



## Submission to the House of Commons Standing Committee on Finance

Submitted by:  
Pamela Berg, Ph.D.  
Director of Resource and Policy Development

### Executive Summary

Canada has earned a global reputation for excellence in health research, but faces significant challenges translating this innovation into high-quality and cost-effective health care. Failure to move research outcomes effectively into health care practice is a major barrier preventing human and economic benefit from advances in the biomedical sector.

Since its inception in 2009, the Rick Hansen Institute (RHI) has partnered with the Government of Canada to accelerate the translation of discoveries and best practices into improved treatments for people with spinal cord injuries (SCI). Spinal cord injury is a complex, chronic medical condition that has devastating consequences for individuals, their families, and health care systems throughout Canada.

RHI is mobilizing the collective power of the global SCI community by creating an international network of researchers, health care providers, innovators, entrepreneurs, investors, policy makers, community service providers and individuals with SCI, resulting in unprecedented levels of multidisciplinary collaboration and expertise being applied to key issues. RHI is a world leader in knowledge transfer and best practice implementation and works with stakeholders to ensure that research advances beyond the pilot project stage, directly benefitting individuals with SCI and the Canadian economy.

The RHI network has identified key obstacles to moving health research into practice, and is working to develop and implement solutions which will be widely applicable beyond the field of spinal cord injury.

**The Rick Hansen Institute is requesting a federal investment of \$48.5 million over 5 years to advance its fundamental objectives.**

## Health Care Innovation in Canada

Canada enjoys a long-standing and well-deserved global reputation for excellence in health research, but faces significant challenges turning this powerful innovation into high-quality and cost-effective health care. A 2015 report commissioned by Health Canada, *Unleashing Innovation: Excellent Healthcare for Canada*,<sup>1</sup> refers to Canada as the ‘land of pilot projects’, lamenting that many excellent Canadian ideas and inventions are never translated into saleable or scalable innovations, and that even highly successful regional initiatives rarely become national programs. Canada is not alone in this dilemma – globally, only 14% of health-related scientific discoveries enter into medical practice,<sup>2</sup> and it takes an average of 17 years to do so.<sup>3</sup>

The process of moving innovation into practice is commonly described as *translation* – the conversion of basic science to patient benefit. Translating research into practice is so difficult that the obstacles to translation are often referred to as ‘valleys of death’. Accelerating the translation of medical research has become a high priority, because **the failure to move health research outcomes effectively into health care practice is a major barrier preventing human and economic benefit from advances in the biomedical sector.**<sup>4</sup>

The consequences of Canada’s failure to efficiently translate health research are evidenced in a 2013 OECD study which ranked Canada’s health care performance 10<sup>th</sup> of 11 peer countries, despite outspending all but 4 countries in per capita health care delivery<sup>1</sup>.

## Spinal Cord Injury in Canada

Spinal cord injury (SCI) is a complex, chronic medical condition that has devastating consequences for individuals, their families, and health care systems throughout Canada. SCI has a variety of causes (including motor vehicle collisions, falls, sports injuries, infections, and tumours), impacts every physiological system in the body, and involves the entire spectrum of health care. SCI results in permanent paralysis, decreased quality of life, and substantially reduced life expectancy. Individuals living with SCI are extremely vulnerable to a wide range of debilitating secondary health complications including pressure ulcers, infections, chronic pain, depression, bladder and bowel dysfunction, spasticity, osteoporosis, diabetes, pneumonia, and cardiovascular disease – which not only have a significant impact on day-to-day functioning, but

---

<sup>1</sup> *Unleashing Innovation: Excellent Healthcare for Canada*. Report of the Advisory Panel on Healthcare Innovation. July 2015, ISBN 978-0-660-02680-0

<sup>2</sup> Westfall JM, Mold J, Fagnan L. Practice-based research – “Blue Highways” on the NIH roadmap. *JAMA*. 2007;297(4):403–406.

<sup>3</sup> Morris ZS, Wooding S, Grant J. The answer is 17 years, what is the question: understanding time lags in translational research. *J R Soc Med*. 2011;104(12):510–520.

<sup>4</sup> Lang ES, Wyer PC, Haynes RB. Knowledge translation: closing the evidence-to-practice gap. *Ann Emerg Med*. 2007;49(3):355–363.

also result in frequent and costly rehospitalizations.<sup>5,6</sup> Indeed, 42% of individuals with SCI have three or more concurrent health conditions, and each year, 26% of individuals with SCI are hospitalized for an average of 23 days.<sup>7</sup> The impact of these secondary health complications is magnified by the fact that they affect a much broader patient population, beyond SCI. Pressure ulcers, for example, are the most costly preventable medical error in the medical system<sup>8</sup>.

Not surprisingly, near-constant health complications reduce the employment rate of individuals with SCI from 62% pre-injury to 32% post-injury.<sup>9</sup> Chronic unemployment coupled with the need for specialized accessible housing, transportation, and medical supports often results in dependence, poverty, mental health issues, and social isolation.

**Although the incidence of SCI in Canada is relatively low, with an estimated 4,071 new cases per year,<sup>10</sup> it carries an almost catastrophic economic burden of \$2.7 billion per year for new cases of traumatic SCI.<sup>11</sup>**

The development of new treatments for spinal cord injury and related secondary health complications is essential but insufficient to optimize health outcomes. Inadequate integration of provincial health care systems and disparate SCI care standards across the country prevent Canadians from achieving the best possible health outcomes with existing resources. Transitions from emergency response to acute care to rehabilitation and return to the community may be disjointed and ill-timed, sacrificing patient gains and system efficiencies. Patients experience detrimental treatment delays and gaps caused by inefficient patient routing, resource allocation and coordination, and are often 'lost' to the system once they are discharged from hospital. Barriers accessing SCI care from the community – particularly in rural and remote regions – result in unacceptably high rates of health complications that have devastating long-term consequences, impacting individuals' ability to work, financial status, community participation, mental health, quality of life, and costs to the health care system.

---

<sup>5</sup> Dryden DM, Saunders LD, Rowe BH, et al. Utilization of health services following spinal cord injury: a 6-year follow-up study. *Spinal Cord*. 2004;42(9):513–525.

<sup>6</sup> Kennedy P, Smithson E, McClelland M, Short D, Royle J, Wilson C. Life satisfaction, appraisals and functional outcomes in spinal cord-injured people living in the community. *Spinal Cord*. 2010;48(2):144–148.

<sup>7</sup> Noonan VK, Fallah N, Park SE, Dumont FS, Leblond J, Cobb J, Noreau L. Health care utilization in persons with traumatic spinal cord injury: the importance of multimorbidity and the impact on patient outcomes. *Top Spinal Cord Inj Rehabil* 2014; 20(4):289–301.

<sup>8</sup> <http://www.cbc.ca/news/canada/nova-scotia/nova-scotia-report-on-medical-errors-accidents-released-1.3198360>

<sup>9</sup> Jetha A, Dumont FS, Noreau L, Leblond J. A life course perspective to spinal cord injury and employment participation in Canada. *Top Spinal Cord Inj Rehabil*. 2014;20(4):310–320.

<sup>10</sup> Noonan V, Fingas M, Farry A, et al. The incidence and prevalence of spinal cord injury in Canada: a national perspective. *Neuroepidemiology*. 2012;38(4):219–226.

<sup>11</sup> Krueger H, Noonan VK, Trenaman LM, Joshi P, Rivers C. The economic burden of traumatic spinal cord injury in Canada. *Chronic Dis Inj Can*. 2013;33(3):113–122.

## The Rick Hansen Institute

**Since its inception in 2009, the Rick Hansen Institute (RHI) has partnered with the Government of Canada to accelerate the translation of discoveries and best practices into improved treatments for people with spinal cord injuries.**

The Rick Hansen Institute's mission is to:

- Lead collaboration across the global spinal cord injury community by providing resources, infrastructure and knowledge;
- Identify, develop, validate and accelerate the translation of evidence and best practices to reduce the incidence and severity of paralysis after SCI;
- Improve health care outcomes, reduce long-term costs, and improve the quality of life for those living with SCI.

To achieve this mission, RHI has mobilized the collective power of the best minds by creating a national and increasingly international network of researchers, clinicians, innovators, entrepreneurs, investors, policy makers, community service providers and individuals with SCI, resulting in unprecedented levels of multidisciplinary collaboration and expertise being applied to key issues.

RHI has worked with stakeholders to create a national SCI strategy and establish consensus-based priorities for SCI research and care. Efforts and resources are aligned and focused on priority issues, making investments into SCI research and care highly efficient and productive. RHI provides its network members with the infrastructure and resources they need to do their best work – funding, collaboration, data analytics, clinical trial and project management, health economics expertise, commercialization leads, and impact evaluation.

From basic research to best practice implementation, RHI evaluates emergent opportunities, outcomes, and the impact of investments, and adjusts the SCI strategy accordingly. With this wide-angle oversight, RHI is able to manage SCI investments for maximum impact and efficiency.

RHI is a world leader in knowledge transfer and best practice implantation. Researchers often do not have the business expertise to successfully commercialize their innovations, or implement them in the health care environment. RHI works with innovators to ensure that research advances beyond the pilot project stage, directly benefitting individuals with SCI and the Canadian economy.

The Rick Hansen Institute is recognized globally as a leader in SCI research and care. International researchers, health care providers, and policy makers are key collaborators in RHI programs. RHI infrastructure is used around the globe. One recent example is New Zealand's adoption of the Rick Hansen Spinal Cord Injury Registry as its national SCI data registry. Just as

RHI has led the creation of a national SCI network and strategy to ensure Canadian resources are used efficiently and to the greatest impact, RHI is expanding its reach globally to increase available resources and accelerate progress.

## Accelerating Innovation

**The Rick Hansen Institute is requesting a federal investment of \$48.5 million over 5 years to advance its fundamental objectives:**

- Improved understanding of the biology and physiology of SCI.
- Development and implementation of promising therapies for SCI.
- Evidence-based equitable care for Canadians with SCI.

Earlier this year, RHI assembled a diverse, multidisciplinary group of international leaders and stakeholders in the field of spinal cord injury for a landmark workshop to develop practical solutions for overcoming challenges to translating research into improved health outcomes for people living with SCI. Through the sharing of hard-won experience and challenging small group conversations, workshop participants identified potential solutions to translational ‘valleys of death’. Coordinating the development and implementation of these solutions will be a major undertaking for RHI over the next 5 year period.

RHI’s objectives are fully aligned with the priority innovations identified in the *Unleashing Innovation*<sup>1</sup> report as having the greatest potential to improve health care quality in Canada:

- Patient-centred care: RHI engages patients as partners, and focuses on patient-identified priorities, including improved health, improved access to the health care system, improved patient experience, and being an active and informed partner in health care.
- Health system integration: RHI is working with stakeholders to eliminate gaps, delays, and disconnects in patient care that are costly to both patients and provincial health care systems.
- Digital health and precision medicine: RHI is investing in the development of precision medicine and informatics technologies to focus data into actionable intelligence that patients, providers, and system decision-makers can use.
- Commercialization: In focusing on the costs of healthcare, Canada too often overlooks the potential of the medical industry as a driver of economic growth. RHI is helping innovators successfully navigate the complex commercialization process, benefitting individuals with SCI, and the Canadian economy.

**The work of the Rick Hansen Institute is crucial not only to the advancement of spinal cord injury care, but also to the broader Canadian health care landscape. The obstacles that impede SCI research and care are no different than the obstacles that impact all other fields of health care, and the solutions will be broadly applicable beyond the field of SCI, as well as beyond Canadian borders. The Rick Hansen Institute is making a significant contribution to Canada's profile as a global health care leader.**

**The Rick Hansen Institute** is a Canadian-based not-for-profit organization committed to accelerating the translation of discoveries and best practices into improved treatments for people with spinal cord injuries.