

Vancouver: A Tale of Two Cities

Introduction

On Friday March 7, 2003, within a three-hour period, two middle-aged men with undiagnosed SARS, one in Vancouver and the other in Toronto, were admitted to hospital. Though outwardly similar events, the outcomes were poles apart.

At 4:55 p.m. (eastern time), Mr. C, a 55-year-old who had just returned from an Asian trip, was taken by ambulance to Vancouver General Hospital, the province's largest and a major teaching institution. No SARS outbreak resulted. B.C. would have just four probable cases: Mr. C, two other Vancouver residents who had been exposed to SARS in Hong Kong, and a nurse who was the only case of local transmission. No other nurse, physician, respiratory therapist, cleaner or other B.C. health worker caught the disease. Nor were there any deaths. B.C. did have 46 suspect cases, but they were of a different magnitude than Ontario's 128 suspect cases.¹⁹⁹

199. Suspect cases in B.C. had generally been to countries with SARS, had respiratory symptoms, and were treated as having SARS as a precaution. None was exposed to SARS in B.C.; none transmitted the virus.

Dr. David Patrick of the B.C. CDC told the Commission:

It's an interesting thing that case definition, as it evolved and that's the case almost with any epidemiological investigation of an unknown thing that you remember that suspect cases were people who had specific symptoms who had either been a contact with somebody who is, you know a probable SARS case, or somebody who was coming in from a place where SARS was known to be transmitted at a relatively high level, now back to probabilities, if you have a suspect case who's been in contact with somebody who actually has the virus, well they have a reasonable probability of, of coming down with it, that was a large proportion of the suspect cases in Toronto, they'd been around, around a case and maybe they had a little bit of fever, or something like that, and they could well have come down with a, with the full thing. Almost all the suspect cases in B.C. were people who had simply come from south China or somewhere in the vicinity, and within a specific timeframe developed fever or other non-specific symptoms, and of course people are going to do that, but when you think about it, there's orders of magnitude difference in the probability than actually having, having SARS. That was a lesson for us in terms of, you know, how we categorize suspect cases, because we, we saw you know, a newspaper article saying, now Vancouver has 60 cases of SARS where they are just adding up suspect and cases under investigation and, and the few real cases that we had, so we had an economic whack, more out of communications than anything else.

Almost three hours later, about 4,500 kilometers to the east, a vastly different set of events was set in motion. As noted earlier in this report, at 7:45 p.m. (eastern time), Mr. T, a 43-year-old who had been looking after his dying mother, presented to the ER at Scarborough Grace. The ensuing public health crisis brought Ontario to its knees. The province ended up with 247 probable cases. Almost half were nurses, physicians, respiratory therapists, cleaners or other health workers. There were 44 deaths, including two nurses and a doctor.²⁰⁰

Vancouver is a useful point of reference for Toronto's response to SARS.

While many of the circumstances in Toronto and Vancouver were different, they also faced strikingly similar challenges, challenges that confronted them at virtually the same time. Like Toronto, Vancouver tackled SARS in the beginning when experts had far more questions than answers. This was before the disease was identified, before it was named and before anyone knew whether it might spark a pandemic.

Despite similar challenges, the outcomes in Toronto and Vancouver were vastly different.

How could the experiences of the two cities be so unlike? Was it luck? Better planning? Better safety culture? Better public health? Better communication? Better systems? Better surveillance?

This chapter will tell the story of how Vancouver contained SARS and Toronto did not.

By providing a contemporaneous comparison, this story will extend beyond this chapter and resonate throughout this report. As the historian Jan T. Gross has said:

The best sources for a historian are those that provide a contemporaneous account of the events under scrutiny.²⁰¹

200. Dr. Colin D'Cunha, presentation to the SARS Commission, SARS Commission Public Hearings, September 29, 2003.

201. Jan. T. Gross, *Neighbours: The Destruction of the Jewish Community in Jedwabne, Poland* (Princeton, NJ: Princeton University Press, 2001).

The Events of February 2003

In the months leading up to SARS, some members of the Chinese community in Vancouver had begun hearing about a mysterious disease outbreak in Guangdong, and had started buying surgical masks.

Some of my customers were asking me if I can get the masks for them to send overseas for the family who live there, a Vancouver pharmacist [told the CBC].²⁰²

Health workers in Vancouver with ties to China had also heard of worrying events in the Far East. Dr. Tom Lee, then medical director of the emergency department at Vancouver General, said:

Actually I was there [in Hong Kong] at Christmas for a visit and reading in the Chinese newspaper there's all sorts of activity in southern China that were being reported.

Health officials in B.C., meanwhile, were systematically monitoring developments in China. They had long been preparing for the possibility of an influenza pandemic. In 1999, mindful of the outbreak of H5N1 avian flu in Hong Kong in 1997, British Columbia set up a pandemic influenza advisory committee. On the eve of SARS, in February 2003, the committee's work culminated in the release of B.C.'s pandemic plan. At the time, Ontario did not have a pandemic plan, and the federal plan was still in draft form.²⁰³

Dr. Danuta Skowronski, an epidemiologist at the B.C. Centre for Disease Control (BC CDC), told the Commission:

We began working on the plan through our BC Pandemic Influenza Advisory Committee in 1999 and I distributed it in February 2003, soon after it had been approved provincially, because of the reports I was hearing coming from south-east Asia about a cluster of severe respiratory illness in China and resurgence of H5N1 in Hong Kong. It turned out

202. "Behind the mask," CBC News Online, November 19, 2003.

203. SARS Commission, first interim report, pp. 39-40.

that the cluster in China was not influenza (it was SARS) but when we heard about simultaneous resurgence of H5N1 and cluster of severe respiratory illness in China, we didn't want to take any chances. We alerted the health care system through electronic bulletins and distributed our pandemic plan – recognizing it would be an evergreen work in progress and it was best to get it out sooner than later.

We wanted the field to have a plan, defining roles and responsibilities during a pandemic, just in case. At the time, we didn't know what it was, but we believed that, either way, a plan outlining what to do in the event of widespread community outbreaks of severe respiratory illness due to a novel virus, was needed and the framework for pandemic influenza planning would serve as a useful guide.

While pandemic influenza is different from SARS, Ontario learned first hand that a pandemic plan can be a useful tool when combatting a new disease. As noted in the Commission's first interim report, B.C.'s plan played an important role in the early days of SARS to prepare contingencies in case SARS spread widely in the community.²⁰⁴

Unlike Ontario, where the system for communicating threats to the health system was fragmented, B.C. had an effective means of alerting its health system:

204. See SARS Commission, first interim report, pp. 39-40:

... Dr. Young met with the Science Committee, a quickly assembled ad hoc committee of experts, on the morning of April 2, 2003, and asked Committee members to prepare scenarios for the possible expansion of SARS into the community. The minutes reflected Dr. Young's concern about the possibility of community spread and his request for the committee to plan quickly for such an occurrence:

Planning for future scenarios (blue sky) – the planning should be done relative to where we are now and relative to the capacity of the health care system. The most immediate planning should be for expansion into the community.

One British Columbia member of the Science Committee suggested to fellow Committee members that Ontario's pandemic flu plan be used for this and other purposes, and was more than surprised to learn that Ontario did not have a pandemic flu plan:

I was shocked. In fact, I said well let's just use the pandemic flu plan and everybody looked at me and there was no pandemic flu plan. And so . . . I just got somebody to e-mail the B.C. pandemic flu plan over.

An electronic distribution system was established to regularly disseminate communicable disease bulletins to healthcare facilities across the province.²⁰⁵

Alarmed about reports from China, the BC CDC used that electronic distribution system to issue its first alert on February 20, 2003, requesting,

... enhanced vigilance for severe influenza like illness in returning travelers from mainland China or Hong Kong or among their close contacts.²⁰⁶

One expert at the B.C. Centre for Disease Control told the Commission:

... we were fairly predisposed to react to an emerging respiratory threat out of Southeast Asia. And when we heard of this avian influenza identification in Hong Kong in early 2003, February 2003, we were predisposed to respond. And we were fairly twitchy about that. That avian influenza first emerged in 1997 and it was, in our minds, the next pandemic candidate or threat.

Alerts were repeated on February 24 and February 28.

A medical study said these alerts,

... noted both avian influenza and a mysterious outbreak of atypical pneumonia in Guangdong Province in southern China. These alerts for BC clinicians, infection control practitioners and public health authorities called for enhanced surveillance and for infection control measures with respect to patients presenting with unusual influenza-like illness after returning from Hong Kong or China.²⁰⁷

205. D.M. Skowronski, M. Petric, P. Daly, R.A. Parker, E. Bryce, P.W. Doyle, et al., "Coordinated response to SARS, Vancouver, Canada," *Emerging Infectious Diseases* (January 2006). Available from <http://www.cdc.gov/ncidod/EID/vol12no01/05-0327.htm> (Skowronski et al., "Coordinated response to SARS).

206. Skowronski et al., "Coordinated response to SARS."

207. Dr. David Patrick, "The race to outpace severe acute respiratory syndrome (SARS)," *Canadian Medical Association Journal* (April 17, 2003).

The Events of March 7, 2003

While the BC CDC was closely monitoring developments in China and issuing its first alerts, Mr. C and his 54-year-old wife were in Hong Kong. They stayed on the ninth floor of the Metropole Hotel during the pivotal third week of February, 2003. The physician who unwittingly carried SARS from Guangdong was also there at the same time. So was Mr. T's mother. From Hong Kong, Mr. T's mother returned to Toronto, where she became ill and passed the disease on to her son.

Mr. and Mrs. C, on the other hand, left the Metropole to visit Bali in Indonesia, where they each developed a fever and were seen by a physician. When they returned home to Vancouver on March 7, 2003, Mrs. C appeared to be on the mend. But her husband was so ill they went directly from the airport to their family physician. The physician sent him by ambulance to the emergency room of Vancouver General. He also called ahead to alert staff that a very sick patient would be arriving.

Mr. C, who was "at the cusp of his peak infectious period,"²⁰⁸ presented at Vancouver General's emergency department at 4:55 p.m. (eastern time).

Unlike at the Scarborough Grace Hospital, opportunities for spread were quickly limited even though Vancouver's emergency department, like Scarborough Grace's, was busy that Friday afternoon. Dr. Lee, an emergency department physician at the Vancouver General, recalled:

The Emergency Department was very full. A lot of admitted patients in the department and quite a number of patients wait out at triage.

Within five minutes, Mr. C was isolated in a single bed in a curtained examination cubicle, where beds are 2.5 metres from each other.²⁰⁹

Dr. David Patrick, Director, Communicable Disease Epidemiology, B.C. Centre for Disease Control in Vancouver, told the SARS Commission:

The early exposures that had occurred in Toronto were essentially headed off by that single act of an emergency room physician.

208. Skowronski et al., "Coordinated response to SARS."

209. Chronology provided by Division of Medical Microbiology and Infection Control, Vancouver General Hospital.

The difference between how the index cases at the Vancouver General and at the Grace were handled does not reflect negatively on the physicians, nurses and other health workers at the Grace. Rather, as will be outlined in this chapter, the physicians and nurses at Vancouver General benefited from a number of systemic advantages that their colleagues at the Grace did not have.

While Grace physicians and nurses had no warning about events in China, emergency room staff at Vancouver General were fully aware of the BC CDC alerts, and were actively looking for unexplained fevers and respiratory ailments in patients who had been in Asia.

The Naylor Report credited the BC CDC alerts with helping to prevent further spread:

... the BC CDC's dissemination of that information was probably responsible for the prompt isolation of the first SARS case in Vancouver. Alerts were also issued by local and provincial public health officials in Ontario, but uptake was apparently inconsistent.²¹⁰

Recalling the events of March 7, 2003, Dr. Lee said:

I actually started my shift at 3:00 p.m. [6 p.m. eastern time] that day. My colleague ... was on duty in the day time and first thing she talked to me about was that we have this Asian man just got off the plane from Hong Kong with a high fever and a cough. And we were watching for actual avian flu, believe it or not. It was a number of years ago because there was some circular from B.C. Centre of Disease Control, I believe in February, saying there are some cases of atypical type activity flu and so we were on the watch out for it. And [she] assessed this patient with high fever and respiratory symptoms and findings on X-rays just so, bilateral changes so it's not a typical pneumonitis. So she was concerned that it could be possible avian flu.

At about 5:10 p.m., or roughly 15 minutes after he was admitted, Mr. C was placed on "full respiratory precautions."

210. The Naylor Report, p. 93.

Dr. Elizabeth Bryce, head of Infection Control at Vancouver General Hospital, said:

Respiratory precautions meant the use of an N95 respirator until the clinical condition was clearer.

N95 respirators were not standard respiratory protection at the Grace, and were not used by staff who treated Mr. T.

This was a significant systemic advantage for Vancouver General. Its emergency department staff were already protected by the kinds of respirators that would not become standard protective equipment in Ontario until weeks later. The ICU at Vancouver General had used N95 respirators for a few years. Fortuitously, the emergency department also began using them some months before SARS hit.

Dr. Bryce said:

We had used N95 respirators in our ICU for quite a few years, probably starting about 2001 and, in fact, that was the only respirator or mask available to them. We just recognized that we were a high-risk hospital for TB and we had just had too many inadvertent exposures. So that was in use regularly and then [in ER] ... we switched over to the same thing about five, six months before SARS.

What also helped to prevent further spread was Vancouver General's robust infection control and worker safety culture and systems based on a precautionary approach.²¹¹

211. Mr. Justice Horace Krever has said:

Where there is reasonable evidence of an impending threat to public health, it is inappropriate to require proof of causation beyond a reasonable doubt before taking steps to avert the threat. As an editorial in the *American Journal of Public Health* in May 1984 put it:

The incomplete state of our knowledge must not serve as an excuse for failure to take prudent action. Public health has never clung to the principle that complete knowledge about a potential health hazard is a pre-requisite for action. Quite the contrary, the historical record shows that public health's finest hours often occurred when vigorous preventative action preceded the crossing of every scientific "t" and the dotting of every epidemiological "i".

Address by the Honourable Horace Krever, International Joint Commission, Great Lakes Science Advisory Board Workshop, Methodologies for Community Health Assessment in Areas of Concern, Windsor, Ontario, October 4, 2000.

When dealing with an undiagnosed respiratory illness, health workers at Vancouver General automatically go the highest level of protection and then scale down as the situation is clarified.

This approach was based on a view of how respiratory illnesses spread that was regarded as unorthodox by some in 2003, but has gained currency since SARS.²¹²

As one expert at Vancouver General told the SARS Commission: “We’re the heretics.”

The more orthodox view on how respiratory illnesses spread revolves around the so-called one metre rule. According to its proponents, there is clear distinction between diseases spread by large droplets, which they contend travel not more than about one metre from the infected person, and those transmitted by tinier airborne particles which can travel much farther. If a disease is droplet spread, health workers were advised to use a surgical mask within about a metre of the infected person, which some refer to as droplet precautions. If, on the other hand, the disease is spread by airborne particles, then they were told to use airborne precautions involving the use of an N95 respirator.

Worker safety experts suggest that it is rare for a disease to be spread purely by droplet alone.²¹³

212. See Dr. Annalee Yassi and Dr. Elizabeth Bryce, “Protecting the faces of healthcare workers: knowledge gaps and research priorities for effective protection against occupationally-acquired respiratory infectious diseases” (Occupational Health and Safety Agency for Healthcare in BC; April 30, 2004); A. Yassi et al., “Research gaps in protecting healthcare workers from SARS,” *Journal of Occupational and Environmental Medicine* 47 (2005): 41-50; J.L. Derrick et al., “Protecting healthcare staff from severe acute respiratory syndrome: filtration capacity of multiple surgical masks,” *Journal of Hospital Infection* 59(2005): 365-8; National Academy of Sciences, *Reusability of Face Masks during an Influenza Pandemic* (Washington, DC: National Academy of Sciences, April 2006); I.T.S. Yu, Y. Li, T.W. Wong, et al., “Evidence of airborne transmission of the severe acute respiratory syndrome,” *New England Journal of Medicine* 350 (2004): 1731-9; Chad J. Roy and Donald K. Milton, “Airborne transmission of communicable infection — the elusive pathway,” *New England Journal of Medicine* 350 (April 22, 2004); T.F. Booth et al., “Detection of airborne severe acute respiratory syndrome (SARS) coronavirus and environmental contamination in SARS outbreak units,” *Journal of Infectious Diseases* 191 (2005): 1472; Tommy R. Tong, “Airborne severe acute respiratory syndrome coronavirus and its implications,” *Journal of Infectious Diseases* 191 (2005):1472.

213. See Bob Janssen, MSc, ROH, Senior Policy Analyst: Policy & Research Division, WorkSafeBC, “A Scientific Review – the Influenza Pandemic: Airborne vs. Non-Airborne Transmission and Considerations for Respiratory Protection” (WorkSafeBC: December 2005) (Janssen, “A Scientific Review”).

Dr. Annalee Yassi, who heads the provincial Occupational Health and Safety Agency,²¹⁴ told the Commission:

When people are coughing or sneezing, it is always never purely droplet spread. It is droplet spread that is at least aerosolized in certain circumstances, and if health care workers feel more protected wearing an N95 when someone is coughing and sneezing, then why not.

Dr. Bryce said:

We feel it is very difficult to tell at the beginning in some illnesses, in some cases, exactly what the person has and we feel that droplets can be aerosolized and there is a gradation of risks and where that stops.

As a result, said an expert at Vancouver General,

... we always start with the highest level of precaution ... we don't use droplet precautions in our hospital, never have because we've always believed that droplets have been aerosolized so we only have one category, that's airborne, and you always start with the highest level of precautions and then as the clinical situation becomes clearer, you step

214. See <http://www.ohsah.bc.ca/321>:

The Occupational Health and Safety Agency for Healthcare in BC (OHSAH) was conceived in early 1998 in an Accord between management and union representatives. The Accord resulted in the creation of OHSAH, an agency with the goal of reducing workplace injuries and illness in healthcare workers and returning injured workers back to the job quickly and safely.

OHSAH was created in response to high rates of workplace injury, illness, and time loss in the healthcare industry. At the time that OHSAH was created, workers in the healthcare industry accounted for 10.5% of all time loss claims accepted by the WCB and 11% of all days lost due to injury in BC. The injury rate in healthcare was 54% higher than the rate for all other workers in the province. It was clear that a new approach was necessary to address these concerns.

OHSAH represents an innovative approach to improving workplace health and safety in the healthcare sector. The Agency is jointly governed by employers and unions. Its Board of Directors consists of four members chosen by the Health Employers Association of BC (HEABC), and one each from the Hospital Employees' Union (HEU), Health Sciences Association of British Columbia (HSA), British Columbia Nurses' Union (BCNU), and BC Government and Service Employees' Union (BCGEU).

back on your precautions. And we have found that is the easiest for workers to understand rather to try to figure out when to wear a surgical, when to wear an N95, how close am I to the patient, do I need to put on a mask? Its just simpler for them to remember that if the patient's got respiratory symptoms, yes, put on an N95, do the appropriate precautions.

Worker safety experts question the basis for the one metre rule,²¹⁵ which was considered so impractical by some at Vancouver General that it became the subject of a joke:

There was a sort of a little joke circulating during SARS that the tiles that we have here on the floor are approximately one metre, so that's how much distance we should keep from everybody.

Dr. Diane Roscoe, Division Head of Medical Microbiology and Infection Control, said:

It is not an easy thing for health care workers to remember. This is a 3-metre or this is a one-metre thing, and this is not. And what am I supposed to do?

215. See Janssen, "A Scientific Review":

... one should be aware of the effects of droplet evaporation and the resultant diminution in size of ejected droplets. A 30 μm droplet dries to a 5 μm droplet within seconds under normal indoor air conditions. This means that a large droplet, as it evaporates, will not settle to the ground but become a free-floating entity. This has implications for the 3 foot rule, the basis for infection control precautionary measures, since it is commonly believed that large droplets ejected upon sneezing or coughing will follow Stoke's Law and fall to ground within a 3 foot distance from the person's face. It is evident that it is commonly believed that the 3 foot rule is a division between an unsafe and safe distance.

There is no indication that the 3 foot rule takes into consideration the evaporation factor and the drift factor of airborne droplets, as discussed above. No scientific evidence is offered by WHO, DHHS-CDC, PCAH, or other medical authorities in explaining the rule. If large droplets quickly evaporate to free-floating small droplets, then the 3 foot rule applies only to droplets greater than about 50 – 100 μm in diameter for which there is insufficient time chance for evaporation to take effect before they fall to the ground from a height of 5 – 6 feet. Free floating small droplets readily go beyond the 3 foot radius. Therefore, if the majority of ejected droplets following a sneeze are evaporated to a size that is free-floating after only seconds in air, the 3 foot rule becomes illogical and not particularly helpful from a disease transmission perspective.

Dr. Bryce said:

And how can the health care worker make the determination what the illness is and whether they should use droplet and airborne? I mean it is kind of expecting them to have a whole level of expertise which they shouldn't be expected to have ... Even if you did determine it like poof, you know you are at this distance, you put on a mask and presto and you step back a foot and you no longer need a mask ... they are moving in and out of the "danger zone" for droplets. They are in and out when they are in a room. And it is just simply easier for everyone and safer for them to put on some sort of respiratory protection when they step into the room ... You've got the patients moving around and the staff moving around. It is very hard to keep the spatial separation and we just feel it is safer too.

Vancouver General's emergency department was also more attuned to the hospital's precautionary approach because, not long before SARS, it had undergone an infection control audit.

Dr. Roscoe told the Commission the audit provided an opportunity to review the hospital's precautionary approach with staff:

We have a protocol, which had just been reviewed with the physicians and staff in the emergency room, that people with undiagnosed respiratory illness should be managed with respiratory precautions until their course or the etiology of their illness is more determined.

Dr. Bryce said Vancouver General had been doing these audits since 1995:

We reviewed the physical layout and environment, policies and procedures. We review infection control knowledge and its application and then we do a series of visits that actually audit what we see occurring in the division ... And so it occurs over several months, these audits, and we have feedback from the healthcare workers as well. We make a number of recommendations and we have time lines and people are responsible for the action plans. So just prior to SARS, a few months prior, an audit had been done ... And we did tee up some of the things that we saw about respiratory protection, particularly the expediency of triaging people who have respiratory illnesses and not to leave them sitting in the waiting room and that came out of a case of influenza that had sat in the waiting

room during that audit period that we didn't think was the ideal thing. So I think that was very fortuitous that the others had been done prior to SARS.

A medical study said:

Before [Mr. C's] arrival, the emergency room at [Vancouver General] also participated in an infection control audit that emphasized that barrier precautions should be applied with all acute-onset respiratory infections.²¹⁶

Aware of the BC CDC's alerts and of Mr. C's travel history, employing Vancouver General's precautionary approach, and worried about Mr. C's condition and symptoms, emergency room physicians consulted with an infectious disease specialist and a respirologist.

Dr. Lee said the two specialists quickly:

reviewed the situation and thought, well the situation suggests that we probably should isolate this man. He was out in the open area in cubicle 6 so we just pulled someone out of the isolation room. I still remember distinctly talking to our charge nurse ... So we shuffled the patient around and put him in the isolation room shortly after I got there.

At about 7:40 p.m. (eastern time), about two and a half hours after arriving at Vancouver General and just before Mr. T arrived at the Grace, Mr. C had been isolated, examined by specialists, treated by health workers wearing full respiratory protections, and moved into a negative-pressure isolation room.

In contrast, Mr. T would not be isolated for nearly 21 hours²¹⁷.

216. Skowronski et al., "Coordinated response to SARS."

217. As noted earlier, time estimates between his admission to hospital and his isolation vary. Mr. T was triaged in the emergency department at 7:00 pm, and admitted to the emergency department at 7:45 pm, on March 7th, 2003. Mr. T was moved to a medical floor, 4D, at approximately 12:00 noon on March 8th. He was transferred to the ICU at approximately 3 pm on March 8th. Dr. Finklestein, the physician who isolated Mr. T, recalled that at approximately 4:00 – 4:45 pm, he saw Mr. T and that initial steps were taken to isolate him. Public Health records report that Mr. T was moved to a negative pressure room at 6:45 pm on March 8th, 2003. It is the approximately 21 hours, between 7:45 pm on Friday, March 7th and 4:00 pm on Saturday, March 8th, when initial isolation steps were taken, that the Commission uses in this report.

Mr. C is Intubated

At about 4 a.m. on March 8, Mr. C suffered an arrest and had to be intubated, a procedure in which a tube is placed into the windpipe,

to open the airway to administer oxygen, medication, or anesthesia.²¹⁸

This is risky because it creates “very small droplets of moisture that may carry microorganisms,” a process known as aerosolization.²¹⁹

The aerosolized droplets may be light enough to remain suspended in the air for short periods of time, allowing inhalation of the microorganisms.²²⁰

A worker safety expert said:

When you put a tube down the throat and then in essence it almost becomes like a mucus gun ... an awful lot of material comes out.

First on the scene were a medical resident and a respiratory therapist both of whom did not wear N95 respirators for the first minute or so. This was a potentially dangerous incident. Dr. Bryce said:

They did describe him in the notes as frothing in the mouth, so obviously the potential for aerosols were also there.

However, there was no spread.

218. “An endotracheal intubation places a tube into the windpipe (trachea). This is done to open the airway to administer oxygen, medication, or anesthesia. It may also be done to remove blockages or to view the interior walls.” Source: *Medline Plus Encyclopedia*, a service of the U.S. National Library of Medicine and the U.S. National Institutes of Health.

219. Ministry of Health and Long-Term Care, *Preventing Respiratory Illness* (September 2005), p. v. (*Preventing Respiratory Illness*)

220. *Preventing Respiratory Illness*. The time between admission and isolation in a proper, negative pressure room is 23 hours.

Dr. Bryce said:

The resident and the RT, because it was an unexpected arrest, did not have a respirator on for the first minute till assistance arrived and then they were appropriately garbed and it was a difficult intubation and they had to call the emerg doctor who intubated them but with full precautions.

Mr. C was safely intubated without anyone being infected. In contrast, a number of physicians, nurses and respiratory therapists were infected while intubating patients in Toronto.

March 17, nine days after Mr. C's intubation, Mr. M., whose story is told above, was intubated at the Scarborough Grace Hospital, but with a different result. Four health workers contracted the disease.²²¹ Then, on March 24, an anaesthetist, a medical resident, and a nurse at Toronto's Mount Sinai Hospital got the disease while intubating a patient ill with SARS but undiagnosed.²²²

Still later, on April 13, six health professionals were infected with SARS during a difficult intubation. That was followed May 28 by an incident in which two health workers at North York General were infected during a resuscitation. This does not speak well of Ontario's worker safety learning curve.

Remarkably, Mr. C was also intubated safely well before the dangers of intubating SARS patients had begun to be identified in Ontario or at the CDC.²²³

221. "In the ICU, intubation for mechanical ventilation of [Mr. M] was performed by a physician wearing a surgical mask, gown and gloves. He subsequently acquired SARS and transmitted the infection to a member of his family. Three ICU nurses who were present at the intubation and who used droplet and contact precautions had onset of early symptoms between Mar. 18 and 20. One transmitted the infection to a household member." See Varia et al., "Investigation of a nosocomial outbreak of SARS.", p. 927.

222. D.C. Scales, K. Green, A.K. Chan, S.M. Poutanen, D. Foster, K. Nowak et al., Illness in intensive-care staff after brief exposure to severe acute respiratory syndrome, *Emerging Infectious Diseases* (October 2003). Available from <http://www.cdc.gov/ncidod/EID/vol9no10/03-03-0525.htm>

223. On March 20th, nearly two weeks after Mr. C's intubation, the CDC issued the first such warning:

Procedures that induce coughing can increase the likelihood of droplet nuclei being expelled into the air. These potentially aerosol-generating procedures include aerosolized medication treatments (e.g., albuterol), diagnostic sputum induction, bronchoscopy, airway suctioning, and endotracheal intubation. For this reason, healthcare personnel should ensure that patients have been evaluated for SARS before initiation of aerosol-generating procedures. Evaluation for SARS should be based on the most recent case definition for SARS.

No Transmission at Vancouver General

On March 12, 2003, four days after Mr. C was intubated, the WHO issued its global alert about severe cases of atypical pneumonia in Vietnam, Hong Kong and Guangdong.

One day later, Vancouver General reported the case of Mr. C to the BC CDC.

A medical study said:

This report, together with timely conversations between Dr. Danuta Skowronski (BCCDC), Dr. Allison McGeer in Toronto and Dr. Jeannette Macey of Health Canada marked the first official recognition that SARS had come to Canada.²²⁴

Another medical study said:

This call linked the separate Toronto and Vancouver cases to events in Asia and led to recognition that SARS had spread beyond that region.²²⁵

Unlike at the Grace, SARS did not spread to any health worker who treated Mr. C:

Review confirmed that symptoms had not developed in any of the 148 hospital workers involved in [Mr. C's] care by 10 days after his arrival at the hospital.

Nor was SARS transmitted to any other patient at Vancouver General. Mr. C's family physician, unlike the doctor who treated Mr. T and his wife, did not develop SARS.²²⁶

224. David M. Patrick, "The race to outpace severe acute respiratory syndrome (SARS), *Canadian Medical Association Journal*, www.cmaj.ca (April 17, 2003).

225. Skowronski et al., "Coordinated responses to SARS."

226. "The family physician had no detectable neutralizing antibody to SARS-CoV when tested at day 496." Skowronski et al., "Coordinated responses to SARS."

Mrs. C did not require any hospitalization. One B.C. official told the SARS Commission:

The wife of [Mr. C] was also infected but did not meet the clinical case definition for probable SARS as defined by Health Canada at the time. She had mild symptoms only but ... she had serologically confirmed SARS-CoV infection acquired simultaneously with her husband at the Metropole Hotel in Hong Kong as part of the initial cluster ...

Of course, as with all infections, SARS included a spectrum of illness. Children in particular tended to have milder symptoms. [The index patient] in B.C. had illness at the extremely severe end of the spectrum while his wife ... was at the opposite end of the spectrum with very mild illness.

Besides Mr. T, four members of his family – his sister, his brother, his wife and his infant child – caught SARS.

Significantly, and again in contrast to Toronto, neither Mr. C nor Mrs. C had any other household contacts.

Dr. Patrick of the BC CDC said there was an element of luck in what occurred at Vancouver General.

Toronto's first importation represented somebody who went home, spread it at home, before the health care system was approached. That was a harder thing to recognize, there had already been spread before the health care system was in a position to intervene. Whereas in B.C., our first individual did not really go home for any length of time, did not have a huge extended family, presented at hospital and was recognized ... very quickly by an emergency physician.

Dr. Patrick said these kinds of factors are "strictly chance," but he said other factors that were "a result of structural or operational decisions" also contributed to ensuring there was no outbreak in Vancouver.

These included Vancouver General's robust worker safety and patient safety culture, which allowed it to respond to an emerging threat before it was recognized.

Dr. Roscoe told the Commission:

And I often say that we practice infection control with a vengeance. And then I think, it sounds silly, but I think it says, it kind of says a lot and it is that you start at the worst-case scenario in terms of what the risks are for spread and then back off as you get more information, either because the patient's clinical course is consistent with something else, or is responding to treatment, or you have some diagnostic test that can help you make those decisions. But it is the philosophy that you think of the worst-case scenario and act on that, if you can practically speaking. All of this has to be taken into, what the patient needs for their medical care because you can never deny that in the first instance and what facilities, manpower etc. you have to be able to implement this. But then it also speaks to is being up front, with the infection control team being recognizable, available, out on the wards, everybody knows who to call and they are very proactive and what we are doing we don't just sort of wait for things to happen or for requests to come, sort of a very proactive approach to anticipating what might happen, what might be the needs...

Many Ontario nurses and their representatives told the Commission they had trouble being heard during SARS, and getting their concerns taken seriously.

An integral component of Vancouver General's safety culture is listening to nurses.

Dr Bryce said:

And we get the feedback from the workers... I mean you know we are not working in isolation here. You have to respect the opinions of the health care workers. And they have to have confidence in the system and in what you are doing for them. If they don't have confidence, then you won't have people coming to work and you'll have people doing whatever they feel is best because they respect you because you are not listening to them.

Dr. Roscoe said listening to health workers improves compliance and strengthens safety in the workplace:

And in the end, infection control isn't done by the infection control unit, it is done by all the healthcare workers in the front line. That is who is really doing it. So you have to be there to educate them and to get them to buy into this and certainly SARS helped everybody buy into the importance of infection control, but it doesn't just happen and it doesn't happen, it is not something you do once and that's it. It has to be done over and over and over because you have people who are busy and who forget. They may have not have time, you have new people and that is never going to stop. So that has to be an ongoing thing.

Different Approaches to Workplace Safety

The contrast between the Ontario and B.C. SARS experiences was not limited to how their respective index cases were handled. It extended to the defining characteristic of the outbreak in Ontario, the fact that it mostly affected workplaces. Of the 247 probable cases in Ontario 190, or 77 per cent, were either health care workers, people who sought care at health care facilities, or visitors.²²⁷ In B.C., only one health worker caught the disease, and SARS was not transmitted to a single patient or visitor.

With such vastly different outcomes, it is not surprising that the roles and approaches of the Ontario and B.C. workplace watchdogs were also dissimilar. When SARS began, B.C.'s workplace regulator, the Workers' Compensation Board (WCB)²²⁸, more commonly known as WorkSafeBC, quickly got involved. A senior policy analyst with the WCB, said:

227. Dr. Colin D'Cunha, presentation to the SARS Commission, SARS Commission Public Hearings, September 29, 2003.

228. Its mandate is to:

- Promote the prevention of workplace injury, illness and disease
- Rehabilitate those who are injured and provide timely return to work
- Provide fair compensation to replace workers' loss of wages while recovering from injuries
- Ensure sound financial management for a viable workers' compensation system

See: <http://www.worksafebc.com/default.asp>

So what happened in the early March, 2003, we heard about this horrific bug, that nobody knew what it was, and we acted right away.

Early in the outbreak, the WCB itself issued detailed guidelines on how to protect health workers in a manner consistent with provincial law, and undertook proactive inspections of hospitals to make sure this was being done.

In Ontario, the Ministry of Labour was largely sidelined during the outbreak. It was not given a primary role at the Provincial Operations Centre, and it was not seen as having a central responsibility in protecting health workers. In contrast, the WCB was widely recognized as having clear authority and jurisdiction over workplace safety issues.

A senior work safety expert who has also worked in Ontario told the Commission:

Basically because our Workers' Compensation Board ... is very prominent, and I think, much more so than in Ontario, I used to live in Ontario and practice there and when the WCB here says this is how it shall be, people do not question it quite as much.

A British Columbia senior work safety expert told the Commission:

They make a decision and get on with it, so I think that once the WCB made it clear that they require certain certification, they were clearly the deciding agency, because they were the ones who could write fines if things were not done the way they thought they should be.

The situation in Ontario could not have been more different.

Despite being the ministry in charge of workplace safety, the Ministry of Labour was largely on the sidelines during SARS. Many in the Ministry were frustrated that more could not have been done during SARS. But there was a systemic failure to see the importance of ensuring that the Ministry, unions and worker safety experts were all at the table as integral partners in the fight against SARS.

The Ministry of Health was the lead ministry during SARS, and Labour had a very low profile during the outbreak. Labour had a secondary role at the Provincial Operations Centre (POC), which directed the response to the outbreak and issued directives.

As an indication of its low profile, senior Ministry of Labour staff even had trouble getting copies of directives. One official said he often had to get copies of directives from contacts at health worker unions or at other agencies.

He told the Commission:

What were we supposed to do? We don't have any information. We can't get any information from the Ministry of Health. We are not getting any directives. How do we get the directives?

In a similar example of the Ministry of Labour's secondary status, the Ministry of Health set up a restricted access web site containing information for ministry staff, public health officials and other key players in the fight to contain SARS. Labour was not made aware of this site until "late April or May," a senior official told the SARS Commission.

SARS also found the Ontario Ministry of Labour was poorly resourced and ill prepared for a public health crisis. Its contingent of physicians had been decimated. In 1992, the Ministry had 19 physicians. By 1996, they were down to three and a half. The ministry no longer had a laboratory or air sampling technicians, and its occupational health and safety nurses had been laid off in the 1990s. Most inspectors had little or no training on infectious disease issues. All inspectors interviewed by the Commission said they had never been involved in an infectious-disease-related inspection of a health care facility before SARS. As a senior ministry official told the Commission, the ministry had little internal expertise in infection control:

The ministry did not have until April of this year [2006], people with specific public health experience working, or people with specific communicable disease experience ... So, at that time, we wouldn't have had people ... [with] specific communicable disease or infectious disease experience.

The WCB in British Columbia was far more ready to tackle SARS because it had a strong internal cadre of experts and had long regarded health care as a sector that required oversight.

A senior policy analyst with the WCB said:

We'd been involved, myself included, quite a bit in inspections of hospitals. Since, actually the day I started with the Board, in 1979-1980, and in many ways we had more focus inspections on hospitals because we had a lot of concerns about ethylene oxide exposures, anesthetic gases. In fact, we even went in during fully functioning operations and did sampling and of course, checked out all the equipment to do with surgery and pharmacy and with the boiler plant itself. And then we got quite heavily involved in the late 80's early 90's with ergonomic issues. That was really our prime focus. That was driven by a high injury rate related to soft tissue injuries (back injuries, shoulder injuries) and there is quite a bit of that. So, that has been our main emphasis. But we certainly did, not only did we go into the field of infectious control at that time ... We were certainly aware of what was going on and some of us had specific interests in infectious diseases and developed that over time.

Timely, Proactive Inspections

A major difference between the SARS responses of the British Columbia WCB and the Ontario Ministry of Labour was their approach to proactive inspections. WCB inspectors began making proactive inspections on April 2, 2003, more than two months before the Ministry of Labour took similar action at SARS hospitals in Ontario.²²⁹ As noted in Table 1, 11 of the WCB's 19 proactive inspections took place in April 2003.

229. Ministry of Labour, submission to the SARS Commission, SARS Commission Public Hearings, November, 17, 2003, p. 16:

On June 12, the Ministry initiated a series of consultations at other health care facilities that were identified as having a risk of SARS transmission to their workers. The health care facilities were categorized based on potential SARS exposure. The facilities were listed as Category 0 to 3, with Category 0 being hospitals with no known cases of SARS. During these consultations the Ministry reviewed infection control precautions, use of respirators and respirator fit testing and the function of the internal responsibility system.

Table 1 – Proactive Inspections in B.C.²³⁰

	Date	Healthcare Institution
1.	April 2, 2003	Facility F
2.	April 3, 2003	Facility F
3.	April 4, 2003	Facility H
4.	April 7, 2003	Facility I
5.	April 17, 2003	Facility G
6.	April 17, 2003	Facility B
7.	April 24, 2003	Facility A
8.	April 25, 2003	Facility C
9.	April 28, 2003	Facility C
10.	April 29, 2003	Facility B
11.	April 29, 2003	Facility D
12.	May 5, 2003	Facility A
13.	May 5, 2003	Facility C
14.	May 7, 2003	Facility C
15.	May 7, 2003	Facility E
16.	May 8, 2003	Facility A
17.	May 27, 2003	Facility A
18.	June 22, 2003	Facility A
19.	June 26, 2003	Facility G

April was when SARS protective measures were first being rolled out, amid mounting reports of large numbers of health workers contracting the disease in many jurisdictions. Conducting numerous inspections in April allowed the British Columbia WCB to make sure at the start that SARS safety measures were implemented in accordance with provincial laws and regulations.

In B.C. the WCB was able to conduct proactive inspections at the beginning when they would have maximum impact on the course of the effort to contain SARS.

In Ontario, the Ministry of Labour could not and did not do so. The structure of Ontario's SARS response resulted in the Ministry of Labour deferring to the Ministry of Health and the health system to ensure that health workers were protected.

²³⁰. Workers' Compensation Board of B.C.

A ministry official told the SARS Commission:

The resources and ... in terms of infectious disease control don't reside in the Ministry of Labour ... we don't have what the health care system has. We don't have what the Public Health officials have. So, I mean, it doesn't surprise me that we would say, that's fine. Access the Ministry of Health and they've got access to international experts and go to it.

It was not until the middle of May that the Ministry of Labour began to realize that workers were not being effectively protected.

A senior labour ministry official told the Commission:

Certainly in mid-May it became apparent that things weren't going right in terms of following directives ... and the large number of complaints that we had been receiving from health care workers ...

It was not until about one month later, on June 12, 2003, that the ministry began a series of proactive inspections of SARS hospitals.²³¹

A senior labour ministry official told the Commission:

Once we became aware that the directives weren't being enforced with the ongoing problems and when we were probably aware of what the expectations were and understood what the situation was, we decided to meet off site.

Needless to say, by June 12, 2003, all health workers who caught SARS had already contracted the disease. The damage had been done to infected nurses, physicians, respiratory therapists and other health workers and their families.

231. Ministry of Labour, submission to the SARS Commission, SARS Commission Public Hearings, November 17, 2003, p. 16:

On June 12, the Ministry initiated a series of consultations at other health care facilities that were identified as having a risk of SARS transmission to their workers. The health care facilities were categorized based on potential SARS exposure. The facilities were listed as Category 0 to 3, with Category 0 being hospitals with no known cases of SARS. During these consultations the Ministry reviewed infection control precautions, use of respirators and respirator fit testing and the function of the internal responsibility system.

Unlike in Ontario, the British Columbia WCB did not have to rely on anyone else to make sure workers were protected in the workplace, whether it was Public Health, the hospitals, regional health authorities, or the provincial Ministry of Health. And it did not have to wait until there was overwhelming evidence, including an enormous number of complaints, before acting.

The WCB acted proactively, aware that this was the most prudent course of action to take in the face of a mysterious new disease. As one occupational health and safety expert told the Commission:

We all know that something that's proactive is much better than a reactive process.

In Ontario, the Ministry of Labour told the Commission that part of the delay in sending inspectors to SARS facilities was concern over their safety. One senior ministry official said:

It wasn't clear in April whether it was safe for the inspectors to go in.

The WCB had the necessary internal expertise to develop its own guidelines for protecting its inspectors.

A senior WCB policy analyst said:

Answer: We also put out an instruction to workers to inspection officers when they go onsite, for their own protection. So we are basically telling that there are certain situations you are not to go into unless you are properly protected and you haven't been instructed in this so keep out of it. And that's what the instructions are to the officers.

Question: So, they were told not to go to a work site...was it with SARS, or?

Answer: Well, not to enter, not to enter but to stay outside and make sure that there is control measures in place.

Question: Are you staying away from the whole facility or just the area where . . . ?

Answer: Well, the area where let's just say, the triage area and the ambulatory area where they would treat or . . . they would bring in the SARS or potential SARS patients.

Question: Okay, but they could go to the offices of the managers, for example?

Answer: Oh yeah, right.

Detailed Guidelines Are Issued by WCB

Where the WCB's response also differed from the Ministry of Labour's was in preparing its own guidelines.

On March 31, 2003, the WCB issued a guide containing its requirements for protecting workers from SARS. The guide also made hospitals aware of their responsibilities under provincial law, and ensured workers knew under what circumstances they could refuse unsafe work.

The WCB policy analyst said:

This was published within three weeks after we learned about this. So before it even got to be a problem in North America.

The guide was prepared after consultations with infection control and occupational hygiene experts.

The analyst said:

Well, I was one of those [who helped to prepare the report] and we have our V.P. and then we have legal counsel and then we have several officers that have an area of expertise, infectious control, to go into hospitals and so there were several officers who were brought in as experts and we called them, "SME's", Subject Matter Experts. Brought in and talked about this and made the basis on their recommendation and that particular group drafted this particular document.

The guide was based on the principles of occupational hygiene,²³² which are founded on a precautionary approach and recommend that,

... all available options for controlling the hazard should be put into place and that when these controls are not possible or not sufficient to control the risk, personal protective equipment such as respirators should be implemented. The hierarchy of controls is as follows:

1. Engineering controls
2. Administrative controls
3. Work practices
4. Personal protective equipment.

These controls are meant to address hazards through control at the source of a hazard, along the path between the worker and the hazard and lastly, at the worker.²³³

232. Occupational hygiene, which is often called industrial hygiene in the U.S., is defined as follows: “The science and art of anticipating, recognizing, evaluating, and controlling chemical, physical, biological, ergonomic hazards that are in or originate from the workplace.” Source: Salvatore R. DiNardi and William E. Luttrell, *Glossary of Occupational Hygiene Terms* (Fairfax, Va.: American Industrial Hygiene Association 2000), p. 106.

233. Controls that are implemented at the source should be put into place first. These include using engineering controls such as enclosing the hazard or using local exhaust ventilation. An isolation room with negative pressure ventilation is an example of an engineering control aimed at the source of the hazard.

Controls that are implemented along the path should be put in place next. These include general exhaust ventilation or the use of shielding or barriers. Administrative control and workplace practice controls are also critical. These controls include such program components as processes to ensure early recognition and appropriate placement of patients who are infectious, surveillance for detection of outbreaks, adequate cleaning and disinfection of patient care equipment and the environment and education programs for health care workers about identifying and managing risk. If, after implementing controls at the source and along the path, the risk of overexposure to the worker is still present, then controls at the worker can be put in place. These include the use of personal protective equipment such as respirators and eye protection. The essential point from the hierarchy of controls is that employers should not rely exclusively on personal protective equipment (PPE) to protect workers. All other means possible should be used to protect workers and PPE used only when other controls have not eliminated or reduced the hazard significantly.

In B.C., the WCB's guide and its overall approach to SARS reflected the occupational hygiene principle that protecting workers means more than just providing them with an N95 respirator.²³⁴ They have to be trained in its use. They have to be fit-tested. They have to be supervised. And the use of the respirator must be integrated into the hierarchy of controls in a manner consistent with provincial laws, regulations and occupational hygiene best practices.

B.C. law requires,

... the employer to implement an exposure control plan where a worker has or may have occupational exposure to a bloodborne pathogen or other biohazardous material as specified by the Workers' Compensation Board. The Board has determined that the micro-organism causing SARS constitutes 'a biohazardous material.'²³⁵

The WCB guide on SARS said:

An employer must implement an exposure control plan where it can be *reasonably* anticipated that a worker will have occupational exposure to SARS. Such workers would include health care personnel who are providing care for, or are exposed to, patients with SARS. The employer must identify the workers at risk, develop safe work procedures, and provide adequate education and training. Engineering controls, such as isolation rooms, should form part of the exposure control plan.²³⁶

Health Care Health and Safety Association of Ontario, *A Guideline for the Development and Implementation of a Respiratory Protection Program for the Prevention of Occupational Infections in Health and Community Care Workplaces – Final Draft*, (Toronto: Health Care Health and Safety Association of Ontario, July 23, 2003), p. 11.

234. Using highly efficient filtering materials, N95 respirators are one of the nine types of disposable particulate respirators that are independently tested and certified by the National Institute for Occupational Safety and Health in the United States, which is part of the Centers for Disease Control. "The N indicates that the respirator provides no protection against oils and the 95 indicates that it removes at least 95% of airborne particles during worst case testing using a most-penetrating-sized particle." Source: A. Yassi et al., "Research gaps in protecting healthcare workers from SARS," *Journal of Occupational and Environmental Medicine* 47 (2005): 41-50.

235. WCB Occupational Disease Prevention Services, "General Guide on Applying the OHS Regulation to Severe Acute Respiratory Syndrome (SARS)" (March 31, 2003), p. 2 (WCB Guide).

236. WCB Guide, p. 2.

The analyst said the guide was prepared to avoid confusion at hospitals and ensure consistency in their worker safety measures:

One of the problems with infection control is that there are guidelines from the infection control community. There is no regulation that deals with infectious control specifically, as I understand it. Unless the Canada Health Act has some guidelines. So it is up to the individual hospital whether they adopt in whole or in part. That's one of things we wanted to make sure, that each hospital was on the same page. That they understood what an Exposure Control Plan means. That means recognizing the hazard, evaluating the hazard and putting in place effective control measures. That would include personal protective equipment and would include putting things on properly and taking things off properly. That is still one of the things that we found problematic is what we call, "donning and doffing" and the problem of self-inoculation or self-infection. You know if you take things off in the wrong order you are going to contaminate yourself and then you go wipe your nose or rub your eyes with your hands and before you know it you've got yourself an infection. So, that's the basis of it.

In addition, the WCB issued a question-and-answer document that provided greater detail on the information and requirements outlined in the guide.

The WCB analyst said:

Control measures, what that means? So, we talked about administrative controls, engineering controls and then of course, respiratory protection...

Ontario directives issued at this time provide a stark contrast to the WCB guide. On worker safety issues, Ontario directives were often confusing and incomplete.

An Ontario directive issued a few days after the WCB's guide, on April 3, 2003, is a case in point. It says the following about worker protective measures:

12. All staff and visitors entering the facility must use frequent hand washing/hygiene. However the routine use of gowns, gloves, and masks is not required provided the patient is not in respiratory isolation.

13. All HCWs and staff entering the room of a SARS patient in ANY location:

- Use frequent hand washing/hand hygiene.
- Use an N95 mask
- Use an isolation gown
- Use gloves
- Use protective eyewear or face shield

14. All visitors to SARS patients must also use the precautions listed in #13.

15. For direct contact with any patient in Intensive/Critical Care Units or Emergency Departments HCWs must:

- Use frequent hand washing/hand hygiene.
- Use an N95 mask
- Use an isolation gown
- Use gloves
- Use protective eyewear or face shield

Unlike in B.C., this Ontario directive, and many others that followed, did not have sufficient worker safety input. It focused on just one element of worker safety, personal protective equipment. There was no mention that worker safety protections must be integrated within a hierarchy of controls. There was no mention that personal protective equipment is considered by worker safety experts to be the last line of defence for a health worker and is not effective without appropriate fitting and training. There was no mention that worker safety protective measures must comply with provincial law. And there was no reference to the relevant provincial laws and regulations themselves.

This does not reflect badly on those who prepared them. The men and women who prepared the directives are to be praised for their dedication and hard work. Rather, the worker safety inadequacies in the Ontario directives reflect systemic problems, including a failure to give Labour an appropriate level of authority and jurisdiction in their preparation that is commensurate with its role as the Ministry in charge of protecting workers.

Work Refusal Regulations Clarified

A major area of concern for nurses in Ontario during SARS was over their already limited right to refuse unsafe work. Unlike most workers in Ontario, who can refuse unsafe work if the institutional protections fail to sufficiently protect them,²³⁷ health workers and other first-responders, including police and firefighters, have only a limited refusal right.²³⁸

237. This right is enshrined in Section 43(3) of the *Occupational Health and Safety Act*, which states:

43. (3) A worker may refuse to work or do particular work where he or she has reason to believe that,
- (a) any equipment, machine, device or thing the worker is to use or operate is likely to endanger himself, herself or another worker;
 - (b) the physical condition of the workplace or the part thereof in which he or she works or is to work is likely to endanger himself or herself; or
 - (c) any equipment, machine, device or thing he or she is to use or operate or the physical condition of the workplace or the part thereof in which he or she works or is to work is in contravention of this Act or the regulations and such contravention is likely to endanger himself, herself or another worker. R.S.O. 1990, c. O.1, s. 43 (3).

238. Sections 43 (1) and (2) of the *Act* state:

43. (1) This section does not apply to a worker described in subsection (2),
- (a) when a circumstance described in clause (3) (a), (b) or (c) is inherent in the worker's work or is a normal condition of the worker's employment; or
 - (b) when the worker's refusal to work would directly endanger the life, health or safety of another person. R.S.O. 1990, c. O.1, s. 43 (1).
- (2) The worker referred to in subsection (1) is,
- (a) a person employed in, or a member of, a police force to which the *Police Services Act* applies;
 - (b) a firefighter as defined in subsection 1 (1) of the *Fire Protection and Prevention Act, 1997*;
 - (c) a person employed in the operation of a correctional institution or facility, a training school or centre, a place of secure custody designated under section 24.1 of the *Young Offenders Act* (Canada) or a place of temporary detention designated under subsection 7 (1) of that Act or a similar institution, facility, school or home;

Work refusals are also problematic for regulated workers like nurses who could be disciplined by the College of Nurses of Ontario.

On April 1, 2003, Ontario nurses' representatives asked the Ministry of Labour to clarify health workers' limited right to refuse unsafe work.

In their joint submission to the Commission, the Ontario Nurses' Association (ONA) and the Ontario Public Service Employees Union (OPSEU) said the response from the ministry dated April 15, 2003 was insufficient:

Right to refuse unsafe work under the *OHSA* was an issue OPSEU and ONA members asked to have clarified. Both unions anticipated and received questions from their members about work refusals. OPSEU published a section on Right to Refuse in almost all of its regular Hazard Alerts. The steps of a work refusal were set out, as were the limitations faced by HCWs under the *OHSA*. ONA had asked the MOL for its position on work refusals for HCWs in the April 1st correspondence referred to above.

The MOL's response of April 15/03 was not detailed enough to give adequate direction to HCWs. ONA was concerned that a worker who did not follow precise steps could be disciplined by the College of Nurses of Ontario. Therefore about one week later ONA completed its own Right to Refuse document and posted it on its website.²³⁹

-
- (d) a person employed in the operation of,
- (i) a hospital, sanatorium, nursing home, home for the aged, psychiatric institution, mental health centre or rehabilitation facility,
 - (ii) a residential group home or other facility for persons with behavioural or emotional problems or a physical, mental or developmental disability,
 - (iii) an ambulance service or a first aid clinic or station,
 - (iv) a laboratory operated by the Crown or licensed under the *Laboratory and Specimen Collection Centre Licensing Act*, or
 - (v) a laundry, food service, power plant or technical service or facility used in conjunction with an institution, facility or service described in subclause (i) to (iv). R.S.O. 1990, c. O.1, s. 43 (2); 1997, c. 4, s. 84; 2001, c. 13, s. 22.

239. ONA/OPSEU, submission to the SARS Commission, SARS Commission Public Hearings, November 17, 2003, p. 30.

In B.C., however, the WCB said a worker had clear direction on the circumstances under which he or she could refuse unsafe work.

The B.C. guide said:

A worker has the right to refuse any work which that person has “reasonable cause to believe ... would create an undue hazard to the health and safety of any person” ... If an employer requires a worker to work with a known or suspected case of SARS, without providing the appropriate personal protective equipment (PPE) and safe work procedures, then this would clearly constitute a case where there is undue risk to that worker’s health.²⁴⁰

Only Certified Respirators Allowed

As noted elsewhere in this report, there was confusion at some Ontario hospitals over what type of respirator to use.

Most Ontario directives allowed the use of N95 respirators “or equivalent.” The word “equivalent” was open to interpretation. Many in the health care system, including Health Canada and experts at some major Toronto teaching hospitals, interpreted “equivalent” to mean masks with the same manufacturer’s specifications as an N95 but which had not been independently tested and certified. This led to situations where health workers were offered both respirators that were independently tested and certified and some that were not.

The Ministry of Labour said it accepted the term “equivalent” in directives because this allowed the use of higher rated NIOSH-approved respirators like the N99 or N100.²⁴¹

One ministry official told the Commission:

Now, if somebody uses an N99 or an N100, they are equivalent and would provide even higher protection.

240. WCB Guide, p. 2.

241. The minimum efficiency of each tested filter is to be greater than or equal to 99.97% for N100 filters and 99% for N99 filters.

The problem was that, like much else during SARS, the Ministry of Labour's position on the word "equivalent" was not appropriately communicated to employers and it was not followed in some workplaces. As will be seen later in this report, some health workers involved in the Sunnybrook intubation in mid-April 2003 and who got SARS wore non-certified masks.²⁴²

B.C. did not have this problem. Like the Ministry of Labour, it only accepted independently tested and certified respirators. The difference is that the WCB was able to convey this clearly to employers. Experts in Vancouver interviewed by the Commission said the issue of using non-certified respirators never arose in B.C.

The WCB said, in its SARS questions-and-answer document:

Currently, the board has accepted only NIOSH-approved/certified respirators ... The board will consider non-NIOSH approved equipment with the following proviso. To be considered as an approved or certified devices, the respirator in question must have been tested in accordance with testing criteria as prescribed by NIOSH or other agency using methods and criteria deemed acceptable by the board. The manufacturer must be able to provide test information on the respirator being marked for use by workers, otherwise one cannot establish that the device does in fact meet NIOSH or equivalent standards.

Impact of the WCB's Proactive Approach

While the failure to conduct proactive visits in Ontario until June 2003 was a missed opportunity to ensure workplace compliance, we will never know whether this would have made a difference. It is pure speculation to question whether such proactive measures might have reduced the toll of SARS.

Nor will it ever be known whether the toll of SARS among Ontario nurses, physicians and other health workers would have been reduced if the Ministry of Labour had been better prepared and better resourced and had not been sidelined by systemic problems. Conversely, it will never be known whether the greater preparedness of the British Columbia WCB and its more aggressive approach to worker safety ensured

242. "Cluster of severe acute respiratory syndrome cases among protected health-care workers Toronto, Canada, April 2003," *Morbidity and Mortality Weekly Report* 52 (May 16, 2003): 433-6.

the much lower impact of SARS in the workplaces in B.C.

What can be said is that the WCB was better prepared before SARS to address a public health emergency, and was better able to respond to the SARS outbreak.

What also can be said is that since SARS, the Ontario Ministry of Labour has made a concerted effort to learn from its experience, and has adopted many of the kinds of approaches employed by the WCB during SARS. It has made a significant effort to address its resource and expertise weaknesses, including hiring 200 more inspectors and developing sufficient in-house health care expertise. And it has adopted a more assertive, proactive approach to workplace safety in general, and to the health sector in particular. A case in point was a series of proactive inspections of health facilities in late 2003 and early 2004. As the Ministry of Labour said in a submission to the Commission:

Inspectors issued orders for a variety of contraventions related to infection control including the notifications of occupational illness, Workplace Hazardous Information System (WHIMS), operation of joint health and safety committees, training, ventilation, storage and handling of materials, risk assessment of needlestick/sharp injuries and the use of safety engineered medical devices, handling of waste materials, appropriate use of refrigeration units and the use of personal protective equipment.

All 192 acute care facilities in Ontario were visited and 2,172 orders were issued.

On average there were approximately 11 orders per facility. Of the 11 orders per facility many related to infection control programs and consultation with the joint health and safety committee.²⁴³

239. Ontario Ministry of Labour, submission to the SARS Commission, SARS Commission Public Hearing, Appendix C, P.2 March 15, 2006.

A Regional Health Authority and SARS

The only transmission to a health worker in B.C. was at the Royal Columbian Hospital in New Westminster.²⁴⁴ Under B.C.'s highly centralized health system, Royal Columbian is overseen by Fraser Health,²⁴⁵ one of the province's five regional health authorities.²⁴⁶

How Fraser Health protected its workers from SARS and how it and the WCB reacted to the infection of a nurse provides yet another contrast to the Ontario SARS experience.

In Ontario during SARS, the expertise and contributions of occupational hygienists and the principles of their discipline were not well understood or recognized.

As a health association said in a submission to the SARS Commission:

There appears to be a lack of understanding in the public health/health care system of the professional expertise available through occupational health and safety personnel. Had the health care sector been aware of and more fully utilized occupational hygiene professionals trained in aerosol science, engineering controls and the proper selection and use of personal protective measures, a significantly improved level of protection for health care workers could have been attained.

At Fraser Health, worker safety experts were seen as integral to the SARS response. Wanting to ensure their workers were fully protected in a manner consistent with the WCB guide and provincial laws and regulations, Fraser Health officials consulted their in-house occupational hygienists shortly after the WCB guide was issued on March 31, 2003.

244. The City of New Westminster is about 20 km east of Vancouver.

245. Headquartered in Surrey, B.C., Fraser Health oversees the health region east of Vancouver, supervises 12 acute care hospitals with about 2,000 acute care beds, employs about 21,000 people and has a budget of \$1.8 billion. It serves about 1.5 million people.

246. The B.C. health system is highly centralized and is managed by five health authorities that govern, plan and coordinate services in geographic regions. A sixth authority coordinates and provides provincial programs and specialized services, such as cardiac care and transplants. Introduced in December 2001, this structure merged the previous 52 health authorities into a more streamlined system. See: <http://www.healthservices.gov.bc.ca/socsec/about.html>

A Fraser Health occupational hygienist told the Commission:

The question came to our director, we are using these N95s, is there any special thing that we need to do? So that was passed along to myself, and I said yes, if we are using N95s we are going to be into doing fit testing or even holding education sessions and do that now. That was communicated to all of our Safety Consultants. The issue that we had at that point in time was that the supplies of N95s within our Health Authority were extremely low because of the world wide demand for them, we had a lot of difficulty in having fit test staff when you just do not have enough N95s and in some of our areas, for example our emergency department in Royal Columbian Hospital, we have got 130, 140 staff that can work in that department.

The unique expertise of worker safety specialists was especially on display when they addressed fit-testing²⁴⁷ problems and shortages of N95 respirators.

Unlike in Ontario, where the logistics of fit-testing and the lack of in-house fit-testing expertise at many hospitals caused a great deal of concern, worker safety specialists at Fraser Health knew what needed to be done under difficult circumstances.

A Fraser Health occupational hygienist told the Commission:

We had enough N95s just to cover the staff that were going into the patients isolation room, within our emergency departments we did not have enough to provide for all the staff for fit testing and everything, so at that point in time what we did is we provided them with education on how to put it on and how to take it off properly, we went through the fit check, we went through all that information, we visually inspected as best we could whether they were getting a good seal but because we did not have enough N95s we could not fit test everybody at that point. So we were in communications with our purchasing department and trying to get any N95s that were available so that we could obviously proceed to a higher level.

247. Required by Ontario and B.C. law, fit-testing ensures that workers select a respirator that best fits their facial features. As part of fit-testing, users are also taught how to achieve a tight mask-to-face seal and how put on and take off the respirator safely.

The transmission to the nurse at Royal Columbian involved a SARS patient who had extensive contact in Hong Kong with two family members, both of whom died of SARS. The patient was admitted to Royal Columbian on March 26.²⁴⁸

A nurse who had contact with this patient on March 29 and March 30 helped the patient to use:

. . . the toilet, which was flushed with lid raised in her presence. She followed guidelines in place at the time, but these did not include eye protection. Symptoms developed in the nurse on April 4.²⁴⁹

Four or five days later, the nurse began showing the symptoms of SARS: muscle pain, cough, shortness of breath and diarrhea. On April 15, a fever developed and she entered another Vancouver area hospital, St. Paul's, where she was admitted directly to a negative-pressure isolation room.

Officials at Royal Columbian and Fraser acted decisively to prevent further transmission to workers and patients. Staff who may have been exposed were quarantined. Patients on the ward were isolated. And, recognizing the threat of a possible nosocomial outbreak, Fraser Health mobilized its occupational health and safety, and infection control resources.

One Fraser Health occupational hygienist told the Commission:

Question: So when you had a hot zone, you devoted a lot of your occupational health resources to it?

Answer: Yes.

Question: And your infection control resources?

248. This patient "... had prolonged contact abroad with 2 family members in Hong Kong, who subsequently died from SARS. Although asymptomatic, she went to her physician ... on March 26 because she was concerned about her exposure. Chest radiograph showed bilateral consolidation, and she was directed, masked, to hospital B, where she was admitted directly to a [negative pressure isolation room]. She was transferred to the ICU of hospital C for assisted ventilation. Neither of her 2 household contacts had detectable SARS-CoV antibody at day 215." Source: Skowronski et al., "Coordinated response to SARS."

249. Skowronski et al., "Coordinated response to SARS."

Answer: And our infection control resources. We had an emergency operations centre set up at Royal Columbian, one at Surrey [Memorial Hospital], because that was where we also we still had a [SARS patient] in ICU, and I think we had one set up at MSA Hospital [in Abbotsford, BC] because there were some suspect cases.

Fraser Health dedicated a team to ensure there was no further nosocomial transmission at Royal Columbian.

Recalled one Fraser Health occupational hygienist who had gone out of town:

So I came back during that Easter weekend and our department was basically on site 24 hours a day for a whole other week and a half after that, until it became clear ... that there was no [other] transmission ...

Nurses, physicians and other staff on affected wards at Royal Columbian were given intensive assistance to make sure they were protected.

An occupational hygienist at Fraser Health told the Commission:

We had hands-on training and supervision and provided support to them. We made sure they were taken care of. Went over with them training them ... We got to a high level of involvement very quickly. That definitely assisted in preventing a nosocomial outbreak.

To make sure there was no further transmission, joint teams of worker safety and infection control experts were on hand on the affected wards at the Royal Columbian Hospital for each health worker shift change. They made sure health workers knew proper procedures, were fit-tested and had the latest information on SARS. They were also on hand to get feedback from staff and address their safety concerns. And they made sure that all support staff, including x-ray technicians, cleaning staff and catering staff, were properly protected.

One Fraser Health occupational hygienist told the Commission:

We were there for all the shift changes, any time a staff member would come in, we were there. Infection Control was there. We gave them a full update on everything they needed to do. We would make sure that they were fit tested. And then any staff that would potentially go into that

room we were fit testing as well. So any medical imaging staff or laboratory staff who needed to draw blood or the various support services that might need to go into that room to provide care for the patient. So there was a huge amount of fit testing at that point.

The situation in Toronto was very different. As one hospital with a strong occupational health and safety program said in its submission to the Commission, many other hospitals lacked qualified worker safety specialists:

... our facility has the advantage of an established occupational health and safety program, which focuses on recognizing and controlling the broad spectrum of hazards encountered by staff in health care settings, not just biological hazards. Many health care organizations do not have appropriately qualified occupational health and safety staff and thus have to rely on infection control practitioners, where available. This leads to significant gaps in the protection of staff, as infection control practitioners are qualified to address the control of communicable diseases within a patient care population, rather than applied biosafety for the protection of staff. Infection control practitioners do not receive masters' level training in aerosol dynamics, respirator performance, engineering controls, ventilation etc., and are not trained to conduct risk assessments relative to the range of biological hazards for which staff protective measures, such as the use of biosafety cabinets, need to be established.

Unlike in Ontario, where as noted above the Ministry of Labour was largely sidelined, the WCB made five inspections at Royal Columbian to make sure workers were protected.

An occupational hygienist at Fraser Health said:

We did have WCB coming onto our site around April 15, which I think was just prior to the Easter weekend ... They were coming in to see what we were doing. So they did an inspection with us. They talked to staff to see if they were fit tested, if they received any training or not.

During the two largest SARS outbreaks at Ontario hospitals, at Scarborough Grace in March and at North York General in May, the Ministry of Labour deferred to public health officials, and did not get directly involved onsite to make sure workers were protected.

At the Scarborough Grace Hospital, Labour received complaints from nurses' representatives by telephone in late March 2003 but did not act beyond conferring, again by telephone, with the hospital, union officials and public health officials.²⁵⁰

The Ministry of Labour told the Commission:

On March 24, 2003, the Ministry received the first complaint relating to SARS from a worker representative regarding management's response to the hospitalization of health care workers at Scarborough Hospital – Grace Division. The complaint was assigned to an inspector who contacted a Ministry physician who in turn telephoned the hospital on March 24 advising both the Director of Occupational Health and Safety and a Human Resources representative about the requirements under the *Occupational Health and Safety Act* to notify the Ministry of Labour of occupational illnesses. In addition the Ontario Nurses Association was contacted. The Ministry physician also discussed infection control measures with the hospital. The Ministry of Labour physician was told that they were receiving assistance from both Toronto Public Health and Mt. Sinai Hospital and were also in contact with Health Canada.

On March 25, 2003, the Ministry of Labour physician spoke with a Toronto Public Health physician who confirmed that Toronto Public Health was attending at the Scarborough hospital to assist with infection control measures. On March 26, the physician from Toronto Public Health also confirmed that Toronto Public Health was investigating health care workers exhibiting SARS symptoms.²⁵¹

This pattern continued in late May at North York General. On May 27, 2003, four days after the second phase of SARS erupted, the Ministry of Labour was contacted by workers at North York General. The Ministry, in its submission to the Commission, indicated that its response was much similar to its response at the Grace two months earlier:

On May 27, 2003, a Ministry of Labour physician was contacted by a worker at North York General Hospital who raised a concern about

250. Ministry of Labour, submission to the SARS Commission, SARS Commission Public Hearings, November 17, 2003, pp. 9-10.

251. Ministry of Labour, submission to the SARS Commission, SARS Commission Public Hearings, November 17, 2003, pp. 9-10.

infection controls in the emergency department. The Ministry of Labour physician, after contacting a North York General Hospital occupational health representative, contacted the Director of Communicable Disease at Toronto Public Health regarding this concern. The Ministry of Labour physician was advised that Toronto Public Health was aware of the concern and their inspectors were in the hospital doing contact tracing. The Ministry of Labour physician specifically requested that the inspectors attend at the emergency department to review the worker concerns which had been communicated to the Ministry of Labour. Toronto Public Health agreed to do so.²⁵²

At the two largest SARS outbreaks in Ontario, at the Grace and North York General, the Ministry of Labour made no onsite visits to make sure workers were protected. It relied on telephone discussions and it deferred to public health authorities who, unlike the ministry, do not have the statutory duty to ensure that workers are protected under Ontario law. Under the way the provincial SARS response was structured and pursuant to a 1984 Memorandum of Understanding with the Ministry of Health,²⁵³ the Ministry of Labour deferred to Public Health. This assumed that even with the myriad tasks on Public Health's plate, from the gargantuan challenge of contact tracing to deciding whether to close the hospital, Public Health had the resources and capability to give worker safety the same level of attention as the Ministry whose primary responsibility it is.

The WCB was not shackled by these kinds of systemic restrictions. Rather, the WCB independently took decisive action when a nurse contracted the disease at Royal Columbian, wanting to make sure there was no other workplace transmission.

252. Ministry of Labour, submission to the SARS Commission, SARS Commission Public Hearings, November 17, 2003, p. 11.

253. Ministry of Labour, submission to the SARS Commission, SARS Commission Public Hearings, November 17, 2003, p. 10:

Since 1984 the Ministry of Labour has been party to an agreement establishing lines of responsibilities where there are suspected outbreaks of infectious diseases in workplaces. This agreement provides that the Ministry of Labour has a general responsibility for investigating hazards in a workplace under the *Occupational Health and Safety Act* and that the local Medical Officer of Health has responsibility for the identification, investigation and control of outbreaks of communicable diseases. It also provides that where the local Medical Officer of Health decides to take charge of an investigation and control of an outbreak the Ministry of Labour will assist.

Disagreements Over PPE Addressed

The N95 respirator and fit-testing were major sources of contention during SARS in both Ontario and B.C. As in Ontario, some infection control practitioners in B.C. thought requirements for N95 respirators and fit-testing were unwarranted and excessive. One occupational health and safety manager was quoted as saying:

Infection Control Practitioners in the acute care facilities abide by Health Canada guidelines re: appropriate respiratory protection and are reluctant to move toward the more stringent guidelines/ requirements of WCB.²⁵⁴

The resistance to fit-testing and N95 respirators was as entrenched among some infection control experts in B.C. as it was among some of their colleagues in Ontario. An infection control physician at one B.C. hospital told the Commission:

The pressure from Worker's Compensation in midstream to suddenly demand full N95 usage and fit testing was not only nonsense but was potentially dangerous. In either regard, it was grossly inappropriate. And it was done perhaps in their mind in the best of intention but without any seeming notion of realities or the expertise of very experienced hospital folk. The notion that somehow we had this new virus that was going to work in mechanisms unlike any other virus that we had ever experienced before. It was just really outrageous.

A senior WCB official said:

... actually it was a very difficult task because we got a lot of resistance from the medical community ... There were certain things they [some hospitals] were doing in terms of clinical procedures which we were extremely uncomfortable with. For example, when they were intubating probable patients ... they had prescribed surgical masks and we said, wait a minute, you're exposing somebody to that airborne. And if it's airborne as far as we're concerned respiratory protection comes into place.

254. Chun-Yip Hon and Rita Ciconte, Occupational Health and Safety Agency for Healthcare (OHSAH), "Lessons Learned from SARS: An Occupational Health Perspective."

What was different in B.C. was how these and other worker safety issues were addressed and resolved.

As noted throughout this report, key players in worker safety in Ontario, including the Ministry of Labour, occupational hygiene experts and health unions, were not involved in a meaningful way in resolving workplace issues. The Ministry of Labour, as noted above, was largely sidelined during SARS.

Health unions were also on the margins. When worker safety issues arose, they did not know who at the Provincial Operations Centre was making worker safety decisions, how to communicate with them, or how to ensure that their members' concerns were heard.

Ontario Nurses' Association (ONA) and the Ontario Public Service Employees Union (OPSEU) said in their joint submission to the Commission's public hearings:

- Prior to SARS ONA/OPSEU, was not aware that there was a POC [Provincial Operations Centre], nor that there was a POC-in-waiting, that would spring up in the event of a crisis such as the SARS outbreak.
- To date, OPSEU/ONA are not sure who exactly was working at the POC, how they were chosen or what their roles were – ONA reports that at the OHA meetings this question was raised numerous times – To date both unions still do not know.
- Most importantly, ONA/OPSEU did not know the background and expertise of the people who were drafting the Directives that directed the daily work of health care workers.²⁵⁵

Health unions, like the Ministry of Labour, also had trouble getting copies of directives and access to the Ministry of Health's "Dark Site."

ONA and OPSEU said in their joint submission to the Commission's public hearings:

251. ONA/OPSEU, submission to the SARS Commission, SARS Commission Public Hearings, November 17, 2003, p. 6.

In the early days of the crisis, both unions had difficulty getting access to the Directives at all. Although OPSEU/ONA was involved in teleconferences discussing the Directives, it was not until April 7, almost two weeks after the first Directive was released, that both unions gained access to what was called the MOHLTC “Dark Site.” This is where the Directives were posted. Until this point, both unions had relied on contacts within the OHA or from union members to provide them with the Directives that were governing the work and the safety needs of health care workers. Even when both unions were issued the password to access the MOHLTC site, ONA/OPSEU was warned in writing that “the site is not intended for the general public and is password protected to provide access to healthcare providers/associations only” (undated memo from [name provided], Communications and Information Branch, MOHLTC). Shortly thereafter, both OPSEU and ONA began to post the Directives in their entirety on their own websites for members, accompanied by interpretations and advice.²⁵⁶

Ontario lacked a process to bring all workplace parties together and sort out quickly any workplace issues that touch on occupational health and safety. Janet Beed, the chief operating officer of the Ontario Hospital Association, has said:

What we learned from SARS is that what is needed is a process to bring together the various partners – union, management, government, ministries, associations – to address these very complex systemic and legal issues, but we need to do that long before the crisis hits. When the crisis hits, we need timely action; we don’t need bringing a group together that hasn’t worked together before or has only worked in distant relationships. Bringing that group together in anticipation and setting up a set of ideologies and legislative requirements will help.²⁵⁷

The expertise of worker safety experts in Ontario was also not utilized, or well understood, as was noted in a number of submissions to the Commission.

256. ONA/OPSEU, submission to the SARS Commission, SARS Commission Public Hearings, November 17, 2003, p. 6.

257. Justice Policy Committee, Public Hearings, August 18, 2004, p. 147.

The situation was dramatically different in B.C. All the workplace parties got together early in the outbreak and everyone with a stake in worker safety was involved.

Dr. Annalee Yassi, head of the Occupational Health and Safety Agency, said:

The various agencies and organizations that needed to talk to each other got talking to each other very quickly. The, I cannot remember what date it was, but you know mid March, very close, very shortly, after the, you know, the events started occurring, a meeting was held that had brought together people from Infection Control, people from Public Health, the Workers Compensation Board, [the Occupational Health and Safety Agency] ourselves, we insured that we kept the health care force and the health care unions involved from the very beginning. There was a very good sense of we are all going to work on this together from the very beginning. There were no turf issues, there was no question of who should be the lead agency, this was just going to happen ...

Through this process, guidelines supplementing the WCB's March 31, 2003, guide were developed collaboratively among all affected parties. An article in the *British Medical Journal* said:

Guidelines were developed through a collaborative process involving the Workers' Compensation Board of British Columbia (the state's regulatory agency), the Occupational Health and Safety Agency for Healthcare (jointly governed by healthcare unions and employers), and provincial experts in public health, infection control, and infectious disease.²⁵⁸

What helped to bring all the parties together was the innovative Occupational Health and Safety Agency, which is jointly governed by employers and unions, including the Health Employers Association of B.C., the British Columbia Nurses' Union and the B.C. Government and Service Employees' Union.

Through this collaborative process involving all the workplace parties, decisions regarding personal protective equipment, despite ongoing differences of opinion, were made on the basis of the precautionary principle. The perspectives of worker safety experts were an integral part of the decision-making process.

258. "Severe acute respiratory syndrome guidelines were drawn up collaboratively to protect healthcare workers in British Columbia," *British Medical Journal* 326 (June 21, 2003):1394-5.

Dr. Yassi said:

Well, you know, not to overstate it, there were certainly the two lines expressed, interestingly even more from the Public Health vs. Occupational Health community even more so than the Infection Control vs. Occupational Health community but I think there was an overall sense of we have to err on the side of safety and that also workers feeling that management cared about their well-being was manifest by over providing rather than under providing, and giving health care workers a sense that managements cares about them, in and of itself important. So even if the science that, you know, N95 respirators fit tested was absolutely whether it was clear or not there was a feeling of the act of doing it would give health care workers a sense of comfort that their needs were being looked after, so that I think factors into the decisions that were made.

Unlike in Ontario, B.C. health workers were also part of the process of implementing guidelines.

One B.C. union official was quoted as saying:

Frontline leaders were consulted in addressing practical problems. For example, how to deliver meals to patients in isolation areas; nurses made management aware of just how long it took to glove/gown/mask etc... Once nurses got involved in the process, better decisions were being made, especially around staffing requirements/equipment.²⁵⁹

Was It a Matter of Luck?

How could the experiences of Toronto and Vancouver be so unlike?

There was an element of good fortune in the case of Mr. C at Vancouver General. He went directly from the airport to his family doctor, who sent him directly to Vancouver General, and, unlike in Ontario, he did not infect any members of his household.

259. Chun-Yip Hon and Rita Ciconte, Occupational Health and Safety Agency for Healthcare (OHSAH), "Lessons Learned from SARS: An Occupational Health Perspective"

Dr. Patrick of the BC CDC told the SARS Commission:

The Toronto index patient was someone who spread it at her home. That's a harder thing to recognize. In B.C., our first individual did not have a huge extended family, presented at hospital and was recognized very quickly as possible SARS. The pattern of early spread is more to do with luck. Luck was a big element.

Dr. Perry Kendall, the Provincial Health Officer, told the SARS Commission:

The index case had directly flown in from China. In Ontario, the index had no travel history. Made it a lot harder to make that link.

And yet, there is no denying the remarkable manner in which Vancouver General treated Mr. C. He was quickly isolated. Health workers took the kinds of precautions not routinely used in Ontario until much later in the outbreak. And while much has changed in the way many Ontario hospitals would react today in the event of another SARS outbreak, Vancouver General officials told the Commission they would treat Mr. C today much as they did in 2003.

Dr. Bryce, head of infection control at Vancouver General Hospital, said:

I just don't think we would have been managed differently...

Vancouver General treated its index patient with the kinds of heightened precautions, including the use of N95 respirators and the rapid isolation of patients presenting with undiagnosed respiratory symptoms, that when appropriately implemented in Toronto proved effective in containing SARS.

What the case of Mr. C also demonstrated was B.C.'s ability to respond to an emerging threat before it was recognized.

The BC CDC had alerted front-line workers to be on the lookout for severe influenza-like illness in returning visitors from mainland China or Hong Kong. This message had reached emergency room staff at Vancouver General staff who were already suspicious of patients with undiagnosed respiratory illnesses. As one study concluded:

[The case of Mr. C] tests the baseline capacity of a system to respond to emerging threats before they are known or recognized ... The response to

[Mr. C] in Vancouver highlights the importance of central coordination, baseline preparedness at the local level, and an efficient network of communication in mitigating outbreaks. Baseline preparedness should include barrier precautions in the care of all acute-onset respiratory infections. These should be reinforced through timely public health alerts and periodic infection control audits.²⁶⁰

Many Ontario hospitals have adopted the kinds of worker safety policies, practices and systems in place at Vancouver General in March 2003, including the use of N95 respirators, more training for staff, and a greater emphasis on worker safety.

There was also an element of good fortune regarding the two other imported cases of SARS in B.C.

The first was a 64-year-old woman who returned from Hong Kong to Vancouver on March 20. She was later phoned by her family and told she had attended a dinner party with family members who had SARS. Two family members subsequently died of the disease. Although asymptomatic, she visited her family doctor on March 26. Two days later, when a chest x-ray showed bilateral consolidated, she was given a surgical mask and directed to Royal Columbian Hospital in New Westminister, B.C. She was admitted directly to a negative pressure isolation room. Neither of her two household contacts got SARS. She was discharged from hospital on April 21, 2003.²⁶¹

The second was a 49-year-old man, who had stayed at the Amoy Gardens housing complex for a few days before returning home on March 30, 2003. More than 300 people in four separate buildings were infected at the Amoy Gardens in one of the largest community outbreaks of SARS. Back home, he isolated himself in the basement of his home and avoided contact with family members. By April 3, he was so short of breath that his son drove him to the emergency room of Vancouver General. Both wore surgical masks. He was immediately admitted to a negative pressure isolation room. He was discharged from hospital on April 21. No family members, including his son, got SARS.²⁶²

260. Skowronski et al., "Coordinated response to SARS."

261. Skowronski et al., "Coordinated response to SARS."

262. Skowronski et al., "Coordinated response to SARS."

The circumstances of these two patients made it easier to prevent further spread. Both attended at hospital wearing surgical masks. Both were immediately placed in negative pressure isolation rooms. And both clearly had epi links to SARS: the 64-year-old woman to family members with the disease, the 49-year-old man to the Amoy Gardens, the site of the largest community outbreak of SARS.

Dr. Patrick told the SARS Commission:

It's much easier to contain something that has never spread than it is to contain something once spread is off the ground.

While there is no denying B.C.'s good fortune, it was also better prepared and better organized to contain any outbreak.

Dr. Perry Kendall said:

We share information, we have been sharing information, different parts of the system and the Public Health system. And it takes one call from the Deputy Minister and in an hour you can have six CEO's and six V.P.'s of Nursing and six Chief Medical Officers of Health sitting on a teleconference call. You can't do that in Ontario. So, yes, we had some luck but I think we had a better organizational setup or a more optimal organization setup and we were better prepared in terms of anticipating imported cases.

Though occupational health and infection control are often described as separate silos, B.C. succeeded in bringing both disciplines to the table and ensuring their cooperation.

This is not to say there were no disputes in B.C. During the preparation of guidelines, discussions become heated on occasion. One participant in those discussions told the Commission that, despite the contentious nature of the issues, the meetings broadened the acceptance of worker safety principles:

At points, they kind of got a little heated, everyone pretty much maintained their composure, but there are certain individuals, that obviously, have strong opinions and I noticed things at the first few meetings, first meeting at least, there was a lot of head banging, saying I do not see the value of this, and the other side saying well this is the value of it, but the more information that we presented from the

[occupational] health and safety side in terms of well here is the research on it and here is what has been done, this issue has been looked at, and it was, it became a lot more acceptable to the infection control side, when they realized there is a science behind it, but definitely it was, it was somewhat heated at the beginning, just because there are some very vocal infection control people that are high profile, that have not really seen this as a requirement before and to change their stance immediately and their ideas was a bit of a challenge.

The difference is that in B.C. all the parties were at the table. All were given a voice. All were recognized as being part of the solution. Worker safety experts were given a prominent role and their expertise was valued.

Unlike in Ontario, the WCB was actively involved throughout SARS. It issued guidelines on March 31, 2003, and followed them up with 19 proactive visits. In Ontario, because of the way the SARS response was structured, the parties most involved in workplace safety, including the Ministry of Labour, ended up on the sidelines.

There was also quick recognition in B.C. of the danger that transmission to workers posed to other workers, to patients and, in fact, to the health system as a whole. This is especially evidenced by how the case of the nurse at Royal Columbian was handled. When there was a workplace outbreak, significant resources were dedicated to ensuring that there was no further workplace spread. There were joint teams of worker safety and infection control experts who were on-site until the danger had passed, and their efforts were monitored by WCB inspections.

There were many structural issues that helped assure the outcome in Vancouver, including efforts to promote a work safety culture.

Dr. Yassi told the SARS Commission:

From the point of view of the health care response, first of all a fair bit of work had been going on in terms of promoting a safety culture in the workplace, and the need to pay attention to proper precautions, patient safety, worker safety so that with the high degree of suspicion that the BCCDC had and the good work that Vancouver Coastal Health [the regional health authority that oversees Vancouver General Hospital] had in terms of promoting proper use of personal protective equipment and escalation procedures and so on. I think that there was a better response

from that point of view that from the very get go had people looking at there is a risk here we have to prevent transmission, protect ourselves, protect the transmission to others. So the climate was I think more attuned to a proper response.

Dr. Yassi also said:

I think that consistent with that sense of collaboration and getting beyond what could have been turf issues was a sense of commitment to really a collaborative but evidence-based approach, that we will err on the side of safety and do what we, what the evidence tells us ought to be done, and that route really quite well. So I think really the combination of a lot of work that was done on safety culture to begin with and the collaboration and the, you know, the commitment to taking a prompt evidence based approach and really good communication with all stakeholders involved.

Conclusion

There was undoubtedly an element of good fortune that saved Vancouver from the devastation that SARS wrought on Ontario. But it must also be said that Vancouver made its own luck.

One study concluded:

While favourable random chance may have played a role, Vancouver's response to SARS should not be dismissed on the basis of luck alone. Pasteur's edict that "chance favours only the prepared mind" may have modern relevance to the prepared healthcare system.²⁶³

The story of Toronto and Vancouver will extend beyond this chapter and resonate throughout this report, for it is against the backdrop of Vancouver's good fortune, better preparedness and systemic strengths that the rest of the story of SARS will be told and Toronto's performance assessed.

263. Skowronski et al., "Coordinated response to SARS."

Even with the crucial differences in the way the index cases presented to hospital in Vancouver and Toronto, it is fair to compare and contrast the differences in every respect, in preparation, worker safety and the application of the precautionary principle.