

Intelligence MEMOS



The C.D. Howe Institute put out a call late last year for Intelligence Memos from next-generation policy leaders. The purpose of the program is to provide a platform for new or soon-to-be graduates to raise their profiles, showcase their ideas, and build their professional networks. This week we are releasing the work of the top three participants.

From: Cheung Pang Wong
To: Canada's Ministers of Health
Date: June 2, 2022
Re: **PATHWAYS TO BETTER PANDEMIC PREPARATION**

COVID-19 is the third coronavirus outbreak in two decades.

Canada's toll includes more than 3.8 million confirmed COVID-19 cases, more than 40,000 deaths and a drop in population life expectancy of [0.6](#) years.

There are many lessons.

And boosting research capabilities in three areas is vital.

First, the expansion of current high-containment biological research facilities such as biosafety level (BSL) 4 laboratories is paramount. These labs have the highest level of biosafety precautions, allowing researchers to safely work with the most dangerous pathogens. While the UK has seven BSL4 sites (government facilities,) the US has [12](#), and China plans on building between [five to seven](#) by 2025.

Meanwhile, the National Microbiology Lab in Winnipeg is this nation's only BSL4 facility.

There are multiple BSL3 laboratories across Canada for research on pandemic-causing human pathogenic viruses, such as SARS-CoV, MERS, and SARS-CoV-2, and more are needed, especially given the high level of regulation on each, which affects research progress.

For instance, occupancy limits are strict. Some experiments may take hours to complete, and researchers are not allowed to process the samples outside the facilities.

So when a lab gets high volumes during periods like COVID-19, researchers face long wait times, which lead to delays in research.

Canada should consider and assess the feasibility of partnering with or encouraging private laboratories and/or companies to launch new BSL3 and 4 facilities to facilitate more research activities and to increase our knowledge on viruses. Business sector involvement is popular elsewhere, including privately-owned BSL4 facilities in both the [UK](#) and the [US](#).

Second, infrastructure alone is not enough. Integration of basic research, patient-oriented research, and population-based research, with the long-term aim of improving public health is needed. The pre-clinical and clinical development of scientific discoveries like antivirals take years to complete, and require collaboration between universities, pharmaceutical companies, and government regulatory bodies.

Ottawa should play a more proactive role in facilitating university-industry research partnerships. For instance, the government should subsidize more campus offices to understand the industry needs and identify relevant research projects in the universities, and help manage the transfer of new technologies. Industry financial support will in turn promote the translational research such as a large-scale screening on drugs that target specific viruses.

Third, a pool of skilled talent is the cornerstone for enhancing research capabilities. Talent expansion requires efforts between government and universities. To increase the size of the talent pool in scientific research, we need more scholarship opportunities for STEM students. Beyond that, Canada needs to promote talent retention in the research field. For instance, universities should provide STEM students with more support in their career development in academia and in STEM industries by arranging more networking events, industry internship opportunities and professional development workshops.

Beyond that, increasing research capability is not sufficient. Manufacturing capacity for rapid test kits, vaccines and antivirals is needed as is a larger national reserve of PPEs as well as laboratory supplies are needed to ensure a stable supply for domestic demand.

Healthcare workers are the fundamental part of the healthcare system. More hospitals and wards that can handle patients infected with respiratory diseases will reduce the possibility of cross infection, and the operational burden of existing systems. More locally trained healthcare workers and addressing barriers faced by internationally trained professionals are needed to meet the increasing demand for healthcare services.

Concerted efforts by governments, universities, and industry are required to map out the pathways to better prepare for health emergencies. The steps outlined here will go a long way. The next outbreak of a respiratory disease caused by another novel coronavirus may arrive sooner than we'd like. The time to act is now.

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