

# The race to outpace severe acute respiratory syndrome (SARS)

David M. Patrick

 *Fast-tracked article*

**W**e didn't ask for it. We didn't expect it. Yet Canada has run the first leg of a race against SARS, and there are reasons to take courage.

Canada was forced into this race on Mar. 13, 2003, as the first country outside Asia to recognize SARS cases. The very first cases had been diagnosed in Hong Kong only a few days earlier. Credit for early recognition of the problem should be shared. Preparations in Canada to confront the threat of a pandemic of influenza had been under way for 2 years. It was against a background of such planning that concern about a small cluster of human cases of avian influenza in Hong Kong had led Health Canada to issue an alert on Feb. 19. This alert underscored the potential for global spread and urged laboratories and public health practitioners to be vigilant. Alerts issued Feb. 20 and 24 and again on Mar. 12 by the British Columbia Centre for Disease Control (BCCDC) noted both avian influenza and a mysterious outbreak of atypical pneumonia in Guangdong Province in southern China. These alerts for BC clinicians, infection control practitioners and public health authorities called for enhanced surveillance and for infection control measures with respect to patients presenting with unusual influenza-like illness after returning from Hong Kong or China.

It is likely that these alerts played a role in the decision by physicians at Vancouver General Hospital to institute early isolation of a 55-year-old man who presented to the emergency department on Mar. 7 with a history of recent travel from Hong Kong and symptoms of pneumonia. They certainly contributed to a report being telephoned to BCCDC when the patient's condition worsened on Mar. 13. This report, together with timely conversations between Dr. Danuta Skowronski (BCCDC), Dr. Allison McGeer in Toronto and Dr. Jeannette Macey of Health Canada marked the first official recognition that SARS had come to Canada.

Good fortune may well have played a role in limiting the initial impact of SARS on the West Coast. The index patient had arrived in Vancouver from Hong Kong on Mar. 6. He was ill and went directly to his home. He had little or no contact outside of immediate family. A brief visit to his family physician did not lead to transmission. When he arrived at the emergency department of Vancouver General Hospital, it was only a matter of minutes before clinical staff astutely provided him with a mask. Shortly after, he

was admitted into full respiratory isolation. Fortunately, his limited contact with others meant that quarantine was necessary for only a handful of contacts. These fortuitous circumstances, together with a state of vigilance against disease outbreaks, likely checked the spread of SARS from Vancouver's first case. The key to further containment appears to have been the rapid mobilization of public health strategies to contain new cases arriving from endemic areas.

Starting on Mar. 24, regional public health staff bolstered the human resources of Health Canada to ensure that all flights returning from Asia would be met by quarantine officers. So far we have been able to limit spread of the disease in British Columbia to 4 probable cases. But the situation is still unstable. As recently as Apr. 15 a probable case was reported in a nurse — the first in a health care worker in the province. Investigation is still under way to determine whether any breach in infection control practice contributed to this event. Continuing vigilance is essential.

By contrast, Ontario was struck early by the harsh reality that transmission to contacts had already occurred before the first patients presented. As of Apr. 15, 108 cases of probable SARS had been diagnosed in Toronto despite massive efforts by health care professionals and the public to control spread. (In the midst of these efforts, epidemiologists in Ontario have done much to define the dynamics of spread for SARS. Clinicians and public health practitioners on the front lines and colleagues across the country published the first clinical description of SARS within weeks of its appearance in Canada.) The challenge continues for public health in Ontario with word that SARS has spread from known cases to a large religious community. But, after initial recognition of the syndrome by physicians in Toronto and Vancouver, the odds are better that future cases can be identified and contained.

Although containment may yet prove possible in Toronto and Vancouver it is likely that SARS will be harder to control elsewhere in the world. In the midst of our continuing efforts to eradicate SARS in Canada, we must remain aware that control of SARS overseas may be necessary to assure our own security. Otherwise, new cases of SARS will continually arrive in Canada. Airport screening will never be an entirely effective method of prevention. Accordingly, we need to urge organizations such as the Canadian International Development Agency to fund projects aimed at assisting China and other countries in the

containment of the epidemic.

If the SARS virus continues to spread, even heroic public health efforts may not fully contain it. Falling back on personal protective measures may then save lives, but the only way to avert a high burden of morbidity and mortality will be the rapid development of effective vaccines and antiviral drugs. We are therefore quite possibly in the early steps of a race against time to create tools to better protect populations against SARS.

Quick recognition of the problem got Canada sprinting out of the starting block on Mar. 13, 2003, and contributed to the WHO's full recognition of the global nature of the threat the following day. But the remainder of the first lap of this epic race has benefited from quick work collecting specimens from Toronto-area clinicians and microbiologists, followed by vigorous teamwork by hundreds of scientists, resulting in the publication of the complete genetic sequence of the SARS virus by the Genome Sciences Centre in Vancouver on Apr. 12 ([www.bcgsc.ca/bioinfo/SARS/](http://www.bcgsc.ca/bioinfo/SARS/)). Their efforts will carry us toward diagnostic tests, clearer delineation of the etiologic role of the SARS virus, and the development of vaccines and drugs.

Yet we still have a long way to run. How can the pace be

maintained? To start with, we must recognize that SARS is not the sole concern of affected municipalities, provinces and countries. All researchers will need to share new bench, clinical and epidemiologic findings as soon as they are known. No one group or collaborative can do it alone, but with a willingness to pass the baton freely to our colleagues, we may yet prevail in this race.

Dr. Patrick is Director, Communicable Disease Epidemiology, BC Centre for Disease Control, Vancouver BC.

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## References

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**Correspondence to:** Dr. David Patrick, Director, Communicable Disease Epidemiology, BC Centre for Disease Control, 655 12th Ave., W, Vancouver BC V5Z 4R4; fax 604 660-0197; [david.patrick@bccdc.ca](mailto:david.patrick@bccdc.ca)