

SARS: Lessons Learned from a Provincial Perspective

Colin D'Cunha, MD

To say that SARS was a unique threat, and one that challenged public health and the entire health system in Ontario could be viewed as somewhat of an understatement. Never had the modern public health or the health care system been put to such a test or been put under such pressure to respond as during the two phases of SARS outbreaks earlier this year.

The very uniqueness and stress that the SARS outbreaks placed on our system inevitably revealed the weaknesses and the areas where change or fortification in our public health defenses was needed in order for us to meet successfully future challenges.

In Ontario, public health services are delivered locally by 37 public health units. Funding for public health services in Ontario is based on a mixed model with municipal and provincial partners contributing to the funding. While funding is referred to as "50/50", in actual fact, the Province matches the municipal contribution, and goes further. An additional 10-15% of funding is made available through the Community Reinvestment Fund to offset the increase in municipal costs over the base year. The total funding for the public health sector has gone up by 55% over 5 years. SARS provides an opportunity for a re-examination of the funding arrangement as some local health units have had difficulty in obtaining funding at the municipal level.

The absence of surge capacity, locally, provincially and nationally, in public health infrastructure came to the forefront during the outbreak. While many individuals volunteered for the response, other public health functions that they were engaged in had to be put on the back burner. The area of public health human resources has been the subject of many studies since 2001. Creating extra capacity takes time as public health professionals take a few years to train. For instance, a fully qualified public health nurse takes 4 years to train, a public health inspector 4 years, a public health physician 5 years post graduation. Therefore aggressive investment and strategic planning is needed to meet public health human resource needs.

A cadre of trained communicable disease investigators has to be nurtured and made available for deployment on an ongoing basis. Other public health professionals should be cross-trained in communicable disease management to create additional surge capacity. Epidemiological training is offered nationally through Health Canada.¹ During the outbreak, the immigrant health resources pool was used successfully. The vast majority of the two provincial rapid response teams assembled were international medical graduates at differing stages on the pathway to qualifying as physicians in Ontario/Canada. Some of these individuals are now considering public health as a career.

In Ontario, the information technology system in place since the late 1980s was the Reportable Disease Information System (RDIS).² Nothing came of the efforts of a steering committee who undertook to modernize this system in the mid 1990s. The arrival of the integrated Public Health Information System (iPHIS) at the turn of the millennium aroused an interest in Ontario, and a formal commitment to its rollout was made in the spring of 2002. Implementation was planned for the spring of 2003 on a staggered basis. SARS challenged the planned start up. However, an iPHIS module was developed and used in April 2003 during the SARS outbreak. At the time of writing, British Columbia

(where iPHIS was developed) is evaluating the SARS iPHIS module developed in Ontario.

Modernizing the public health information platform on a regular basis is critical for public health workers regardless of the setting they work in. Dedicated funding and staff to evaluate, plan and integrate new changes have to be in place. Some of the delays in data transfer between public health agencies can be mitigated with web-based technology. Giving different users access to different fields with appropriate safeguards can alleviate privacy concerns.

The public health platform developed and used should ideally have the capacity to interact with other systems in society. As public health is all-encompassing, the public health platform for example should be able to access census, economic, environmental, financial and other significant health data. The use of sentinel events in non-human populations cannot be understated. A practical success story is the West Nile virus surveillance system where bird and mosquito surveillance served as an early warning system. The Global Public Health Intelligence Network (GPHIN)³ system that scans raw newswire feed provides valuable alerts for influenza pandemic surveillance, based on events around the world. The use of non-prescription drugs can also be used as a sentinel for other conditions. Analysis of the sales of diarrheal medications in two communities (Saskatchewan⁴ and Wisconsin⁵) preceded the discovery of waterborne outbreaks there.

Clinical interface is also important. Strong relationships between public health and our clinical colleagues promote early identification and reporting of public health threats. The median delay in reporting data sets from the field to public health officials was 4 days (with a range from 0 to 25 days). There was a further delay in reporting to the Ministry of Health and Long-Term Care. The median of the additional delay period was 3 days (with an average of 3.3 days).⁶

The *Health Protection and Promotion Act* (HPPA)⁷ provides for mandatory disease reporting and control. SARS was quickly added to the list of designated reportable, communicable and virulent diseases under the Act on March 25, 2003. Other jurisdictions should seek legislative renewal to ensure that appropriate powers are includ-

Ontario Ministry of Health and Long-Term Care, Toronto, ON

Correspondence: Dr. Colin D'Cunha, Chief Medical Officer of Health, Ontario Ministry of Health and Long-Term Care, 8th Flr, 5700 Yonge St, Toronto, ON M2M 4K5. Tel: 416-314-5487, Fax: 416-327-7438, E-mail: Colin.D'Cunha@moh.gov.on.ca

Disclaimer: The opinions expressed in this article are solely those of the author and do not represent those of any affiliated professional organization or employer.

ed within their statutes to monitor and control disease outbreaks, and that adding new, emerging infectious diseases to the legislative scheme may be done quickly and efficiently.

The HPPA was recently amended to empower the courts to order isolation of individuals in appropriate institutions other than hospitals, where the legal test is met, under section 35 of the Act. The HPPA also allowed the Minister, under section 87, to order the occupier of any premises to deliver possession of all or part of any facility he or she specified for use as a temporary isolation facility.

The new amendment provides that the Chief Medical Officer of Health, rather than a medical officer of health, may certify to the Minister that the premises are needed for use as a temporary isolation facility anywhere in Ontario, for a period of not more than 12 months. In addition, the Act was amended to allow a medical officer of health to make a "Communicable Disease Order" under section 22 of the Act respecting an entire class of persons, where notice to each member of the class is likely to significantly increase the risk to the health of any person.

Communication was a focal point; there was a need to communicate with health professionals and the public. Although much effort was made to provide open and transparent communications, the result was mixed reviews. Communicating during a crisis was a challenge and should

never be underestimated.⁸ The media has to play an effective role in getting key messages out without being alarmist. In this age of electronic communication, it became obvious that the international world was also monitoring the media to keep abreast of latest developments.

Communications with stakeholders, in particular health professionals, is a formidable challenge. Many if not all health professionals are not electronically linked, thus posing delays in getting key information out in a timely fashion. Multiple communication strategies have to be implemented to overcome this hurdle, such as the use of e-mail, fax, paper, web-based and other modalities.

SARS brought home to health care colleagues the reality that nosocomial infections put them at personal risk. In the early stages, it was apparent that even some procedures as basic as handwashing were not practiced adequately. Reinforcing the message to handwash helped increase compliance with this very basic infection control practice. Risk assessments have to be done at the system, institution and individual level so that the best and most appropriate level of protection is followed. Using the correct approach minimizes the risk of the health care individual being personally infected or carrying it to others.

The use of appropriate barriers and precautions has to be continually reinforced at periodic intervals. Any new lessons learned have to be incorporated with minimal delay.

Basic and applied research must be fostered so that a disease's course may be fully understood and that the interventions proposed are necessary. An evaluation of the efforts directed at responding to the outbreak should be conducted. This allows for better preparation for the future.

Public health emergency preparedness is critical. Tabletop and other exercises allow for key players to interact regularly, understand each other's roles and build strong dynamic relationships that mitigate the stress invariably experienced during a crisis. To successfully benefit from the lessons learned requires the commitment and the investment of all levels of government that are responsible for public health.

REFERENCES

1. Skills Enhancement for the Health Surveillance Program, Centre for Surveillance Coordination, Health Canada.
2. Public Health Information Strategy Advisory Committee (PHISAC) Report, November 2000.
3. Personal Communication with Dr. Ron St. John, Health Canada, November 2003.
4. Stirling R, Aramini J, Ellis A, Lim G, Meyers R, Fleury M, Werker D. Waterborne cryptosporidiosis outbreak, North Battleford, Saskatchewan, Spring 2001. *Can Commun Dis Rep* 2001;27(22):185-92.
5. Addis DG, Arrowood MJ, Bartlett ME, et al. Assessing the public health threat associated with waterborne cryptosporidiosis: Report of a workshop. *MMWR* 1995;44(RR-6): 1-19 Publication date: June 16, 1995.
6. Ministry of Health and Long-Term Care line list, November 26, 2003.
7. R.S.O., 1990, Chapter H7.
8. Learning from SARS: Renewal of Public Health in Canada. A Report of the National Advisory Committee on SARS and Public Health, October 2003.