

SARS: Make No Mistake – There Will Be a Next Time

The recent outbreak of SARS in China, Canada and other countries has posed unprecedented challenges to Canada's public health system, untold personal devastation, illness and death for those directly affected by SARS, enormous stress to front-line healthcare workers and negative economic impact that will likely run into the tens of billions.

As noted in a *Globe and Mail* editorial on June 11, it is important to ask what we can learn, even now, from this outbreak. What went wrong? What went right? What could we do better next time? For make no mistake – there will be a next time.

Globalization, world travel, intensive agricultural techniques, dense urban populations, substandard public health conditions in many parts of the world and the uncanny ability of microbial pathogens to evolve rapidly – all conspire to guarantee that SARS will be just the latest in a string of diseases that include cholera, plague, and more recently influenza, polio, HIV/AIDS, Mad Cow Disease and West Nile virus.

Such threats, as Federal Health Minister Anne McLellan has noted, pose significant challenges to Canada's public health and healthcare systems. Newly emerging pathogens also pose unprecedented challenges for the research community. Just as it is too late to realize that we need front-line healthcare workers experienced in dealing with highly contagious pathogens, it is also too late by the time a new disease like SARS hits, to decide we need virologists, immunologists, epidemiologists, DNA sequencers and public health researchers. The average period of training for any of the above areas of research is between 5–10 years, after a first university degree. It's like deciding you need a fire department only after a fire breaks out.

When Parliament created the Canadian Institutes of Health Research (CIHR) three years ago, it had in mind the creation of a research agency and a health research community that would be proactive, strategic and responsive to the health needs of Canadians. The SARS outbreak exemplifies Parliament's wisdom. The creation of the Canada Foundation for Innovation, Genome Canada, the Canada Research Chairs and the Canadian Institutes of Health Research, will truly be one of the lasting legacies of this Government to the people of Canada.

Unquestionably, our country's ability to respond quickly to the challenge of SARS reflects recent investments at both the federal and provincial levels in health research. Since our

creation in 2000, CIHR alone has invested more than \$100 million dollars in research into infectious diseases, including HIV/AIDS, hepatitis C, Mad Cow Disease, and now SARS. CIHR's Institute of Infection and Immunity, with more than 15 partners in the food production, health and environmental research sectors, has also launched a major research initiative on the safety of Canada's food and water supply.

In a unique trans-Canada partnership, four CIHR-funded research teams dropped what they were doing and in just 11 weeks from recognizing a new coronavirus associated with SARS, completed and announced to the world the complete sequence of this virus on April 13. Now the entire world can build on this outstanding Canadian accomplishment to understand the virus, and develop diagnostic tests, a vaccine and antiviral therapies.

Think of it – it took almost a decade to obtain the complete sequence of HIV, the virus that causes AIDS. Today, thanks to the spectacular advances in health research and DNA sequencing technology, we now know the most intimate secrets of this coronavirus in a matter of weeks.

The sequencing of the SARS genome is just the first step in the scientific journey to understand this virus and defeat it. With our partners, CIHR has developed a three-pronged strategy against SARS.

First, CIHR's Institute of Infection and Immunity, with our partners from industry, research agencies in the provinces of Ontario, British Columbia and Quebec, health charities, federal networks in vaccines, protein engineering and mathematics, and Health Canada, have funded four research teams in Quebec City, Toronto, Hamilton and Vancouver to understand the severe lung disease caused by the virus, develop a rapid diagnostic test, engineer a vaccine and develop antiviral drugs.

Second, four of CIHR's Institutes, with our partners, will select more research teams that will examine and evaluate the public health and healthcare system's response to the SARS outbreak.

Third, we announced the formation of the Canadian SARS Research Consortium (CSRC), a unique public-private partnership that will develop an integrated national, and ultimately international, strategy to coordinate, catalyze and fund research on SARS. The goals of this are to understand the virus and control it. And we should be clear – our war against SARS, and other emerging infectious diseases, will only succeed if we bring every available weapon to bear – not

just face masks and quarantine procedures, but also virology, immunology, proteomics, combinational chemistry, epidemiology, public health and healthcare system research.

Attracting and retaining the very best health researchers, and providing them and their trainees with the very best facilities to do their research, are vitally important. Creating an environment of collegiality, partnership and public service – core Canadian values – has also been key so far in the SARS saga, both among our researchers also, of course, among the front-line healthcare workers who have put themselves and their families in danger during the course of their work.

Canada has much to be proud of in this story, from the dedication of our healthcare and public health workers to the responsiveness and excellence of Canada's health research community.

As a scientist and virologist, I can't wait to find out how the SARS virus causes such devastation. As a member of

Canada's health research community, no one will be prouder when Canadian research teams, funded by CIHR and our partners, contribute to successful global efforts to combat this and the literally hundreds of other diseases that still affect human kind.

No one could have predicted the SARS outbreak and no one can predict future outbreaks. What we can predict, and plan for, is the ability of our country to be able to respond quickly and effectively when future outbreaks arise. A sustained investment in health research will allow us to respond.

Alan Bernstein, OC, PhD, FRSC, is President of the Canadian Institutes of Health Research. Dr. Bernstein is known internationally both as a researcher and as a scientific leader. His pioneering research results in the area of cancer, hematopoiesis and gene therapy remain landmarks in their field. For more information see www.cihhr.ca.

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