

**Written Submission for the Pre-Budget
Consultations in Advance of the Upcoming
Federal Budget**

By: Praxis Spinal Cord Institute



- **Recommendation 1:** That the government maintain or increase funding levels for innovation in Canada, as the most effective means of building the post-pandemic economy.
- **Recommendation 2:** That the government invests in health care innovation and commercialization, to increase self-sufficiency and contribute to economic growth.

After months of responding to the immediate impacts of the COVID-19 pandemic, the Government of Canada is now tasked with setting out a plan to rebuild the Canadian economy.

The pandemic has accelerated significant and permanent shifts in the economy – many established businesses will not survive or will adopt new business models as they move forward, while new enterprises that respond to current needs will thrive.

The Post-Viral Pivotⁱ, an April 2020 report by the Ontario-based Innovation Economy Council emphasizes that tech start-ups out-perform traditional industries in driving employment and growth, and support established organizations:

Much of the innovation that will power the economy in the next decade will come from smaller tech startups that provide essential products and services in the supply chain. Canada's big manufacturers, banks, and retailers depend on these startups; their technology makes the rest of the economy more productive, competitive and innovative.

The massive investments made by the Government of Canada to support Canadians during the pandemic are anticipated to drive future spending reductions, but continued investment in research and innovation is more important than ever to develop and advance new technologies that will create new companies, support established businesses, and drive economic growth in the post-pandemic period.

Canadian investment in research and development already lags behind its peers. In 2018, Canadian R&D spending was 1.56% of GDP, compared to the 2.4% OECD average. Canadian R&D investment is the 2nd lowest of G7 countries, and in the bottom half of G20 nations.ⁱⁱ Investment in innovation is the most effective means of rebuilding the economy, and despite budget pressures, Canada cannot afford spending reductions in this area.

Investment in health care innovation is particularly critical. During the pandemic, countries around the world, including Canada, experienced dire shortages of pharmaceuticals and medical equipment. International procurement of standard items such as personal protective equipment, ventilators, and medications became a massive challenge. While scarcity of these items is no longer headline news, concern has shifted to vaccine availability, once one or more are developed and approved for use. Will Canada be able to access a timely, sufficient supply of vaccine to protect the population and get the economy back on track? We have left this outcome in the hands of other countries that have their own interests to protect.

Canada has made significant investments in COVID-19 vaccine development, but does not have the manufacturing capacity to deliver an adequate supply of vaccine to the Canadian population. This is but one example of underinvestment in the health sciences sector. Canada cannot afford to be in this position, from either an economic or a health care perspective. The supply-chain disruptions experienced during the pandemic have underlined the need for greater economic diversification as well as enhanced self-sufficiency, investment, and innovation in the health care field.

Canada has an enviable wealth of health care and scientific expertise. Government supports and partnerships are needed to translate this knowledge and potential into products and services for Canadians. To illustrate, consider the partnership between Western Economic Diversification (WD, one of six regional development agencies within the federal Ministry of Economic Development and Official Languages) and Praxis Spinal Cord Institute.

Western Economic Diversification and the Praxis Spinal Cord Institute

The Praxis Spinal Cord Institute (formerly named the Rick Hansen Institute) has been funded by Western Economic Diversification since 2013. WD support empowers Praxis to lead global collaboration in spinal cord injury research, innovation, and care, moving the most promising ideas out of the laboratory, into the marketplace, and ultimately, into the hands of the people who need them.

By working with national and international partners within the spinal cord injury community and beyond, Praxis is uniquely positioned to make exceptional improvements in the health of Canadians with spinal cord injury. The word *praxis* means the practical application of a theory. This is exactly the type of work the Praxis Spinal Cord Institute does – *moving knowledge into action*.

In 2019, Western Economic Diversification released *Grow Westⁱⁱⁱ – the Western Canada Growth Plan*. The plan includes the following key diversification priorities:

- Strengthen innovation ecosystems
- Build inclusive technology sectors
- Accelerate innovation adoption

Praxis is driving innovation and economic development in Canada, in accordance with WD priorities.

Strengthening innovation ecosystems

Headquartered in Vancouver, Praxis facilitates a national and international network of scientists, medical professionals, innovators, entrepreneurs, investors, biotech companies, policy makers, regulatory experts, and individuals living with spinal cord injuries – working together to identify, prioritize and solve the most urgent challenges related to spinal cord injury. Successful innovation is critically dependent on idea-sharing and collaboration among a multitude of disciplines and roles.

Strong, diverse research ecosystems enable creativity and rapid development of solutions. For example, in 2019 the Digital Emergency Medicine department of Vancouver Coastal Health partnered with Praxis to develop a smartphone app that would provide status updates to patients waiting for emergency care. When the COVID-19 pandemic hit, the potential of this app was

quickly recognized. A text messaging component was added, enabling ER patients to avoid waiting in crowded waiting rooms, and to do so in safer locations such as their own cars, homes, or outdoors. The app was urgently deployed at the Vancouver General Hospital Emergency Department and the Vancouver Urgent Primary Care Centre. The app is also being provided to front line units throughout the BC Lower Mainland.

Building inclusive technology sectors

Patient engagement in research is an emerging field that is developing rapidly. Funders, research organizations, and health care providers are recognizing that engaging patients in their work improves outcomes. From identifying research and innovation priorities to participating in studies and validating findings, individuals with spinal cord injuries and their families and caregivers are critical to ensuring that research meets real-world needs. Individuals with spinal cord injuries are key members of Praxis' staff, management team, Board of Directors, and advisory committees. They are engaged throughout the organization, to ensure research, best practice, and commercialization investments are relevant, feasible, and of maximum impact.

Praxis recently partnered with the North American Spinal Cord Injury Consortium to survey patient perspectives on electrical stimulation (e-stim) of the spinal cord. This high-profile technology has shown exciting potential for functional improvements for people living with SCI. The survey, developed by individuals with spinal cord injuries, identified patient priorities related to e-stim technology, gauged expectations for recovery, gathered opinions on clinical trial design, and assessed demand and willingness to pay for spinal cord stimulation. The survey is providing invaluable data and insights from people with spinal cord injuries that will guide future investment, development, and application of e-stim technologies.

Accelerating innovation adoption

The *valley of death* is a term commonly used to encompass the many obstacles that prevent prototype innovations from successfully making the leap to fully commercialized products available to end-users. As an integral part of its mandate to move knowledge into action, Praxis is committed to getting innovations to market to improve health outcomes, enhance health care delivery, and realize an economic return on research investment.

Praxis *Accelerate SCI* is the first-ever accelerator program designed to support the commercialization of medical devices, diagnostics, and therapeutics specifically targeted to improve the lives of people living with spinal cord injuries. The first Accelerate SCI program ran from April – June 2020, and included five start-up companies. The start-ups received the guidance, resources, and tools they needed to scale and market their innovations, from researchers, commercialization experts, and end-users.

Praxis and two start-up companies it has worked with are participating in a virtual roadshow organized by the Canadian Embassy in Beijing, which will promote Canadian health sector capability to the China market.

In closing

The Western Economic Diversification – Praxis Spinal Cord Institute partnership demonstrates how the Government of Canada can successfully support innovation that improves health and economic outcomes for Canadians. It is vitally important that Canada maintains its investment in innovation, and in health care innovation in particular, to ensure we have the infrastructure, capacity, and expertise to respond to challenges, achieve greater self-sufficiency, and drive economic development.

Thank you for your consideration of this submission. The Praxis Spinal Cord Institute would be pleased to appear before the Standing Committee on Finance to provide additional details and answer any questions you may have.

References

- ⁱ <https://oce-ontario.org/docs/default-source/default-document-library/iec-report-april-2020-final.pdf?sfvrsn=2>
- ⁱⁱ <https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm>
- ⁱⁱⁱ <https://www.wd-deo.gc.ca/images/cont/19876-en.pdf>