

# SHATTERING THE 'SOLITUDES': HEALTH RESEARCH, INNOVATION AND CANADA'S ECONOMY

Pre-Budget Submission to House of Commons  
Standing Committee on Finance

Submitted by: HealthCare*CAN*

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HealthCareCAN is the national voice of Canada's healthcare organizations, community and research hospitals across Canada. We represent over 600,000 employees, 45,000 volunteers, 8,000 scientists and 60,000 research staff and students in the healthcare setting.

Canada's healthcare organizations are critical and strategic enterprises in support of economic development and the health and well-being of Canadians. In 2007, legendary researcher and innovator Dr. John Evans said that, "...health expenditures and public and private revenue streams are viewed as two solitudes; much more work needs to be done to better understand the value proposition between innovative goods and products, their impact on the health status of Canadians and the derivative economic effects of investing in health innovation in this country." This remains true today.

Canada's healthcare institutions play a critical role in ensuring that Canada remains a productive player in a competitive world. In addition to their role in the delivery of healthcare, healthcare organizations play a key role in the education and training of both healthcare professionals and researchers. They serve as economic drivers contributing to their local economies through employment and direct spending. In some communities, they are the largest employer. As centres for health/life sciences research, innovation and commercialization they contribute to the larger economy by attracting leading Canadian, and global research talent.

In support of the productivity and competitiveness focus of this year's consultation, HealthCareCAN's submission concentrates on 3 areas:

1. Health research and innovation;
2. Health infrastructure; and,
3. Antimicrobial resistance and stewardship.

## **Health Research and Innovation**

HealthCareCAN commends the federal government's focus on better coordination and increased funding for science research. There is great promise in the recommendations offered in the recent report of Canada's Fundamental Science Review entitled, *Investing in Canada's Future: Strengthening the Foundations of Canadian Research* (referred to below as the Report). The Report provides a thorough diagnostic of Canada's current science and research ecosystem. It confirms what researchers, research institutions, and associations, like HealthCareCAN have been saying for years – that health research funding has been stretched to a point where Canada is rapidly becoming less competitive internationally and is at risk of losing expensively-trained talent to more progressive jurisdictions. Canada's position in this space is out of step with its potential:

- Canada's global rank in total research output has dropped from 7<sup>th</sup> (2005-10) to 9<sup>th</sup> (2010-14).<sup>1</sup>

- Canada wins fewer international prizes in the sciences than the US, UK and Australia. The latter, a direct comparator by population, now outperforms Canada on several other measures.<sup>1</sup>
- Early career investigators (ECIs) received \$90M per year in funding on average under the previous CIHR grant program or 18% of the total. ECIs will now receive just 12% of the total or \$60M, reducing ECI support by a third.<sup>2</sup>
- 46% of ECIs have indicated that because of the current funding environment, they are considering leaving research, academia or Canada.<sup>3</sup>

The Report also provides hope and a positive pathway in terms of strategically re-investing in Canada's research sector; re-balancing the focus between fundamental and applied research; re-aligning granting councils' mandates and funding allocations; and re-establishing Canada's research competitiveness with our peers.

HealthCareCAN and its members support the Report. It is imperative that the government implement the Report's single most important recommendation – reinvesting immediately and substantially in science. *The 2016 federal budget investment in health research, while greatly welcomed, can only be seen as a down payment to the development of a strong and robust health research ecosystem.*

The federal government must demonstrate a serious commitment to advancing science in service of health in the 2018 federal budget. Not doing so would be an abdication of its responsibilities in this area. More funding is needed to restore CIHR to its 2010 purchasing power. The government by its actions would demonstrate to researchers and the world that Canada is truly back. Without further investment, health research will be severely compromised. As the Report notes, "... many less wealthy nations are now rapidly expanding their research capacity, while many of our OECD peers are investing heavily in both research and innovation." Canada cannot afford to be left behind. It is time to recover lost ground.

HealthCareCAN recommends that the federal government:

- **Increase funding for investigator-led research:** invest \$485M, phased in over four years, for investigator-led research to restore Canada's international competitiveness in light of limited investment since 2010.

This steady increase to base funding over four years translates into 0.4% of government's annual budget. Investments in research yield high returns. Our health research institutes are major employers that help local economies thrive. They are an engine that sustains the knowledge-based economy. Every dollar invested in fundamental research results in \$2.20 to \$2.50 in direct and indirect economic activity.<sup>4,5</sup> Annualized return on fundamental research is estimated to range from 20% to 67%<sup>4</sup> and health research pays for itself and saves health care dollars within five years.<sup>6</sup>

## Health Infrastructure

Healthcare organizations maintain, operate and use key elements of the country's critical infrastructure. Natural, intentional and accidental hazards can affect the sector's response capacity during a crisis. For instance, many of the 174 significant natural disasters tracked by Public Safety Canada over the last decade – floods, wildfires, storms, epidemics, and more – have affected the health sector's operations and tested its resilience.<sup>7</sup> Similarly, human-generated hazards (e.g., human errors that affect the power grid, malware attacks on computer systems, or bioterrorism) can harm health system infrastructure, threatening the health and safety of Canadians.

HealthCareCAN has taken a leadership role, working in partnership with the federal government and its members to address Canada's needs in the health sector critical infrastructure. As co-chair of the Health Sector Network on Critical Infrastructure and Cyber Security, HealthCareCAN has worked to define the needs of the sector and promote coordination with the other nine critical infrastructure sectors recognized by Public Safety Canada (PSC). HealthCareCAN also advances this work as a delegate to the PSC-led National Cross Sector Forum on Critical Infrastructure.

Aging physical and technological infrastructure has been identified as a key risk as part of a scoping exercise for understanding the critical infrastructure needs of the health sector.<sup>8</sup> While significant investments have been made in selected facilities in recent years (e.g., hospital building re-development), the variable nature of capital spending and challenges in prioritizing replacement of some types of 'invisible' infrastructure – such as boilers and communication systems – were highlighted. Canada's hospitals face an accumulated deferred maintenance cost of roughly \$28B. The 2016 Canadian Infrastructure Report Card assessed the state of municipal infrastructure and found health care facilities are the oldest building types, with 48% of the inventory being older than 50 years.<sup>9</sup>

The last time the federal government deliberately invested in hospital infrastructure was through the 1966 Health Resources Fund Act and the 1948 Hospital Construction Fund. For the past 10 years, research hospitals have been explicitly excluded from federal infrastructure funds, such as the Knowledge Infrastructure Program, the Canada First Research Excellence Fund and the Building Canada Fund. The 2016 Post-Secondary Institutions Strategic Investment Fund welcomed applications from research hospitals, however, an application glitch required university-affiliated research hospitals obtain the signature of a university president to be eligible. This model reflects a misunderstanding of our industry. Hospitals are independent legal entities, often with very different research priorities. Healthcare organizations' applications for infrastructure grants should not be gated by the priorities of universities, since these do not address healthcare as a separate sector of our economy.

Direct access to government infrastructure funds provide numerous benefits, including: addressing deferred maintenance; job creation; stimulating the local, provincial and national economy; building more efficient and cleaner, greener facilities; improving infrastructure to support infection prevention

and control; improving the way health care is delivered and in a more clinically, socially and spiritually healing environment; minimizing costly falls and injuries, and attracting the best healthcare talent to what would be technologically-advanced centres.

HealthCareCAN recommends that the federal government:

- **Provide direct eligibility for infrastructure and innovation support:** to allow research hospitals to compete directly and independently for funds.
- **Provide funding for research hospital infrastructure projects:** \$250M for a second intake of the Post-Secondary Institutions Strategic Investment Fund to accommodate infrastructure projects from Canada's research hospitals.

## Antimicrobial Resistance and Stewardship

HealthCareCAN welcomes the health-related investments in the 2017 budget. However, HealthCareCAN is concerned that proper attention is not being paid to antimicrobial resistance (AMR) and stewardship (AMS).

AMR is a major global health threat that could radically limit our ability to treat human disease. All forms of surgery, chemotherapy, radiation therapy, burn therapy, dialysis and a host of other common treatment options may soon be unavailable. Resistant bugs know no borders. The UK's Review on Antimicrobial Resistance found that ten million people around the world will die annually from infections by 2050 because we have lost the capacity to treat them, surpassing cancer mortality by a wide margin.<sup>10</sup>

AMR is largely driven by the inappropriate use of antibiotics. Every year, over 23 million antimicrobial prescriptions are written for human consumption in Canada,<sup>11</sup> of which 30-50% are estimated to be unnecessary.<sup>12</sup> There is a public health imperative to increase *appropriate* prescribing and not merely to reduce prescribing. It is also evident that encouraging appropriate prescribing through robust antimicrobial stewardship would create significant savings for the public treasury. A 15% reduction in prescribing in British Columbia resulted in \$50M per year in cost-savings for society, \$25M of which was saved by government.<sup>13</sup>

AMS research and programming is currently under-supported in Canada. In June 2016, HealthCareCAN and the National Collaborating Centre for Infectious Diseases (NCCID) co-hosted a National Action Roundtable on AMS and developed a menu of ten actions the healthcare sector will need to take in order to make progress in AMS.<sup>14</sup> Two notable actions were the need to convene and fund a national network for coordinating AMS programming, and to support and scale-up formal hospital-based AMS programs.

To meet the first action, HealthCareCAN and NCCID co-led the development of the AMS Canada Network – an interdisciplinary network of stakeholders, advocates, practitioners, researchers, government institutes and agencies, and key influencers tasked with providing strategic advice and coordination of AMS projects.

AMS Canada members began to plan a set of initial activities, in collaboration with the Public Health Agency of Canada (PHAC). However, the modest funding PHAC had planned to allocate in support of AMS Canada Network has been deferred indefinitely. If PHAC is to play a leadership role in addressing AMR, then the Agency needs to be given tools and resources commensurate with the task.

HealthCareCAN recommends that the federal government:

- **Allocate \$25M over 5 years to the Public Health Agency of Canada:** to fund projects on AMR/AMS in collaboration with the Antimicrobial Stewardship Canada Network.

## Conclusion

HealthCareCAN recommends three interlinked initiatives that will boost health care discovery, infrastructure and targeted innovation. The implementation of HealthCareCAN's recommendations will fuel the health research discovery engine; enable safe and efficient hospital infrastructure that allows discoveries to be translated into clinical innovations; and allow Canada to find and apply solutions to the perils posed by antimicrobial resistance, all of which will make Canada more productive and competitive.

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<sup>1</sup> [Investing in Canada's Future: Strengthening the Foundations of Canadian Research](#), pp. xiv, 13

<sup>2</sup> [Open Letter: A crisis for new investigators in health and biomedical research](#)

<sup>3</sup> [Early Career Investigators \(ECIs\) in health research: final report of a cross-Canada survey](#)

<sup>4</sup> [Science economics: What science is really worth?](#), p. 682-684

<sup>5</sup> [The Economic Impact of Canada's Faculties of Medicine and Health Science Partners](#), p. 13

<sup>6</sup> [Estimating the payoffs from cardiovascular disease research in Canada: an economic analysis](#)

<sup>7</sup> [Canadian Disaster Database](#)

<sup>8</sup> HealthCareCAN Briefs: [Critical Infrastructure](#) and [Cyber Security](#)

<sup>9</sup> [Adaptation State of Play Report](#), p. 28

<sup>10</sup> [Tackling Drug-Resistant Infections Globally: Final Report and Recommendations](#)

<sup>11</sup> [Canadian Antimicrobial Resistance Surveillance System Report](#)

<sup>12</sup> [US Centres for Disease Control and Prevention](#)

<sup>13</sup> [British Columbia Centre for Disease Control](#)

<sup>14</sup> [Putting the Pieces Together: A National Action Plan on Antimicrobial Stewardship](#)