

## Chapter 8

# CLINICAL AND PUBLIC HEALTH SYSTEMS ISSUES ARISING FROM THE OUTBREAK OF SARS IN TORONTO

Throughout its deliberations, the Committee appreciated the importance of understanding the response to SARS within a clinical and local public health context. While we recognize that these matters are primarily a provincial responsibility, viruses do not respect borders or jurisdictions, and lessons from Ontario are almost certainly applicable to other provinces. We have indicated that British Columbia was both fortunate and in some respects better prepared to deal with SARS. We also speculated that had SARS touched down somewhere other than Toronto, the results could have been more devastating, although it is possible that some of the jurisdictional tensions would have been less.

Based on the SARS experience, this chapter discusses the steps that key informants believe might be taken to enhance the readiness, efficiency and effectiveness of the response to a future outbreak. It also provides an assessment of the deferred service and disruption during SARS and actions that might be taken in future to reduce the degree of disruption to 'normal' services.

This chapter draws heavily on work by the Hay Group. The Committee gave a specific mandate to these consultants and interacted with them on study design. Their conclusions were extraordinarily consistent with those that arose from stakeholder submissions and from the Committee's own experiences, interviews, reading, and deliberations.

The consultants used a combination of surveys, interviews, focus groups and data analysis. These activities focused on a sample of organizations and individuals in the public domain significantly affected by SARS and/or who were actively involved in the management of the response. Given the time frame available, the consultants established firm schedules for participation and requested that participants make themselves available. The organizations and

individuals contacted made every effort to provide input within the schedule and the Committee greatly appreciates their efforts.

We have dealt elsewhere with the readiness of Health Canada to respond in support of those at the local and provincial levels fighting SARS. Health Canada's responses were seriously confounded and limited by the lack of jurisdictional clarity about roles and responsibilities and the lack of what can be termed 'a receptor function' in the provincial system. However, it should be emphasized here that, during the consultants' work, multiple informants indicated disappointment with the role played by Health Canada in dealing with the outbreak in Toronto.

The chapter also draws strongly on a series of roundtables convened by Health Canada's Office of Nursing Policy to solicit the perspectives of front-line nurses and support staff affected by the SARS outbreak in Toronto. Regulatory colleges, professional bodies, and unions affiliated with these two groups were also invited. Two Committee members attended the sessions.

In framing our perspectives and recommendations, the Committee was also guided by input from several organizations. Among these were briefs from the Victorian Order of Nurses, Ontario Association of Medical Laboratories, the Ontario Hospital Association, the Ontario Council of Teaching Hospitals, and the Association of Nursing Directors and Supervisors of Ontario Health Agencies.

In general, a striking congruence of perspectives emerged in the responses of administrators, specialist physicians, front-line nursing and support staff, and unions representing the latter groups. The chapter focuses on areas for improvement; the consultants specifically solicited input on the strengths and weaknesses associated with the response to the outbreak and steps that might be taken to improve that response in the future. Most informants

indicated that most participants indicated that the aspect of the response that allowed the system, in the end, to successfully contain the outbreak of SARS was the incredible effort made by front-line staff. This report focuses on opportunities for the future and thus is unable to give a full accounting of the valiant and sometimes heroic efforts of many of the public health and health care workers in the Greater Toronto Area [GTA] as they battled to aid those infected and contain the spread of the disease.

Last, we have deliberately kept our recommendations at a fairly high level of generality. This reflects considerations of mandate, time constraints, and the existence of two other processes to learn lessons from SARS in Ontario. We anticipate that more detailed recommendations applicable to the Ontario experience will be forthcoming from a provincial panel chaired by David Walker, Dean of the Faculty of Medicine at Queen's University and from Mr. Justice Archie Campbell's public health investigation.

## 8A. Scope and Approach

In total, the consultants conducted 25 focus groups and 21 interviews with organizations and individuals representative of those that were most directly involved in treating people infected with SARS and containing the spread of the disease. This included staff of nine hospitals, four public health units, Community Care Access Centres [CCACs] in Toronto, representative primary care providers, and officials of the Ontario Ministry of Health and Long-Term Care [OMHLTC].

They surveyed all acute care, rehabilitation and complex continuing care hospitals in the GTA regarding their readiness and experience with SARS. They received responses from all Toronto and GTA hospitals included in the survey<sup>1</sup>.

The survey collected activity volume data for March, April, May, and June of 2002 and 2003. The four months in 2003 were selected to cover the period of the SARS outbreak. The data for the same four months in 2002 were collected to provide an approximate activity baseline, with the simplifying assumption that any major changes in activity levels could be attributed to the impact of SARS.

Much of the analysis of the hospital survey activity data focused on comparing the 2003 activity levels with the volumes for the corresponding month in 2002. Only hospitals with complete data for all eight months were included in the analyses.

Daily Census Summary [DCS] data were provided by the OMHLTC. These are records of the number of inpatients treated, patient days and type of service delivered in Ontario hospitals each day. These data support comparisons of changes in acute care hospital occupancy rates during the SARS outbreak.

Detailed, patient-specific records of inpatient and ambulatory procedure activity for the GTA and Toronto hospital patients receiving care during the SARS outbreak will not be available until late 2003. This means that there can be no direct analysis of the impact of SARS on hospital case mix and specific clinical groups. However, to provide some information about the normal case mix and clinical characteristics of the patients treated in Toronto hospitals, the Hay Group used the 2001/02 Canadian Institute for Health Information [CIHI] records for Toronto hospitals obtained previously for a benchmarking study. These data were then used to estimate the expected distribution by program of Toronto hospital activity during the period of the SARS outbreak and to support the estimate of the volume and cost of deferred surgical activity.

The Committee had hoped to examine physician service volumes but approvals from the OMHLTC to access the necessary data set had not been obtained at the time of preparation of this report. Researchers at the Institute for Clinical Evaluative Sciences will be undertaking analyses of physician practices as part of a broader assessment of process and outcome impacts from the outbreak.

As to the four roundtables convened by the Office of Nursing Policy, attendance follows:

- sixteen front-line nurses from eight organizations;
- nine participants from organizations representing nurses;
- six front-line support staff from three organizations; and
- four participants from organizations representing front-line staff.

Participants included full-time, part-time, and casual staff from various sectors. Categories of staff included: registered nurse, registered practical nurse, infection control practitioner, nurse manager, environmental services, dietetic attendant, porter, and patient service aide.

<sup>1</sup> Some multi-site hospitals provided separate responses for each of their sites, while others provided a single response for the corporation.

## 8B. Readiness of the Health System

### 8B.1 Background

Key dates in the outbreak have already been presented in Chapter 2. To recapitulate, the index patients with atypical pneumonia were seen at the Grace Site of the Scarborough Hospital the week of March 10, 2003 and identified as potential SARS cases on March 14. Premier Ernie Eves declared SARS a provincial emergency on March 26. On or about March 28, under direction from the Provincial Operations Centre [POC], all GTA and Simcoe County hospitals restricted access to critically ill patients and necessary staff only. On March 29, these hospitals were also directed to “initiate full Code Orange emergency response plans.” The Premier lifted the provincial emergency as of May 17, 2003.

A ‘second wave’ of SARS cases was confirmed on May 23, 2003. On May 27, the provincial government announced, “four hospitals, working with all Greater Toronto Area hospitals, will use their expertise and leadership in a coordinated fight against Severe Acute Respiratory Syndrome (SARS).” The four hospitals were North York General Hospital, St. Michael’s Hospital, The Scarborough Hospital, General Division, and the Etobicoke site of the William Osler Health Centre. The Minister stated that “We are concentrating the treatment and expertise of SARS at four key sites around the Greater Toronto Area to ensure we quickly identify and contain the disease during this current wave of cases... This will help us protect the capacity of the health care system as well as ensure that the health care system in the GTA keeps running safely and efficiently<sup>2</sup>.” These four hospitals are collectively referred to as the “SARS Alliance” hospitals.

For the purposes of this chapter, SARS I refers to the timeframe of approximately March 10 to May 17, 2003. This timeframe corresponds to the initial identification of SARS in Ontario and the response characterized by the declaration of a provincial emergency and oversight of outbreak management by the POC.

SARS II refers to the period beginning on or about May 18, 2003 and ending approximately June 30. This timeframe corresponds to the second cluster of SARS patients and the date of the final new case under investigation. Characteristics of the SARS II response

include the SARS Alliance announced May 27 and the SARS Operations Centre [SOC] established by the OMHLTC.

### 8B.2 Roles and Responsibilities

During the initial stages of the outbreak, between approximately March 10 and March 26, 2003, various respondents were unclear on the roles and jurisdictional responsibilities of Health Canada, the provincial Ministry of Health and the regional Public Health Units. From their perspective, it was unclear, for example:

- who was to be the contact with the World Health Organization [WHO];
- who was responsible for keeping the system informed;
- who had the jurisdiction/role to issue press releases;
- who was to provide advice on proper infection control procedures and to whom; and
- whose definitional frameworks were to be used.

Respondents observed that these issues appeared to be a source of debate between the OMHLTC and Health Canada. The province assumed responsibility for communication with the public initially through the Public Health Commissioner and later through a subset of members of the Executive Committee of the POC. It became clear that Health Canada had responsibility for contact with WHO. However, respondents were concerned that it was not until May 29 that Health Canada announced a full alignment (or re-alignment) of its criteria for diagnosis of SARS with those of WHO.

Respondents felt that clarity in jurisdiction and role and more communication between Health Canada, the OMHLTC, and regional public health units would have eliminated some of the early confusion in addressing the outbreak. Front-line roundtable participants spoke of “fragmentation” in the system, “silos”, and “chaos” during SARS I.

#### Provincial Government

Command and control for the operational response was somewhat clarified when the Premier declared SARS a provincial emergency on March 26, 2003 under the authority of the *Provincial Emergency Plans Act*. This activated the POC, made up of representatives from all necessary provincial ministries. Concurrently, each Ministry activated its own Ministry Advisory Group

<sup>2</sup> Ontario Ministry of Health and Long-Term Care Press Release, “Eves Government announces four hospitals to lead coordinated fight against SARS,” Toronto, May 27, 2003, Canada News Wire.

[MAG] to advise the POC and manage the emergency on behalf of its respective Ministry. Pre-selected individuals populated the POC and the MAGs. The consultants interviewed a number of individuals who had contact with the POC during SARS I. Most indicated that the multiplicity of participants, and the advice being provided by the MAGs (most of whom had little understanding or involvement with SARS), led to a perception of confusion and dysfunction at the centre.

**Public Health Units**

There was also confusion regarding the roles and responsibilities of public health units and their relationship to other parts of the system. The reporting relationship of Regional Public Health Units through local governments was perceived to be a source of uncertainty and conflict in their relationship with the OMHLTC Public Health Branch. Respondents widely reported that there was a lack of coordination of information and overlap of roles.

Public health units and hospitals alike reported that there was inconsistency in approach and activities across the public health units in the GTA. Respondents attributed the inconsistencies to the absence of a clear linkage and role for the units in the clinical sphere, the weak link of the units to the OMHLTC Public Health Branch, and a lack of leadership from the OMHLTC Public Health Branch.

A number of respondents criticized the municipal reporting relationship of the regional public health units. They acknowledged that a number of the current responsibilities of Public Health benefit from a local emphasis (health promotion, smog alerts, etc.), but argued that areas such as infectious diseases would benefit from a broader, provincial approach and responsibility. Health care providers suggested that government should undertake a review of Public Health activities with the goal of redistributing and clearly identifying responsibilities of local public health units and the provincial Public Health Branch of the OMHLTC. Respondents felt that roles, responsibilities, and accountabilities needed to be clearly defined and understood.

**Hospitals**

As one CEO indicated, the management of any new infectious disease in the absence of a scientific consensus on diagnostic criteria, etiology or treatment creates both apprehension and new challenges for hospitals and hospital staff in responding to the illness.

None of the hospitals contacted for this study has identified infectious diseases as a priority program; there is also no regional infectious disease program designated by the OMHLTC. Further, there is no formal network of infectious disease specialists and there is no regional mechanism to design or implement strategies to respond to an outbreak of infectious disease. It was reported that infection control specialists from hospitals have developed an informal network and some hospitals reported learning about the outbreak through that source. A regional infectious disease network and strategy is clearly needed.

Many respondents indicated that being prepared requires anticipation of a potential event and the availability of a planned response should it occur. The increasing prevalence of infectious disease outbreaks and challenges requires that surveillance be an ongoing hospital function, and that a planned response to an outbreak be available on both a routine and emergent basis.

**Community Care Access Centres**

CCACs are Ontario's clearinghouse for access to a range of home-based health and social services. They reported that the OMHLTC and hospitals did not use the expertise of CCACs to the extent that was possible. The CCACs could have provided greater support in the discharge and decanting of patients, particularly in the SARS Alliance facilities that were attempting to create the capacity to accept SARS patients. In some instances hospitals/physicians simply signed patients out without notifying the CCACs for tracking purposes, for arrangement of appropriate home support, or for appropriate protection of community workers.

Conversely, the Committee has learned that the CCACs in the GTA did not have ready access to infection control expertise or standardized protocols for dealing with SARS-like situations. The Victorian Order of Nurses took a number of steps that enabled home care nurses to participate effectively in the outbreak response. However, the home care system in general was not adequately integrated or prepared for an outbreak of this nature.

During SARS II, the OMHLTC announced that the Leisureworld Brampton Woods facility would provide services for patients, particularly from the SARS Alliance hospitals, that no longer required hospital care. Some informants felt that the same result could have been achieved with better outcomes (patients in facilities closer to home and more appropriate settings) if the Ministry had utilized the resources of the CCACs.

## Inter-Organizational Interaction

Respondents reported that no system existed prior to the SARS outbreak for communication of routine infectious disease alerts from Health Canada to the operational levels of the health system (i.e., to hospitals, long-term care [LTC] facilities, CCACs, ambulance services, family physicians). Hospitals indicated that they had no direct communication from Health Canada regarding SARS.

Respondents also indicated that there was a lack of clarity regarding responsibility for alerting the various components of the health system to infectious disease risks when they are identified. Virtually all informants identified the need for a clear statement and assignment of responsibility for providing infectious disease alerts to each of the components of the health system including:

- regional public health units;
- family physicians;
- ambulance;
- hospitals;
- CCACs; and
- LTC facilities.

Several individuals suggested that such alerts must be in a format that is readily digestible by the different audiences that receive them. Further, the recipients themselves require a process to receive and appropriately disseminate such alerts. A number of individuals identified the Coroners' reports as an example of dissemination that works reasonably well: clearly labeled reports, identifying particular professionals who would have an interest in the specific findings and recommendations, and a process to disseminate results.

Feedback regarding interaction with WHO was unequivocal: Health Canada has responsibility for liaison with WHO and provinces and Health Canada must collaborate to meet our international obligations. Health Canada should communicate relevant WHO information to provincial Public Health Branches and local public health units. If Health Canada is departing from international recommendations (as in the SARS diagnostic criteria), it must follow a process that builds consensus and credibility with unambiguous explanations to all concerned.

Communication protocols regarding infectious diseases must include information flow in both directions: from local to provincial to federal levels and from the federal level back. Although local public health units have the responsibility to collect infectious disease information for

reportable diseases at the individual case level, and providers are required to report such information to the public health units, Public Health does not have clear enough responsibility to report this information back to providers. Front-line workers expressed concern that Public Health focused on community contact tracing and quarantine to the exclusion of closer interaction with hospitals to identify how their processes and practices might be contributing to nosocomial infections.

Respondents believed that Health Canada should establish a surveillance role that enables it to accumulate and analyze the locally-collected information, and establish a communication process that alerts provincial public health units about unusual patterns in an appropriate form for dissemination back to providers. Finally, relevant WHO information should be analysed in concert with the locally collected information in the surveillance of unusual patterns.

In sum, post-SARS, clinical and public health leaders in the Toronto area were unambiguous in supporting an integrated and regional system of surveillance, reporting, and outbreak management for infectious diseases. Front-line roundtable participants similarly urged the establishment of coordinated outbreak management under a single authority.

### **8B.3 Emergency Structure/Planning**

Due to the nature of the SARS emergency, there was some initial confusion/frustration between the POC, populated by individuals prepared broadly for emergency response, and the OMHLTC MAG with the content knowledge to address the SARS emergency. The POC, which had not previously been activated, had not developed a process to share responsibility. The POC and the OMHLTC MAG ultimately amalgamated and situated themselves in the same physical location. Respondents stated that this accommodation by the POC to the greater expertise of the OMHLTC significantly improved the functioning of the POC. This occurred within 72 hours of the declaration of the emergency.

The command-and-control structure of the POC, however, had not anticipated sharing responsibility/authority with a lead Ministry. There was perception that the roles of the Commissioner of Public Safety and the Commissioner of Public Health/Chief Medical Officer of Health overlapped, and it was unclear which position was ultimately responsible for the management of the emergency. Respondents reported that this lack of clarity in leadership led to confusion in the field.

It was also noted that the various areas within each Ministry had identified only one individual per area to populate the POC and the MAGs; there were no alternates. This quickly proved inadequate given a 24/7 workload. Below the level of the POC and the MAG, there appeared to be little infrastructure to assist in the workings of the MAGs in support of the POC or to support the POC itself.

Further, areas of expertise were missing. Insufficient input from the acute care sector meant that some of the early directives demonstrated a lack of understanding of the workings of either the health care system as a whole or the individual components of the system. Hospital respondents reported frustration with early directives that were unrealistic and often not possible to implement.

Consistent with findings and recommendations in Chapter 5, respondents suggested that a process be established to share the authority vested in the POC with a lead Ministry with content knowledge of the particular disaster. This process should include a clear statement of the position/person that has ultimate authority for a given emergency. Most recommended against a shared responsibility during a crisis. It was also noted that more than one individual from each Ministry should be identified to support the POC and the MAGs.

Several respondents also raised the question as to whether or not a provincial emergency actually needed to be declared in the SARS outbreak. They felt that the POC was a cumbersome structure for this particular emergency given that the response mostly required the efforts of a single Ministry. Others noted, however, that the declaration of the emergency was necessary to provide the government with the authority to make decisions and issue needed directives. As an alternative, informants suggested that key Ministries might develop their own individual emergency plans that provided the government with relevant authority to act and that such Ministry-specific plans need not involve the entire POC apparatus. If criteria for identifying Provincial versus 'Ministerial' emergencies could be set, this would allow for a more graded response rooted in sectoral expertise. Many felt that the SARS Operations Centre functioned more effectively than did the general Provincial Operations Centre.

It was also widely suggested that both the provincial and ministerial emergency plans consider closely the expertise that would be required in various emergency situations and identify ahead of time individuals with such expertise. As the SARS Scientific Advisory Committee demonstrated, such experts need not be employees of the provincial

government. Rather, experts from across the province could be identified in advance and take part in exercises to pre-determine relevant emergency protocols.

Emergency plans should also consider compensation issues. Respondents noted that neither at the provincial nor ministerial level had emergency planning made advance provisions for compensation of those individuals required to respond to the emergency, as well as those affected by the particular emergency.

Again consistent with recommendations in Chapter 5, it was also suggested that the federal government be involved with the emergency planning of provincial governments to ensure that the federal role in various emergency situations is identified ahead of time.

Respondents identified the lack of any formal process or previous human resource planning for recruiting or seconding staff to public health units in the event of an emergency. It was almost universally felt that there is insufficient capacity in local public health units to address emergency situations. Respondents were grateful that London and Hamilton provided teams to assist the GTA public health units and noted that individuals were re-deployed internally to provide additional focus on the SARS situation. Public health units reported a lack of physicians with appropriate public health training, and some of those with this type of training were not available to the local units, as they had been seconded to the OMHLTC for the emergency.

A number of individuals suggested that there should be the ability to dispatch a team of professionals to the epicentre of a major outbreak if requested to do so. Such a team would be specifically trained to assess the outbreak and if necessary identify additional resources that could be accessed to contain the situation. The services provided by this team might range from infection control advice and specific staff education to actual patient care staffing. However, several respondents felt that sufficient health human resources do not exist for such an approach. It was suggested that an assessment of the expertise required to deal with infectious diseases be made and specific policies put in place to encourage the training of a sufficient number of such professionals.

Many hospital respondents noted that emergency preparedness policies and procedures are developed and tested at the level of the individual institution. No regional policies exist and there is little evidence of consistency of protocols among institutions.

There was a sense among focus group participants and interviewees that cooperation among hospitals was inadequate to the needs of the SARS emergency. A number of individual examples of sharing (non-union) staff with particular expertise were identified as positive exceptions. Participants noted a particular need for greater cooperation among hospitals in the following areas:

- transferring/accepting non-SARS critical care patients; and
- sharing staff (and physicians) with particular expertise.

Many suggested that the absence of a pre-existing plan or approach to cooperation among hospitals in an emergency situation was an impediment to effective action during the SARS outbreak. This was identified by several respondents both within and external to the hospitals.

In sum, it was clear that the Toronto public health system could not manage both the SARS crisis and carry on its day-to-day business. It was also clear that Toronto could not deal with more than one crisis at a time and that the system would crash if faced with one additional large-scale crisis. Without a pre-existing mechanism to share resources within the system and no surge capacity, Toronto was overwhelmed.

Managerial and front-line respondents alike urged that all levels of government invest in front-line public health capacity, in addition to, and not at the expense of, existing resources and core services. Both clinical teams and outbreak teams are needed when dealing with a health emergency. An adequate and consistent surge capacity across Canada must be developed and requires the collaboration of provincial/territorial and municipal governments to ensure that investments are made and needs met.

Code Orange is the internationally recognized code for an external disaster/emergency. Each hospital has developed its own policies and procedures to address Code Orange situations. A number of hospitals commented that Code Orange was not intended to deal with an outbreak of infectious disease; nor was it the most appropriate response for all hospitals in the system.

The survey conducted as part of this study requested that hospitals state whether there were formal protocols for outbreak management in place prior to the SARS outbreak. Almost 90% of the acute care hospitals and 78% of the non-acute hospitals reported having a formal outbreak policy in place (Exhibit 8.1).

## *E X H I B I T 8 . 1*

### *Hospital Survey Responses re Existence of Formal Protocols for Outbreak Management*

Hospital Location (County)	Acute Care with Formal Outbreak Policy			Non-Acute with Formal Outbreak Policy		
	Yes	No	% Yes	Yes	No	% Yes
Durham	4	0	100%	0	1	0%
Halton	5	0	100%	0	0	
Peel	3	0	100%	0	0	
Toronto	11	2	85%	7	1	88%
York	2	1	67%	0	0	
<b>Total</b>	<b>25</b>	<b>3</b>	<b>89%</b>	<b>7</b>	<b>2</b>	<b>78%</b>

Two of the three Toronto hospitals that reported no formal outbreak policy were SARS facility level 3 (the highest level) hospitals during the outbreak, while the third was level 2.

The survey also asked hospitals to provide a copy of their protocols for outbreak management. Eighteen facilities submitted copies out of the 32 facilities that reported the existence of such protocols.

The protocols received were of variable detail, clarity, quality and length. There are very different policies and procedures for dealing with outbreaks of infectious disease among the hospitals. In most cases, the protocols did not appear to provide sufficient information or instruction to define how to manage severe outbreaks. Most protocols had not been recently revised. Front-line respondents particularly emphasized the need for standard protocols and practice algorithms in outbreak management.

Some respondents indicated in interviews and focus groups that SARS showed that many hospitals, especially community hospitals, are unprepared to deal with serious outbreaks of infectious disease. They have relatively weak infection control functions and processes. Finally, some respondents urged that basic standards of cleanliness and standardized infection control practices and protocols be mandated across the health care system, including hospitals, LTC, home care, and the offices of independent health professionals. Some suggested that

there be requirements, particularly for hospitals, to provide continuing education on basic precautions for physicians, nurses and other health professionals. Analogies were drawn to basic fire training required on an annual basis.

The lack of any regional hospital planning for emergency preparedness was also heavily criticized. It was strongly suggested that the emergency response plans of hospitals should include regional planning and cooperation. Such planning must include both inter-hospital participation and other providers and stakeholders as appropriate (i.e., CCACs, LTC facilities, Public Health, etc.).

A number of hospitals reported making use of existing networks, such as the Toronto East Emergency Network and the Child Health Network, to assist with communications and in some cases patient transfer.

CritiCall<sup>3</sup> was essential for a number of required patient transfers. Many hospitals, however, suggested that the powers of CritiCall to enforce acceptance of patients by facilities with open beds needed to be strengthened. Numerous situations were reported wherein hospitals had difficulty transferring patients both with and without SARS.

## 8B.4 Hospital Facilities

The hospital survey included questions regarding the preparedness of the hospital facilities to accommodate SARS patients. Exhibit 8.2 shows the number of single patient rooms with anterooms and/or negative pressure in the GTA and Toronto acute care hospitals. Overall, 3.8% of Toronto and GTA acute care hospital beds are in single negative pressure rooms. Only 1.0% of Toronto and GTA non-acute care hospital beds are in single negative pressure rooms.

Toronto hospitals have the highest percent of rooms with negative pressure (4.6% of acute beds, 1.0% of non-acute beds). The range in the percent of acute care beds equipped with negative pressure for individual hospitals (shown in Exhibit 8.3) is from 0% to 12%.

Of the 28 Toronto and GTA hospitals with emergency departments, 6 reported in the survey that they do not have an infection control area. The hospitals without infection control areas in their emergency departments are distributed as follows:

- two in York;
- three in Toronto; and
- one in Durham.

### EXHIBIT 8.2

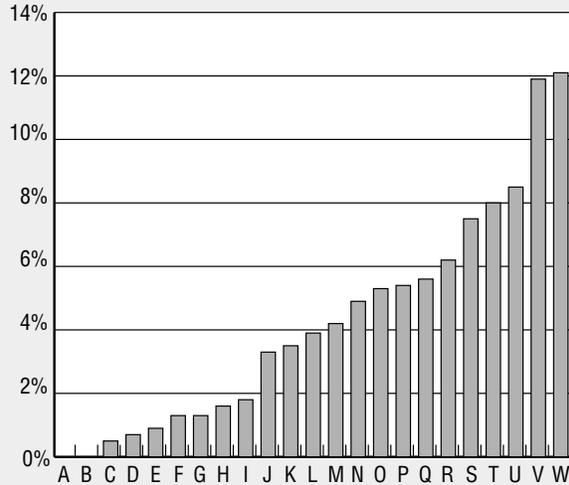
#### Hospital Survey Responses re Anterooms and Negative Pressure Rooms in Acute Care Hospitals by Hospital Location

Acute		Hospital Location (County)					
Anterooms?	Negative Pressure	Durham	Halton	Peel	Toronto	York	Grand Total
Yes	No	–	8	31	7	12	58
Yes	Yes	11	14	22	147	20	214
No	Yes	3	13	2	140	2	160
<b>Total Beds:</b>		552	830	1,445	6,254	800	9,881
<b>% Beds w/ Anterooms</b>		2.0%	2.7%	3.7%	2.5%	4.0%	2.8%
<b>% Beds w/ Neg. Press</b>		2.5%	3.3%	1.7%	4.6%	2.8%	3.8%
<b>% Beds w/ Both</b>		2.0%	1.7%	1.5%	2.4%	2.5%	2.2%

<sup>3</sup> The Ontario CritiCall Program facilitates emergency patient referrals by assisting physicians in community hospitals with access to the resources of larger tertiary care hospitals in their regions. Management of the program is provided by Hamilton Health Sciences (HHS).

### EXHIBIT 8.3

#### Variation in Percent of Toronto and GTA Hospital Acute Beds in Single Negative Pressure Rooms (only hospitals with at least 100 acute beds)



The survey results show that 18% of monitored intermediate/critical care beds are equipped for infection control. The percent equipped for infection control ranges from 10% in Halton to 28% in Peel.

Only 30% of hospitals with autopsy suites reported that their suites conformed to CDC guidelines.

All hospitals as well as front-line workers commented on the lack of capacity to accommodate the surges in demand that often accompany emergencies. If it needs to operate regularly at 90% to 95% of capacity (as is the case for acute medical beds), the system is unable to absorb a large influx of patients associated with an emergency while still maintaining normal activity levels. In addition, the rest of the system lacks capacity to absorb volume if some hospitals have to reduce volumes to deal with an emergency, as occurred during SARS when some hospitals' ICUs became compromised. Some hospitals did indicate that the elective elements of normal activity could be temporarily suspended, if needed, to provide sufficient resources to deal with the emergent situation. However, such interruptions would have to be brief and accompanied by provision for catch-up capacity.

The SARS Alliance facilities noted that, with no regional disaster planning in place or previously identified methods for cooperation between facilities, it was very difficult to transfer non-disaster (non-SARS) related patients to other facilities. The concept of designating

entire facilities as 'level 3' on the Ministry's SARS scale, rather than specific units of a hospital where a breach had occurred, led to confusion and a transient stigmatization of entire institutions. A number of patients were refused, despite the transfer protocols, simply because they were coming from a level 3 facility.

Given the impact and potential increase in prevalence of infectious disease outbreaks, a number of suggestions regarding appropriate infrastructure were also brought forward. Specifically, respondents suggested that each emergency room be equipped with isolation facilities with appropriate air handling and anterooms. They also suggested that the number of negative pressure rooms in hospitals be expanded. These facilities would, in the event of an outbreak, be temporary treatment areas prior to transfer to a regional facility (or facilities) with responsibility for caring for and isolating patients with the infectious disease. If patients could be congregated in regionally-designated institutions, the rest of the system could carry on in addressing the other health and health service needs of the population.

It was suggested that one or more institutions in each region of the province should have the necessary infrastructure to isolate a large number of patients in an emergency situation. These institutions would require both the facilities to accommodate a large number of patients suffering from infectious disease, and the staff required to treat them.

If regional programs in infectious diseases were established, the institution(s) with the facilities for addressing the outbreak should also be the locus for the program. Many suggested that it would be unrealistic to expect a single institution to be home to sufficient infectious disease and infection control expertise to deal with a crisis. Rather, a network of providers should be created that could collectively focus on each outbreak and realign themselves to ensure that the needed resources are available to the regional facility in the event of an outbreak.

### 8B.5 Communications Structures and Processes

As noted, respondents reported that there was not a seamless and effective system prior to the SARS outbreak for communication of routine infectious disease alerts from Health Canada to the operational levels of the health system (i.e., to hospitals, LTC facilities, CCACs, ambulance services, family physicians).

The interviewees and managerial/physician focus group participants indicated that communications related to SARS came from various components of the health care system, with no clearly identified source and often with conflicting and/or out-of-date advice. Communications came from:

- Public Health Commissioner;
- Regional Public Health Units;
- Provincial Operations Centre;
- SARS Operations Centre;
- Ontario Hospital Association;
- Ontario Medical Association;
- Ministry of Health and Long-term Care;
- Public Health Branch, OMHLTC;
- Institutions Branch, OMHLTC;
- Ministry of Public Safety and Security; and
- Health Canada.

There was neither the mechanism nor the discipline required to consolidate and control communications within the POC. Theoretically, the POC should have been the single source for communications for all providers. This was not the case. Various reasons for this were postulated; chief among them was a lack of clarity of role and jurisdiction and a need for organizations to be seen to be active in supporting their constituencies.

As noted above, the field also heavily and repeatedly criticized both the process of issuing directives and the content of directives from the POC. Front-line staff emphasized that, especially early in the outbreak, it appeared that those formulating directives were not sufficiently knowledgeable about the practicality of implementing these practices in the clinical setting.

Criticisms also included:

- lack of clarity around who the POC was and who was directing its activities;
- frustration that teleconferencing did not allow participants to know who was participating in the POC, and whether the participation was informed by science or political necessities;

- length of time required to issue directives, which in turn was attributed to delays occasioned by the internal review and approval process;
- inconsistency in directives;
- initial directives not numbered or signed; and
- lack of a pre-defined process to clarify directives.

Some of these criticisms are not entirely consistent with others; speed in issuing directives may lead to lack of clarity while delays led to criticisms about lack of leadership. Regardless, the criticisms speak to an opportunity for improved performance.

Respondents had a mixed response to the mechanism/media used for communications by the POC. Many stakeholders expressed frustration with the length and frequency of teleconferences. However, many also stated that this was a timely method of disseminating quickly changing information. After the first few days, respondents reported that the effectiveness of the teleconferences improved.

Some respondents felt that the difficulties associated with the communications process could have been alleviated if the OMHLTC had its own emergency preparedness plan separate from that of the POC. It was overwhelmingly suggested that regardless of the emergency situation declared, responsibility for communications should be identified clearly in the various scenarios and that mechanisms be established to enforce a single communications source.

Numerous comments were received highlighting the need to ensure that all interested stakeholders receive appropriate communications. Clearly, interested stakeholders will vary depending on the situation. However, many respondents suggested that appropriate contact sheets could be prepared ahead of any particular emergency situation to ensure, for example, that family physicians and local Public Health Units<sup>4</sup> receive information at the initiation and throughout an outbreak situation.

Finally, almost all respondents felt that a process must be in place to attempt to minimize frequent changes to information and conflicting information in an emergency.

<sup>4</sup> It is curious that initial directions from the POC were not made available to public health units. CCACs reported providing information to public health units that the public health units did not seem to be receiving directly.

In sum, the overwhelming sense obtained by the consultants was that SARS demonstrated the importance of effective communication during an emergency, both domestically and internationally. Poor communication during the SARS outbreaks may have contributed to the imposition of a travel advisory by WHO, harming Canada's economy and reputation. The use of a myriad of spokespeople speaking to the media at the same time with messages that sometimes conflicted did nothing to instill confidence in the public health system and undermined the credibility of those at the helm. Respondents noted that uneven communication to other affected sectors, such as the travel sector, created confusion and fear for both the public and people working in those other sectors. The travel sector, severely affected by SARS, should have been kept better informed and better utilized in disseminating information and easing public anxiety. Pharmacists as front-line health care professionals also could have been better utilized to convey important messages.

### **Public Health**

There was no effective mechanism for medical officers of health [MOH] to communicate amongst themselves and to coordinate their actions during the outbreak. Conference calls among the MOH were arranged but not consistently attended by all units. Many clinical leaders commented that the MOH in the various regions were disconnected from each other.

Participants also expressed frustration that communications from the public health units were non-existent or sporadic; in their view, much information was provided to Public Health, but little information came from Public Health. Hospitals reported receiving inquiries from multiple public health units for the same information regarding the same patient. When notified that the information had already been provided to a different public health unit, hospitals were told that the units did not have mechanisms to share the information amongst themselves and that it was easier to collect it again from the hospital.

Some hospitals anticipated that the role of Public Health was to consolidate, analyze and communicate back in some useful fashion the information that it was collecting. Public Health informants felt that they could not share information because of confidentiality restrictions, because they did not have sufficient resources to share information, or simply because it was not their responsibility to communicate back to providers. It is unclear, therefore whose role this was. Either expectations must be modified or mechanisms found to close the communications gap.

The role assumed by most public health units was focused on front-line containment of the outbreak. As noted earlier, along with their front-line staff, several hospital leaders had expected advice from the public health units on infection control and quarantine procedures and enforcement; these expectations were not consistently met. Providers were unsure if this was or should be a role for provincial or regional level Public Health.

Confidentiality concerns raised by Public Health were shared by health care providers who argued that they, too, have a responsibility and tradition of maintaining confidentiality. Hence, some sharing of information should have been possible.

### **Family Physicians**

There was no regular connection between Public Health and family physicians during the outbreak. The role of Public Health in relation to physicians' offices is not clear. Those contacted for this study indicated that they have no relationship with Public Health and received no communication from their local public health unit. Family physicians were unaware of the outbreak until after it had occurred and were unclear what precautions should be taken in their practices and unclear whose responsibility it was to provide them with such information.

Family physicians were also largely unaware of Health Canada infectious disease alerts. They did not know whose role it is to provide such alerts to family physicians.

Most family physicians reported learning of the outbreak initially through the media. Formal communications with the SARS emergency infrastructure were non-existent. Initial communications (such as the location of SARS clinics) came from the media; subsequently, the Ontario Medical Association provided communications that respondents found useful and effective. Those actively involved with a hospital received information and advice from the hospital. There was no direct communication from Public Health to physicians' offices.

### **Community Care Access Centres**

CCACs were not receiving any official infectious disease communications from any source prior to the Toronto outbreak. Like others in the system, CCACs have no direct relationship with Health Canada, although they do monitor Health Canada information for product alerts. It was unclear to CCACs whose role it is to alert them about emerging infectious diseases or outbreaks. Respondents reported that Public Health and the CCACs sometimes provided conflicting information to CCAC

clients. These members of the public were accordingly unclear if the CCACs or Public Health were the appropriate source for information.

## Hospitals

No hospital reported receiving infectious disease alerts from Health Canada or having a formal system in place to receive or scan for such alerts. A number of hospitals reported awareness of Health Canada product alerts and bulletins, but they had no formal link to Health Canada. Hospitals reported that they became aware of the Toronto SARS outbreak through the media and communications from the Public Health Branch of the OMHLTC. One CEO stated that in the UK public health is more integrated with other elements of the health system. He had learned that in the UK, public health informed hospitals about the emergence of a new respiratory illness from China in February 2003, whereas in Toronto, hospitals did not know about SARS until the patients contracted the disease at The Scarborough Hospital, Grace Division in March 2003.

Virtually all hospitals commented that throughout SARS I, it was not clear who was sending directives to the hospital. Early directives were unsigned. Later directives were signed by both the Commission of Public Health/Chief MOH and the Commissioner of Public Safety and Security. In either event, some hospitals were not initially clear how to get clarifications of the directives or raise concerns about them.

All hospitals commented on confusion arising from:

- receipt of information from different sources;
- conflicting information;
- frequent changes to information and directives;
- conflicts between directives and expertise and experience of staff; and
- impracticality of directives in the hospital situation.

Administrators and staff at all levels expressed frustration with an inability to implement the directions received. The most common reasons for failing to implement directives were:

- unavailability of supplies identified in directives; and
- timing of receipt of directives (i.e., insufficient notice to allow implementation).

A number of respondents felt that more input from the front-line staff actually dealing with SARS patients might have improved the practicality of the directions from the POC and the SOC.

Front-line respondents also commented on internal communications. They appreciated the effort made by institutions to communicate creatively by formal and informal channels, but, consistent with comments in Chapter 5 on risk communication, urged that spokespeople acknowledge 'the unknowns' rather than hold back information.

Many indicated that there is a need to strengthen the relationship and communication between public health and hospitals. Although there is a statutory requirement that representatives of the MOH sit on infection control committees in hospitals, these individuals often lack a strong clinical background and may therefore have little understanding of hospitals. As a result, they are unable to effectively liaise between the hospital and public health or provide useful advice to the hospital. Most hospitals in particular felt that they had little access to regional public health officials. And when they did have access, hospitals were concerned that public health staff may not have the necessary knowledge, skills or experience to provide appropriate advice to the hospitals regarding infection control.

Exhibit 8.4 shows the responses from the hospital survey regarding liaison with Public Health. While most hospitals (89%) reported regular liaison with Public Health, in some instances the liaison appeared to be little more than the mandatory communication regarding reportable communicable diseases or having representatives on Infection Control Committees. Despite the statutory requirement, 35% of hospitals did not mention Public Health representation on committee structures when asked to describe how they kept in contact with Public Health. These findings emphasize the need to ensure that there is close liaison between local public health units and hospital infection control.

Also, hospitals and clinical leaders commented critically on the number of requests for information from Public Health regarding SARS patients. Hospitals reported receiving requests for information from more than one regional health unit, the Public Health Branch of the OMHLTC as well as from the Ministry per se.

## E X H I B I T 8 . 4

### **GTA and Toronto Hospital Survey Responses re Regular Liaison with Public Health**

Hospital Location (County)	Hospitals Reporting Regular Liaison with Public Health		Hospitals Reporting Public Health on Infection Control Committee	
	Yes	No	Yes	No
Durham	4	1	3	2
Halton	4	1	4	1
Peel	3	0	3	0
Toronto	20	1	13	8
York	2	1	1	2
<b>Total</b>	<b>33</b>	<b>4</b>	<b>24</b>	<b>13</b>
<b>% Yes</b>	<b>89%</b>		<b>65%</b>	

### **8B.6 Surveillance**

Surveillance emerged as another area of diffused responsibility. Local public health was geared towards outbreak containment; provincial Public Health did not take on the role of the collection point for assembling and facilitating the analysis of the cumulating data. There is no body with the jurisdiction at the overall system level to:

- accumulate and analyze information definitively or facilitate such analysis by others;
- identify and communicate findings of the analysis of patterns of occurrence;
- identify and communicate alerts of unusual patterns; and
- develop contingency plans.

Although some public health units reported that they were assisting hospitals with syndromic surveillance to identify patients with SARS-like symptoms, hospitals indicated that these cases were not confirmed by public health if an epidemiologic link to a confirmed case was not present. Some hospitals felt that the focus on epidemiologic links blunted their vigilance.

### **8B.7 Health Human Resources**

A number of hospitals identified insufficient numbers of specialized staff as a challenge in dealing with the outbreak. The most commonly cited deficiencies were infectious disease specialists, infection control physicians and hospital epidemiologists.

While 71% of acute care hospitals reported having access to a physician trained for infection control, one quarter of these hospitals reported that the position was not paid and protected, leaving 46% of acute care hospitals without a paid and protected infection control position. Only 1 of 9 (11%) non-acute hospitals had a physician trained for infection control (this position is not paid and protected). Collectively, the consultants' survey suggested that the Toronto and GTA hospitals have at most 7 FTE paid and protected specialized infection control physicians (or 0.7 FTE positions per 1,000 acute care beds). This may be an over-estimate based on the Committee's own tally. The number of fully-trained hospital epidemiologists is even lower.

These observations clearly reinforce findings from Chapter 7 about the state of infection control human resources and the need for action as regards accreditation standards or regional/ministry regulations to strengthen infection control.

Numerous individuals noted that the nature of the collective agreements makes it virtually impossible to have full-time employees of one institution work across multiple organizations, unless each of the organizations employs the person directly. Sharing of staff in emergency contravenes existing collective agreements. Front-line staff and their organizations signaled a high degree of dedication and a willingness to engage in planning for emergencies, along with dissatisfaction with *ad hoc* and *post hoc* human resource practices during the SARS outbreak.

Several hospitals identified that the high percentage of nursing staff working part-time or casual hours through agencies was a problem during SARS, a point echoed by front-line focus groups. These types of employment practices provide a flexible workforce for the peaks and valleys in demand inherent in hospitals, but result in staff being employees of several institutions simultaneously. Front-line workers highlighted the importance of a stable and permanent workforce, rather than reliance on more costly agency personnel. Although a great deal of publicity centred around the potential increased risk of infection being transferred across organizations arising from this practice, respondents were not aware of a single case of SARS transmitted from health care workers

working in multiple institutions (in fact, it appears there was only one such case). Restrictions on movement of staff during the outbreak may have mitigated this potential problem. However, the challenge associated with such arrangements arises from:

- staff needing to be familiar with the different infection control policies and procedures of multiple organizations;
- difficulty engendering the level of commitment to an organization that is required to respond to emergencies; and
- difficulty for a hospital to secure additional shifts when employees have commitments to work at multiple organizations.

There were various issues identified with compensation throughout the SARS experience. Some hospitals reported being 'required' to pay physicians additional stipends to induce them to work with SARS patients. The Ontario Medical Association and the OMHLTC, working through the Physicians Services Committee, have developed two programs for physicians whose incomes were affected by SARS. These programs are the SARS Advance Payment Program and the SARS Income Stabilization Program. Details of these programs were made available to physicians on the Ontario Medical Association website in a series of communications dated June 26, 2003.

In the SARS Advance Payment Program, physicians may apply for advance payment against future billings to address current shortfalls in income due to service reductions as a result of SARS. In this program, a physician whose income is less than 80% of average monthly billings may receive payments to make up the difference between the earned amount and the threshold of 80% of average billings. These advances will be deducted from future payments. This program applies to the period from March 14, 2003 to June 30, 2003.

The SARS Income Stabilization Program applies to physicians whose incomes were reduced because of quarantine, reductions in hospital operating capacity or reduced practice volumes in and/or outside the hospital setting. All physicians affected by SARS are eligible to receive payments equivalent to the difference between the amount earned and 80% of average annual billings. Physicians who worked in hospitals that were specifically treating SARS patients are eligible for payment of the difference between the amount earned and 100% of average annual billings. Top up to 80% applies to the entire SARS emergency period. Top up to 100% applies to the period from May 23, 2003 to June 30, 2003.

The SARS Alliance hospitals chose to provide double-time pay to those individuals working in SARS affected areas/SARS units. The OMHLTC did not sanction this action. It was heavily criticized from an equity perspective since other hospitals that treated SARS patients did not provide the same benefit to their staff. Further, staff were provided the additional salary whether or not the SARS unit they worked on actually treated SARS patients. As a result, in some cases staff treating SARS patients received no added compensation benefit, while others who did not treat SARS patients did receive additional compensation.

The lack of intensive care nursing professionals, and the centralized response to this challenge, resulted in compensation practices that were also heavily criticized. A contract between the province and Med-Emerg was established to provide critical care nursing staff to hospitals upon their request. Respondents noted that the nurses employed by Med-Emerg were compensated at rates up to three times that of 'regular' hospital-based critical care nurses, causing equity concerns. Front-line representatives expressed concern about both differential compensation and inconsistent perquisites. Because of uneven pay scales, some hospitals felt compelled to offer their own staff the same premium that the OMHLTC was paying to agency staff from Med-Emerg. Further, a number of hospitals reported that nurses who would otherwise have been regularly available to the institution were recruited by Med-Emerg. Finally, hospitals reported limited flexibility in the staffing offered by Med-Emerg; the hospital was unable to modify staffing requirements and consequently, they sometimes found themselves in the uncharacteristic position of having too many staff. Despite these criticisms, as indicated in Chapter 2, Med-Emerg was understood to have filled serious gaps in staffing in a very difficult period.

During the outbreak, nurses were restricted from working in multiple institutions to control the risk of SARS moving from one hospital to the next. This provision served to reduce the incomes of nurses who relied on income from multiple organizations. Respondents noted that the OMHLTC has not volunteered to compensate these nurses in the same way that it has guaranteed the incomes of most physicians who work in hospitals.

These findings all highlight the need for regularized processes for sharing and compensating staff during emergencies.

Occupational health and safety concerns emerged clearly from focus groups with front-line workers. Existing occupational health and safety committees were not engaged; necessary equipment was sometimes unavailable or suboptimal, and some administrators lifted precautions prematurely. The Committee understands

that ambulance personnel and paramedics also had serious concerns about protective equipment during the SARS outbreak.

### 8B.8 Psychosocial Implications of SARS

Many respondents also discussed the significant psychosocial implications of SARS and related stories that illustrated the palpable fear among both health workers and the public. The impact of SARS on individuals working within the health system should not be underestimated. It included:

- people afraid to go to work in hospitals;
- people afraid to care for SARS patients;
- people afraid to associate with health care workers, or even spouses of health care workers, particularly those from SARS units;
- lingering resentment of colleagues who might not have contributed what was expected;
- people feeling helpless, angry, and guilty; and
- people experiencing acute social isolation and ostracism.

Many who participated in the interviews and focus groups suggested that the fear was engendered both by the sensationalism of the media coverage and inconsistent information coming from the provincial and municipal public health officials. Front-line focus group participants emphasized the need for formal crisis communications protocols suited to the unique needs of each institution and its staff (e.g., remote workers, shift workers). Much of the fear was simply a reasonable reaction to an unknown but extremely virulent disease. In spite of these fears, the focus groups yielded many accounts of heroic efforts of health workers to support each other and to ensure that all patients received the best care possible.

## 8C. Services Impact and Backlog Estimates

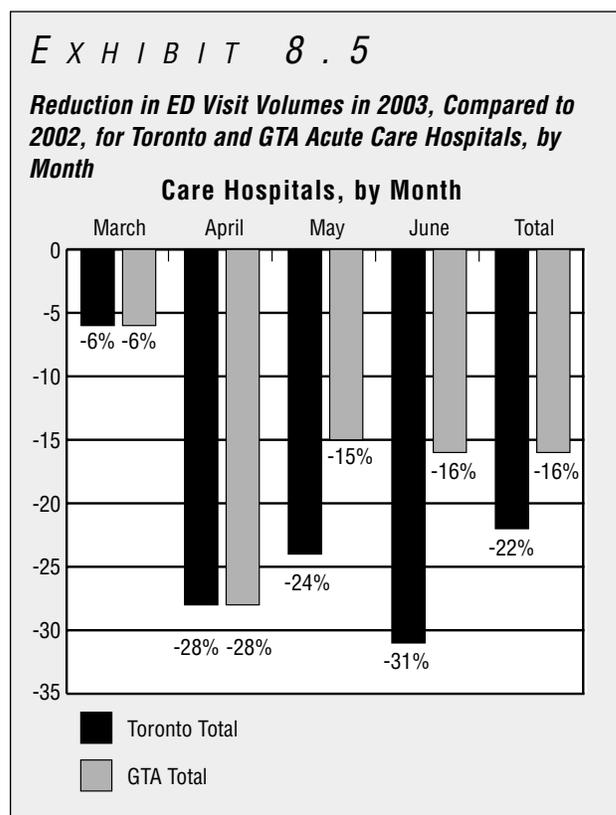
All focus group participants and interviewees referred to the impact of the SARS outbreak on hospital activity volumes, and the challenges posed in attempting to clear backlogs. Hospital activity data from 2002 and 2003 were used to document the impact of SARS on the GTA and Toronto hospitals and to estimate the cost to the hospital system to clear the backlog.

The primary impacts on hospital service volumes were the result of the directives to GTA and Toronto hospitals at the end of March that required that they restrict access to only critically ill patients. Because most surgical patients

are elective, this restriction had the greatest impact on surgical volumes. The physical limitations on access to hospitals and the increasing public awareness of the risks of SARS in health care facilities meant that visits to emergency departments [ED] were also greatly reduced.

### 8C.1 Impacts on Emergency Department Visit/Admission Volumes

Exhibit 8.5 shows the year-over-year percent change from 2002 to 2003 in ED visits, by month and hospital location (GTA and Toronto).

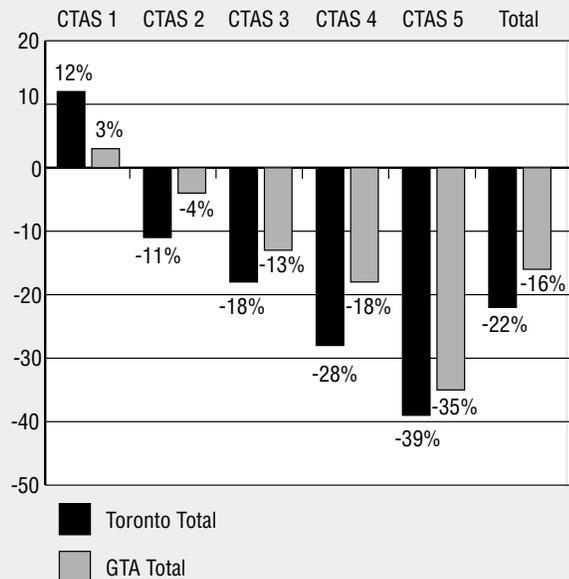


During the first full month of the outbreak (April 2003) visits to the ED were 28% below the April 2002 levels for both the Toronto and the GTA hospitals. After April, ED visits to the GTA hospitals recovered to levels approximately 15% below the prior year's level. Visits to the ED in Toronto hospitals increased slightly in May (to 24% below the prior year), but fell to 31% below the prior year in June with SARS II. The hospitals assigned to the SARS Alliance had a 50% reduction in their ED visit volumes in June (after the Alliance had been established).

Exhibit 8.6 shows the overall changes in ED volumes by Canadian Triage Acuity Scale [CTAS] scores.

## EXHIBIT 8.6

### Reduction in ED Visit Volumes in 2003, Compared to 2002, by CTAS Score, for Toronto and GTA Acute Care Hospitals, by Month



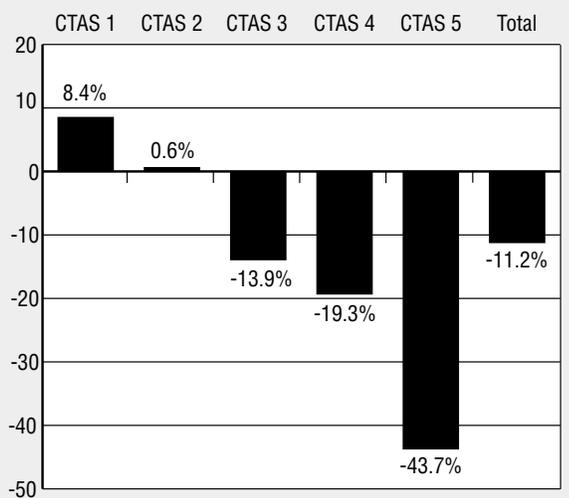
Overall, during the four-month period, the volumes of ED visits with CTAS score 1 (the most urgent cases) increased by 3% in the GTA hospitals and 12% in the Toronto hospitals. The volumes of ED visits with CTAS score 5 (the least urgent cases) decreased by 35% in GTA hospitals and by 39% in Toronto hospitals.

As would be expected, the ED visit volumes fell the most for the visits that would most likely be considered to be deferrable. There is no way to determine whether these patients who would normally attend and receive care in an ED received care elsewhere, e.g., in a family physician's office or drop-in clinic, or went without care. Lack of access to OHIP physician service data precluded this analysis.

For medical and mental health patients, the most common route of entry to the hospital is via the ED<sup>5</sup>. It would be expected that the most critically ill patients, who require admission to hospital for definitive treatment, would continue to visit the ED and would continue to be admitted as inpatients. Exhibit 8.7 shows that although there was an 11.2% decrease in admissions via the ED in the four months in 2003 compared to the same four months in 2002, the decrease was exclusively due to decreases in admission of the least urgent patients. Admissions of CTAS 1 (resuscitation) patients increased by 8% and admissions of CTAS 2 (emergent) patients remained constant.

## EXHIBIT 8.7

### Reduction in Admissions of Patients via the ED in 2003, Compared to 2002, by CTAS Score, for Toronto and GTA Acute Care Hospitals



The reduction in admissions through the ED is progressively greater for the CTAS score 3, 4, and 5 visits. This suggests that the SARS outbreak and the restrictions on hospital services led to changes in inpatient admission thresholds, and that patients who would have been previously admitted were not admitted.

This study does not assess the impact of the reduction of ED visit volumes on the health of the population nor can it determine whether patients who would otherwise have attended the ED were able to receive appropriate care elsewhere. The sustained reductions in ED visit volumes during the outbreak suggest that the Toronto and GTA EDs have traditionally accommodated a large number of ambulatory care visits that might be handled by a reformed primary care system, and that when disincentives to visit the ED were introduced, these visit volumes dropped.

<sup>5</sup> In 2001/02 68% of medical admissions and 81% of mental health admissions for GTA and Toronto hospitals entered via the ED.

## 8C.2 Surgery Volumes

The hospital survey asked that hospitals report their surgical volumes (ambulatory procedures, inpatient elective cases, inpatient non-elective cases) for March, April, May, and June of 2002 and 2003. The analyses presented here compare 2003 volumes with 2002 volumes for the four months.

Of all Toronto and GTA hospital ambulatory procedure cases, 98.2% are considered to be elective. When the directives to restrict activity to critically ill patients were published, ambulatory procedures and ambulatory clinic visits would be the first services to be reduced or eliminated. Exhibit 8.8 shows the reduction in ambulatory procedure volumes from 2002 to 2003.

In April 2003, ambulatory procedure volumes dropped by 56% in the GTA hospitals and by 70% in the Toronto hospitals, compared to April 2002. In May 2003, GTA hospital ambulatory procedure volumes rebounded to a level 3% above the prior year. Toronto hospital ambulatory procedure volumes in May were only 7% below the prior year. SARS II appears to have had very limited impact on ambulatory procedure volumes, with the GTA hospitals only 1% below, and Toronto hospitals 5% below, the prior year. The majority of the ambulatory procedure backlog was caused in April.

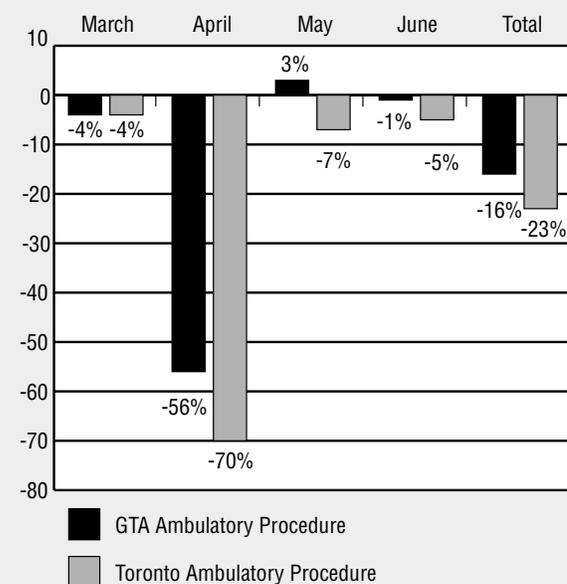
Exhibit 8.9 shows the impact of the SARS outbreak on inpatient elective surgery volumes in the Toronto and GTA hospitals. In April, the reductions in surgery were greatest for the Toronto hospitals, but for both the GTA and Toronto hospitals, the percent reduction was not as great as it was for ambulatory procedures.

Although GTA inpatient elective surgery volumes for May showed a significant increase over April, they stayed 13% below the level from the previous year. In June, the drop in volumes for inpatient elective surgery for the GTA hospitals was even greater, at 21% below the prior year. The Toronto hospitals followed a similar pattern, with inpatient elective surgery volumes 15% below the prior year in May, and then further below (24%) in June.

Thus, during the initial outbreak (in April), the drop in ambulatory surgery activity was greater than the drop in inpatient elective surgery, whereas during May and June, ambulatory surgery volumes returned almost to normal while the volume of inpatient elective surgery remained depressed. One explanation is a lack of critical care capacity in the hospitals, since complex inpatient elective cases (e.g., most cardiac surgery, most thoracic surgery, most neurosurgery, etc.) are more likely to require a critical care stay.

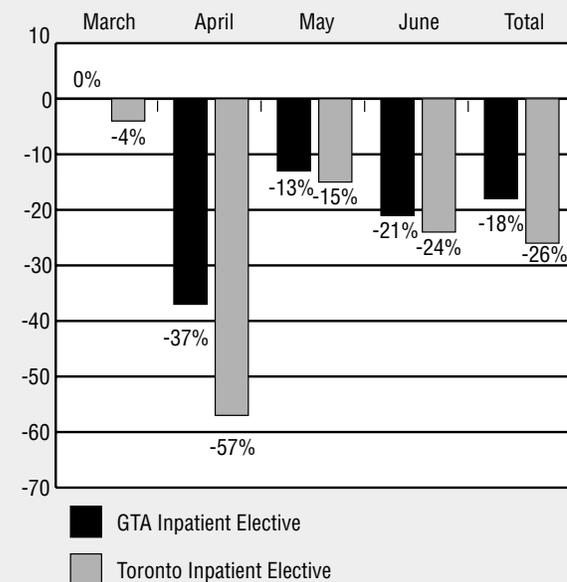
### EXHIBIT 8.8

**Reduction in Ambulatory Procedure Volumes from 2002 to 2003 by Month and Hospital Location**



### EXHIBIT 8.9

**Reduction in Inpatient Elective Surgery Volumes from 2002 to 2003 by Month and Hospital Location**



The inpatient non-elective surgery patients would be expected to fall into the category of critically ill patients, who would be given priority with little reduction in volumes caused by the activity restrictions imposed as a result of SARS. Non-elective surgery volumes for each of the four months were generally within 10% of the previous year's volume. For the GTA hospitals, non-elective surgery volumes were actually higher than the prior year for three of the four months (and only 1% lower in May). For the Toronto hospitals, non-elective surgery volumes were higher during SARS I, but lower during SARS II. The higher non-elective surgery volumes could be a result of hospitals re-categorizing patients from elective to non-elective, year-over-year growth in volumes, or random variation.

### 8C.3 Patient Days and Occupancy

The OMHLTC provided daily census and bed numbers, by bed type, for GTA and Toronto hospitals for March, April, May, and June of 2003<sup>6</sup>. Exhibit 8.10 shows the change in occupancy of medical, surgical, and mental health beds from the beginning of March to the end of June.

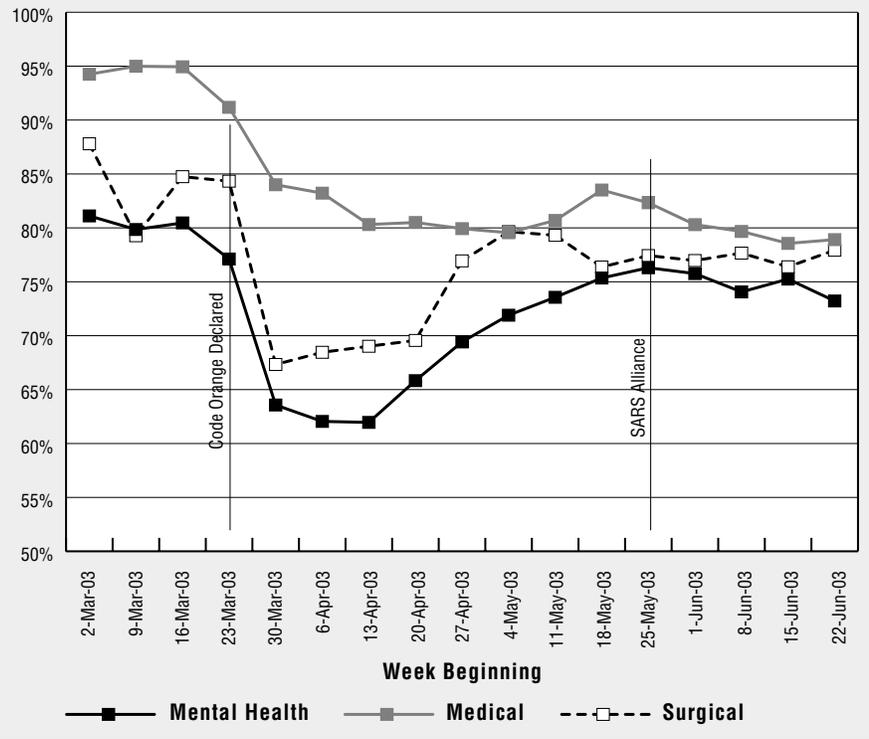
The vertical bars on Exhibit 8.10 show the date that the Code Orange directive was published and the date that the SARS Alliance hospitals were assigned.

In early March 2003, medical bed occupancy averaged 95%. High occupancy (over 90%) in medical beds is associated with off-service placement of patients and more frequent transfers of patients between services. This can present infection control challenges as patients are moved from one unit to another, sometimes temporarily placed on units where the staff may be unfamiliar with their care requirements.

During SARS I, medical bed occupancy dropped to 80%. It recovered to almost 85% by mid-May, but dropped again to 80% during SARS II.

## EXHIBIT 8.10

**2003 GTA and Toronto Hospital Bed Occupancy for Medical, Surgical, and Mental Health Beds by Week**



In early March 2003, surgical bed occupancy was 88%, with a drop to 80% during the March school break. It dropped from 85% just prior to the declaration of Code Orange to 68% immediately following the declaration. From late April until the end of June, surgical bed occupancy stayed between 75 and 80%.

Occupancy of mental health beds dropped from 80% prior to SARS I to 62% in mid-April. It rose to 75% by mid-May and stayed close to 75% until the end of June (when it dropped slightly to 73%). The drop in mental health bed occupancy is surprising since most mental health admissions (94.5%) are considered non-elective. This drop is likely related to the reduction in ED activity, since most mental health inpatients are admitted via the ED. There was no way, with the available data, to assess the impact of the reduction of mental health inpatient activity on mental health patients (or potential patients).

The occupancy data show that the introduction of Code Orange had the most immediate and greatest impact on surgical beds. There was also a large occupancy reduction for mental health beds, particularly in Toronto

<sup>6</sup> At the time that this report was prepared, not all Toronto and GTA hospitals had reported their occupancy data for June 2003. Only hospitals with complete data for all four months are included in the analyses. Data were missing for June 2003 for four acute care hospitals—Toronto East General, St. Joseph's Health Centre, Sunnybrook and Women's, and St. Michael's Hospital (which was a SARS Alliance hospital).

community hospitals. The reduction in occupancy for medical beds was not as rapid or as large.

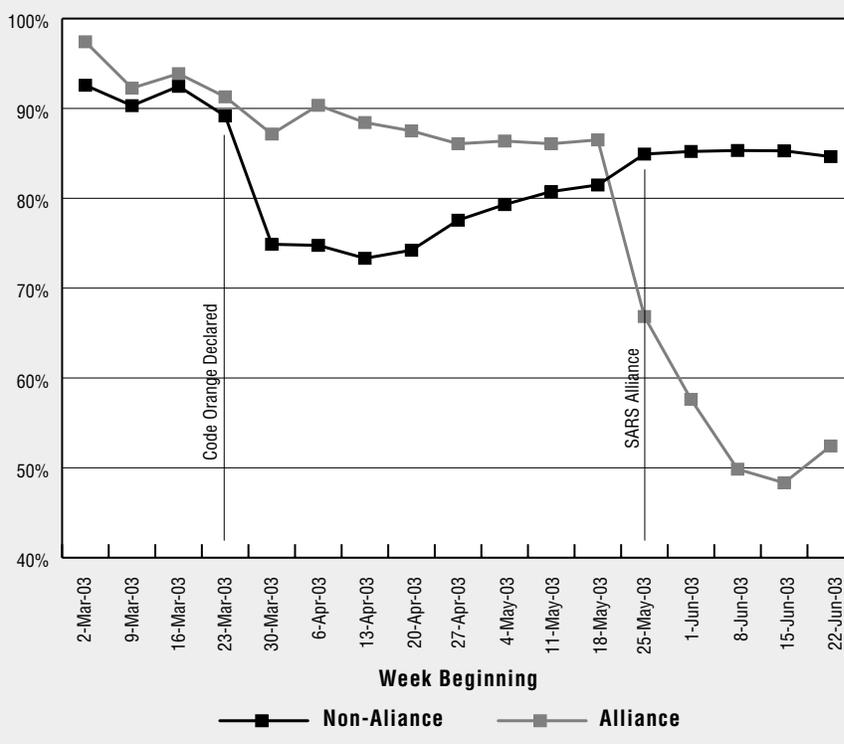
Exhibit 8.11 shows that prior to the establishment of the SARS Alliance the hospitals that would become Alliance members maintained overall bed occupancy rates better than the other hospitals. We speculate that this is because two of the hospitals (St. Michael's and Sir William Osler) had very limited SARS volumes in SARS I, and the Scarborough General site would have taken on overload from the closure of the Grace site. After the Alliance was established, overall bed occupancy in the Alliance hospitals dropped to 50%. However, this figure may be somewhat misleading. A major contributor to the drop in occupancy in SARS Alliance hospitals was the virtual closure of North York General Hospital. Furthermore, data from one of the four SARS Alliance hospitals, St. Michael's Hospital, were not available for analysis. At the same time, the non-Alliance hospitals were able to maintain an overall occupancy rate of 85% during SARS II.

Exhibit 8.12 shows that during SARS II (and after the establishment of the SARS Alliance) the overall hospital acute care bed occupancy was approximately 80%, much lower than the above 90% rate in early March, but higher than the 75% rate during SARS I.

The attempt to confine the impact of SARS to the SARS Alliance hospitals during SARS II appears to have insulated the non-Alliance hospitals from further large reductions in activity, but the non-Alliance hospitals were still unable to return to pre-SARS occupancy levels.

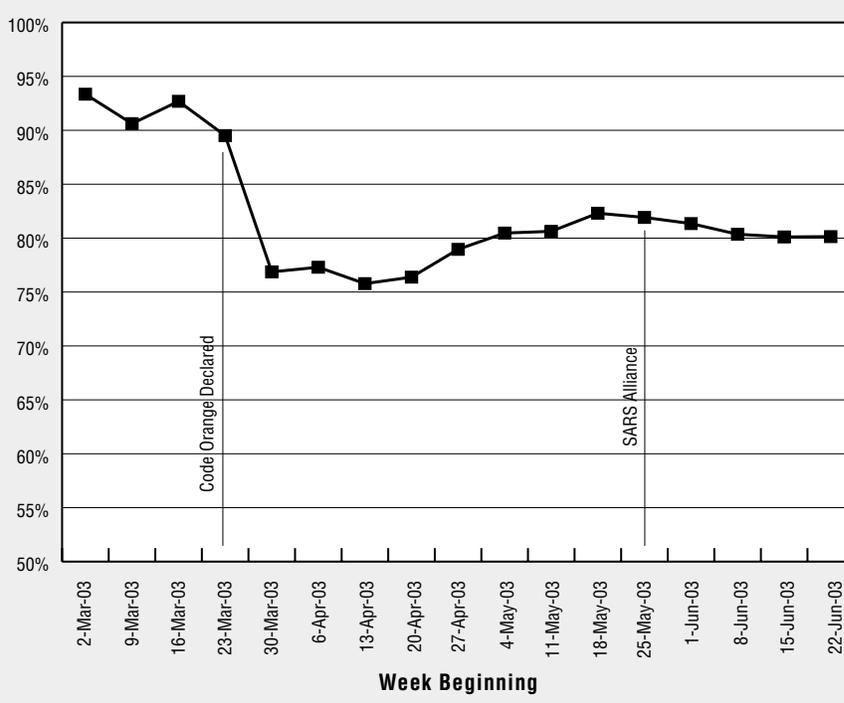
### EXHIBIT 8.11

**2003 GTA and Toronto Hospital Overall Acute Care Bed Occupancy by Hospital SARS Alliance Status by Week**



### EXHIBIT 8.12

**2003 GTA and Toronto Hospital Overall Acute Care Bed Occupancy by Week**



### 8C.4 Elective Surgery Backlog

As noted, most medical admissions to acute care hospitals are non-elective and occur via the ED. The majority of surgical admissions are elective (as are almost all ambulatory procedures). This analysis of the service backlog in Toronto and GTA hospitals accordingly focuses on elective surgery cases (both ambulatory and inpatient).

If Toronto and GTA elective surgery activity in March, April, May, and June 2003 had been equal to the activity levels in the same months in 2002<sup>7</sup>, then we estimate that there would have been 6,641 additional inpatient cases and 17,828 additional ambulatory procedure cases. More than half of the inpatient elective surgery backlog occurred in April 2003, during SARS I and Code Orange. The ambulatory procedure backlog was even more concentrated, with 85% occurring in April.

For purposes of calculating the cost to eliminate this backlog, we have assumed that all of the elective surgical cases that could not be accommodated during the SARS outbreak were deferred and will have to be accommodated some time in the future. It may not be necessary to address the entire backlog since:

- some patients may no longer require surgery (having opted for non-surgical treatment instead) or may no longer be suitable candidates for the surgery;
- some patients may have sought and received their care in hospitals outside Toronto and the GTA; and
- some physicians and patients may reassess the appropriateness of the planned surgery (given the restricted access), leading to removal of some patients from the waiting lists.

Using the 2001/02 CIHI/Hay Group annual benchmarking study data for Toronto and GTA hospitals, we established clinical program profiles for elective inpatient and ambulatory procedure activity. By applying average direct cost per weighted case values to the weighted case data, we estimated the direct cost of the deferred surgical activity to be \$32.1 million.

The program areas with the estimated greatest backlog (in terms of cost) are:

- general surgery (including much of the cancer surgery, \$6.3 million);

- orthopaedic surgery (\$5.2 million); and
- cardio-thoracic (\$5.2 million).

The analysis above is based on direct costs only. Some overhead costs (excluded from the direct cost calculation) could be considered to be partially variable, or at least affected by changes in direct care volume (e.g., laundry, housekeeping, materials management). If 50% of overhead costs were added to recognize variable overhead costs, the total estimate of the cost of deferrable surgical activity would increase from \$32.1 million to \$37.9 million. However, as explained above, it is unlikely that the entire calculated backlog will need to be cleared.

While this calculation focuses on deferred elective surgical activity, there will be various other backlogs, such as deferred elective medical admissions and deferred ambulatory diagnostic tests.

The OMHLTC has made \$25 million available to hospitals for clearing deferred cases arising from the SARS outbreak. This funding will go some distance towards the estimated costs of the backlog, but not cover all estimated costs.

Funding will not be the only limiting factor on the capacity of the Toronto and GTA hospitals to further increase their activity levels to clear the backlogs. Other possible constraints include:

- hospital physical capacity (e.g., OR theatres, beds);
- staffing shortages (e.g., ICU nurses, respiratory therapists); and
- impact on efficiency and productivity of accommodating the post-SARS “new normal” practice in Ontario hospitals.

In addition, if overtime payments are required to ensure that staff is available to support the expanded activity, the unit costs per case will also be higher.

## 8D. Recommendations

A number of the issues raised by these interviews, focus groups, surveys, and analyses have already been addressed in earlier chapters, viz. strengthening public health infrastructure, better F/P/T coordination, clarity about outbreak management at a systems level, emergency preparedness and response and its relationship to health

<sup>7</sup> We have assumed that without SARS, the 2003 activity levels would have been equal to the 2002 activity levels. This might not have been the case since some hospitals facing funding constraints may have planned to reduce activity anyway in 2003, while others were planning for increased activity consistent with program expansions arising from Health Service Restructuring Commission directives.

emergencies, surveillance, systems of alerts, and communication challenges. However, additional issues, many specific to health care and local/regional public health, also emerged. The Committee's members live, work, and pay taxes in several different provinces of Canada. Several of us are active as administrators and/or practitioners in the health field. As the tenor of the foregoing chapters has illustrated, we see our mandate as national, aiming at building all levels of public health collaboratively. We therefore have no hesitation in offering recommendations that bear on health care and local/provincial public health matters. Accordingly, the Committee recommends that:

- 8.1 The CEOs of hospitals and health regions should ensure that there is a formal Regional Infectious Disease Network that can design and oversee implementation of hospital strategies for responding to outbreaks of infectious disease. These Networks should map out programs of hospital surveillance for infectious diseases that cross-link institutions and connect in turn to a national surveillance program so as to integrate hospital and community-based information.**
- 8.2 As part of its activities, the F/P/T Network for Emergency Preparedness and Response should examine provincial and federal emergency measures with a view to ensuring that all emergency plans include a clear hierarchy of response mechanisms ranging from the response of a single ministry to a response from the entire government, with appropriate cross-linkages.**
- 8.3 Provincial/territorial ministries and departments of health should ensure that emergency plans include provisions for appropriate compensation of those individuals required to respond to and those affected by the emergency.**
- 8.4 Provincial/territorial ministries and departments of health should revise their statutes and regulations to require that every hospital or health region has formalized and updated protocols for outbreak management. These plans must include mechanisms for getting information and supplies to those outside the institutional sector, such as primary care physicians, ambulance personnel/paramedics, and community care providers.**
- 8.5 The CEO of each hospital or health region should ensure that each hospital's protocol for outbreak management incorporates an understanding of the hospital's interrelationships with local and provincial public health authorities.**
- 8.6 The CEO and relevant clinical chiefs of each hospital or health region should ensure that there is continuing education for hospital staff, particularly front-line health care workers, to enhance awareness of outbreak/infectious disease issues and institutional/clinical infection control.**
- 8.7 Provincial/territorial ministries and departments of health should ensure that all key health leaders are trained in crisis communications. Hospital and health region CEOs in turn should ensure that clinical leaders and key administrators are also trained in crisis communications and that the organization has a clear cut protocol for providing all relevant information to staff and hearing their concerns in a timely, respectful, and participatory fashion.**
- 8.8 Provincial/territorial ministries and departments of health should require through regulation and provide funding to ensure that emergency departments have the physical facilities to isolate, contain and manage incidents of infectious disease. Emergency departments should also be equipped with appropriate infrastructure to enable their participation in infectious disease surveillance networks, including receipt of all necessary national and international alerts.**
- 8.9 Provincial/territorial ministries and departments of health should provide the necessary funding for renovation to achieve minimal facility standards for infection control in emergency departments.**
- 8.10 Provincial/territorial ministries and departments of health should ensure that each hospital has sufficient negative pressure rooms for treatment of patients with infectious disease.**
- 8.11 Provincial/territorial ministries and departments of health should ensure that, for emergency situations, at least one hospital in each 'region' of a province/territory has sufficient facilities and other infrastructure to serve as a regional centre to anchor the response to outbreaks of infectious disease.**
- 8.12 Provincial/territorial ministries and departments of health should ensure that systems are developed to ensure that providers and the public receive timely, accurate and consistent information and directives during an outbreak of infectious disease.**

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**8.13 Public health managers and facility/regional health authority CEOs, in collaboration with relevant unions, professional associations and individuals, should create a process/mechanism to include front-line public health and health care workers in advance planning to prepare for related outbreaks of infectious diseases and other health emergencies. Occupational health and safety issues should be given prominence in this process.**

**8.14 Provincial/territorial ministries and departments of health should engage the Canadian Council for Health Services Accreditation to work with appropriate stakeholders to strengthen infection control standards, surveyor guidelines and tools that are applicable to emergency services as well as outbreak management within health care institutions. The standards should also include descriptors of the appropriate expertise required to maintain hospital infection control.**