SARS: A Reminder, a Warning and an Opportunity

A Brief for the
National Advisory Committee on SARS and Public Health

Submitted by
The Canadian Society for Medical Laboratory Science
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Introduction

When severe acute respiratory syndrome (SARS) appeared in Canada in the winter of 2003, medical laboratory professionals – medical laboratory technologists, assistants and scientists— played an integral role on the health care teams that managed the outbreak.

Within this context, the Canadian Society for Medical Laboratory Science (CSMLS) is pleased to contribute this commentary and our recommendations to the National Advisory Committee on SARS and Public Health.

Medical laboratory professionals are Canada's third largest group of health care providers and are known as the "diagnostic engine" of the health care system. Medical laboratory technologists conduct laboratory tests on blood, body fluids and body tissues, and interpret results— approximately 85 per cent of all physicians' decisions regarding diagnosis and treatment are based on laboratory test results. Medical laboratory scientists conduct research to find new ways to prevent, diagnose and treat disease.

From CSMLS's perspective, the SARS crisis served as a reminder, a warning and an opportunity for public and institutional health policy.

It was a timely reminder that emerging pathogens can severely challenge even our modern and sophisticated Canadian health care system. We applaud the establishment of the National Advisory Committee on SARS and Public Health and offer our expertise to prepare for future challenges.

The warning notes related to the 2003 SARS outbreak are coming from many voices in the health care system and have refocused the spotlight on some well-documented system challenges – shortages of trained professionals, reduced resources for training and continuing education, and increasing numbers of part-time and casual health care workers.

CSMLS adds its voice to those sounding a warning – each of these issues holds true for medical laboratory technologists and, if not addressed, will inhibit Canada's ability to respond effectively to future infectious disease challenges.

The opportunity in this situation lies in our response to it. There's no question that the 2003 SARS outbreak exposed some weaknesses in our institutional and public health systems. We now have an opportunity to build on the system's strengths and address the areas for improvement to enhance our effectiveness the next time we are tested by an infectious disease outbreak such as SARS.

1. Infectious Disease Control and Prevention Models

The SARS outbreak reminded us that infectious disease surveillance and control is essential given the emergence of new pathogens such as SARS and West Nile virus. The speed and frequency of global travel means that diseases have the opportunity to jump from one country to another and thus spread rapidly and more broadly than at any other time in history.

CSMLS believes the National Microbiology Laboratory should expand its role in the monitoring of infectious disease agents through the creation of a national database on notifiable diseases. The database would allow for regular reporting (e.g., daily or weekly) of positive results from all diagnostic laboratories, and would indicate possible changes in organisms or the emergence of a new agent.

Laboratory-acquired infections should also be captured on a new, national database. Such a database would help evaluate infection prevention and control and occupational health and safety procedures, as well as the development of new procedures. Health Canada's Office of Laboratory Security has put forward a proposal to develop this type of database and CSMLS strongly supports its establishment.

CSMLS also supports the creation of a national centre for disease control and prevention. The absence of such an organization contributed to the mixed messages that were a problem in the 2003 SARS outbreak, and led to a lack of consistency in the application of infection control protocols.

2. Response Capacity for Outbreaks

a) Surge capacity

Significant human resources issues exist for laboratories that will directly affect Canada's surge capacity and ability to respond effectively to future infectious disease outbreaks:

- Half of Canada's medical laboratory technologists (MLTs) will be eligible to retire by 2016.
- Funding for new training positions and clinical placements is urgently needed to provide adequate supply of MLTs in the future. CSMLS estimates that Canada needs an additional 281 training positions to generate enough new graduates to replace those who will leave the workforce due to retirement.

- Thirty per cent of medical laboratory technologists work part time. This creates the potential scenario of lab workers moving between workplaces and thus spreading infections (an issue also raised by Ontario nurses in response to the 2003 SARS outbreak). The number of part-time positions also reflects the cutbacks in laboratory staff that have taken place in institutional workplaces, which in turn have an impact on the ability to recruit new people into the field.

Even without the spectre of emerging pathogens and future outbreaks, these human resources issues for laboratory technologists have the distinct potential to severely impair the strength of Canada's health care system.

b) Coordinating response

- Outbreak management would benefit from a clear line of authority, with a specific person/organization designated to be in charge and in regular communication with medical officers of health, institutional infection prevention and control departments, occupational health and safety departments, provincial laboratories, laboratory service providers and others, e.g., hospital emergency departments.
- Regulatory bodies and professional associations (Canadian Nurses Association, CSMLS, etc.) have the ability to communicate with their members quickly and efficiently using a variety of media. Formal communication networks should be established between public health officials and these groups to facilitate timely dissemination of information to health care professionals.
- It's essential that clear clinical guidelines from one source be established and communicated so that consistent and appropriate infection control, disease monitoring and reporting takes place.
- Laboratories dealing with the increased workload resulting from a disease outbreak must be given the authority to shift staff resources, thus affecting the normal turnaround time of other lab tests.

c) Strengthening institutional infection control

During the 2003 SARS outbreak, certain hospitals were designated as destination hospitals for SARS patients. Any hospital with such a designation must have an appropriately equipped lab facility with an operational capacity related to the risk level of the organism.

It could be argued that under the "new normal" protocols of heightened surveillance and response readiness, every institutional health care facility should be equipped with personal protective

equipment (masks, face shields, etc.) and engineering controls such as biological safety cabinets. Similarly, additional funding and staff support for safety and infection control training must be provided.

3. Laboratories

a) What improvements are required to the laboratory network in order for greater effectiveness in outbreak control?

- Specimen protocols, specifying which specimens should be tested, could be established by broad disease states and grouped by major symptom categories—such as respiratory, neurological, etc. This would limit the number of specimens entering the laboratory and thus reduce the exposure of staff procuring or processing the samples. In the 2003 SARS outbreak, a needlessly wide variety of specimens were procured to determine the presence of the SARS virus. This meant additional work during an already busy time, as well as greater risk of infection transmission.
- The closure of hospital-based outpatient specimen collection centres during the SARS outbreak resulted in a dramatic increase in workload in some community-based laboratories. Their ability to handle the surge must be addressed from staffing, budget and infection control perspectives.
- The National Microbiology Laboratory must ensure it has the expertise and research capacity to continue to develop testing methods to detect new infectious agents.
- If a new infectious agent is diagnosed, the initial outbreak investigation should be performed at the provincial laboratories with assistance from the National Microbiology Laboratory. High-volume testing may be performed by routine laboratory services only once test validation and a review of results are performed. Confirmation testing may continue to be performed at the provincial laboratories, depending on the complexity and expertise that is required.

b) How would the ideal laboratory network be funded and organized?

- Organization/accountability is a larger issue than funding. Currently, there are a number of public and private laboratory models, all of which perform a variety of tests. CSMLS believes laboratories should be made responsible for the provision of certain tests, and that outbreak investigations should be under the jurisdiction of the provincial laboratories.

4. Communication to the Public

As stated earlier, the establishment of a single organization, e.g., national centre for disease control and prevention, with the responsibility of overseeing the management of infectious disease outbreaks, would greatly aid both public and health care community communications.

In the 2003 SARS outbreak, much of the confusion in the general public resulted from inconsistent practices at the institutional levels, which in turn appeared to be based on unclear direction from provincial/federal health authorities.

5. Other Considerations in Building Capacity for the Future

a) Lessons about health human resources

There are profound implications for health care human resources in an outbreak situation. Considerations for future labour legislation include:

- The "right to refuse" dangerous work
- The potential requirement to be tested for carrier status
- The potential requirement for decolonization of employees
- Record-keeping by employers pertaining to potential or actual exposure
- Payment for time in quarantine

CSMLS recommends that proactive policies and legislation be put in place to address these issues, particularly with respect to the issue of payment for quarantine. We believe there would be greater compliance for quarantine—and not just for health care workers—if wage replacement was guaranteed up front.

Additional human resource considerations are:

- The impact of stress/fatigue on morale, sick time, workplace safety
- Appropriate staffing levels
- Training for outbreak management
- Critical incident debriefing

Institutional infection prevention and control departments and the medical officers of health should work together to develop protocols and policies that speak to the health care human resource implications of outbreak management.

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Recommendations from the
Canadian Society for Medical Laboratory Science for the
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1. **Strengthen Canada's infectious disease surveillance system**

   - Expand the National Microbiology Laboratory's role in surveillance of emerging infectious diseases through the creation of a national database on notifiable diseases.
   - Establish a national database on laboratory acquired infections through Health Canada's Office of Laboratory Security.
   - Establish a national centre for disease control and prevention.

2. **Establish clear lines of authority and communication between health care providers, public health officials, and ministries of health and Health Canada**

3. **Develop integrated communication network to support infectious disease surveillance**

   - Use "push technology" to disseminate information to health care providers on emerging pathogens/outbreaks (e-mail alerts to ERs to watch for certain symptoms as occurred in British Columbia with the SARS outbreak).
   - Develop integrated data information systems to support sharing of surveillance-related information among health care providers (hospitals, community laboratories), public health departments, provincial laboratories, Health Canada and the National Microbiology Laboratory.

4. **Ensure that hospital laboratories have the facilities and operational capacity to manage outbreaks**

   - Ensure availability of personal protective equipment (face shields, masks, etc).
   - Ensure that laboratories are equipped with appropriate safety equipment and engineering controls (e.g., biological safety cabinets).
   - Increase funding for infection control and occupational health and safety training for laboratory staff.
   - Provide funding to hire additional infection prevention and control/occupational health and safety practitioners.

5. **Develop a national human resource plan for Canada's medical laboratory workforce**

    - Provide funding for additional training positions for medical laboratory technologists to address the shortage.
    - Provide adequate funding and support for clinical placements.
    - Provide more full-time positions for medical laboratory professionals.
    - Develop a national promotional campaign for medical laboratory science careers.

6. **Establish specimen protocols by broad disease states**

7. **Provide research support for the development of testing methods for the detection of new infectious agents**

8. **Develop staffing plans to manage laboratory workload during outbreaks**

    - Develop policies and procedures to reduce fatigue and burnout during outbreaks.
    - Provide staffing support to community collection sites/laboratories (volumes surge when hospitals close outpatient testing).

9. **Strengthen Canada's provincial laboratories**

    - Formalize provincial laboratories' role in testing for new infectious agents and outbreak investigation.
    - Provide additional funding and support.

10. **Develop clear and consistent human resource policies and guidelines to manage quarantine of health care staff**

    - Establish compensation policies for health care workers who are ordered into quarantine.
    - Review provincial legislation regarding the "right to refuse" dangerous work, the requirements to be tested for carrier status, etc.