life and physical sciences to exchange ideas on overcoming the isotope shortage. One key recommendation was the creation of a national imaging clinical trials network.

The Government of Canada responded accordingly in its February 2010 budget by awarding CIHR $10 million to establish a national imaging trials network. By June 2010 a request for applications was launched and an international panel awarded funding for a pan-Canadian interdisciplinary imaging network. Under the direction of Dr. Jean-Claude Tardif of the Montreal Heart Institute, the network is now up and running at several centres and is uniting — for the first time — Canadian researchers involved in a variety of imaging technologies and medical disciplines in a common cause.

“It’s a tribute to the Institute of Cancer Research at CIHR because they are the people who have driven this and have really made things happen,” said Dr. Alexander (Sandy) McEwan, Chair of Oncology at the University of Alberta.

“CIHR made money available through the joint program with NSERC for research into alternatives and two or three groups have come up with quite good options,” said Dr. McEwan, who is also Medical Director at the Cross Cancer Institute in Edmonton. “I’ve been very impressed with the process that CIHR put in place to put a network together to look at those alternatives and at the best ways of validating them quickly and effectively. It was a very quick turnaround. We’ve had the right people guiding it from the CIHR level, showing that the system can work and be reactive.”

CIHR has also reached out internationally to meet the medical imaging challenge, co-organizing a workshop with Cancer Research United Kingdom and the National Cancer Institute of the United States in the summer of 2011 in London, England, to explore potential international collaborations. It is anticipated that such collaborations will expedite the use of new biomarkers and imaging technologies in clinics and advance the field of personalized medicine.

THE SEARCH IS ON FOR OTHER ISOTOPE SOURCES

CIHR AND NSERC ARE CURRENTLY FUNDING SEVEN 2-YEAR PROJECTS AIMED AT FINDING REPLACEMENTS FOR THE TECHNETIUM-99 ISOTOPES CURRENTLY USED FOR MEDICAL IMAGING, AND AT EXAMINING ALTERNATIVE MEANS OF PRODUCTION. THESE ARE:

1. *Cyclotron-Based Production of Technetium Radioisotopes*. Principal Investigators: **Drs. François Bénard and Thomas Ruth, University of British Columbia**.

2. *Rubidium-82 – An Alternative Radiopharmaceutical for Myocardial Imaging (Rb-ARMI)*. Principal Investigators: **Drs. Robert A. De Kemp, Rob Beanlands, George A. Wells, Ottawa Heart Institute Research Corp**.

3. *Replacement of 99mTc-Macroaggregated Albumin with Biodegradable 68Ga-Labelled Microspheres for Lung Perfusion Imaging*. Principal Investigator: **Dr. Urs Hafeli, University of British Columbia**.

4. *Substitution of 99mTc-labelled Red Blood Cells with a 68Ga-Labelled Polyglycerol for Cardiac Blood Pool Imaging*. Principal Investigator: **Dr. Urs Hafeli, University of British Columbia**.

5. *Iodine-123 Labelled Rotenone for Myocardial SPECT Perfusion Imaging*. Principal Investigator: **Dr. Terrence Ruddy, Ottawa Heart Institute Research Corp**.

6. *The Formulation and Clinical Testing of I-123 Lodohippuran as an Alternative to Tc-99m MAG3 for Assessment of Renal Function in Patients with Kidney Disease*. Principal Investigator: **Dr. John Valliant, McMaster University**.

7. *Seventy-to-Ninety Per Cent Reduction of Tc-99m Required for Breast Cancer Lymphoscintigraphy*. Principal Investigators: **Drs. Pamela Zabel and Muriel Brackstone, London Health Sciences Centre**.

Courtesy of TRIUMF, Canada's National Laboratory for Particle and Nuclear Physics (Mindy Hapke).

A patient is prepared for a PET scan of the brain using medical isotopes.

CIHR DRIVES INTERNATIONAL EFFORT TO DEAL WITH DEMENTIA

ALZHEIMER'S DISEASE AND RELATED DEMENTIAS HAVE BEEN CALLED A "RISING TIDE" WITH THE POWER TO OVERWHELM HEALTH-CARE SYSTEMS ACROSS THE PLANET

Unless research-driven treatments or interventions are introduced, more than 1.1 million Canadians — about 3% of the population — will be living with Alzheimer's disease or a related form of dementia within 30 years.

Because it will take a coordinated international effort to turn back the tide, CIHR has created the International Collaborative Research Strategy for Alzheimer's Disease (ICRSAD) to combine Canada's efforts with those of other countries so that Canadian researchers exchange knowledge with international colleagues and Canadians have rapid access to the latest preventive, diagnostic and treatment approaches.

"We're quite fortunate in Canada to have a cadre of experts in the field of dementia research," said Dr. Rémi Quirion, ICRSAD's Executive Director. "We're excellent, but we're a small team. To be able to tackle a problem of the magnitude of Alzheimer's disease we need to work with other groups around the world to make faster progress to find better treatments."

Dr. Quirion points out that Canada has produced world-leading work in dementia research. "So, for us at CIHR, when we discuss collaborations with international partners they know about our scientists, they know about the quality of their work and it's easy to open doors."

CIHR is also working in partnership with the Alzheimer Society of Canada, which co-hosted a Canadian Consultation Meeting during the International Conference on Alzheimer's Disease in July 2010.

GLOBAL EFFORT: MAXIMIZING RESOURCES TO COMBAT DEMENTIA

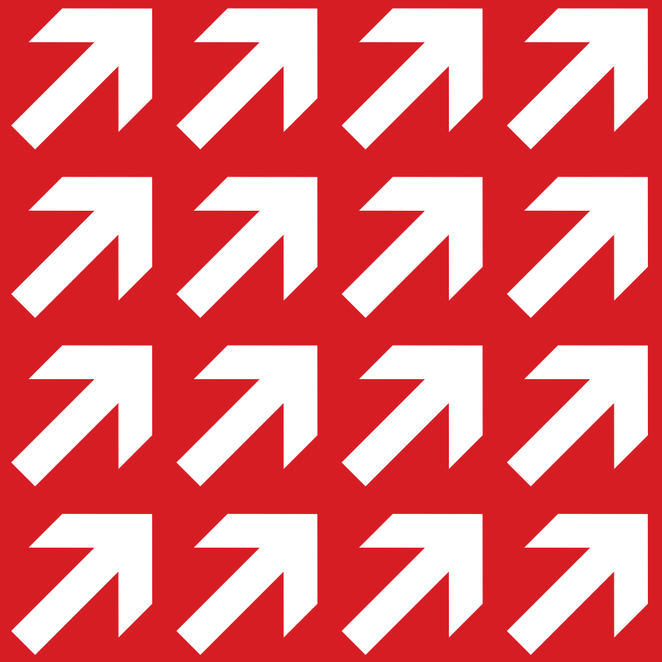
➔ In June 2010, CIHR, the **German Centre for Neurodegenerative Diseases** and the United Kingdom's **Medical Research Council** agreed to work together to establish uniform guidelines and technologies for neurodegenerative diseases. The agreement will help remove obstacles to aligning research into critically escalating conditions such as Alzheimer's disease. "We understand the importance of working together to ensure uniform global standards," said **Health Minister Leona Aglukkaq**. "I commend CIHR for its leadership in developing this initiative."

➔ CIHR has contributed $1.6 million of a total $8 million for collaborative projects with researchers in the United Kingdom, Germany, Belgium and Italy on Alzheimer's disease and related dementias.

➔ CIHR is providing $1.5 million for five Canadian sites to collaborate with 55 U.S. centres in the second phase of the **Alzheimer's Disease Neuroimaging Initiative**. The study is monitoring 1,000 people aged 55 to 90 over five years to detect changes in brain structure and function as mild cognitive impairment, a common precursor to Alzheimer's disease, develops.

➔ CIHR is investing $1.4 million in a $5-million France-Quebec-Canada collaboration that is helping to fund five research projects in the diagnosis, treatment or management of patients with Alzheimer's disease or related diseases.

ACCELERATING THE CAPTURE OF HEALTH AND ECONOMIC BENEFITS OF HEALTH RESEARCH



REALIZING THE RETURNS ON HEALTH RESEARCH INVESTMENTS

Twelve-year-old Jayden Taylor-Kay received a serious concussion while playing lacrosse. He is accompanied by Minister of Health Leona Aglukkaq and his parents, Jera Taylor and Kelsey Kay. Second row: Dr. Ian Pike and Dr. Malcolm King. Minister Aglukkaq announced CIHR funding for five child and youth injury research teams for a total of $8.2 million over five years.

Café scientifique – Ottawa

CIHR'S RESPONSIBILITY TO CANADIANS DOES NOT END AT FUNDING EXCELLENT HEALTH RESEARCH. ALONG WITH ENABLING EXCEPTIONAL INVESTIGATORS TO GENERATE NEW KNOWLEDGE, THERE IS A DUTY TO ENSURE THAT KNOWLEDGE IMPROVES CANADIANS' HEALTH AND HEALTH CARE.

Knowledge translation means realizing benefits by facilitating the use of research results in the creation of better health products and services, smarter health policies and more effective health-care systems. Translating knowledge into practice is how Canadians reap returns on their investment in health research.

How knowledge translation is accomplished varies. It can mean making sure health-care practitioners and their patients know about successful new therapies. It can mean ensuring policy makers are aware of better ways to marshal resources for maximum impact — and that researchers are cognizant of decision makers' information needs and policy issues as they commence their investigations. Knowledge translation also means assisting researchers in overcoming obstacles that stand in the way of commercializing their breakthroughs so that they can be marketed to the most people to do the most good and deliver the maximum benefit to the Canadian economy. No matter what form it takes, knowledge translation is essential to putting research to work.

PUBMED CENTRAL CANADA

TIMELY ACCESS TO PEER-REVIEWED REPORTS

Dr. Ian Graham, CIHR Vice-President of Knowledge Translation and Public Outreach; Dr. Janet Curran, CIHR-funded postdoctoral fellow at the Ottawa Hospital Research Institute (OHRI); Pam Bjornson, Director General, Canada Institute for Scientific and Technical Information; and Dr. Michael Rudnicki, a CIHR-funded researcher and Senior Scientist at OHRI.

THE DIGITAL REVOLUTION HAS MADE IT POSSIBLE TO DELIVER INFORMATION INSTANTLY TO THOSE WHO CAN PUT IT TO TIMELY USE.

Access to knowledge is shifting from a privilege shared by a few to a right demanded by all. Nowhere is this more important than in health research.

In April 2010, PubMed Central (PMC) Canada's online manuscript submission system began streamlining the process for CIHR researchers to contribute to a growing, free repository of health research. PMC Canada was created in 2009 in partnership with the National Research Council's Canada Institute for Scientific and Technical Information and the U.S. National Library of Medicine as a free digital archive of biomedical and life sciences literature.

CIHR has been an early and steadfast leader of the "open access" movement to share research results. Since 2008, CIHR grants have required investigators to make their peer-reviewed articles freely available through open access journals or online archives within six months of publication. This means the fruits of their taxpayer-supported work are easily accessible to other researchers, clinicians, policy makers and the private sector.

"From a research point of view, the people you're trying to get are not just other researchers, but those who will use the results of research — the patients and students and teachers and entrepreneurs," said Dr. James Till, the Canadian co-discoverer of stem cells with Dr. Ernest McCulloch. "They may not have access to a major university library. They go online and can see a whole bunch of interesting abstracts and say, 'That might be interesting, but I have to pay $35 or $40 to see the whole thing.' It can run into quite large costs to do a thorough exploration of the literature."

Dr. Till, a long-time advocate for open access, chaired the national task force whose work led to the creation of CIHR's open access policy. He sees PMC Canada as a significant advance in transferring knowledge into the public domain.

"It's a way of fostering open access to research literature, particularly to giving visibility to publications that have come out of work supported by CIHR. There is evidence that more people look at an article and read it through open access than if it comes out in a toll-access journal. A wider variety of people look at these articles now because they can," said Dr. Till.

PUBMED CENTRAL CANADA BY THE NUMBERS

(April 28, 2010, to February 15, 2011)

801
submissions to PMC Canada.

312
submissions published on PMC Canada.

169
links to CIHR grants in PMC Canada.

1,318,198
downloads.

196,961
unique visits (from individual IP addresses).

COCHRANE COLLABORATION

ENABLING EVIDENCE-BASED DECISION MAKING

Photo courtesy of Malcolm Taylor in *The Art and Science of Caring: Nurses Advancing Practice Through Research* by St. Michael's Hospital.

CIHR IS HELPING ENSURE THAT HEALTH-CARE PROVIDERS AND PATIENTS IN CANADA AND ACROSS THE WORLD GET THE VERY BEST EVIDENCE-BASED INFORMATION AVAILABLE.

A Google search of "heart disease," for example, produces 34 million results. Sorting and separating high-quality, credible material from the avalanche of search results presents a major challenge. The Cochrane Collaboration helps people make well-informed decisions about health care by preparing, updating and promoting Cochrane Reviews and publishing them online.

Through ongoing support of the Canadian Cochrane Centre, including a 2010 commitment of $9.6 million for five years, CIHR is helping ensure that health-care providers and patients in Canada and across the world get the very best evidence-based information available.

BBC News has called the Cochrane Collaboration "the world's leading independent assessor of medical interventions and medical research." The organization has 28,000 contributors worldwide. They evaluate and synthesize research in all areas of health care and present the results online in Cochrane Systematic Reviews that Dr. Jeremy Grimshaw, Director of the Canadian Cochrane Centre, calls "the gold standard in health research."

To further disseminate this knowledge to French-speaking communities in Canada and around the world, CIHR announced in 2011 that it would provide co-funding, in collaboration with funding partners in Quebec and France, for the French translation of Cochrane Reviews. The support will be used to translate existing abstracts and plain language summaries of approximately 3,000 Reviews, with funds set aside for future translations.

"We are delighted that CIHR recognizes the value in Cochrane Canada and the larger Cochrane Collaboration," said Dr. Grimshaw, who is a senior scientist with the Clinical Epidemiology Program at the Ottawa Hospital Research Institute and a Canada Research Chair in Health Knowledge Transfer and Uptake. "We are determined to utilize this funding in the best possible manner and produce even more Cochrane Reviews to help influence the way medicine is practised in Canada and inform health policy."

CANADIAN COCHRANE CENTRE BY THE NUMBERS

10

percentage of the Cochrane Library's **4,432** reviews contributed by Canadian groups.

18

Cochrane-connected regional sites at Canadian universities, and **1** regional authority.

26

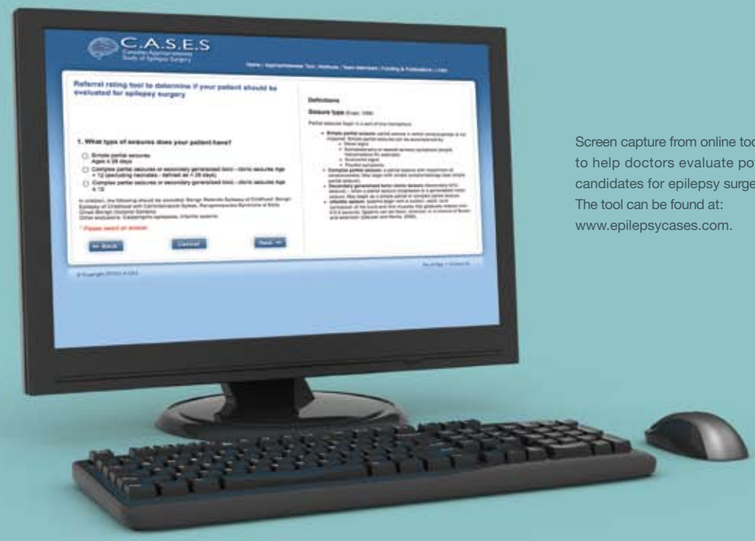
partner organizations across Canada.

2,300

number of Canadians actively involved.

3,869

number of accesses of the full text of Cochrane Musculoskeletal Group's review *Glucosamine therapy for treating osteoarthritis* in 2009.



Screen capture from online tool to help doctors evaluate potential candidates for epilepsy surgery. The tool can be found at: www.epilepsycases.com.

ONLINE TOOL HELPS MDs DECIDE IF PATIENT IS A CANDIDATE FOR EPILEPSY SURGERY

Uncontrolled epilepsy can lead to progressive memory difficulties, injuries and even death. While surgery can improve a patient's seizures and quality of life, many patients go years without the treatment. Now, thanks to a study that CIHR helped to fund, a user-friendly online tool can help doctors identify potential candidates for epilepsy surgery. **The University of Calgary's Dr. Nathalie Jetté** and colleagues conducted an extensive literature review, summarizing more than 700 articles related to partial epilepsy and epilepsy surgery. Neurological experts read the review and rated more than 2,500 possible patient scenarios to determine which patients would benefit from an epilepsy surgery evaluation. The result is a tool that produces a 1–9 rating based on patient characteristics such as age, duration of epilepsy, seizure type, severity of seizures, the number of anti-epileptic drugs tried, side effects of current treatment and results of tests, including magnetic resonance imaging (MRI). The tool is available at www.epilepsycases.com. The patients with the highest ratings are the best candidates for the surgery.

SOCIAL MEDIA

CAPITALIZING ON AN INFORMATION-SHARING PHENOMENON

SOCIAL MEDIA HAS CHANGED THE KNOWLEDGE TRANSLATION GAME.

As the YouTube video *Social Media Revolution* illustrates, it took radio 38 years to reach 50 million users. It took television 13 years. The Internet did it in four, the iPod in three. Facebook, in comparison, had 200 million users in less than a year.

Today, millions of Canadians search for and exchange information in formats that didn't even exist when CIHR was founded only a decade ago. That's why CIHR is on YouTube, to capitalize on social media's application for knowledge translation. So far, CIHR has posted more than 20 videos in the past year highlighting research results. More material — such as profiles of researchers and expert alerts — will appear regularly as CIHR helps more researchers become video savvy in presenting the results of their work.

CIHR is also on Facebook, where, as of early 2011, the Health Research in Canada page had attracted more than 125,000 fans (English and French combined). Almost 12,000 fans from all over the world have also flagged the Banting Postdoctoral Fellowships program's Facebook page. Facebook is not only a forum for publicizing health research developments, it also encourages those keen to find out more to interact.

Twitter has also become an excellent vehicle for getting timely information to a wider — and younger — audience. CIHR uses Twitter to post the latest information about Café Scientifique topics and locations and to alert audiences about other upcoming events or relevant research. As well, Flickr has provided a platform for an online database of pictures related to health research.

Social media, clearly, is not a fad. CIHR is riding the crest of this information-sharing phenomenon to further efforts and extend the reach in knowledge translation.

TWITTER TRAFFIC COULD HELP TRACK DISEASE

What do you get when you blend information technology, social media and epidemiology? **Dr. Gunther Eysenbach** of the **Centre for Global eHealth Innovation** at the **University Health Network** coined the term infodemiology. Infodemiology describes the science of capturing and analyzing data about how people use the Internet to obtain and exchange information concerning the spread of disease and to monitor health and inform public policy. In 2007, Dr. Eysenbach demonstrated how Google searches for the words "flu" and "influenza" correlated with outbreaks of influenza. He is also studying Twitter traffic patterns during the 2010 H1N1 outbreak, collecting some 2 million tweets and analyzing them to create a picture of what people were reading, thinking about and planning to do during the pandemic. While the Twitter study is retrospective, lessons learned from the way people used the technology during the pandemic could help create "real-time" reports during the next public health crisis that would keep authorities informed and enable them to respond to public concerns quickly.

BEST BRAINS EXCHANGES

BRINGING RESEARCHERS AND DECISION MAKERS TOGETHER

THROUGHOUT 2010–11, CIHR HAS COORDINATED A SERIES OF ONE-DAY, IN CAMERA MEETINGS FOR CIHR-SPONSORED RESEARCHERS AND HEALTH MINISTRY OFFICIALS TO DISCUSS HIGH-PRIORITY CHALLENGES.

The sessions, called Best Brains Exchanges, are aimed at helping decision makers formulate policy and improve health care. The Exchanges emerged from the Evidence on Tap program that CIHR initiated to share high-quality, timely evidence with provincial and territorial health-care leaders. Initially a pilot project, the Exchanges have been so successful that they are expanding to other provinces and now include federal Best Brain Exchanges.

CIHR organized three pilot Best Brains Exchanges with Saskatchewan's Ministry of Health as it began work to adopt a patient- and family-centred care approach within its health-care system. The sessions were a definite success, said Pauline Rousseau, Executive Director of Saskatchewan Health's Policy and Planning Branch. "They triggered decisions about strategic directions for the health system and actions that we have taken," she said. "They triggered connections, networks and ongoing collaborations."

The University of Ottawa's Dr. Annette O'Connor, a world leader in patient decision aids, took part in one of Saskatchewan's early Best Brains Exchanges and is now, with Dr. Dawn Stacey, providing "very practical, research-based support as they move forward" said Dr. O'Connor. "For example, Saskatchewan needed to examine existing decision aids for priority clinical areas. So our knowledge translation team used our online database to produce a report on the available decision aids and the extent to which they met current international standards. This customized 'just in time' information will help them to decide about the best tools for their needs."

Ms. Rousseau said Saskatchewan has plans for more Exchanges. "It will be part of how we do business. I'm hoping that we can regularize it to the point that we do two or three a year. This is the most important research initiative targeted at bringing together the research and policy communities that I have seen in decades."

From the researcher's point of view, the Exchanges represent "a golden opportunity to see the fruits of your labour make a difference to the health of people," said Dr. O'Connor.

BEST BRAINS EXCHANGES TOPICS 2010–11

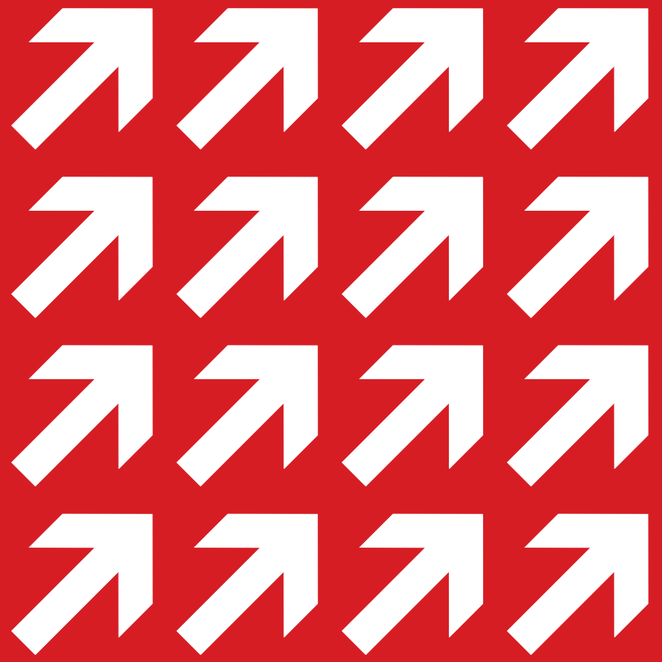
- **May 2010, Fredericton:** Primary Care.
- **October 2010, Regina:** Developing and Implementing a Framework for Patient and Family-Centred Care.
- **February 2011, Ottawa:** Health Science and Research in Canada's Arctic – Building the Evidence Base.
- **March 2011, Ottawa:** Health Inequalities, Health Policy and the Social Determinants of Health of First Nations Communities.
- **March 2011, Halifax:** Governance Models to Support an Integrated System of Care for Mental Health and Addictions Services.

STUDY'S FINDINGS USED IN GUIDELINES TO STOP SPREAD OF *C. DIFFICILE*

Findings from CIHR-funded research into the efficacy of alcohol-based hand disinfection versus washing with soap and water have been incorporated in the 2010 update of Clinical Practice Guidelines for *Clostridium difficile* Infection in Adults. **McGill University's Dr. Michael Libman** conducted the study using volunteer health workers whose hands were exposed to a harmless form of *C. difficile*. He found that because alcohol-based hygiene products are ineffective at removing *C. difficile* spores, hand washing with soap and water is the best way to prevent infection from the diarrhea-causing bacteria.

"Alcohol-based hand disinfectants do a great job on just about everything else," said Dr. Libman, "but because you need to remove the spores from the skin, hand-washing is needed." The Guidelines are published by the Society for Healthcare Epidemiology of America and the Infectious Diseases Society of America.

ACHIEVING ORGANIZATIONAL EXCELLENCE, FOSTERING ETHICS AND DEMONSTRATING IMPACT



STAYING ACCOUNTABLE TO CANADIANS

CANADIANS INVEST BROADLY IN HEALTH RESEARCH THROUGH THEIR TAX DOLLARS. THEY DESERVE TO KNOW THAT THEIR INVESTMENT IS BEING ALLOCATED WISELY AND RETURNING GOOD VALUE. TO DEMONSTRATE ACCOUNTABILITY, CIHR HAS COMMITTED TO BEING A FIRST-RATE, LEADING-EDGE ORGANIZATION THAT EMPLOYS BEST PRACTICES IN ITS SERVICE TO CANADIANS AND THE GOVERNMENT OF CANADA.

RESEARCH REPORTING SYSTEM

CAPTURING A CLEAR PICTURE OF RESEARCH GAINS

In health research, the return on investment is not always immediately apparent. Even at the end of a project, when the research is completed, the dividends that the work will yield may not be evident. For example, it can take years for researchers to publish their work in peer-reviewed publications. Securing patents and licences for technologies developed during a research project can take just as long. And there is often a delay before research influences clinical practice or policy.

In the past, CIHR has required researchers to submit end-of-grant reports outlining the results achieved in their work. But those snapshots have not always captured the complete story.

Realizing more extensive follow-up was needed, CIHR developed the Research Reporting System to provide systematic, high-quality reporting of the results of funded research. This online tool, developed through extensive consultations with the research community and a comparison of existing tools at funding agencies across Canada and around the world, was implemented in March 2011.

Preliminary results from a sample of 596 researchers who completed their grants between 2000 and 2008 indicated that an average of seven papers — not including book chapters, technical reports and master's or PhD theses — were published for every CIHR grant.

The Research Reporting System provides a clearer picture of Canadians' return on their investments in health research in terms of gains made in new knowledge and knowledge translation, achievements in expanding research capacity and improving training, and impacts on health and health care.

INTERNATIONAL REVIEW

QUALITY ASSURANCE ON A GLOBAL SCALE

Members of the International Review Panel team
Standing: Professor Rudi Balling, Dr. Jan Lundberg. Seated: Dame Sally Davies, Dr. Elias Zerhouni (Chair), Professor Fiona Stanley, Dr. Marie-Françoise Chesselet. Missing: Professor Sir John Bell, Professor Christian Bréchot, Professor Victor Dzau, Dr. Steven E. Hyman, and Dr. Chris Murray.

Any organization can call itself world-class, but to achieve this status requires world-class evaluation and an international stamp of approval.

In 2010–11, CIHR began preparations for the second International Review. An intense exercise, it involved inviting world-renowned leaders in health research to analyze activities to ensure CIHR is fulfilling its mandate as outlined in the *CIHR Act*.

The first step was to recruit a blue-ribbon International Review Panel to conduct the evaluation. In July 2010, CIHR President Alain Beaudet announced that Dr. Elias Zerhouni would lead the panel. Dr. Zerhouni is a former Director of the U.S. National Institutes of Health, the largest biomedical research and development agency in the world. The 10 other panel members include internationally respected health research leaders from academia, government, administration and industry.

CIHR also recruited 13 expert review teams, each including a member of the International Review Panel, to assess the operations of the individual CIHR Institutes. To facilitate the process, the Institutes prepared detailed reports that summarize their mandates and research priorities. The reports outline the critical initiatives and significant outcomes pursued and realized since the inception of CIHR in 2000. They focus on progress made in these areas since the 2006 International Review and include responses to major aspects of that review.

The Institutes submitted their reports in September 2010. The formal reviews — in which more than 30 reviewers met with some 150 key informants including 13 scientific directors, Institute Advisory Board chairs, as well as researchers and other stakeholders from across Canada — took place over three days in February 2011.

In March, the International Review Panel conducted its review of CIHR's performance as a whole, as well as of the Institutes' accomplishments. It examined CIHR reports and conducted interviews with Canadian research leaders, young investigators, federal funding agencies, CIHR partners and senior officials. Dr. Zerhouni's findings and the International Review Panel's recommendations are to be tabled with CIHR's Governing Council in June 2011.

CIHR

ONE OF CANADA'S TOP 100 EMPLOYERS

Not only does CIHR enable Canada's health researchers to do great work, the agency itself is a great place to work: Mediacorp Canada Inc. declared CIHR one of Canada's Top 100 Employers of 2010.

For the past two years, Mediacorp has also named CIHR one of the National Capital Region's Top 25 Employers.

The awards recognize organizations that lead their industries in attracting and retaining employees. Key factors include: condition and location of the workplace; health, financial and family benefits; vacation and time off; training and skills development; and community involvement.

"Now everyone knows what we at CIHR have always known: that this is an innovative workplace that strives for excellence in all its pursuits," said CIHR President Dr. Alain Beaudet.

CIHR staff celebrate the organization's 10th anniversary at CIHR Staff Recognition Day.

CIHR AT 10

HIGHLIGHTS FROM THE ANNIVERSARY

On June 7, 2010, CIHR marked its 10th anniversary. Throughout 2010, the organization celebrated this important milestone with a series of activities and events. On June 10, the Speaker of the House of Commons, the Honourable Peter Milliken, hosted a breakfast for parliamentarians, members of the media and representatives from partner and stakeholder organizations to celebrate the anniversary. Later in the same month, the organization held a 10th anniversary-themed employee recognition event, attended by Health Minister Leona Aglukkaq. "Canada is just beginning to see the benefits of CIHR's contribution to health research. Its positive impact on the lives of Canadians will be felt for generations to come," the Minister said.

In November, CIHR's annual Canadian Health Research Awards paid special recognition to the anniversary. And throughout the year, the Café Scientifique program held special 10th anniversary-themed café events across the country.

CIHR president Dr. Alain Beaudet and His Excellency the Right Honourable David Johnston at the Canadian Health Research Awards ceremony.

IMPLEMENTATION REPORT

FOLLOWING THE ROADMAP

Developing a strategic plan is one thing, but adhering to it in subsequent years is another. In 2010–11, the publication of the first annual *CIHR Three-Year Implementation Plan and Progress Report 2010–13* ensured the organization is following through on the *Health Research Roadmap*, the five-year strategic plan made public in 2009 and designed to carry the agency forward well into its second decade.

The purpose of the implementation plan is to focus on the short-term actions and deliverables that make up the overall strategic plan, to make sure milestones are met and goals achieved. A copy of the implementation plan is available on the CIHR website so that Canadians can see how their investments in health research are paying off.

PROVIDING STEWARDSHIP AND ACCOUNTABILITY

CIHR GOVERNING COUNCIL

CIHR reports to Parliament through the Minister of Health. Its Governing Council comprises 17 Canadians who have been appointed by Order in Council to renewable three-year terms. Council members represent a wide range of backgrounds and disciplines, reflecting CIHR's broad mandate and vision.

CIHR INSTITUTES

CIHR is composed of 13 innovative Institutes. These Institutes bring together all partners in the research process — those who fund research, those who carry it out and those who use its results — to share ideas and focus on what Canadians need: good health and the means to prevent and fight diseases when they happen.

Each Institute is headed by a Scientific Director who is a leader in his or her field. Scientific Directors receive guidance from their Institute Advisory Boards, made up of volunteers from all areas of the health research community.

CIHR EXECUTIVE MANAGEMENT TEAM

CIHR's Executive Management Team provides leadership and decision making for strategic, corporate policy and management areas that support and contribute to the strategic directions set out by the Governing Council.

GOVERNING COUNCIL

Front row, from left to right: Alain Beaudet, Elias Zerhouni, Ray Rajotte, Glenda Yeates, H. Arnold Steinberg, Janet Rossant, Robert S. Sheldon. Back row: Patrick J. McGrath, James Brien, Harvey Max Chochinov, Keith G. Anderson, Bernard Prigent, Brett Finlay.

Dr. Alain Beaudet
(Chair)
President
Canadian Institutes of Health Research

Mr. Keith G. Anderson
Senior Policy Advisor and Health Management Consultant
British Columbia

Dr. James Brien
Professor of Pharmacology and Toxicology
Director of Research
Faculty of Health Sciences
Queen's University

Dr. Harvey Max Chochinov
Canada Research Chair in Palliative Care
Professor of Psychiatry
University of Manitoba and CancerCare Manitoba

Dr. Brett B. Finlay
Professor
Michael Smith Laboratories
Department of Biochemistry and Molecular Biology
University of British Columbia

Dr. Nicole Letourneau
Professor
Faculty of Nursing
University of New Brunswick

Dr. Christopher W. Loomis
President and Vice-Chancellor
Pro Tempore
Memorial University of Newfoundland

Dr. Patrick John McGrath
Vice-President Research
IWK Health Centre
Professor of Psychology, Pediatrics and Psychiatry
Dalhousie University

Dr. Bernard Prigent
Vice-President and Medical Director
Pfizer Canada
Montreal, Quebec

Dr. Ray Rajotte
Professor of Surgery and Medicine
Director
Surgical-Medical Research Institute
Director
Islet Transplantation Group
University of Alberta

Mr. Morris Rosenberg
(Ex-Officio, Non-Voting – until April 2010)
Deputy Minister
Health Canada

Ms. Glenda Yeates
(Ex-Officio, Non-Voting – as of May 2010)
Deputy Minister
Health Canada

Dr. Janet Rossant
Chief of Research
Hospital for Sick Children
Professor
Department of Medical Genetics and Microbiology
University of Toronto

Dr. Jean L. Rouleau
(until October 2010)
Dean of Medicine
University of Montreal

Dr. Robert S. Sheldon
(Non-Voting)
Professor of Cardiac Sciences, Medicine and Medical Genetics
Associate Dean of Clinical Research
University of Calgary
Vice-President Research
Calgary Health Region

Mr. H. Arnold Steinberg
Vice-Chair
Principal
Cleman Ludmer Steinberg, Inc.
Director
McGill University Health Centre Foundation
MUHC Research Institute and Canadian Patient Safety Institute

Dr. Cornelia Wieman
Co-Director
Indigenous Health Research Development Program
Assistant Professor
Dalla Lana School of Public Health
Faculty of Medicine
University of Toronto

CIHR INSTITUTES

CIHR INSTITUTE OF ABORIGINAL PEOPLES' HEALTH (CIHR-IAPH)

Dr. Malcolm King
University
of Alberta

CIHR-IAPH fosters the advancement of a national health research agenda to improve and promote the health of First Nations, Inuit and Métis peoples in Canada through research, knowledge translation and capacity building. The Institute's pursuit of research excellence is enhanced by respect for community research priorities and Indigenous knowledge, values and cultures.

CIHR INSTITUTE OF AGING (CIHR-IA)

Dr. Anne Martin-Matthews
University
of British
Columbia

Adults over 65 years constitute the fastest growing age group in Canada. By the year 2026, one out of every four Canadians will be considered 'seniors', surpassing the number of children under the age of 15 in this country. CIHR-IA supports research in the field of aging to improve the health and quality of life of older Canadians by understanding and addressing or preventing the consequences of a wide range of factors associated with aging.

CIHR INSTITUTE OF CANCER RESEARCH (CIHR-ICR)

Dr. Morag Park
McGill
University

CIHR-ICR has been coordinating cancer research across Canada in priority areas such as palliative and end-of-life care, establishing a model for the world. Future priorities span the continuum of cancer and include prevention, individualized cancer care, cancer stem cells and survivorship, with research training and capacity building being an overarching priority.

CIHR INSTITUTE OF CIRCULATORY AND RESPIRATORY HEALTH (CIHR-ICRH)

Dr. Peter Liu
(until June 2010)
University
Health Network
University
of Toronto

Dr. Lori West
Interim Scientific
Director
(June 2010 –
December 2010)
University
of Alberta

Dr. Jean L. Rouleau
(as of
December 2010)
University
of Montreal

Heart, lung and blood vessel diseases are the major health burdens facing Canadians — yet if we understood how our genes, the environment and our behaviour interplay to cause these common conditions, they might be preventable. CIHR-ICRH is supporting research that asks tough questions about the causes, consequences and control of these conditions.

CIHR INSTITUTE OF GENDER AND HEALTH (CIHR-IGH)

Dr. Joy Johnson
University of British
Columbia

CIHR-IGH fosters research excellence regarding the influence of gender and sex on health, and applies these research findings to identify and address pressing health challenges. Gender and sex influence health in many ways that, if better understood, could inform interventions and programs designed to improve the health and well-being of women, men, boys and girls.

CIHR INSTITUTE OF GENETICS (CIHR-IG)

Dr. Roderick McInnes
(until May 2010)
Hospital for
Sick Children
University
of Toronto

Dr. Paul Lasko
(as of May 2010)
McGill
University

CIHR-IG supports research on the human and other genomes and on all aspects of genetics, basic biochemistry and cell biology. New advances in genetics and genomics, and in the understanding of how cells work, pose challenges to our health-care system and often raise complex ethical, legal and social issues. The Institute is addressing these challenges to develop solutions that benefit Canadians.

CIHR INSTITUTE OF HEALTH SERVICES AND POLICY RESEARCH (CIHR-IHSPR)

Dr. Colleen M. Flood
(until January 2011)
University of Toronto

Dr. Robyn Tamblyn
(as of January 2011)
McGill University

CIHR-IHSPR is helping the country meet the challenge of making high-quality health care available to all those who need it, when and where they need it, while also ensuring that Canada's health-care system is responsive, efficient and sustainable. It does so by supporting the brightest minds in health services and policy research, championing the development of the methods and tools that generate excellent research, and supporting evidence-informed health policy decision making.

CIHR INSTITUTE OF HUMAN DEVELOPMENT, CHILD AND YOUTH HEALTH (CIHR-IHDCYH)

Dr. Michael Kramer
Montreal Children's Hospital
McGill University

CIHR-IHDCYH promotes and supports research that improves the health and development of mothers, infants, children, youth and families in Canada and throughout the world. Through our support, researchers address a wide range of health concerns, including those associated with reproduction, early development, childhood and adolescence.

CIHR INSTITUTE OF INFECTION AND IMMUNITY (CIHR-III)

Dr. Marc Ouellette
Laval University

CIHR-III led the charge against SARS and H1N1, orchestrating a rapid research response unprecedented in Canadian health research. Its strategic priorities are the immune system and infectious disease. Areas that fall under this umbrella include vaccine development, food and water safety and the federal government's initiatives in HIV/AIDS research.

CIHR INSTITUTE OF MUSCULOSKELETAL HEALTH AND ARTHRITIS (CIHR-IMHA)

Dr. Jane Aubin
University of Toronto

Move It or Lose It! Musculoskeletal (MSK) health, including muscle, joint and bone health, is dependent on optimal amounts of physical activity. MSK disorders such as osteoporosis and arthritis can limit mobility and ability to be physically active, creating a vicious circle of inactivity and MSK degeneration. CIHR-IMHA is working to better understand and treat MSK (including skin and oral) diseases and injury and to improve the health of Canadians by focusing on our flagship theme of physical activity.

CIHR INSTITUTE OF NEUROSCIENCES, MENTAL HEALTH AND ADDICTION (CIHR-INMHA)

Dr. Anthony Phillips
University of British Columbia

From diseases of the central nervous system (e.g. Alzheimer's disease), to addiction, to mental ill health (e.g. schizophrenia) and to the five senses through which we interpret the world, CIHR-INMHA is concerned with how the brain works and with finding new ways to improve the outcomes of brain-related illnesses, which are recognized internationally as leading causes of life-long disability.

CIHR INSTITUTE OF NUTRITION, METABOLISM AND DIABETES (CIHR-INMD)

Dr. Philip Sherman
University of Toronto

CIHR-INMD supports research that addresses the causes, prevention, screening, diagnosis, treatment and palliation of a wide range of conditions associated with hormone, digestive system, kidney, and liver function. CIHR-INMD has identified four strategic priorities that will guide the Institute from 2010 to 2014: food and health; continuum of care; environments, genes and chronic disease; and seeking solutions to obesity.

CIHR INSTITUTE OF POPULATION AND PUBLIC HEALTH (CIHR-IPPH)

Dr. Nancy Edwards
University of Ottawa

CIHR-IPPH is supporting innovative research to understand the impacts of multi-level program and policy interventions on health improvements. This renewed focus requires researchers and other stakeholders to explore pathways to health equity so that all people can reach their full health potential regardless of gender, race or socioeconomic status.

EXECUTIVE MANAGEMENT TEAM

Dr. Alain Beaudet
President

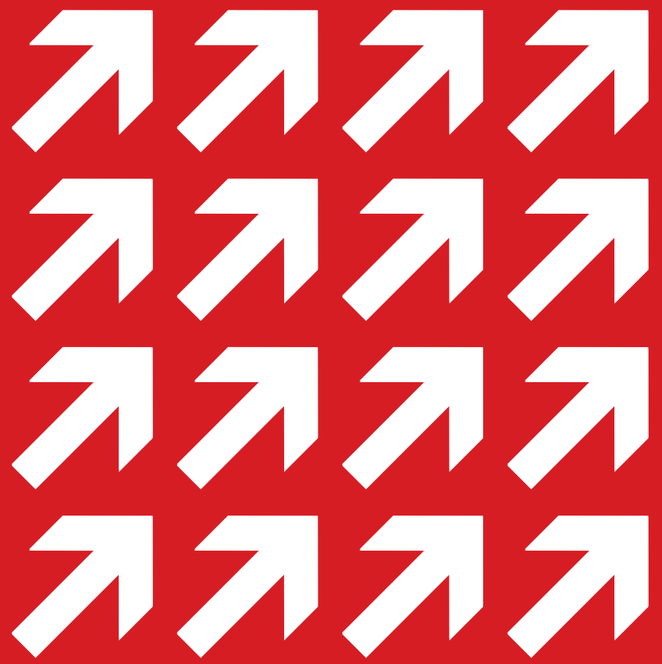
Ms. Christine Fitzgerald
Executive Vice-President

Dr. Ian Graham
Vice-President, Knowledge Translation and Public Outreach

Dr. Pierre Chartrand
Chief Scientific Officer
Vice-President, Research

Mr. James Roberge
Chief Financial Officer
Vice-President, Resource Planning and Management

FINANCIAL STATEMENT DISCUSSION AND ANALYSIS



DISCLAIMER

This Financial Statement Discussion and Analysis (FSD&A) should be read in conjunction with the Canadian Institutes of Health Research (CIHR) annual audited financial statements for the year ended March 31, 2011 and accompanying notes. The FSD&A and audited financial statements have been reviewed and approved by the CIHR Governing Council.

FINANCIAL HIGHLIGHTS

➔ CIHR's net cost of operations increased by 4.3% in 2010–11 largely due to increased Parliamentary authorities provided by the Government of Canada.

➔ Total CIHR expenses for 2010–11 increased by 4.5% mostly as a result of a 4.3% increase in grants and awards expenses.

➔ The ratio of total operating expenses to total expenses for 2010–11 was 6.4%, up slightly from 6.3% in 2009–10.

➔ Total Parliamentary authorities provided by the Government of Canada increased by 4.3% in 2010–11 resulting primarily from new funding announcements by the Government of Canada.

➔ CIHR's total assets and total liabilities decreased by 11.5% and 11.4% respectively as compared to 2009–10. These corresponding decreases to assets and liabilities resulted directly from CIHR's recognition of $2.3 million of additional revenues in 2010–11, whereby CIHR disbursed funds on behalf of external parties to fund additional health research grants and awards. As such, the due from the Consolidated Revenue Fund asset and the deferred revenue liability both decreased as compared to the prior year.

➔ Net cash provided by the Government of Canada increased by 4.8% in 2010–11 to offset an increase in expenses of 4.5%.

FINANCIAL ANALYSIS

CIHR is financed by the Government of Canada through Parliamentary authorities. In 2010–11, CIHR was provided with $1,029.9 million of Parliamentary authorities, an increase of $42.2 million (or 4.3%) as compared to 2009–10. The Government of Canada provided CIHR with additional Parliamentary authorities as part of Budget 2010, as follows:

➔ An ongoing budget increase of $16.0 million to support outstanding health-related research;

➔ $5.0 million to fund a clinical trials network to help move research on medical isotopes and imaging technologies into clinical practice; and

➔ $1.6 million of funding for the introduction of the Banting Postdoctoral Fellowships Program, to help expand Canada's world-class research capacity by recruiting top-tier international postdoctoral researchers to Canada.

CIHR also received additional Parliamentary authorities to increase funding for several key programs and initiatives, including:

➔ An additional $5.3 million to fund the third round of Centres of Excellence for Commercialization and Research grants – an innovative program designed to create centres to advance research and facilitate commercialization of technologies, products and services;

➔ $4.6 million to support the launch of the new Canada Excellence Research Chairs Program, which supports Canadian universities in their efforts to build on Canada's growing reputation as a global leader in research and innovation;

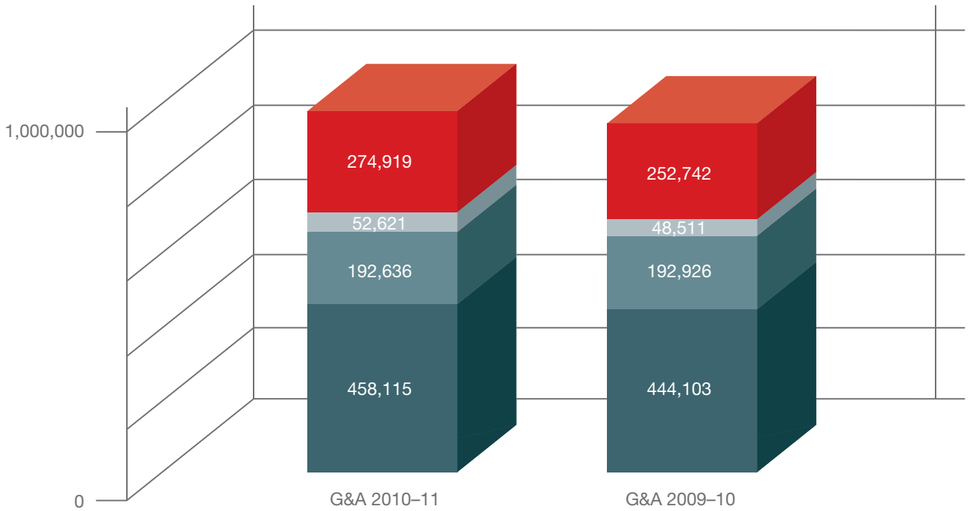
➔ $4.5 million of additional funding to support the CIHR-led Drug Safety and Effectiveness Network, to generate evidence for use in assessments of drug products' safety risks relative to their therapeutic benefits; and

➔ An ongoing annual transfer of $3.0 million from the Public Health Agency of Canada to support innovative research in the prevention, detection and treatment of breast cancer.

The foregoing increases in Parliamentary authorities have resulted in corresponding increases in total Parliamentary authorities used by CIHR (4.4%), grants and awards expenses (4.3%) and the net cost of operations (4.3%). Total operating expenses increased by 6.1% primarily due to increased employee salaries and benefits, as CIHR increased its human resource capacity to enable the effective administration of new and expanded grants and awards programs.

The following graphic indicates how 2010–11 grants and awards expenses were allocated by CIHR's four program activities.

Grants and Awards Expenses by Program Activity
(in thousands of dollars)

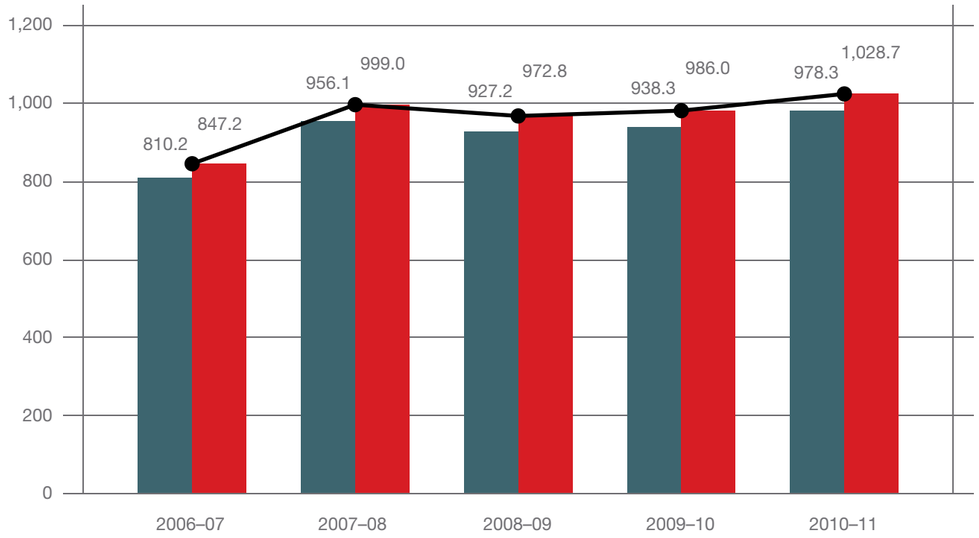


*Figures do not include refunds on previous year's grants and awards

As displayed in the graphic above, the two largest increases were to the Health Knowledge and to the Health and Health Services Advances program activities. Expenses under the Health Knowledge program activity increased by approximately $15.7 million. This increase was a result of increased expenses incurred via CIHR's Open Operating Grant Program which funds the best project ideas submitted by researchers from all areas of health research. The Health and Health Services Advances program activity expenses increased by approximately $23.9 million largely as a result of funding for new strategic initiatives such as the Strategy for Patient-Oriented Research, the International Collaborative Research Initiative on Alzheimer's Disease Research, the Medical Isotopes Initiative and the expanded Drug Safety and Effectiveness Network.

TREND ANALYSIS

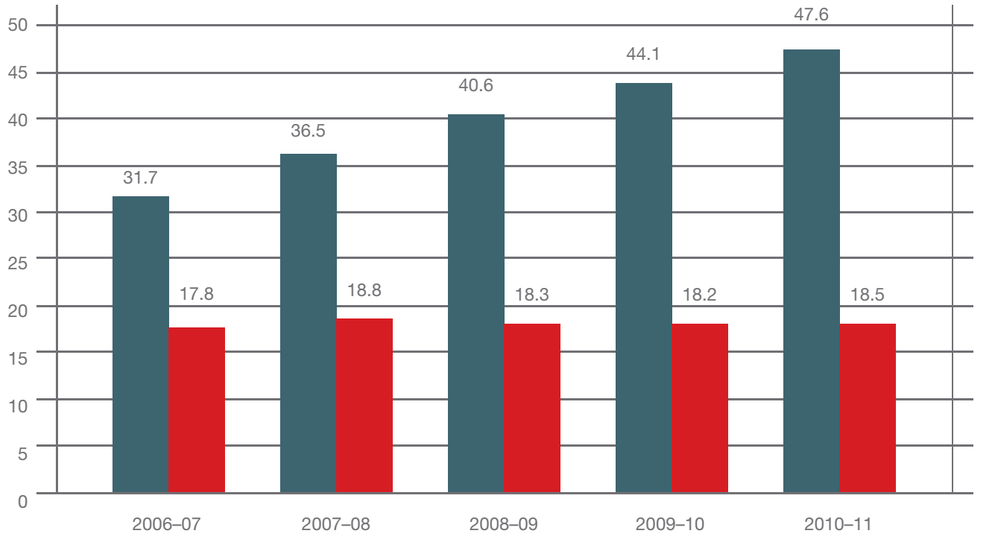
CIHR Net Cost of Operations and Grants and Awards Expenses
(in millions of dollars)



➔ As evidenced by the above chart, net cost of operations and grants and awards expenses increase or decrease on a yearly basis in relative proportion to changes in the Parliamentary authorities provided to CIHR by the Government of Canada.

➔ Total Parliamentary authorities have increased by 19.3% since 2006–07 whereas net cost of operations has increased by 21.4% and grants and awards expenses have increased by 20.7% over the same period.

CIHR Operating Expenses
(in millions of dollars)



➔ In 2010–11, salaries and employee benefits made up 72.0% of total operating expenses, compared to 70.8% in 2009–10. The increase in CIHR's salaries and benefits, and other operating expenses is consistent with the overall increase in grants and awards expenses.

➔ Total operating expenses increased by 6.1% in 2010–11 due to higher wages for employees as CIHR increased its human resource capacity to enable the effective administration of an increased number of grants and awards programs.

➔ The ratio of operating expenses to total expenses was 6.4% in 2010–11, consistent with prior fiscal years.

RISK AND UNCERTAINTIES

CIHR understands the importance of risk management and is committed to ensuring that risk management considerations are integrated into its strategic and operational planning, business processes and decision making. CIHR has a Risk Management Framework that sets out how CIHR identifies, assesses and mitigates risk.

As reported in its 2010–11 Report on Plans and Priorities, CIHR has identified three primary risks, as follows:

Health Research Roadmap
CIHR's Strategic Plan, the *Health Research Roadmap*, sets out an ambitious agenda that will enable the agency to realize its full mandate in all its complexity, show leadership within the wider health research community and demonstrate accountability and results to the people of Canada. There is a risk that CIHR will be unable to fully deliver on the strategic directions outlined in the *Health Research Roadmap* within the defined timeframe, including risks that internal and external stakeholders will not understand or support the proposed changes and that ongoing operational requirements and competing priorities may prevent the required human and financial resources from being able to focus on the implementation of the strategy.

CIHR management has implemented several strategies to mitigate these risks, including:

- The development of a high-level, three-year rolling implementation plan, which includes goals, key activities, and performance measures for external audiences;
- The implementation of an internal governance model to ensure that senior management monitors progress, identifies and resolves issues promptly and takes steps to mitigate implementation risks; and
- The implementation of a stakeholder engagement and communication plan.

Knowledge Translation
There is a risk that CIHR may not be able to support the synthesis, dissemination, exchange and ethically sound application of knowledge at the levels required to achieve the Knowledge Translation (KT) component of its mandate and to improve the health of Canadians. The importance of achieving these objectives has been strongly emphasized in CIHR's *Health Research Roadmap*. Funding opportunities and other mechanisms for advancing KT require time, human resource expertise and resources at levels that CIHR has yet to achieve.

CIHR management has taken the following steps to mitigate risk associated with potentially not achieving its KT mandate:

- The development of a new KT strategy for CIHR including an implementation plan and an evaluation plan; and
- The establishment of a core suite of CIHR KT programs as set out in the *Health Research Roadmap*.

Results Management
There is a risk that CIHR will be unable to evaluate and report on the results of CIHR's funded research inputs, outputs and impacts.

To mitigate this risk, CIHR management has implemented or is in the process of completing the following mitigation strategies:

- The development and implementation of a five-year Evaluation Plan to assess all programming over the period;
- The development of an Impact Framework to report on results in a consistent way to demonstrate impact; and
- The implementation of a research reporting system to allow the organization to access reports on results of CIHR funded research.

FUTURE FINANCIAL OUTLOOK: 2011–12

On June 6, 2011, Minister of Finance James Flaherty tabled in Parliament the Government budget for fiscal year 2011–12. Budget 2011 lays out a plan for new investments into the key drivers of economic growth – innovation, investment, education and training – and seeks to foster an environment in which all Canadians contribute to and benefit from a stronger economy. In doing so, the Government will reinforce Canada's comparative advantages. More specifically, Budget 2011 includes significant investments in innovation which will likely impact CIHR's future outlook, as follows:

- A $15.0 million permanent budget increase for CIHR to support advanced health-related research such as the Strategy for Patient-Oriented Research;
- A new investment of $53.5 million over 5 years to support 10 new Canada Excellence Research Chairs; and
- A $100 million investment over 10 years to help establish the Canada Brain Research Fund to support Canada's very best neuroscience and advance knowledge and treatment of brain disorders. Federal funding will be matched by resources from Brain Canada and its partners.

CIHR is expected to continue to remain in good financial position as the Government of Canada continues to make significant investments in health research and innovation to preserve Canada's comparative advantages. CIHR management anticipates that once all new funding initiatives are approved, its total Parliamentary authorities will once again reach $1 billion in 2011–12.

AUDITOR'S REPORT AND FINANCIAL STATEMENTS

CANADIAN INSTITUTES OF HEALTH RESEARCH STATEMENT OF MANAGEMENT RESPONSIBILITY INCLUDING INTERNAL CONTROL OVER FINANCIAL REPORTING

Responsibility for the integrity and objectivity of the accompanying financial statements for the year ended March 31, 2011, and all information contained in these statements rests with the management of the Canadian Institutes of Health Research (CIHR). These financial statements have been prepared by management in accordance with Treasury Board accounting policies, which are based on Canadian generally accepted accounting principles for the public sector.

Management is responsible for the integrity and objectivity of the information in these financial statements. Some of the information in the financial statements is based on management's best estimates and judgment, and gives due consi deration to materiality. To fulfill its accounting and reporting responsibilities, management maintains a set of accounts that provides a centralized record of CIHR's financial transactions. Financial information submitted in the preparation of the Public Accounts of Canada, and included in CIHR's *Departmental Performance Report* and annual report, is consistent with these financial statements.

Management is also responsible for maintaining an effective system of internal control over financial reporting designed to provide reasonable assurance that financial information is reliable, that assets are safeguarded and that transactions are properly authorized and recorded in accordance with the *Financial Administration Act* and other applicable legislation, regulations, authorities and policies.

Management seeks to ensure the objectivity and integrity of data in its financial statements through careful selection, training, and development of qualified staff; through organizational arrangements that provide appropriate divisions of responsibility; through communication programs aimed at ensuring that regulations, policies, standards, and managerial authorities are understood throughout CIHR; and through conducting an annual assessment of the effectiveness of the system of internal control over financial reporting (ICFR).

An assessment for the year ended March 31, 2011 was completed in accordance with the *Policy on Internal Control*, and the results and action plans are summarized in the annex. The system of ICFR is designed to mitigate risks to a reasonable level based on an ongoing process to identify key risks, to assess effectiveness of associated key controls, and to make any necessary adjustments. The effectiveness and adequacy of CIHR's system of internal control is reviewed by the Finance Branch, which conducts periodic reviews of different areas of CIHR's operations, and by CIHR's Departmental Audit Committee, which oversees management's responsibilities for maintaining adequate control systems and the quality of financial reporting.

The CIHR Audit Committee, selected jointly by the President and the Comptroller General and appointed by the Treasury Board, provides independent, objective advice, guidance, and assurance on the adequacy of the CIHR control and accountability processes. In accordance with the Treasury Board Directive on Departmental Audit Committees, the Audit Committee has reviewed the financial statements with management and external auditors and discussed any significant issues and findings from the audit prior to recommending acceptance of the financial statements to the President and Governing Council.

The Office of the Auditor General of Canada, the independent auditor for the Government of Canada, has expressed an opinion on the fair presentation of the financial statements of CIHR which does not include an audit opinion on the annual assessment of the effectiveness of the department's internal controls over financial reporting.

Approved by:

Alain Beaudet, MD, PhD
President

James Roberge, CMA
Chief Financial Officer

Ottawa, Canada
June 22, 2011

Auditor General of Canada
Vérificateur général du Canada

INDEPENDENT AUDITOR'S REPORT

To the Canadian Institutes of Health Research
and the Minister of Health

I have audited the accompanying financial statements of the Canadian Institutes of Health Research, which comprise the statement of financial position as at 31 March 2011, and the statement of operations, statement of equity of Canada and statement of cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

My responsibility is to express an opinion on these financial statements based on my audit. I conducted my audit in accordance with Canadian generally accepted auditing standards. Those standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Opinion

In my opinion, the financial statements present fairly, in all material respects, the financial position of the Canadian Institutes of Health Research as at 31 March 2011, and the results of its operations and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Clyde M. MacLellan, CA
Assistant Auditor General
for the Interim Auditor General of Canada

22 June 2011
Ottawa, Canada

CANADIAN INSTITUTES OF HEALTH RESEARCH
STATEMENT OF FINANCIAL POSITION

As at March 31

(in thousands of dollars)	2011	2010
ASSETS		
Financial Assets		
Due from the Consolidated Revenue Fund	$12,789	$15,706
Accounts receivable and advances (note 4)	701	691
Total financial assets	**13,490**	**16,397**
Non-financial assets		
Prepaid expenses	799	246
Tangible capital assets (note 5)	3,982	4,008
Total non-financial assets	**4,781**	**4,254**
	$18,271	**$20,651**
LIABILITIES AND EQUITY OF CANADA		
Liabilities		
Accounts payable and accrued liabilities (note 6)	$5,207	$5,401
Vacation pay and compensatory leave	1,507	1,475
Deferred revenue (note 7)	7,590	10,314
Employee future benefits (note 8)	8,914	9,027
	23,218	**26,217**
Equity of Canada	**(4,947)**	**(5,566)**
	$18,271	**$20,651**

Contingent liabilities (Note 9)
Contractual obligations (Note 10)

The accompanying notes are an integral part of these financial statements.

Approved by Governing Council:

Alain Beaudet, MD, PhD
President

Approved by Management:

James Roberge, CMA
Chief Financial Officer

CANADIAN INSTITUTES OF HEALTH RESEARCH
STATEMENT OF OPERATIONS

For the Year Ended March 31

(in thousands of dollars)	2011	2010
Expenses		
Health Knowledge	$469,238	$453,520
Health Researchers	195,778	195,342
Health Research Commercialization	52,581	48,851
Health and Health Services Advances	288,764	264,823
Internal Services	33,835	32,647
Total expenses	**1,040,196**	**995,183**
Revenues		
Health Knowledge	138	285
Health Researchers	79	1,000
Health Research Commercialization	48	1,545
Health and Health Services Advances	11,197	6,310
Total revenues	**11,462**	**9,140**
Net cost of operations	**$1,028,734**	**$986,043**

Segmented information (note 12)

The accompanying notes are an integral part of these financial statements.

CANADIAN INSTITUTES OF HEALTH RESEARCH
STATEMENT OF EQUITY OF CANADA

For the Year Ended March 31

(in thousands of dollars)	2011	2010
Equity of Canada, beginning of year	$(5,566)	$(4,188)
Net cost of operations	(1,028,734)	(986,043)
Net cash provided by Government	1,025,417	978,023
Change in Due from the Consolidated Revenue Fund	(2,917)	94
Services provided without charge by other government departments (note 11)	6,853	6,548
Equity of Canada, end of year	**$(4,947)**	**$(5,566)**

The accompanying notes are an integral part of these financial statements.

CANADIAN INSTITUTES OF HEALTH RESEARCH
STATEMENT OF CASH FLOWS

For the Year Ended March 31

(in thousands of dollars)	2011	2010
Operating activities		
Net cost of operations	$1,028,734	$986,043
Non-cash items:		
Amortization of tangible capital assets	(1,025)	(804)
Services provided without charge by other government departments (note 11)	(6,853)	(6,548)
Loss on disposal of capital asset	(3)	-
Variations in Statement of Financial Position:		
Increase in accounts receivable and advances	10	67
Increase in prepaid expenses	553	96
Decrease in accounts payable and accrued liabilities	194	61
Increase in vacation pay and compensatory leave	(32)	(352)
Decrease (increase) in deferred revenue	2,724	(163)
Decrease (increase) in future employee benefits	113	(1,436)
Cash used in operating activities	**1,024,415**	**976,964**
Capital investing activities		
Acquisitions of tangible capital assets	1,012	1,059
Proceeds on disposal of capital assets	(10)	-
Cash used in capital investing activities	**1,002**	**1,059**
Net cash provided by Government of Canada	**$1,025,417**	**$978,023**

The accompanying notes are an integral part of these financial statements.

CANADIAN INSTITUTES OF HEALTH RESEARCH
NOTES TO THE FINANCIAL STATEMENTS

For the Year Ended March 31, 2011

1. Authority and Objectives

The Canadian Institutes of Health Research (CIHR) was established in June 2000 under the *Canadian Institutes of Health Research Act*, replacing the former Medical Research Council of Canada. It is listed in Schedule II to the *Financial Administration Act* as a departmental corporation.

CIHR's objective is to excel, according to international standards of scientific excellence, in the creation of new knowledge, and its translation into improved health, more effective health services and products, and a strengthened Canadian health-care system. CIHR achieves these objectives through its strategic outcome of being a world-class health research enterprise that creates, disseminates and applies new knowledge across all areas of health research. The strategic outcome is based on four program activities. The first program activity is Health Knowledge; these programs aim to support the creation of new knowledge across all areas of health research to improve health and the health system. The second, Health and Health Services Advances, aims to support the creation of new knowledge in strategic priority areas and its translation into improved health and a strengthened health system. The third program activity, Health Researchers, aims to build health research capacity to improve health and the health system by supporting the training and careers of excellent health researchers. The fourth, Health Research Commercialization, aims to support and facilitate the commercialization of health research to improve health and the health system.

CIHR is led by a President who is the Chairperson of a Governing Council of not more than nineteen other members appointed by the Governor in Council. The Governing Council sets overall strategic direction, goals and policies and oversees programming, resource allocation, ethics, finances, planning and accountability.

CIHR has thirteen Institutes that focus on identifying the research needs and priorities for specific health areas, or for specific populations, then developing strategic initiatives to address those needs. Each Institute is led by a Scientific Director who is guided by an Institute Advisory Board, which strives to include representation of the public, researcher communities, research funders, health professionals, health policy specialists and other users of research results.

CIHR's grants, awards and operating expenditures are funded by budgetary authorities. Employee benefits are funded by statutory authorities.

2. Significant Accounting Policies

These financial statements have been prepared in accordance with Treasury Board accounting policies stated below, which are based on Canadian generally accepted accounting principles for the public sector. Management believes that the presentation and results using the stated accounting policies do not result in any significant differences from Canadian generally accepted accounting principles, except as disclosed in Note 14 – Net Debt Indicator.

Significant accounting policies are as follows:

(a) Parliamentary authorities – CIHR is financed by the Government of Canada through Parliamentary authorities. Financial reporting of authorities provided to CIHR does not parallel financial reporting according to generally accepted accounting principles since authorities are primarily based on cash flow requirements. Consequently, items recognized in the Statement of Operations and the Statement of Financial Position are not necessarily the same as those provided through authorities from Parliament. Note 3 provides a reconciliation between the bases of reporting.

(b) Net cash provided by Government – CIHR operates within the Consolidated Revenue Fund (CRF), which is administered by the Receiver General for Canada. All cash received by CIHR is deposited to the CRF and all cash disbursements made by CIHR are paid from the CRF. The net cash provided by Government is the difference between all cash receipts and all cash disbursements including transactions between departments of the Government.

(c) Amounts due from the CRF are the result of timing differences at year end between when a transaction affects authorities and when it is processed through the CRF. Amounts due from the CRF represent the amount of cash that CIHR is entitled to draw from the CRF without further appropriations to discharge its liabilities.

(d) Revenues

- Funds received from external parties for specified purposes are recorded upon receipt as deferred revenues. These revenues are recognized in the period in which the related expenses are incurred.
- Funds that have been received are recorded as deferred revenue, provided CIHR has an obligation to other parties for the provision of goods, services, or the use of assets in the future.
- Other revenues are accounted for in the period in which the underlying transaction or event that gave rise to the revenue takes place.

(e) Expenses – Expenses are recorded on the accrual basis:

- Grants and awards are recognized in the year in which the conditions for payment are met. In the case of grants which do not form part of an existing program, the expense is recognized when the Government announces a decision to make a non-recurring transfer, provided the enabling legislation or authorization for payment receives parliamentary approval prior to the completion of the financial statements.
- Vacation pay and compensatory leave are accrued as the benefits are earned by employees under their respective terms of employment.
- Services provided without charge by other government departments for accommodation, employer contributions to the health and dental insurance plans, and audit services are recorded as operating expenses at their estimated cost.

(f) Refunds of previous years' expenses – These amounts include the return of grants and awards funds to CIHR in the current fiscal year for expenses incurred in previous fiscal years due to cancellations; refunds of previous years' expenses related to goods or services; and adjustments of previous years' accounts payable. These refunds and adjustments are recorded against the related expenses in the financial statements but are recorded as revenue on an authority basis and therefore are excluded when determining current year authorities used.

(g) Employee future benefits

i. Pension benefits: Eligible employees participate in the Public Service Pension Plan, a multiemployer defined benefit plan administered by the Government. CIHR's contributions to the Plan are charged to expenses in the year incurred and represent the total obligation of CIHR to the Plan. Current legislation does not require CIHR to make contributions for any actuarial deficiencies of the Plan.

ii. Severance benefits: Employees are entitled to severance benefits under labour contracts or conditions of employment. These benefits are accrued as employees render the services necessary to earn them. The obligation relating to the benefits earned by employees is calculated using information derived from the results of the actuarially determined liability for employee severance benefits as determined by the Treasury Board Secretariat for the Government as a whole. Management believes these amounts to be a reasonable estimate of CIHR's liability for employee severance benefits.

(h) Accounts receivable and advances are stated at the lower of cost and net recoverable value; a valuation allowance is recorded for receivables where recovery is considered uncertain.

(i) Contingent liabilities – Contingent liabilities are potential liabilities which may become actual liabilities when one or more future events occur or fail to occur. To the extent that the future event is likely to occur or fail to occur, and a reasonable estimate of the loss can be made, an estimated liability is accrued and an expense is recorded. If the likelihood is not determinable or an amount cannot be reasonably estimated, the contingency is disclosed in the notes to the financial statements.

(j) Tangible capital assets – All tangible capital assets having an individual initial cost of $5,000 or more are recorded at their acquisition cost. CIHR does not capitalize intangibles, works of art and historical treasures that have cultural, aesthetic or historical value, assets located on Indian Reserves and museum collections.

Amortization of tangible capital assets is done on a straight-line basis over the estimated useful life of the capital asset as follows:

Asset class	Amortization period
Informatics hardware	3–5 years
Informatics software	3–10 years
Office equipment	10 years
Vehicles	5 years

Assets under construction are recorded in the applicable capital asset class in the year that they become available for use and are not amortized until they become available for use.

(k) Measurement uncertainty – The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses reported in the financial statements. At the time of preparation of these statements, management believes the estimates and assumptions to be reasonable. The most significant items where estimates are used are contingent liabilities, the liability for vacation pay and compensatory leave, employee severance benefits, the useful life of tangible capital assets, and services provided without charge. Actual results could significantly differ from those estimated. Management's estimates are reviewed periodically and, as adjustments become necessary, they are recorded in the financial statements in the year they become known.

3. Parliamentary Authorities

CIHR receives most of its funding through annual Parliamentary authorities. Items recognized in the Statement of Operations and the Statement of Financial Position in one year may be funded through Parliamentary authorities in prior, current or future years. Accordingly, CIHR has different net results of operations for the year on a government funding basis than on an accrual accounting basis. The differences are reconciled in the following tables:

(a) Reconciliation of net cost of operations to current year authorities used

(in thousands of dollars)	2011	2010
Net cost of operations	$1,028,734	$986,043
Adjustments for items affecting net cost of operations but not affecting authorities:		
Services provided without charge	(6,853)	(6,548)
Refunds of previous years' expenses	4,203	5,434
Decrease (increase) in employee severance benefits	113	(1,436)
Amortization of tangible capital assets	(1,025)	(804)
Increase in vacation pay and compensatory leave	(32)	(352)
Loss on disposal of capital assets	(3)	-
Other adjustments	169	242
	(3,428)	(3,464)
Adjustments for items not affecting net cost of operations but affecting authorities:		
Acquisitions of tangible capital assets	1,012	1,059
Increase in prepaid expenses	553	96
	1,565	1,155
Current year authorities used	**$1,026,871**	**$983,734**

(b) Authorities provided and used

(in thousands of dollars)	2011	2010
Authorities Provided:		
Vote 20 - Operating expenditures	$54,255	$52,698
Vote 25 - Grants	969,215	929,327
Statutory amounts	6,453	5,745
Less:		
Authorities available for future years	-	(2,162)
Lapsed: Operating	(666)	(1,692)
Lapsed: Grants	(2,386)	(182)
Current year authorities used	**$1,026,871**	**$983,734**

4. Accounts Receivable and Advances

The following table presents details of CIHR's accounts receivable and advances balances:

(in thousands of dollars)	2011	2010
Receivables from other government departments and agencies	$266	$220
Receivables from external parties	261	310
Employee advances	186	186
	713	716
Allowance for doubtful accounts on receivables from external parties	(12)	(25)
	$701	**$691**

5. Tangible Capital Assets

(in thousands of dollars)

Cost					Accumulated amortization				Net Book Value	
Capital asset class	Opening balance	Acquisitions	Disposals and write-offs	Closing balance	Opening balance	Amortization	Disposals and write-offs	Closing balance	2011	2010
Informatics hardware	2,698	185	-	2,883	2,065	224	-	2,289	594	633
Informatics software	10,386	693	-	11,079	7,256	755	-	8,011	3,068	3,130
Office equipment	464	106	-	570	232	42	-	274	296	232
Vehicles	32	28	(32)	28	19	4	(19)	4	24	13
Total ($)	**13,580**	**1,012**	**(32)**	**14,560**	**9,572**	**1,025**	**(19)**	**10,578**	**3,982**	**4,008**

Amortization expense (in thousands) for the year ended March 31, 2011, is $1,025 (2010 - $804).

6. Accounts Payable and Accrued Liabilities

The following table presents details of CIHR's accounts payable and accrued liabilities:

(in thousands of dollars)	2011	2010
Accounts payable to other government departments and agencies	$1,732	$1,928
Accounts payable to external parties	1,298	2,174
	3,030	4,102
Accrued liabilities	2,177	1,299
	$5,207	**$5,401**

7. Deferred Revenue

Deferred revenue represents the balance at year end of unearned revenues stemming from amounts received from external parties which are restricted to fund the expenditures related to specific research projects and amounts received for fees prior to services being performed. Revenue is recognized in the period that these expenditures are incurred or the service is performed. Details of the transactions related to this account are as follows:

(in thousands of dollars)	2011	2010
Opening balance	$10,314	$10,151
Amounts received	8,738	9,301
Revenue recognized	(11,462)	(9,138)
Closing balance	**$7,590**	**$10,314**

8. Employee Future Benefits

Employees of CIHR are entitled to specific benefits on or after termination or retirement, as provided for under various collective agreements or conditions of employment.

(a) Pension benefits: CIHR's employees participate in the Public Service Pension Plan, which is sponsored and administered by the Government. Pension benefits accrue up to a maximum period of 35 years at a rate of 2% per year of pensionable service, times the average of the best five consecutive years of earnings. The benefits are integrated with the Canada/Quebec Pension Plans benefits and they are indexed to inflation.

Both the employees and CIHR contribute to the cost of the Plan. The 2010–11 expense (in thousands of dollars) amounts to $4,530 ($4,148 in 2009–10), which represents approximately 1.9 times (2.0 in 2009-10) the contributions by employees.

CIHR's responsibility with regard to the Plan is limited to its contributions. Actuarial surpluses or deficiencies are recognized in the financial statements of the Government of Canada, as the Plan's sponsor.

(b) Severance benefits: CIHR provides severance benefits to its employees based on eligibility, years of service and final salary. These severance benefits are not pre-funded. Benefits will be paid from future authorities. Information about the severance benefits, measured as at March 31, is as follows:

(in thousands of dollars)	2011	2010
Accrued benefit obligation, beginning of year	$9,027	$7,591
Expense for the year	233	1,676
Benefits paid during the year	(346)	(240)
Accrued benefit obligation, end of year	**$8,914**	**$9,027**

9. Contingent Liabilities

CIHR may be subject to legal claims in the normal course of business. In management's view, there are currently no such claims with a material impact on the financial statements and consequently, no provision has been made.

10. Contractual Obligations

CIHR is committed to disburse grants and awards in future years subject to the appropriation of funds by Parliament. In addition, the nature of CIHR's operating activities result in some multi-year contracts whereby CIHR will be committed to make some future payments when the goods or services are rendered. Future year contractual obligations are as follows:

(in thousands of dollars)	2012	2013	2014	2015	2016 and thereafter	Total
Grants	$806,386	594,936	394,795	239,050	135,613	$2,170,780
Operating expenditures	3,646	419	50	41	-	4,156
Total	**$810,032**	**595,355**	**394,845**	**239,091**	**135,613**	**$2,174,936**

11. Related Party Transactions

CIHR is related as a result of common ownership to all Government departments, agencies, and Crown Corporations. CIHR enters into transactions with these entities in the normal course of business and on normal trade terms. During the year, CIHR received common services which were obtained without charge from other Government departments, the most material of which are disclosed below.

(a) Common services provided without charge by other government departments

During the year, CIHR received services without charge from certain common service organizations, related to accommodation, the employer's contribution to the health and dental insurance plans, and audit services. These services provided without charge have been recorded in CIHR's Statement of Operations as follows:

(in thousands of dollars)	2011	2010
Accommodation provided by Public Works and Government Services Canada	$3,450	$3,403
Employer's contribution to the health and dental insurance plans provided by Treasury Board Secretariat	3,241	2,916
Audit services provided by the Office of the Auditor General of Canada	162	229
Total	**$6,853**	**$6,548**

The Government has centralized some of its administrative activities for efficiency, cost-effectiveness purposes and economic delivery of programs to the public. As a result, the Government uses central agencies and common service organizations so that one department performs services for all other departments and agencies without charge. The costs of these services, such as the payroll and cheque issuance services provided by Public Works and Government Services Canada, are not included in CIHR's Statement of Operations.

(b) Administration of CIHR funds by other government departments

Other federal departments and agencies administer funds on behalf of CIHR to issue grants, awards and related payments. During the year, other federal departments and agencies administered $95,322,985 in funds for grants and awards (2010 - $89,302,698), primarily pertaining to the Canada Research Chairs program. These expenses are reflected in CIHR's Statement of Operations.

12. Segmented Information

Presentation by segment is based on CIHR's strategic outcome. The presentation by segment is based on the same accounting policies as described in the Summary of significant accounting policies in note 2. The following table presents the expenses incurred and revenues generated for the main strategic outcomes, by major object of expenses and by major type of revenues. The segment results for the period are as follows:

(in thousands of dollars)	Health Knowledge	Health Researchers	Health Research Commercialization	Health and Health Services Advances	Internal Services	2011 Total	2010 Total
Transfer payments							
Grants and Awards	$458,115	$192,636	$52,621	$274,919	-	$978,291	$938,282
Refunds of previous years' grants and awards	(1,982)	(736)	(753)	(742)	10	(4,203)	(5,434)
Total transfer payments	456,133	191,900	51,868	274,177	10	974,088	932,848
Operating Expenses							
Salaries and employee benefits	8,947	3,379	603	11,392	23,291	47,612	44,128
Professional and special services	1,227	150	14	947	4,516	6,854	7,047
Accomodation	684	202	37	762	1,765	3,450	3,403
Travel	1,802	108	52	1,020	356	3,338	3,298
Other	228	20	6	179	930	1,363	1,419
Furniture, equipment and software	58	2	-	26	1,188	1,274	1,233
Communication	159	17	1	261	753	1,191	1,003
Amortization of tangible capital assets	-	-	-	-	1,026	1,026	804
Total operating expenses	13,105	3,878	713	14,587	33,825	66,108	62,335
Total expenses	469,238	195,778	52,581	288,764	33,835	1,040,196	995,183
Revenues							
Donations for health research	138	79	48	11,197	-	11,462	9,138
Endowments for health research	-	-	-	-	-	-	2
Total revenues	138	79	48	11,197	-	11,462	9,140
Net cost from continuing operations	$469,100	$195,699	$52,533	$277,567	$33,835	$1,028,734	$986,043

13. Comparative Information

Comparative figures have been reclassified to conform to the current year's presentation.

14. Net Debt Indicator

The presentation of the net debt indicator and a statement of change in net debt is required under Canadian generally accepted accounting principles.

Net debt is the difference between a government's liabilities and its financial assets and is meant to provide a measure of the future revenues required to pay for past transactions and events. A statement of change in net debt would show changes during the period in components such as tangible capital assets, prepaid expenses and inventories. Departments are financed by the Government of Canada through appropriations and operate within the Consolidated Revenue Fund (CRF), which is administered by the Receiver General for Canada. All cash received by departments is deposited to the CRF and all cash disbursements made by departments are paid by the CRF. Under this government business model, assets reflected on the departmental financial statements, with the exception of the Due from the CRF, are not available to use for the purpose of discharging the existing liabilities of the department. Future appropriations and any respendable revenues generated by the department's operations would be used to discharge existing liabilities.

(in thousands of dollars)	2011	2010
Liabilities		
Accounts payable and accrued liabilities	$5,207	$5,401
Vacation pay and compensatory leave	1,507	1,475
Deferred revenue	7,590	10,314
Employee future benefits	8,914	9,027
Total financial liabilities	$23,218	$26,217
Financial Assets		
Due from the Consolidated Revenue Fund	$12,789	$15,706
Accounts receivable and advances	701	691
Total financial assets	$13,490	$16,397
Net Debt Indicator	**$9,728**	**$9,820**

SUMMARY OF THE ASSESSMENT OF EFFECTIVENESS OF THE SYSTEMS OF INTERNAL CONTROL OVER FINANCIAL REPORTING AND THE ACTION PLAN OF THE CANADIAN INSTITUTES OF HEALTH RESEARCH FOR THE FISCAL YEAR 2010–11

Annex to the Statement of Management Responsibility Including Internal Control Over Financial Reporting

Note to the Reader

With the Treasury Board Secretariat *Policy on Internal Control*[1], effective April 1, 2009, Departments and Agencies are now required to demonstrate the measures they are taking to maintain an effective system of internal control over financial reporting (ICFR).

As part of this policy, Departments and Agencies are expected to conduct annual assessments of their system of ICFR, establish an action plan to address any necessary adjustments, and to attach to their *Statements of Management Responsibility* a summary of their assessment results and action plan.

Effective systems of ICFR aim to achieve reliable financial statements and provide reasonable assurance that:

- Transactions are appropriately authorized;
- Financial records are properly maintained;
- Assets are safeguarded from risks such as waste, abuse, loss, fraud and mismanagement; and
- Applicable laws, regulations and policies are followed.

It is important to note that the system of ICFR is not designed to eliminate all risks, but rather to mitigate risk to a reasonable level with controls that are balanced with and proportionate to the risks they aim to mitigate.

The system of ICFR is designed to mitigate risks to a reasonable level based on an ongoing process to identify key risks, to assess the effectiveness of associated key controls and adjust as required, as well as to monitor the system in support of continuous improvement. As a result, the scope, pace and status of those Department/Agency assessments of the effectiveness of their system of ICFR will vary from one organization to another based on risks and taking into account their unique circumstances.

[1] http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=15258

1. Introduction

This document is an annex to the Canadian Institutes of Heath Research's (CIHR) *Statement of Management Responsibility Including Internal Control Over Financial Reporting* for the 2010-11 fiscal year. As required by the Treasury Board Secretariat (TBS) *Policy on Internal Control*, effective April 1, 2009, this document provides summary information on the measures taken by CIHR to maintain an effective system of internal control over financial reporting (ICFR). In particular, it provides summary information on the internal control assessments conducted by the CIHR as at March 31, 2011, including progress, results and related action plans along with some financial highlights pertinent to understanding the control environment unique to the CIHR.

1.1 Authority, Mandate and Program Activities

CIHR is the Government of Canada's Agency for health research as mandated by the CIHR Act. CIHR is a Departmental Corporation and separate employer listed in Schedule II of the *Financial Administration Act*[2]. As an arm's length agency of government, CIHR is accountable to Parliament through the Minister of Health.

CIHR's mandate is to "excel, according to internationally accepted standards of scientific excellence, in the creation of new knowledge and its translation into improved health for Canadians, more effective health services and products and a strengthened Canadian health-care system."

CIHR is composed of 13 Institutes and four central portfolios – *Research; Knowledge Translation and Public Outreach; Strategy and Corporate Affairs;* and *Resource, Planning and Management*. The organization provides leadership and support to more than 14,100 researchers and trainees in every province of Canada. Through CIHR, the Government of Canada is supporting health research that addresses society's highest priority health issues and contributes to economic growth and prosperity.

Detailed information on CIHR's authority, mandate and program activities can be found in its *Departmental Performance Report* and *Report on Plans and Priorities*.

1.2 Financial highlights

The Financial statements of CIHR for fiscal-year 2010–11 can be found in CIHR's annual report[3] and *Departmental Performance Report*, and are consistent with the *Public Accounts of Canada*[4].

- Total expenses were $1,040.2M. Grants and Awards payments comprise the majority (92.9% or $966.8M) followed by operating expenses of which salaries is the largest component (4.6% or $47.6M for 427 full-time equivalent employees);
- Although CIHR receives most of its funding through annual Parliamentary authorities, CIHR also administers funds received from external parties for specified purposes. These amounts are recorded as revenues ($11.5M) when their related expenses are incurred;
- Tangible capital assets comprise 21.8% of total assets ($18.3M) and consist mainly of Informatics hardware and software;
- Accounts payable and accrued liabilities comprise over 22.4% of total liabilities ($23.2M);

[2] http://laws.justice.gc.ca/en/F-11/
[3] http://www.cihr-irsc.gc.ca/e/153.html
[4] http://www.tpsgc-pwgsc.gc.ca/recgen/txt/72-eng.html

1.3 Service arrangements relevant to financial statements

CIHR relies on other organizations for the processing of certain transactions that are recorded in its financial statements:

- Public Works and Government Services Canada (PWGSC) centrally administers the payments of salaries and the procurement of some goods and services.
- TBS provides CIHR with information used to calculate various accruals and allowances, such as the accrued severance liability.
- The Department of Justice provides legal services to CIHR.
- Other federal Departments and Agencies administer funds on behalf of CIHR to issue grants, awards and related payments. During the year, other federal departments and agencies administered $95.3M in funds for grants and awards (2010 - $89.3M), primarily pertaining to the Canada Research Chairs program. These expenses are reflected in CIHR's Statement of Operations as expenses.

1.4 Material changes in fiscal year 2010-11

No significant material changes that are relevant to the financial statements occurred in 2010-2011.

2. CIHR's Control Environment Relevant to ICFR

CIHR recognizes the importance of setting the tone from the top to help ensure that staff at all levels understand their roles in maintaining effective systems of ICFR and are well equipped to exercise these responsibilities effectively. CIHR's focus is to ensure that risks are well managed through a responsive and risk-based control environment that enables continuous improvement and innovation.

2.1 Key positions, roles and responsibilities

Below are CIHR's key positions and committees with responsibilities for maintaining and reviewing the effectiveness of its system of ICFR.

President – CIHR's President assumes the overall responsibility and leadership for the measures taken to maintain an effective system of internal control.

Executive Management Committee (EMC) – EMC provides leadership and decision making for strategic, corporate policy and management areas that support and contribute to the strategic directions set out by CIHR's Governing Council.

Chief Financial Officer (CFO) – CIHR's CFO reports directly to the President and provides leadership for the coordination, coherence and focus on the design and maintenance of an effective and integrated system of ICFR, including its annual assessment.

Executive Vice-President and Vice-Presidents – CIHR's Executive Vice-President and Vice-Presidents are responsible for maintaining and reviewing the effectiveness of their system of ICFR falling within their mandate.

Chief Audit Executive (CAE) – CIHR's CAE reports administratively to the Executive Vice-President, functionally to the President and has unfettered access to the CIHR Departmental Audit Committee and the Committee Chair. The CAE provides assurance through periodic internal audits that are instrumental to the maintenance of an effective system of ICFR.

Audit Committee –The Audit Committee is an advisory committee that provides objective views on CIHR's risk management, control and governance frameworks. CIHR established its Audit Committee in July 2009. This committee is chaired by a member of CIHR's Governing Council and is comprised of three other external members. The President also sits on the committee as an ex-officio non-voting member. In 2010–11, the Audit Committee met 8 times, 7 times via teleconference/videoconference and once in person. In terms of ICFR, the Audit Committee reviews the system of internal control, including the assessment and action plans relating to the system of ICFR.

2.2 Key measures taken by CIHR

CIHR's control environment includes a series of measures to equip its staff to manage risks by: raising awareness; providing appropriate knowledge and tools; and, developing skills. Key measures include:

- The CIHR *Code of Conduct,* which is aligned with the *Values and Ethics Code* for the Public Service;
- A requirement for accounting designations in key financial management positions as well as a dedicated unit under the CFO which monitors internal controls;
- Agency policies that are tailored to CIHR's control environment;
- Regularly validated and updated delegation of financial signing authorities instrument;
- Documentation of main business processes and related key risk and control points to support the effectiveness, management and oversight of its system of ICFR;
- Training programs and regular communication to employees on core areas of financial and contracting management;
- Secure financial and contracting IT processing systems to achieve enhanced security, data integrity, and efficiency and effectiveness of transactions; and,
- Annual performance agreements that include clearly articulated financial management responsibilities.

3. Assessment of CIHR's System of ICFR

3.1 Assessment baseline

The *Policy on Internal Control* stipulates that CIHR be able to maintain an effective system of ICFR with the objective to provide reasonable assurance that a) transactions are appropriately authorized, b) financial records are properly maintained, c) assets are safeguarded and d) applicable laws, regulations and policies are followed. This new Annex provides assurance of the management of internal controls.

The review includes the assessment of the **design and operating effectiveness** of the agency's system of ICFR, including its ongoing monitoring and continuous improvement.

Design effectiveness means to ensure that key control points are identified, documented, in-place and that they are aligned with appropriate risks (i.e. controls are balanced with and proportionate to the risks they aim to mitigate). This includes the mapping of key processes and IT systems to the main accounts. To achieve design effectiveness, there is also a requirement that any deficiency is addressed through a remediation/action plan.

Operating effectiveness means that the application of key controls has been tested over a defined period and that any required remediation is addressed. Such testing includes corporate or entity, general computer and business process controls.

CIHR has assessed the design of its system of ICFR and has a monitoring process in place to sustain and continually improve on this system.

3.2 Approach to CIHR's assessment

In response to the Treasury Board *Policy on Internal Control*, CIHR established an Internal Control Unit (ICU) in November 2008 which is responsible for the development and implementation of the Internal Control over Financial Reporting (ICFR) process.

The foundation for ICFR at CIHR was established through the development of an Internal Control Policy, Internal Control Framework and an Internal Control Methodology (Guidelines).

At the beginning of the 2010–11 fiscal year, CIHR conducted a financial risk assessment of its Financial Statements to identify the key business processes posing the highest risk to the organization and to users of the Financial Statements. CIHR identified key control points and then determined any potential gaps in the internal control framework along with the level of risk those gaps posed. The review was further extended to include the assessment of the business process controls which were separated into the following 15 key business processes:

- Financial Statements Preparation
- Grants and Awards
  - Open Operating Grants
  - Other Grant Types
  - Training Awards
- Grants and Awards and Procurement Payment Process
- Hospitality
- Procurement
- Salary and Payroll
- Shipping and Receiving
- Travel-Card Administration
- Travel – Employee and Peer Review
- Payable at Year End (PAYE)
- Deferred Revenue
- Collaborative Agreements
- Administrative Expenses
- Recoveries
- Other Terms and Conditions

For each business process, CIHR took the following steps:

1. Gathering information pertaining to processes and locations, risks and controls relevant to ICFR, including appropriate policies and procedures.

2. Mapping out key processes using narratives, flow charts and internal control matrices to identify and document key processes, risks and control points on the basis of materiality, volumes, linkage to compliance documents, complexity, and susceptibility to loss.

3. Assessing, documenting and testing the design and operating effectiveness of key controls.

4. Formally reporting and remediating the deficiencies identified.

CIHR also documented and assessed its Entity-Level Controls and IT General Controls (ITGCs).

Entity-Level Controls are defined as the overarching controls of the organization that set the "tone at the top". The following 11 areas were identified: Governance, Public Service Values, Policy and Programs, People, Citizen Focus Service, Risk Management, Stewardship, Accountability, Learning, Results and Performance and Monitoring.

ITGCs are defined as controls over the core financial systems and IT infrastructure used across the organization and which support financial transactions. CIHR is responsible for assessing the effectiveness of all the key ITGCs for systems that it fully manages.

4. CIHR's Assessment Results

As a result of the assessment approach described above, CIHR developed a baseline architecture of the riskiest key control points by business process and main IT systems.

As at March 31, 2011, CIHR had completed the analysis and testing of design and operating effectiveness for 9 of the 15 key business processes identified. The assessment results are described in the following subsections. All control deficiencies identified were classified as weaknesses only, the lowest severity classification.

4.1 Design effectiveness of key controls

When completing the design and operating effectiveness testing, CIHR documented its key processes and validated them with stakeholders. Corporate, general computer and business process controls were also verified to ensure they were in place and corresponded to actual practices. Design effectiveness also included ensuring appropriate alignment of each key control with the risks they aim to mitigate.

As a result of these assessments, CIHR identified that the following significant adjustments are required:

Approval process and segregation of duties

- Better defined process of approval for the funding of competitions and their results i.e. at the correct points in the process;
- Strengthened controls where segregation of duties is not feasible due to limited resources; and
- Close monitoring of positions for which system access rights require employees to have almost full access to the system.

Asset Management

- Strengthened shipping and receiving verification procedures to consistently apply an assessment of the quality and quantity of goods received; and
- Fully implement the Capital Asset/Inventory management system to better track capital assets and inventory items to ensure compliance over safeguarding of assets and accuracy of the account balances.

Documentation

- Greater consistency, accuracy and detail in the documentation of controls and procedures within grant program files;
- Maintain documentation of reconciliations and source data in program files; and
- Improve documentation surrounding the review of accounting transactions.

IT Systems

- Strengthen manual controls to support the data management function where limited edit and application controls exist within the systems.

4.2 Operating effectiveness of key controls

In 2010–11, CIHR has assessed the operating effectiveness of key controls in 9 of the 15 business processes. In doing so, it has developed a risk-based testing plan that identified key controls to be tested over a defined period of time, including the selection of the test period as well as the method and frequency of testing. Remediation requirements to date were addressed as soon as necessary adjustments were identified. When completing operating effectiveness testing, CIHR has ensured that key controls are well functioning over a 12-month period or a specified period of time during the fiscal year based on risks.

5. CIHR's Action Plan

5.1 Progress as of March 31, 2011

During the 2010–11 fiscal year, CIHR continued to make significant progress in assessing and improving its key controls. Below is a summary of the main advancements made by CIHR.

CIHR has completed the following:

- Documentation and assessment of the entity level controls and IT general controls;
- Documentation and assessment of design/operating effectiveness testing for 9 of the 15 key business processes;
- Development of Remediation Plans to address documented control weaknesses;
- Strengthened CIHR's Internal Control Unit by way of an increased focus on ICFR and its ongoing monitoring;
- Shipping and receiving procedures have been formalized and roles and responsibilities have been better defined;
- Accounting procedures and management review processes have been updated and communicated with relevant stakeholders; and
- The Standard Operating Procedures have been updated to better document and reconcile program files.

CIHR has significantly advanced the following:

- Implementation of the Remediation Plans with shorter implementation horizons;
- Developed a monitoring methodology for implementation in future years;
- Engaged new personnel or modified system access profiles to better segregate duties; and
- Implemented an ICFR software solution that integrates and improves the current system of ICFR.

CIHR has commenced or partially completed the following:

- Implementation of longer term Remediation Plans which require significant funding and/or Information Technology components; and
- Partially completed the implementation of the Capital Asset/Inventory system

5.2 Action plan

Building on the progress to date, CIHR will complete the initial assessment of its system of ICFR and begin the transition to ongoing monitoring.

By the end of 2011–12, resources permitting, CIHR plans to:

- Address outstanding Remediation Plans from 2010–11;
- Begin the documentation and design/operating effectiveness testing of remaining key processes and controls reviewed to date; and
- Test the operational effectiveness of key controls in remediation actions implemented since 2009–10 and 2010–11.

By the end of 2012–13, CIHR plans to:

- Complete any outstanding remediation (if applicable);
- Complete the documentation and design/operating effectiveness testing of any remaining key processes and controls that were not completed in 2011–12;
- Test the operational effectiveness of key controls in remediation actions items implemented since 2010–11 and 2011–12;
- Complete the implementation of the integrated ICFR software solution;
- Develop and pilot a transition from centralized monitoring towards more self-assessment by operational areas; and
- Implement an ongoing monitoring program of the effectiveness of the departmental system of ICFR. This includes training to enhance the awareness and knowledge of Internal Controls Over Financial Reporting and associated responsibilities across CIHR.