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Submission to the Standing Committee on Science and Research

Study on International Moonshot Programs

January 11, 2023

INTRODUCTION

HealthCare*CAN* is the national voice of action for health research institutes, hospitals, and healthcare organizations across Canada. We advocate in support of health research and innovation and enhanced access to high-quality health services for people across Canada, and we empower health professionals through our best-in-class learning programs. We welcome the opportunity to make this submission to the Standing Committee on Science and Research as part of its study on International Moonshot Programs.

Health research and innovation drive health outcomes and health system transformation while playing a crucial role in helping Canada respond to medical and health system challenges. Health research and innovation is also vital in helping address some of Canada's and the world's most pressing social challenges, such as climate change and an aging population, and offers innovative and economic benefits for Canada.

As this Committee studies the potential for moonshot programs, we urge you to consider the importance of moonshot programs focused on healthcare, and the significant role that the health system and health researchers in health research institutes, hospitals, and healthcare organizations across Canada play in Canada's research ecosystem.

The remainder of this submission outlines considerations and recommendations as they relate to moonshot programs in healthcare and the components needed to ensure their success in Canada.

RECOMMENDATIONS

Identify clear, ambitious challenges that moonshot programs will strive to address, including a moonshot program to improve healthcare in Canada

Canada has a strong reputation in health research. Canadian health research institutes and universities are highly ranked internationally, our population is well-educated, and the research workforce is highly skilled, knowledgeable, and enterprising. But while we have exceptional research talent and institutions, we lack a vision for research in Canada. Because of this, we do not tap into the full innovative and economic power of research, and especially health research, in the way that many of our peer countries do.

With both the US and UK redoubling their commitment to research with clearly outlined objectives and corresponding funding to achieve them, it is vital that Canada does the same. This includes outlining clear, ambitious challenges that moonshot programs will strive to address, and clearly defining how moonshot programs fit into Canada's overall vision for research.

In developing moonshot programs, Canada can borrow from its international peers that have implemented similar programs, such as Japan. Canada must identify key strategic science initiatives where it can lead, adopting the approach taken by many countries around the world.

One moonshot program Canada should adopt is creating an innovative and sustainable health care system that prevents and treats major diseases and supports healthy living and aging. Among other things, this would involve creating integrated networks across health systems, leveraging technology and innovation to optimize healthcare and provide quality, equitable health services to people across Canada.

Clearly define how moonshot programs fit into Canada's overall federal research support system

Canada's federal research support system is complex and difficult to navigate. Funding exists across various institutes and government departments, and they do not effectively coordinate research programs and opportunities, both within their own institution/department or across the federal research support system. This reduces the impact of Canadian scientific priorities and research dollars.

The research support system is not set up to best support Canadian researchers and their work. Application processes and deadlines often place additional burden and stress on researchers at all career levels. Increasingly more frequent competitions, shorter submission timelines, and decreasing success rates are not conducive to researchers applying broadly for and securing funding, nor do they position Canada as an attractive country in which to conduct research for the next generation of researchers.

With strategic science, Canada has taken a fragmented and continuously evolving approach that has not been very effective. With initiatives existing within the Tri-Council and outside of it through various programs, such as the Canada First Research Excellence Fund (CFREF), New Frontiers in Research Fund (NFRF), Canada Excellence Research Chairs (CERC), Strategic Science Fund (SSF), Strategic Innovation Fund (SIF), and Networks of Centres of Excellence (NCE) program, accountability and governance is scattered, with no clear line of sight on the impact and success of these various initiatives and programs. Assessments of the outcomes of strategic funding approaches are frequently limited in scope, or non-existent.

If Canada embarks on moonshot research, the federal government must clearly define how moonshot programs will fit into the overall federal research support system. It is also essential that the governance and administrative concerns outlined above are not carried over to new moonshot programs. The success of moonshot programs will hinge on their structure being centralized, nimble and flexible to address barriers, take advantage of opportunities, and drive progress through broad engagement with researchers across the country, as needed.

Increase investment in health research in Canada and ensure additional earmarked funding for moonshot programs

Despite the importance of health research in driving improved health outcomes and health system transformation, Canada's investment in its research sector – both health related and generally – lags other OECD countries, leading to a widening gap with peer countries.

In 2020, the most recent year for which comparable data is available, Canada invested 1.8% as a percentage of GDP on research and development, while the OECD average was 2.7% and US investment sat at 3.5%.[i] As it pertains to health research, Canada lags in the percentage of total public spending on health devoted to health research at 1.5%, compared to the US at 4.7% and Australia at 3.3%.[ii]

Canada already invests too few dollars in health research, and in research more broadly, and especially in fundamental, investigator-led research. If Canada embarks on moonshot research, it cannot be to the detriment of important fundamental, investigator-led research. Funding to the Tri-Council must at minimum be doubled so that Canada can remain competitive globally, attract and retain top talent across all career levels, and realize the full innovative and economic benefits of health research.

Moonshot programs must be additive and have separate earmarked funding for research related to the specific challenges it aims to tackle. This strategic research is important and must be supported alongside investigator-led research, not instead of it. Moonshot research is not feasible without a solid core of well-funded and productive researchers across career stages, backgrounds, and disciplines, including in health and medicine.

Ensure all organizations conducting research, including health research institutes, have direct and equal access to all funding opportunities

Federal innovation and infrastructure programs have established criteria that preclude research institutes and healthcare organizations from applying for funding. As an example, while health research institutes can apply directly to Canadian Institutes of Health Research (CIHR), they must go through their affiliated universities when applying to most other federal research and innovation agencies and programs such as the Research Support Fund, the Canada Research Chairs, Mitacs, and others. More recently, the federal government's Innovation Superclusters Initiative and the Strategic Innovation Fund (SIF) – except for Stream 4 – are all industry-led initiatives.

While many research institutes have good relationships with their affiliated universities, this process places health research institutes at a disadvantage since the university, which has its own research priorities, ultimately decides which research projects to put forward for consideration and how funds are distributed. This model reflects a misunderstanding of our sector and the health research ecosystem in Canada. Research institutes' applications to federal innovation programs should not be gated by the priorities of universities.

Any moonshot research program must be directly accessible to all organizations that conduct research. In the health context, that means health research institutes and hospitals. This is an issue of both fairness, to ensure that all promising work is considered regardless of the institution or organization from which is stems. It is also an issue of equity so that smaller institutes and organizations, including emerging health research institutes and rural and remote healthcare organizations, have an equal opportunity to compete for funding with their larger, urban peers.

Reimagine infrastructure funding programs to foster innovation, partnerships, and improved patient outcomes

The strength of health research institutes lies in their ability to foster networks and relationships between researchers, academia, industry, innovators, start-ups, clinicians, patients, and caregivers.

When it comes to health research, the federal government must recognize research hospitals' and healthcare organizations' role as powerful innovation hubs within healthcare and the health research and life sciences sector. They sit at the centre of the health research and life sciences ecosystem, where pressing healthcare needs and the innovations to address these needs converge. This makes them uniquely positioned to lead moonshot research in healthcare.

However, as noted in the previous section, current federal infrastructure funding, including both general and health-specific infrastructure programs, often do not allow health research institutes and healthcare organizations to apply directly for funding. This makes them reliant

on funding that flows to the provinces and territories, and possibly further to municipalities, being allocated to improvements to health infrastructure.

For moonshot programs in healthcare to succeed in Canada, the federal government's approach to investing in infrastructure as it relates to health research infrastructure must be reimagined to align with the needs of today's research ecosystem, including the critical need for physical lab space in Canada. It must also align with the way that health research is conducted in the 21st century, notably in research institutes embedded within the health system. Similarly, it must expand beyond covering initial purchase and set up costs, and cover maintenance and updates.

The federal government must earmark funding to build or renovate buildings to create much needed lab and incubator space that attracts and brings together key research partners and best positions moonshot research for success. New lab space must be located at research hospitals as this is where health research is taking place, where new ideas are being conceived, and where end users – patients, caregivers, and clinicians – are located. This could be achieved by reinstating the Research Hospital Fund so health research institutes can build much-needed laboratory space on a long-term, sustainable basis. This infrastructure funding is essential for the building of lab space to be financially feasible for healthcare organizations. Many hospitals and research institutes are in dense urban areas with no option to expand outward, necessitating more costly tear-down and rebuild initiatives rather than simple renovations.

Thought must also be given to ensure our valuable research facilities are maintained and operating with the latest technologies. This could be achieved through an expansion of the Canadian Foundation for Innovation (CFI) to include long-term, sustainable funding to support equipment maintenance and updates.

Establish pan-Canadian information technology infrastructure to support the pursuit of science across institutions and jurisdictions

Connections and networks among Canada's health researchers are well-established, but researchers lack the tools to effectively communicate and share data and information across institutional and jurisdictional divides. This is true in all areas of health research and innovation and especially acute when it comes to clinical trials.

A pan-Canadian health data strategy that allows for interoperability between institutions, jurisdictions, and governments is crucial to the success of moonshot research. The ability to easily share data will enrich the quality and availability of health data and research, foster the partnerships and collaboration needed to drive innovation that will address Canada's most pressing health challenges, and make Canada a more attractive place to conduct research.

As part of the data strategy, the federal government must create a repository to centralize health research data from across Canada and facilitate health research and innovation across institutions and jurisdictions. This will further support the interdisciplinary, cross-jurisdictional research that will be necessary for moonshot research to succeed. It will also further enable research that is increasingly being carried out in rural, remote, and northern communities. Greater interconnectivity and availability of tools to do research outside of urban centres will better support researchers in these communities and encourage more researchers to conduct research in these settings. It will also expand the amount of research being done in these communities, leading to treatments that meet the unique needs of people in these communities, and in turn moonshot programs that are equitable and inclusive.

Create a policy and regulatory environment that promotes partnership

In recent years, new federal innovation and infrastructure programs have established criteria that restricts the formation of partnerships by identifying who are eligible partners. Often, research hospitals and healthcare organizations are not included as potential partners, despite the significant role research institutes and hospitals play in innovation.

Additionally, many federal and Tri-Council funding programs have restrictive stipulations that hinder partnerships. For example, there is the "Canada first" funding principle that only funds research that is conducted in Canada and stays in Canada. For moonshots to be viable in Canada, they must enable and foster international collaboration.

Similarly, Tri-Council funding program criteria stipulate that grants are awarded to the researcher's institution and not directly to the researcher. Unless researchers in community healthcare organizations or emerging research institutes are affiliated with a university or have a university appointment, they cannot access funding despite the important community-based research they conduct.

Improving researchers' ability to collaborate with domestic and international partners will be vital to the success of moonshot programs as it will foster important research partnerships that will result in significant benefits for Canada's research ecosystem, health system, and economy, as well as the health of people across Canada.

Support the entire innovation continuum, from discovery to commercialization and manufacturing, with particular attention on programs and funding to support translation of health research into practice

Canada needs to do a better job of translating health research into practice, supporting the commercialization of innovations discovered through research, and leveraging research discoveries to solve urgent societal issues. Federal research funding does not support translation to the level needed to achieve this, especially as it relates to health research.

If moonshot research is pursued in Canada, programs and funding must support the entire innovation continuum, from discovery to commercialization and manufacturing. There are several examples of Canadian researchers making ground-breaking discoveries that are then sold to international companies to commercialize, manufacture, and distribute. Canada and its researchers and innovators lose out on the economic benefits of the discovery. Patients and providers lose out on the benefits of these innovations as they must compete with other countries for access to sometimes limited and often expensive therapies.

For moonshot programs to succeed in Canada, we must ensure they support Canadian companies and made-in-Canada solutions during the entirety of the innovation continuum. This means focusing more of our efforts on cultivating Canadian talent, innovators and companies and helping them flourish, rather than building an innovation and manufacturing strategy around investing in international organizations to establish themselves in Canada. It also requires recognizing that having innovations to commercialize and manufacture starts with supporting the research that makes commercialization and manufacturing possible.

About HealthCare*CAN*

HealthCare*CAN* is the national voice of health research institutes, hospitals, and healthcare organizations across Canada. Our members are part of the more than 1,200 healthcare facilities that support over two million direct and indirect jobs, account for nearly 12% of Canada's GDP, and stimulate local economies through research and development, commercialization of discoveries, and infrastructure projects.

HealthCare*CAN* membership is diverse and made up of a variety of organizations, including research institutes, hospitals, long-term care and home care providers, health authorities and health sector associations.

These organizations are crucial in furthering our understanding of diseases, developing treatment solutions for patients, delivering high-quality care, and contributing to addressing the most pressing issues facing Canada.

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[ii] Canadian Institute for Health Information. 2020. National Health Expenditure Trends. Ottawa, ON: CIHI; 2021. Retrieved from: https://www.cihi.ca/sites/default/files/document/nhex-trends-2020-narrative-report-en.pdf; American Medical Association. 2021. Trends in health care spending. Retrieved from: https://www.ama-assn.org/about/research/trends-health-care-spending; Australian Institute of Health and Welfare. 2021. Health Expenditures Australia 2019-2020. Retrieved from: https://www.aihw.gov.au/getmedia/f1284c51-e5b7-4059-a9e3-c6fe061fecdc/Health-expenditure-Australia-2019-20.pdf.