

A Time of Fear:
**How Canada Failed Our Health Care Workers
and Mismanaged Covid-19**

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**“Those who cannot remember the past
are condemned to repeat it.”**

George Santayana
The Life of Reason, 1905

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Dedication and Acknowledgements

This report is dedicated to the victims of COVID-19, their families, friends, colleagues and communities. May their suffering and anguish lead to a Canada that is far better prepared to face future public health crises.

This report is also dedicated to the memory of Mr. Justice Archie Campbell, whose SARS Commission provided a roadmap that could have averted many of the issues revealed by COVID-19. Fourteen years ago, he wrote presciently:

“SARS taught us that we must be ready for the unseen. That is one of the most important lessons of SARS. Although no one did foresee and perhaps no one could foresee the unique convergence of factors that made SARS a perfect storm, we know now that new microbial threats like SARS have happened and can happen again. However, there is no longer any excuse for governments and hospitals to be caught off guard and no longer any excuse for health workers not to have available the maximum level of protection through appropriate equipment and training.”

Assisting Justice Campbell as Senior Advisor was an honour and the highlight of my career.

The response to the pandemic has been characterized by the dedication, hard work and courage of health care workers and of workers in other essential sectors — and by the commitment of Canadians who have overwhelmingly done their best to follow public health directives. We owe them all huge debt of gratitude.

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Executive Summary – How Health Care Workers Paid the Price for Canada’s Failure to Learn from SARS

The story of COVID-19 in Canada is a story of courage, dedication and professionalism by health care workers, whose voices went largely unheard. Under-protected, under-resourced and under-appreciated, they continued to provide care, despite grave fears for their own safety and the safety of colleagues, loved ones and other patients.

Workers are worried about the risks they face each working day. Comprising about 20 per cent of COVID-19 cases in Canada, health care workers are more likely to get infected than the general population. They are worried about their families, their patients and their co-workers, and about unknowingly infecting them. They are worried about their colleagues and about what will happen if too many health care workers get infected and the health care system gets swamped. They are worried about a lack of appropriate personal protective equipment, and their employers’ seeming disregard for their health and safety concerns. And they worry about the unknown.

The stories of our dedicated health care workers provide a compelling window into the emotional and physical toll of COVID-19.

Stories from the front lines

Fearing for at-risk family members

Angela (a pseudonym to preserve this health worker’s identity) is a clerk in an emergency room. She’s often the first face a patient sees and the first person to screen them. Her husband is immunocompromised. She wears a surgical mask, not an N95 respirator, because that is all her employer is giving her.¹ “I have great concerns that I am bringing [COVID-19] home to someone who is on chemotherapy,”

Michelle (another pseudonym) is a health care worker in a group home. Her grandson has an inherited disorder for which there is no cure. She also has a baby granddaughter. When she asked for a surgical mask, her supervisor asked: “Is your client sick?” Michelle answered “no.” The supervisor asked: “Are you sick?” Michelle again answered “no.” The supervisor responded: “If you are not sick, we are not allowed to give you masks.”²

Preparing for the worst

Across Canada, health care workers and their families made the kind of preparations normally made by those going off to war.

An Edmonton nurse reported that she and her husband prepared their wills just before she began treating possible COVID-19 patients.

The nurse, a mother of two, said: “A lot of my colleagues and I have described it as standing on the edge of a cliff and looking down, but not knowing how far it is to the bottom or when you’re going to fall.”³ She is worried about shortages of personal protective equipment and about what would happen if she or her firefighter husband were to get sick. “I have anxiety, but I’m not necessarily afraid.”⁴

Daily risks and heightened anxiety

Health care workers face significant risks each and every working day.

Consider a respiratory therapist in Toronto. He faces life-and-death situations every day, especially when helping to prone a patient: turning them onto their stomach so they can draw more air.

“When we’re doing the proning, [the patient is] connected to life support. If that circuit disconnects, it’s just going to shower [us] with all that spray, which puts us at [a] high, high risk of getting COVID.”⁵

His anxiety is a constant. At one point, he took himself to the emergency room, worried about his chest pains, which he later found out were anxiety-related. “There’s the fear because I don’t want to take this back to my family; I don’t want to hurt anyone else.”⁶

Dealing with “a sneaky virus”

An experienced nurse in Ontario has experienced SARS, H1N1 and Ebola. But this pandemic, she says, is different.

“COVID-19 is a sneaky virus. This outbreak is scarier because patients can spread the virus while symptom-free. With SARS, it was clearer who was infected. With COVID-19, we have fewer clues that someone might be a carrier.”⁷

COVID-19 raises the stakes – and the pressures – normally found in any emergency room.

“In the ER, we’re still treating car accident injuries, heart attacks, strokes – anything you can think of and a dozen things you can’t. And it’s all complicated by this virus. Say, my team is running a Code Blue to resuscitate a patient. This happens often. But now we have to think about the fact that, if a patient is unresponsive, we can’t ask for their medical or travel history. We can’t know if they’re infected. Right now, we don’t have the luxury of getting it wrong. We have to assume they could have the virus.”⁸

Introduction

The system for protecting Canadian health care workers is broken. It must be fixed before the second wave of COVID-19.

If the reader notices a parallel between this language and the language used by the late Justice Archie Campbell to describe the systemic failures of severe acute respiratory syndrome (SARS) in 2003,⁹ it is no coincidence. Similar language is being used to describe health care worker safety problems exposed by COVID-19 that are similar in cause and manifestation to those revealed by SARS.

In COVID-19, Canada is witnessing a systemic preventable failure to learn from the 2003 SARS outbreak. It is a failure to both adequately prepare and to urgently respond in a manner that is commensurate with the gravest public health emergency in a century.

The biggest SARS lesson – flowing from the heavy burden of the disease on health care workers, who comprised 44 per cent of cases in Ontario,¹⁰ the largest outbreak outside Asia¹¹ – was the precautionary principle.

When facing a new pathogen, there is a call for safety: protect health care workers at the highest level using airborne precautions, including N95 respirators or higher, until we better understand the new virus; scale the protection down only if it is safe to do so.

The precautionary principle also extends to other pandemic containment measures, like border closings and public masking: when the evidence is not conclusive, it's best to err on the side of caution and safety.

Since the start of COVID-19, the lessons of the precautionary principle have largely been ignored, despite repeated warnings from health care workers, unions and worker safety experts.

According to a snapshot of data analyzed by the Canadian Institute for Health Information, as of July 23, 2020, more than 21,000 health care workers in Canada had been infected with COVID-19. The highest infection rates, as a proportion of total provincial cases, are in Quebec, New Brunswick, Nova Scotia and Ontario.¹²

Nationally, health care workers comprise almost 20 per cent of all COVID-19 infections in Canada,¹³ a rate that is about double the global health care worker infection rate (10 per cent) reported by the WHO and the International Council of Nurses.^{14 15}

Canada's national health worker infection rate is more than four times the rate in China, where airborne precautions are used.¹⁶

Health care workers comprised 24.1 per cent of cases in Quebec and 16.7 per cent of cases in Ontario. In the Atlantic Provinces, health care workers represented 18.8 per cent of total cases in New Brunswick and 17.2 per cent of cases in Nova Scotia. In contrast, in Prince Edward Island and Newfoundland and Labrador, health care worker infections stood at 5.6 per cent and 6.1 per cent respectively. The Canadian Institute for Health Information's data snapshot highlights lower figures in the western provinces than the national average: 10.1 per cent in Manitoba, 5.4 per cent in Saskatchewan, 8.8 per cent in Alberta and 7.6 per cent in British Columbia.¹⁷

About 13,000 Canadian health care workers have filed workplace injury claims arising from COVID-19, representing 75 per cent of all claims in Canada. Most were filed in Quebec and Ontario.¹⁸

Tragically, while official reports put the number of health care worker deaths from COVID-19 at 12,¹⁹ at least 16 health care workers have died of COVID-19 in Canada, according to union sources.²⁰ They include:

- Flozier Tabangin, 47, a residential worker in Richmond, B.C., who assisted people with intellectual and physical disabilities and worked multiple jobs to support his wife and young daughter. A former colleague said he was “like a father, a brother to everyone. If you need something, you [could] count on him any time.”²¹
- Brian Beattie, 57, a nurse at a seniors’ home in London, Ontario. The Ontario Nurses’ Association said: “Brian was a well-liked and respected registered nurse. He was the definition of dedication, and he considered his colleagues and residents to be his other family.”²²
- Victoria Salvan, 64, a health care worker at an under-staffed long-term care home in Montreal, caught the virus just weeks away from retirement. A colleague said Victoria always elicited a smile from her patients “because they knew they would be treated with love and kindness.”²³

Despite the mounting toll on health care workers, Canadian public health agencies and their advisers, acting with the best of intentions, have repeatedly ignored the warnings of unions, health care workers and worker safety experts, and have continued to:

- Dismiss the need for the precautionary principle and for the higher protections for airborne disease, which typically involve N95 respirators;
- Rule out the need for airborne precautions by summarily dismissing the possibility that SARS-CoV-2, the virus that causes the new disease, was spread by small particles, known as aerosols, that float in the air; and
- Assert with high levels of certainty that enough was known about SARS-CoV-2 – the virus that causes COVID-19 and a cousin of SARS – that contact and droplet precautions, including surgical masks, are sufficient, except for high-risk procedures.

There are many instances of disconnect between infectious experts’ guidance and the on-the-ground reality faced by health care workers.

None is more striking than the following example from Quebec.

On the same day that a top Montreal infectious disease specialist declared that COVID-19 has demonstrated “how rarely an N95 mask is truly needed” and that surgical masks are sufficient protection,²⁴ Quebec unions published an article citing the fact that more than 13,600 health care workers in the province relying on that advice had been infected.²⁵

The president of the Confédération des syndicats nationaux, Jeff Begley, reproached the government for sending his members to the front lines so poorly equipped:

“We have been abandoned. The term is strong, but it represents the reality. Public health recommendations, blindly followed by health institutions, have failed to protect staff. And health care workers continue to be put at risk.

From the start of the pandemic, when there was uncertainty about how the virus was transmitted, we asked for protection against possible airborne transmission, which we were denied. Transmission of the virus by aerosols appears more and more likely. The World Health Organization has recognized this recently, and much research is now pointing in this direction.

How can we explain that our public health authority continues to recommend the wearing of masks, equipment, as well as preventive procedures that do not protect against this mode of transmission?"²⁶

This example is not isolated. Public health agencies and their advisers have steadfastly maintained their aversion to the precautionary principle since the start of COVID-19.

In March 2020, a Public Health Ontario document confidently stated: "Healthcare workers caring for COVID-19 patients in other jurisdictions [...] have not acquired COVID-19 while using droplet and contact precautions recommended in the province."²⁷

In May 2020, an infectious disease specialist in Toronto said: "The reason we know [COVID-19 is not airborne] is because we have hundreds of health care workers who are taking care of patients wearing regular masks. If this [were] airborne, [...] all those health care workers would be getting sick."²⁸

In a May 2020 letter to a major Canadian newspaper, a group of infection control experts wrote: "If COVID-19 were an airborne infection [...], we would see large and widespread outbreaks in places adhering to droplet prevention [...]. We have not."²⁹

In July 2020, another infectious disease expert said that if surgical masks and other contact and droplet precautions "didn't work, we would see vastly higher numbers in our health care workers."³⁰

Tragically, the number of infected and dead Canadian health care workers has proven far worse than public health agencies anticipated – and has confirmed the worst fears of health care workers, unions and worker safety experts.

It has also demonstrated the strong link between health care worker safety and pandemic containment. Consider that, as of August 31, 2020:

- Canada had more COVID-19 cases (129,888) than China (85,048), Hong Kong (4,801) and Taiwan (488) combined; and
- Canada had more COVID-19-related deaths (9,164) than China (4,634), Hong Kong (88) and Taiwan (7) combined.
- Chinese health care workers comprise 4.4 per cent of COVID-19 cases. Most were infected before airborne precautions were implemented.³¹ As of late July 2020, in Hong Kong, five health care workers had been infected.³² Similarly, in Taiwan, just three health care workers had been infected as of late July 2020.³³

A litany of systemic problems

COVID-19 exposed the systemic failure to keep an open mind to the possibility that SARS-CoV-2, the virus that causes COVID-19, was profoundly different from all other pathogens experienced by humankind and thus warranted a precautionary approach.

COVID-19 has consistently surprised the medical community with a host of other symptoms and complications:

“[T]he virus has been implicated in skin lesions, the loss of taste and smell, heart problems, strokes, brain damage, and other side effects, some of which can be traced back to the virus’s ability to infect the endothelial cells that line blood-vessel walls. The virus also appears to trigger an out-of-control immune reaction, known as a cytokine storm, in some patients.”³⁴

Perhaps the most surprising characteristic of COVID-19 is the large number of what are generally called asymptomatic cases – people who get infected but do not show symptoms or feel sufficiently unwell to see a doctor. These cases fall into two categories. There are people who are subclinical³⁵ or pre-symptomatic,³⁶ with the latter not appearing to be ill but eventually becoming visibly ill. And there are those who are truly asymptomatic and appear healthy throughout the course of their infection.³⁷

Until COVID-19, the evidence suggested that asymptomatic transmission was generally a “rare event,” and that epidemics historically were not driven by that kind of transmission.³⁸

With the benefit of hindsight, we can see that Western experts were not taking a precautionary approach, and did not seem open to the possibility that a completely new virus might behave in a completely new and unexpected manner.

There were early warning signs from China, however, about these so-called “silent carriers.”

In a letter published in *The Lancet* on February 13, 2020, Chinese experts warned that, based on their frontline experience, asymptomatic COVID-19 patients were a serious issue and could spread the disease. In their view, this was an important reason for protecting health care workers at a precautionary level with airborne protections:

“These findings warrant aggressive measures (such as N95 masks, goggles and protective gowns) to ensure the safety of health care workers,” they concluded.³⁹

Moreover, citing classified Chinese government data, the *South China Morning Post* reported in March 2020: “The number of ‘silent carriers – ‘people who are infected by the new coronavirus but show delayed or no symptoms – could be as high as one-third of those who test positive.”⁴⁰

A study published in August 2020 in *JAMA Internal Medicine* confirmed that estimate, suggesting that 30 per cent of COVID-19 cases may be asymptomatic. Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases in the United States, puts the estimate as high as 40 per cent.⁴¹

Unlike Canada, China and South Korea felt the evidence of asymptomatic transmission was sufficient to take a precautionary approach early in the pandemic. They decided to test anyone who had had close

contact with a COVID-19 patient, regardless of whether the person presented symptoms. Some experts suggested this may explain why the two Asian countries seem to have stemmed the spread of the virus.⁴²

Canada's failure to take a precautionary approach to the possibility of asymptomatic transmission – as China and South Korea did – has had profound consequences for health care workers and for border control measures.

If a “silent carrier” can transmit the disease, then emphasizing such symptoms as fever, cough and gastrointestinal issues as indicators of COVID-19 (as Canada did for far too long) is an inadequate means of triaging passengers arriving at Canadian airports.

In hindsight, Canada's approach for detecting COVID-19 cases at the border or in the health care system left a huge blind spot.

Inadequate supplies of PPE

There have been persistent and widespread systemic supply management problems during COVID-19, leading to debilitating shortages of personal protective equipment, despite the lessons from SARS on stockpiling supplies.

These problems had been years in the making because Canada had allowed itself to be dependent on foreign manufacturers. Successive federal and provincial governments had sat on their hands on this issue, even after it had been exposed by SARS.

This was compounded by the destruction of significant stockpiles in the years leading up to COVID-19:

- The federal government destroyed and did not replace its stockpile of up to two million N95 respirator masks in May 2019, leaving only 100,000 in federal warehouses at the start of the pandemic.⁴³
- In 2017, Ontario began destroying as many as 55 million N95 respirators that had been stockpiled on the recommendation of the SARS Commission in preparation for a public health emergency. These respirators had been allowed to expire and were not replaced.⁴⁴

Because of N95 shortages during COVID-19, health care workers across Canada have been pressured to use surgical masks, even though worker safety experts overwhelmingly believe fit-tested N95 respirators, or better, along with other personal protective equipment, should be considered the minimum requirement to protect workers against a new pathogen like COVID-19.

One nurse reported a negative experience with management after refusing to conduct COVID-19 tests without an N95: “This didn't go over well. I was made to feel belittled, and my concerns were dismissed.”⁴⁵

Another nurse expressed similar anxieties about having to engage with COVID-19 patients without the appropriate personal protective equipment:

“We’re so low on N95 masks that we’re expected to enter COVID-19 rooms with surgical masks, which are not effective against the virus. Not only are we risking our own health, but the health of our children and spouses.”⁴⁶

Even surgical masks were often rationed during the pandemic. Some hospitals limited frontline staff to one or two disposable masks a day. “They’re treating us like we’re disposable,” said one nurse, whose identity was kept confidential by CBC.⁴⁷

Another anonymous nurse expressed similar feelings to the *Toronto Star*.

“When you walk [into the hospital] and see your entire worth as a human being is two masks in a brown paper bag – like, that’s all you’re worth to the hospital, that’s all your health is worth, two masks for a whole shift – you’re like, what am I doing here?”⁴⁸

“I didn’t sign up to die on my job.”⁴⁹

Going to work meant that health care workers risked not only their own health but also that of their families.

The case of Felicidad Maloles, a highly regarded 65-year-old personal support worker in Toronto, underscores the risks to health care workers’ families. She survived a bout of COVID-19, but lost her 69-year-old husband, her partner for 40 years, to the disease.

“I’m so stressed, and blaming myself because I got the virus,” said Maloles. If I didn’t get the virus, maybe he would not die.”⁵⁰

These heartbreaking stories of disease and death, of mental anxiety and anguish – combined with troublingly high rates of infection and death among health care workers – underline the breadth of systemic worker safety failings of the first phase of COVID-19, and of the extent to which the lessons from SARS were not heeded.

To be sure, other countries, like the United States, have fared much worse than Canada in containing the pandemic. That is little comfort to the thousands of infected Canadian health care workers and their families. Countries like the United States escaped SARS and did not have the opportunity to learn from it. Canada experienced SARS but tragically did not apply the lessons learned.

Failure to heed warnings from health care workers and unions

A significant systemic problem during COVID-19 – as it was during SARS – is that health care workers and unions were not seen by governments and public health agencies as collaborative partners in setting safety guidelines and procedures. This is, unfortunately, still the case, despite the fact that the Internal Responsibility System, the principle underlying all Canadian worker safety laws and regulations, mandates the equal participation of unions and workers in keeping workplaces safe.

Consider the following timeline on how hard it was for unions to be included in the Public Health Agency of Canada’s discussions on worker safety:

- January 24, 2020: The Canadian Federation of Nurses Unions (CFNU) wrote to the Public Health Agency of Canada (PHAC), asking for unions to be directly involved in developing COVID-19 health care infection prevention and workplace safety guidance, as they had with the H1N1 outbreak in 2008 and Ebola in 2013-2014.⁵¹
- January 28, 2020: PHAC refuses to allow nurses' unions to participate.
- January 29, 2020: Nurses unions made a second plea to Dr. Theresa Tam regarding PHAC's refusal to include them in the development of guidance that had a direct impact on workers' safety.⁵²
- January 29, 2020: Nurses unions pled with federal Health Minister the Honourable Patty Hajdu regarding PHAC's refusal to include them in health care worker safety discussions.⁵³
- February 1, 2020: Nurses unions are provided with an embargoed copy of the first edition of the PHAC worker safety guidance for acute care (Infection Prevention and Control for Novel Coronavirus (2019-nCoV): Interim Guidance for Acute Healthcare Settings).
- February 3, 2020: the PHAC released the guidance online prior to CFNU's response.

More will be said later in this report about how the subsequent consultations between public health agencies, unions and workers generally have not been conducted in a spirit of collaboration and cooperation, and in a manner reflecting the principles of the Internal Responsibility System.

The lens of hindsight

Canada should have done better to protect our health care workers.

We are able to say this with the benefit of hindsight. This tool was not available to Canadian public health agencies, their experts and their advisers. It goes without saying that no one wished for the unacceptably high levels of disease and death among Canadian health care workers. We are using the benefit of hindsight not to demonize or scapegoat, but to identify where things went wrong and to draw lessons from mistakes.

We will never know for certain to what extent those unbearably high numbers of health care worker infections and deaths could have been reduced, had the warnings of unions, health care workers and safety experts been heeded.

What we do know – and will demonstrate in this report – is that other nations that experienced SARS, like China, Hong Kong and Taiwan, were able to draw from that experience and apply its vital health care worker safety lessons. And their health care workers fared better than ours.

Who is to blame?

While it would be tempting to point fingers at particular individuals, or groups of individuals, for worker safety failures, those failures are, in fact, systemic.

In the SARS Commission's final report, Justice Campbell noted findings that are as relevant today as they were in 2006:

“It is too easy to seek out scapegoats. The blame game begins after every public tragedy. While those who look for blame will always find it, honest mistakes are inevitable in any human

system. There is always more than enough blame to go around if good faith mistakes made in the heat of battle are counted in hindsight as blameworthy.”⁵⁴

The leaders of the COVID-19 response in Canada – like their predecessors during SARS – are dedicated, competent, well intentioned, highly trained and hard-working. Leaders in 2003 and in 2020 acted in good faith and with the best of intentions.

The failures to heed the warnings of SARS and fully protect health care workers during the current pandemic are systemic ones⁵⁵ – grounded in organizational shortcomings, deficiencies and imperfections – and not directly attributable to any individual or group.

Writing of SARS in sentiments equally applicable to COVID-19, Justice Campbell wrote:

“This was a system failure. We were all part of it because we get the public health system and the hospital system we deserve. We get the emergency management system we deserve and we get the pandemic preparedness we deserve. The lack of preparation against infectious disease, the decline of public health, the failure of systems that should protect nurses and paramedics and doctors and all health care workers from infection at work, all these declines and failures went on through three successive governments of different political stripes. We all failed ourselves, and we should all be ashamed because we did not insist that these governments protect us better.”⁵⁶

Because of systemic failures, Canada has experienced a tragic replay of many of the worker safety issues identified by Justice Campbell and the SARS Commission. Sadly, it was these very systemic failures that the SARS Commission’s findings and recommendations had been designed to address.

During the SARS epidemic outbreak, as now during the COVID-19 pandemic, there was a passionate debate over whether droplet and contact precautions (including surgical masks) or airborne precautions (including fit-tested N95 respirators or higher) sufficiently protected health care workers against a novel pathogen.

The fact that this debate still rages during COVID-19 demonstrates the wide continuing gap between widely accepted worker safety principles in health care and the ethos of public health agencies and their advisers. The former are rooted in the precautionary principle of erring on the side of caution in the face of scientific uncertainty; the latter – on levels of scientific certainty more appropriate for the safe introduction of new medicines and vaccines.

The best evidence of SARS’s ability to spread through the air under certain conditions did not emerge until about a year after the outbreak.

Justice Campbell noted that this validated the precautionary approach:

“Knowledge about how SARS is transmitted has evolved significantly since the outbreak. Some recent studies suggesting a spread by airborne transmission lend weight to a precautionary approach to protect health care workers against a new disease that is not well understood.”⁵⁷

Compared to the absence of evidence during the SARS outbreak itself, there is now growing evidence of possible airborne transmission of SARS-CoV-2.

Over and over during COVID-19, health care workers, unions, and health and safety experts have presented mounting research on airborne and aerosol transmission, not as definitive proof but as sufficiently compelling for the precautionary principle to be invoked.

Over and over, public health agencies and their advisers have misinterpreted the submissions on airborne transmission by unions and safety experts as failed attempts at definitively proving that SARS-CoV-2 spreads through breathing, talking, singing and coughing. Definitive proof was never their intention. Instead, unions and safety experts were simply demonstrating the need for adopting a precautionary approach until the science is settled.

A prime example is the response by the Canadian public health community to a July 2020 letter to the WHO. The letter, which was signed by 239 experts from 32 countries, called on the WHO to revisit its deep-seated resistance to growing evidence of airborne transmission. Suggesting that it is precisely during a time of scientific uncertainty that the precautionary principle should be invoked, the authors noted:

“It is understood that there is not as yet universal acceptance of airborne transmission of SARS-CoV-2; but in our collective assessment there is more than enough supporting evidence so that the precautionary principle should apply. In order to control the pandemic, pending the availability of a vaccine, all routes of transmission must be interrupted.”⁵⁸

The letter has been widely dismissed by the Canadian public health and infection control experts, who judged it not on its precautionary message but on whether it proved airborne transmission.

One public health leader called it “a tempest in a teapot.”⁵⁹

An infectious disease expert said: “We’re just rehashing the same arguments that we’ve heard throughout February, March, April up until now. I’m not quite sure what the fuss is all about.”⁶⁰

The debate over the WHO letter was reminiscent of Justice Archie Campbell’s warning in the SARS Commission’s final report regarding the importance of the precautionary principle:

“The point is not who is right and who is wrong about airborne transmission. The point is not science, but safety. Scientific knowledge changes constantly. Yesterday’s scientific dogma is today’s discarded fable. [...] We should not be driven by the scientific dogma of yesterday or even the scientific dogma of today. We should be driven by the precautionary principle that reasonable steps to reduce risk should not await scientific certainty.”⁶¹

Blame and accountability

The strength of inquiries like the SARS Commission is that they can identify systemic root causes and systemic solutions.

Their weakness is that, because they are precluded from assigning civil or criminal liability, no one and no group is held accountable. No one was fired after SARS. No one was scrutinized over their actions or omissions.

There were many remarkable leaders during SARS – like the late Dr. Sheela Basrur, then head of Toronto Public Health. She was integral to the response’s success, especially in light of the absence of effective leadership.

But there were also those whose actions fell well below the standards set by the commendable actions and leadership of Dr. Basrur.

Which brings us to the question of how best to fix the systemic problems COVID-19 has revealed.

We must recognize that our public health leaders have acted in good faith and with the best of intentions to address systemic failings that have been years in the making.

However, just because problems are systemic and require systemic solutions does not mean that the actions of decision-makers should not be reviewed on a go-forward basis.

This should be done not to find scapegoats but to determine who is most qualified to fix the systemic problems revealed by COVID-19.

Protect health care workers, protect the community

In the wake of the first phase of COVID-19, Canada has little to celebrate. It has paid a heavy price in disease, death, anguish and anxiety for failing to have learned from SARS and taken a precautionary approach.

Canada’s pandemic scoreboard is a depressing read.

More than 21,000 Canadian health care workers have contracted COVID-19. They make up about one in five cases. On pandemic containment, we have more cases and deaths than China, Hong Kong and Taiwan, our SARS peers,⁶² combined.

COVID-19 has reaffirmed an important lesson from SARS: health care worker safety and outbreak containment go hand in hand.

Protecting health care workers breaks the chain of transmission. If they are protected, they cannot be infected by their patients, residents or their colleagues. Conversely, if they are protected, they cannot infect their patients, their residents, their colleagues and their families.

As Justice Campbell noted, protecting health care workers during a pandemic has a positive knock-on effect by helping to mitigate pandemic’s human, societal and economic negative consequences.

“One of the strongest lessons from SARS is that the health and safety of health care workers and other first responders is vital in a public health emergency. SARS demonstrated that an emergency response can be seriously hampered by high levels of illness or quarantine among health care workers.”⁶³

We owe a great debt of gratitude to the tens of thousands of Canadian health care workers who bravely cared for COVID-19 patients, often in environments like long-term care facilities with exceptionally high levels of risk and disease, and troubling working conditions.

We also owe a great debt of gratitude to other essential front-line workers in a myriad of sectors and to the millions of Canadians who have followed public health advice and have persevered in the face of one of Canada's greatest challenges. That we flattened the curve during the first phase of COVID-19 is a testament to them, and to their profound commitment to Canada's foundational social values.

For decades, health care workers have witnessed first-hand the understaffing, overcrowding and persistent lack of funding that have chronically impoverished long-term care facilities, and now revealed by COVID-19. And for decades, governments, long-term care owners and operators have turned a blind eye, relying on the dedication and courage of health care workers to act as the fragile glue to mend the unmendable – the many, deep, persistent and long-standing cracks in this sector.

At the beginning of September 2020, about eighty per cent of Canadian deaths from COVID-19 had been in the long-term care sector, exceeding by far deaths from COVID-19 in hospitals or within the community. During the same period, approximately one in five seniors' homes in Canada had experienced outbreaks.⁶⁴

As COVID-19 has exposed this sector's fissures and shortcomings, health care workers have paid a heavy price. Since the start of the pandemic, over 10,000 health care workers have contracted COVID-19 in long-term care, representing about a third of all cases in nursing homes.⁶⁵

These issues need to be addressed on an urgent basis.

We cannot waste the breathing room dedicated they have bought us. As we brace for a potential second wave of COVID-19, public health agencies and governments must act urgently to fix the worker safety systemic failings exposed by the current pandemic, and learn from other jurisdictions, like China, Hong Kong and Taiwan, that used the precautionary principle to protect their workers and to more effectively contain the pandemic.

Justice Campbell presciently warned in his final report in December 2006:

“SARS taught us to be ready for the unseen. This is one of the most important lessons of SARS. Although no one did foresee and perhaps no one could foresee the unique convergence of factors that made SARS a perfect storm, we know now that new microbial threats like SARS have happened and can happen again. However, there is no longer any excuse for governments and hospitals to be caught off guard and no longer any excuse for health care workers not to have available the maximum level of protection through appropriate equipment and training.”⁶⁶

There is no longer any excuse to not fully protect our health care workers from COVID-19.

The systemic failures revealed by COVID-19 must be fixed, and quickly.

Amid warnings that COVID-19 could persist into 2022, urgent action is needed now to address the problems revealed by the pandemic.

Recommendations

Precautionary principle

- That the precautionary principle, which states that action to reduce risk need not await scientific certainty, be expressly adopted as a guiding principle throughout Canada's public health, employer infection policies, measures, procedures and worker safety systems by way of immediate action in: policy statements; all relevant operational standards and directions; and by inclusion, through preamble, statement of principle, or otherwise, in all relevant legislation.
- That in any infectious disease public health emergency, the precautionary principle guide the development, implementation and monitoring of measures, procedures, guidelines, processes and systems for the early and ongoing detection and treatment of possible cases.
- That in any infectious disease public health emergency crisis, the precautionary principle guide the development, implementation and monitoring of worker safety measures, procedures, guidelines, processes and systems.
- That federal and provincial/territorial governments collaboratively act on an urgent basis to ensure that there are sufficient supplies of N95 respirators, or better, or equivalent, to ensure that all health care workers can be protected at a precautionary level. This must include maintaining and regularly refreshing strategic stockpiles and developing a made-in-Canada supply chain.
- The precautionary principle should be the primary driver in setting and properly maintaining levels of personal protective equipment in national and provincial stockpiles. Stockpiles should be set and maintained at levels that ensure that all health care workers are protected at an airborne level. Building on its contracts with 3M and Medicom to produce N95 in Canada, the federal government should ensure that Canada has sufficient domestic production capability to protect health care workers at a precautionary level.
- When a new pathogen emerges – and experts believe COVID-19 is not the last time we will face this threat – health care workers should be protected at a level consistent with the precautionary principle. This precautionary requirement should be enshrined in all occupational health and safety legislation.
- Chief medical officers of health (CMOHs) should be statutorily required to consider and apply the precautionary principle in assessing their jurisdiction's public health emergency preparedness, thus ensuring that their health care workers are protected at a precautionary level.
- Decisions to forego the precautionary principle should not be taken arbitrarily, with a lack of transparency, or without the concurrence of health care worker unions and workplace safety experts. Decisions to forego the precautionary principle should be reviewed by relevant legislative committees and auditor generals.
- That the health and safety concerns of health care workers be taken seriously, and that in the spirit of the precautionary principle, health care workers should also feel safe.
- Canada should critically assess WHO guidance on worker safety and pandemic containment through the lens of the precautionary principle, and determine whether it is in Canada's best interests, and reflects the best evidence from other countries' natural experiments and emerging scientific evidence.

Occupational health and safety

- Canada should immediately add occupational hygienists, worker safety experts and aerosol experts to PHAC and jointly develop guidance that exercises the precautionary principle and accepts and considers diverse sources of evidence, not just randomized control trials.
- On worker safety and pandemic containment measures, Canada should have the resources and capabilities, including sufficient worker safety and aerosol expertise, to independently assess guidance from the WHO and to formulate our own.
- A formal national health care table should be established involving health care unions, employers and the PHAC, with a legal requirement for the PHAC to consult that committee in a transparent and meaningful manner before finalizing guidance on infectious disease response.
- Guidance on the safety of health care workers be made on a precautionary basis by workplace regulators, health care worker unions and worker safety experts working collaboratively, and that those decisions form the basis of health worker safety guidance issued by public health agencies.
- Ensure that provincial labour ministries have the resources and ability to act independently from provincial health ministries and fully enforce occupational health and safety laws.
- That provincial ministries of labour use their enforcement and standard-setting activities, and ministries of health use their funding and oversight, to promote organizational factors that give rise to a safety culture in health workplaces.
- That in any future infectious disease crisis, ministries of labour have clearly defined decision-making role on worker safety issues, and that this role be clearly communicated to all workplace parties.
- That provincial ministries of labour have the capabilities and resources to safely, effectively and comprehensively conduct in-person, on-site inspections during public health emergencies.
- Establish a worker safety research agency as an integral part of the Public Health Agency of Canada, with legislated authority for decision-making on matters pertaining to worker safety, including the preparation of guidelines, directives, policies and strategies. It would be modeled on NIOSH, an essential part of the U.S. CDC, and would be focused on worker safety and health research, and on empowering employers and workers to create safe and healthy workplaces. Like NIOSH, its staff would represent all fields relevant to worker safety, including epidemiology, nursing, medicine, occupational hygiene, safety, psychology, chemistry, statistics, economics, and various branches of engineering.
- In the interim and on an urgent basis, any section of the PHAC involved in worker safety have, as integral members, experts in occupational medicine and occupational hygiene, and representatives of workplace regulators, and consult on an ongoing basis with workplace parties.

Accountability, transparency and independence

- It is important that Canadian ministers and senior public health officials continue to participate in relevant WHO decision-making bodies. However, to preserve Canada's independence, Canadian participants in policy and Canadian guidance-making bodies should not wear two hats. They should either participate in policy and guidance making at the WHO or at Canadian public health agencies, but not at both.
- Federal and provincial chief medical officers of health (CMOHs) be statutorily required, on an annual basis, to report to their respective legislatures, and to the public that they're mandated to protect, on the state of their jurisdiction's public health emergency preparedness, and make recommendations on addressing any shortcomings. The preparation of this report should reflect the concerns and perspectives of health worker unions and safety experts.

- The reports of the CMOHs be required to go to a standing committee of their respective legislatures, which will hold annual hearings into the report and related issues.
- Chief medical officers of health be given the statutory independence – in jurisdictions where they do not have this right – to speak publicly on vital issues like pandemic preparedness without fear of political interference or retribution.
- Qualified outside auditors with sufficient expertise and resources independently audit, on a biannual basis, CMOHs' preparedness resources and their statutory declarations on pandemic preparedness, and publicly report their findings.
- That all jurisdictions be required to publicly report to their stakeholders and to the federal government – in a consistent, detailed and timely manner – the number of health care worker infections in their area.
- Governments and public health agencies be open and transparent on levels of PPE stockpiles.
- With regards to efficiently and cost-effectively maintaining stockpiles of PPE, governments may want to consider Taiwan's three-tier stockpiling framework. It has proven its ability during COVID-19 to optimize the PPE stockpiling efficiency, including through regular cycles of refreshing, ensure a minimum stockpile, use the government's limited funds more effectively, and achieve the goal of sustainable management.
- That significant good faith effort be made to iron out federal-provincial jurisdictional conflicts hindering timely data sharing on health care worker infections.
- That Statistics Canada be given the authority and resources to implement and operate a transparent national system on health care worker data. The resulting data sets must have consistent terminology and criteria. They must have significant granularity to allow monitoring and trend analysis by occupation and sector at a detail level (e.g., PSW, nurse, physician; or LTC, nursing homes, hospitals, pandemic wards within hospitals, direct patient care and other key roles such as triaging). The data has to be shared in real time, not delayed by weeks or even months. And the performance of the system must be monitored and tested regularly.

Long-term care

- Fixing a historical anomaly, the *Canada Health Act* should be amended to include long-term care, making it available to Canadians on a universal basis. Government programs aimed at assisting Canadians with long-term care needs vary by jurisdiction and typically are income-based. This is not consistent with the principle of universality at the heart of Canada's publicly funded health care.
- Convene a national commission to develop short-, medium- and long-term strategies for the structure of the long-term care sector in light of the shortcomings revealed by COVID-19.
- Develop and implement a long-term care labour force strategy to address the multiple labour force problems revealed by COVID-19, including the problems of inadequate compensation, staff shortages, overreliance on part-time staffing, and training failures.
- Improve wages, benefits (including paid sick leave) and conditions of employment for health care workers in the long-term care sector to levels that commensurate with the social importance of their work, the complexity of their duties and the daily hazards they face, even in non-pandemic times.
- Offer all part-time workers in this long-term care sector full-time employment (with full-time wages and benefits) and limit their work to one single facility.
- Examine best practices of jurisdictions like South Korea, Hong Kong and Singapore, which have a strong track record of limiting COVID-19 in their long-term sectors. In South Korea, for example, anyone with suspected COVID-19 is immediately isolated and moved out to a separate emergency

quarantine centre or hospital. In Hong Kong, all long-term care facilities have, as a minimum, a three-month supply of N95 respirators and other PPE. Also in Hong Kong, all long-term care facilities conduct emergency exercises every year to coincide with the advent of flu season to ensure infection control measures and resources are in an acceptable operational state.

- Because systemic infrastructure shortcomings limit the ability of many long-term care facilities to isolate COVID-19 cases, it is vital that on an urgent basis separate emergency isolation facilities be created, resourced and staffed. This would permit COVID-19 cases to be transferred out of long-term care facilities that are unable to isolate them.
- Ensure that any surge in COVID-19 hospitalizations does not result in shifting patients to already overburdened, under-resourced and understaffed long-term care facilities, which may be unable to isolate new admissions.
- Reflecting a best practice developed in the U.S., consider establishing, where space and resources permit, a cohort unit for exposed and new admissions as an effective way to separate and screen higher-risk individuals for the 14-day incubation period. Keeping these patients on isolation and with dedicated staff would make contact tracing for exposure identification easier.
- Ensure that all long-term care facilities are staffed by a dedicated infection control professional with occupational health and safety training. Require that professional to provide quarterly publicly accessible assessments of the state of infection control and occupational health and safety at their facility.
- Ensure that relevant workplace regulators conduct in-person proactive inspections of all long-term facilities to ensure compliance with occupational health and safety laws, regulations and best practices.
- On an urgent basis, ensure that all health care workers in the long-term care sector are properly trained and fit-tested on the use of N95 respirators and other protective equipment.

All sectors (community, acute and long-term care)

- Respect and enforce the health and safety rights of workers.
- Ensure workers have the right to participate in decisions that could affect their health and safety.
- Ensure workers have the right to know about the hazards in their workplace and receive the training they need to be able to do their jobs safely.
- Ensure workers have the right to refuse work that could endanger their health and safety or that of others.
- That the right of health care workers to speak out about unsafe working conditions be protected from retaliation by their employers.
- Ensure adequate supplies of personal protective equipment (PPE), including N95 respirators or better (e.g., elastomeric respirators), and that workers and essential family visitors have access to appropriate PPE.
- Recognizing that while sufficiently protective, N95s have their drawbacks, including comfort, the federal and provincial governments should collaborate on standards and sufficient supplies of alternative respiratory protective equipment, like elastomeric respirators, that protects at the same level or better than N95s, and that, evidence suggests, may have comfort and cost advantages.
- Provide hands-on training on infection prevention and control, including training testing and drilling workers on donning, doffing, safe use and limitations of PPE – for all workers and essential family visitors working in and entering long-term care homes.

Stories from the front lines

Though the SARS multi-country outbreak took place on a far smaller scale than the COVID-19 global pandemic, it nonetheless had a significant impact on health care workers in Toronto, the Canadian epicenter of the 2003 outbreak. Many of the struggles faced by these workers echo those faced by health care workers on the front lines of today's COVID-19 pandemic.

“I was the sickest I'd ever been”

Four of every 10 SARS cases in Ontario was a health worker.⁶⁷

One of the first was Susan Sorrenti, a nurse at Mount Sinai Hospital in Toronto. She caught SARS from a patient being transferred from another hospital. Sorrenti had been assured the patient did not have SARS.

That patient went on to infect 13 others. These included three members of his immediate family, a cousin and two close friends – one of whom died. His family doctor, three nurses, two physicians and one respiratory therapist were also among the infected. Sixty-nine Mount Sinai staff were quarantined, and the hospital's ICU had to be closed to new patients.

“I was the sickest I'd ever been,” Sorrenti recalled. She was the primary income earner for her family. “My anxiety was overwhelming. ...Almost 20 years later, nurses have been kind of waiting for the next pandemic. These mistakes that we made – that's on us for that period of time in history. Now we don't have any kind of excuse.”⁶⁸

Her advice to health care workers during COVID-19: Sorrenti believes health care workers currently battling COVID-19 need to better advocate for themselves and trust their instincts when faced with danger. “[Don't] accept any kind of less-than-adequate protection for yourself.”⁶⁹

Back on the front lines

Pat Tamlin is another Toronto nurse who contracted SARS in 2003. Seventeen years later, she is still on the front lines. During the SARS outbreak, her daughter also caught the virus. Today, Tamlin's children are grown up, but she is worried about her husband, who is currently immunocompromised as a result of chemotherapy treatments.

Nevertheless, she is determined to keep caring for patients and demands that she be appropriately protected: “We signed up to look after patients [...] but with the expectation that we are allowed to protect ourselves and everybody else with the right equipment.”⁷⁰

Chapter 1: SARS: A ‘Dress Rehearsal’ for COVID-19

Introduction

With a potential pandemic on the horizon, Canada should have been uniquely prepared to contain COVID-19. Having suffered an outbreak of SARS in 2003 – the 21st century’s “first severe and readily transmissible new disease”⁷¹ – Canada was uniquely positioned to apply the lessons imparted by that experience.

Canada had:

- First-hand experience in facing a completely new coronavirus that coincidentally originated from the same horseshoe bat reservoir in southern China as its close cousin, SARS-CoV-2, the virus that causes COVID-19;⁷²
- Witnessed the tragic consequences in death and disease of not following the precautionary principle against a new pathogen with unknown dynamics and transmission characteristics;
- Seen the impact on worker safety of shortages of N95 respirators and other personal protective equipment; and
- Learned what happens when we don’t have sufficient lab-testing capacity and modern data and communication systems.

And yet, COVID-19 revealed that Canada largely disregarded the lessons of SARS.

Justice Archie Campbell, who led the SARS Commission inquiry into the 2003 outbreak, had warned about this possibility:

“SARS taught us lessons that can help redeem our failures. If we do not learn the lessons to be taken from SARS, however, and if we do not make present governments fix the problems that remain, we will pay a terrible price in the face of future outbreaks of virulent disease.”⁷³

Sadly, he proved far more prescient than anyone feared.

This chapter will set out the findings and recommendations of the SARS Commission that might have addressed many of the same problems revealed by COVID-19, and that could have changed the course of the pandemic had they not been ignored.

As Dr. Sandy Buchman, past president of the Canadian Medical Association, noted: “That SARS Commission report was prescient. It almost predicted everything.”⁷⁴

SARS takes flight

The emergence of COVID-19 was strangely similar to the dawning of SARS:

- In November 2002, reports surfaced of an unusual pneumonia circulating in China, strangely echoing the early days of the COVID-19 pandemic.

- As they would 17 years later, Chinese authorities tried to censor the news, even going so far as to sanction a doctor who warned about its severity.⁷⁵ During COVID-19, the Chinese Public Security Bureau attempted to silence a key whistleblower, Dr. Li Wenliang.⁷⁶
- Come February 2003, the new illness – by then known as severe acute respiratory syndrome (SARS) – had spread globally, affecting Canada among others.⁷⁷

Thus unfolded, in a matter of months, the SARS epidemic.

By the time SARS ended in the summer of 2003, 8,096 SARS cases and 774 deaths were recorded around the world. These figures include 375 cases and 44 deaths in Ontario, which was the jurisdiction worst affected outside of Asia. The burden of disease was heavy on Ontario’s health care workers, who comprised 44 per cent of all SARS cases in Ontario – one of the world’s highest rates.⁷⁸

Three remarkable Ontario health care workers died.⁷⁹

- Nelia Laroza, 52, a nurse at North York General Hospital, died during the second phase of SARS after authorities ignored nurses’ warnings that SARS had not gone away. Married, Nelia had two children. One colleague said: “She was as good as it gets for anyone, she was just your good, basic, decent person.”
- Tecla Lin, 58, a nurse at West Park Health Care Centre, died after volunteering to care for fellow nurses sickened in the outbreak. Her husband also died, following his wife’s exposure to SARS. One doctor recalled: “When Tecla Lin died, it was the worst.”
- Nestor Yanga, 55, a family physician, died. He was married and had two children. A colleague recalled: “He would make you feel that you were special and that you were the most important patient.”

As the world reels from the COVID-19 pandemic, SARS can be seen with the benefit of hindsight as “a dress rehearsal”⁸⁰ for COVID-19, offering vital lessons in health worker safety and pandemic preparedness.

Canada, unfortunately, missed this opportunity, despite the detailed lessons and recommendations⁸¹ of the SARS Commission.

The precautionary principle

The precautionary principle – the central finding of the SARS Commission – is simple to understand. It is intuitive. Precautionary warnings are common in our daily lives. There is “better safe than sorry.” There is “look before you leap.” There is “haste makes waste.” We all intuitively understand this sage advice, though we don’t always follow it.

It is no great leap of faith to see the advantages of taking a similar approach to protecting health care workers – especially against a wholly new disease like SARS or COVID-19, whose transmission dynamics and characteristics are still obscure.

The precautionary principle is foundational to the science and practice of worker safety, and to the laws and regulations implemented to protect all workers, including those in health care.

As will be detailed in this chapter, it was also the central finding and recommendation of the SARS Commission.

Justice Campbell was influenced by the work of Justice Horace Krever, who was appointed in 1993 by the Canadian government to head the Royal Commission of Inquiry on the Blood System in Canada. The Krever Commission, as it became known, was established to investigate how and why tainted blood and blood products infected thousands of Canadians with the AIDS virus and hepatitis C.⁸²

While many factors contributed to the tainted blood tragedy, Justice Krever focused on the absence of a precautionary approach by the administrators and regulators of Canada's blood system:

"The slowness in taking appropriate measures to prevent the contamination of the blood supply was in large measure the result of the rejection, or at least the non-acceptance, of an important tenet in the philosophy of public health: action to reduce risk should not await scientific certainty. When there was reasonable evidence that serious infectious diseases could be transmitted by blood, the principal actors in the blood supply system in Canada refrained from taking essential preventive measures until causation has been proved with scientific certainty. The result was a national public health disaster."⁸³

The precautionary principle: a tale of two cities

Some of the most important evidence to support the precautionary principle came at the start of the SARS outbreak, when Canada's first two SARS patients presented separately to Scarborough Grace Hospital in Toronto and Vancouver General Hospital, on the same day (March 7, 2003), within three hours of each other.⁸⁴

The Vancouver index patient was isolated within five minutes of being admitted. Ten minutes later, he was placed on "full respiratory precautions." This meant that staff treating him wore airborne precautions, including N95 respirators.

It was the policy of Vancouver General that, when dealing with an undiagnosed respiratory illness, health care workers automatically went to the highest level of protection and then scaled down, if appropriate, as the situation was clarified.

One Vancouver General expert told the Commission:

"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 precautions, and then as the clinical situation becomes clearer, you step back on precautions."⁸⁵

In contrast, the index patient at Scarborough Grace was not isolated for nearly 21 hours. He spent 16 of those hours in a crowded emergency ward. Health care workers used contact and droplet precautions. In those 21 hours, SARS spread dramatically at Scarborough Grace, leading to a total of 128 SARS cases. Forty-seven of the cases, or 36.7 per cent, were hospital staff who had been using the contact and droplet precautions of a surgical mask. Patients and visitors accounted for 36 of the cases, or 28.2 per cent, demonstrating the strong correlation between health worker safety and outbreak containment.⁸⁶

British Columbia had just four probable cases and only one case of local transmission, which involved a nurse. No other nurse, physician, respiratory therapist, cleaner or other B.C. health worker caught the disease.

While some have suggested that good fortune was the reason for British Columbia's better outcome, Justice Campbell found that the province had “made its own luck” because of the precautionary approach taken by institutions like Vancouver General Hospital, which treated British Columbia's index patient.

The SARS Commission's final report said the precautionary approach:

“... was in use at Vancouver General Hospital when it received B.C.'s first SARS case on March 7, 2003, the same day Ontario's index case presented at the Scarborough Grace Hospital [in Toronto]. When dealing with an undiagnosed respiratory illness, health care workers at Vancouver General automatically go to the highest level of precautions and then scale down as the situation is clarified. While the circumstances at Vancouver General and the Grace Hospital were different, it is not surprising that SARS was contained so effectively at an institution so steeped in the precautionary principle.”⁸⁷

The precautionary principle: N95 vs. a surgical mask

The most contentious worker safety issue during SARS – much as it is now during COVID-19 – was over how health care workers should be protected.

More specifically, the debate was over whether health workers needed airborne precautions, including fit-tested N95 respirators or better, for any worker at risk of being exposed to a patient – or whether contact and droplet precautions, including surgical masks, were sufficient on the assumption that SARS behaved like other respiratory viruses?⁸⁸

What turned the tide in this debate were alarming transmissions of SARS among health care workers and in health care settings, especially during the initial outbreak at Scarborough Grace Hospital when, as noted above, 47 of the 128 total cases, or 36.7 per cent, were hospital staff wearing surgical masks as droplet and contact precaution.⁸⁹

On March 26, 2003, nearly three weeks after the first index patients presented to Scarborough Grace, SARS disastrous toll on health care workers forced the province to raise health worker protections to airborne precautions.⁹⁰

One of the leaders of the SARS response said the decision was made on a precautionary basis:

“We chose, for means of protection, to use the N95 mask. We believed from the beginning that it was droplet spread, but we believed, until we were more certain, that we should use the more protective N95 mask.”⁹¹

Another SARS response leader echoed this sentiment:

“Early on, we didn’t know how it was transmitted. We couldn’t say it wasn’t airborne transmitted. And therefore we assumed the worst and made the decision. We were going to require everybody in the city wear an N95 mask in a health care facility.”⁹²

The implementation of this policy was problematic.

Directives on who should wear an N95 were confusing. The initial directives on March 27, 2003, as health care unions pointed out, required only emergency departments and clinics to wear N95 respirators.

A joint submission by the Ontario Nurses’ Association (ONA) and the Ontario Public Service Employees Union (OPSEU) to the SARS Commission noted: “This distinction between what protection was recommended for which groups of workers in the same facilities arose again and again throughout the crisis.”⁹³

N95s tended to be distributed with little or no training and no fit-testing.

Fit-testing – the legally required process for matching wearer to the right mask for their facial dimensions – was a hot-button issue.

While Ontario law required fit-testing for all users of N95s, fit-testing – the procedure for ensuring that N95s protect at required levels – did not get under way until the outbreak’s final stages in June 2003. And this occurred only after a worker exercised her right to refuse unsafe work, and this work refusal was upheld by the Ministry of Labour at that time.

Some prominent infection control specialists questioned in good faith whether fit-testing was required by law even though it had, in fact, been mandated by law since 1993 and demonstrated by worker safety regulators as being essential to the proper use of N95 respirators.

Justice Campbell wrote:

“One prominent hospital infection control director insisted in a June 2003 memo to health workers that ‘Canadian regulations have never required fit testing in a health care setting.’ Nothing could have been more untrue. While no one questions the good faith of this person, there is something profoundly wrong with a system in which a person in this position can be so utterly wrong about worker safety in hospitals.”⁹⁴

Some health care workers – believing that placing a surgical mask underneath an N95 would improve its performance – were infected, having not been trained that anything placed between skin and N95, including beard stubble, negated the medical device’s protective seal.⁹⁵

Justice Campbell wrote that to send health care workers “... like this into SARS without training does not reflect well on the way the health care system protected its workers.”⁹⁶

Sadly, this same situation recurred during COVID-19.

Military personnel helping to ease the crisis at Ontario long-term care facilities found similar unsafe use of N95s by personnel who had not been properly trained or fit-tested. In one report, military medical

staff observed the following at one facility: “[...] surgical mask under N95, scarves under mask [...]”. At another, they observed: “[...] N95s provided to staff without fit-test.”⁹⁷

The precautionary principle: shortages of supplies

Justice Campbell was acutely aware that in order to implement the precautionary principle during a major outbreak, sufficient supplies of N95 respirators, or better, are required.

We use the term “or better” in this report because N95 respirators, while in wide use in health care, are not the be-all and end-all in respiratory protection. There are alternatives that provide the same or higher protections. Examples are elastomeric respirators, reusable devices with exchangeable cartridge filters, and powered air-purifying respirators (PAPR), which use a battery-powered fan to blow air through a filter to a hood or face piece. More will be said on these alternatives later in this report.

During SARS, there were shortages of N95s from the moment that Ontario required all health care workers to wear them.

Since Canada did not have any domestic production supply of N95s during SARS (and still did not have at the start of COVID-19), Ontario scrambled to buy as many as it could.

One SARS response leader told the SARS Commission: “The decision was made to buy every N95 in North America. We bought out the market by the weekend.”⁹⁸

Despite these efforts, N95 shortages persisted during SARS.

An article published in *The Lancet* medical journal written shortly after SARS noted:

“With 211 hospitals in Ontario alone requiring these supplies, Canadian suppliers rapidly ran out of stock. There was not pre-existing supply stockpile, and our mask suppliers were obtained from foreign manufacturers.”⁹⁹

Ontario was fortunate because, unlike during COVID-19, SARS did not affect the United States, and thus American N95 supplies were not needed domestically.

The authors added:

“Because SARS was a worldwide threat, there was great difficulty in acquiring masks for other countries, since foreign governments understandably wanted to keep such supplies for their own citizens.”¹⁰⁰

Recognizing these supply chain issues, Justice Campbell highlighted the importance of sufficient supplies of protective equipment:

“SARS not only underlined the importance of having an effective emergency management structure, it also emphasized the need to have sufficient quantities of medical supplies, secure supply chains and the means to distribute the supplies.”¹⁰¹

To ensure there were sufficient supplies of N95s and other protective equipment, Justice Campbell recommended:

“Measures resulting from advance planning require resources of people and equipment. Examples are surge capacity for human resources and medical equipment such as N95 respirators, gloves, gowns, visors and other protective equipment, and a secure source of supply and an effective logistical system to distribute them.”¹⁰²

On Justice Campbell’s recommendation, Ontario established a stockpile of 55 million N95s in the wake of SARS. It was largely destroyed before the pandemic and not replaced.¹⁰³ Similarly, the federal government destroyed but did not replace its stockpile of up to two million N95s in May 2019, leaving only 100,000 respirators at the start of the pandemic.¹⁰⁴

These unfortunate failures demonstrate that this vital lesson of SARS was not heeded. More will be said about this later in this report.

The hierarchy of controls

There was too much emphasis during SARS over whether health care workers should wear surgical masks or N95 respirators.¹⁰⁵ It is as if nothing else mattered in worker safety. There are echoes of this during COVID-19.

In fact, worker safety experts regard personal protective equipment (PPE) like N95s as a last line of defense against workplace hazards. They recommend that PPE should be utilized not in isolation but within a holistic, coordinated system of workplace controls.

Reflecting this perspective, Justice Campbell titled the chapter dealing with the respiratory protection issue, “It’s not about the mask.” He concluded that worker safety is not just about a particular piece of personal protective equipment like an N95 respirator (important as it may be) or about PPE policies like fit-testing (significant as they may be).

Justice Campbell wrote:

“Perhaps the most important respiratory protective lesson from SARS is the importance of focusing not just on one protective component, whether it’s the N95 respirator or fit-testing. To return to the title of this chapter, it’s not about the mask; and it’s not about fit-testing. It’s about a whole system of safety controls in which the respirator and other personal protective equipment are simply the last component, the final line of defense. That bigger safety system, of which the respirator is just one small part, is known as the hierarchy of controls.”¹⁰⁶

The hierarchy of controls is a fundamental principle of worker safety. Among these controls, personal protective equipment is the last line of defense, not the first.¹⁰⁷

The hierarchy of controls involve:

1. Engineering controls
2. Administrative controls
3. Personal protective equipment

The Healthcare Health and Safety Association of Ontario described the hierarchy of controls as follows:

“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. 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 does not eliminate the worker’s risk of exposure, 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 of control should be used to protect workers and PPE used only when other controls have not eliminated or reduced the hazard significantly.”¹⁰⁸

The culture of safety

SARS demonstrated the importance of a strong safety culture. Its key elements incorporate: close co-operation between infection control and worker safety experts, including occupational hygienists, the engineers trained and specializing in workplace safety; listening to workers’ concerns; and ensuring workers have a dynamic role to play in their workplaces through effective internal responsibility systems.

Regarding close co-operation between infection control and occupational hygienists, as Justice Campbell noted, this had been recommended in a Health Canada worker safety manual issued in 2002. He noted that close cooperation between worker safety and infection control disciplines is essential for the safe operation of a health care facility, referencing Health Canada’s *Prevention and Control of Occupational Infections in Health Care* guideline:

“A component of the [worker safety] program relates specifically to infection control and must be planned and delivered in collaboration with the Infection Control (IC) program of the workplace [...] This document supports the close collaboration of OH personnel with those responsible for the IC program [...] It notes the essential collaboration of both groups working together where responsibilities overlap, especially in the management of outbreaks.”¹⁰⁹

Unfortunately, this knowledge was not used during SARS. This expertise was ignored.”¹¹⁰

Tragically, neither does this knowledge appear to have been effectively used during COVID-19. From the evidence presented in this report, it appears that once again worker safety experts have been largely sidelined during COVID-19.

The internal responsibility system

During SARS, as is now occurring during COVID-19, governments and public health agencies appear to have generally misunderstood and under-appreciated the legally mandated vital role that unionized and other workers play in keeping workplace safety.

Justice Campbell noted:

“The evidence reveals widespread, persistent and ingrained failures by the health system to understand and comply with Ontario’s safety laws including the Occupational Health and Safety Act and related regulations. Ontario’s worker safety laws are based on the Internal Responsibility System.”¹¹¹

The Internal Responsibility System (IRS) is based on the principle that everyone in the workplace has a role to play in health and safety. Directors, executives, managers and supervisors have the greatest responsibility to establish and implement safe workplace policies, procedures and systems. They must take every precaution reasonable in the circumstances to protect workers.

The Ontario Ministry of Labour describes this system as follows:

"Employers, workers and others in the workplace share the responsibility for occupational health and safety. Each party is responsible to act to the extent of the authority that they have in the workplace. This concept of the internal responsibility system is based on the principle that the workplace parties themselves are in the best position to identify health and safety problems and to develop solutions.”¹¹²

This concept emerged from the Royal Commission on the Health and Safety of Workers in Mines in Ontario in 1976 and was soon adopted as the basis of the province’s new *Occupational Health and Safety Act* in 1978.¹¹³

Justice Campbell found evidence of the Internal Responsibility System in the strong safety culture in British Columbia and its absence in Ontario:

“The Vancouver experience demonstrated the value of a safety culture in health workplaces. Expressions of this safety culture included the close cooperation and mutual respect between infection control and worker safety, the emphasis on listening to health care workers, and the deployment of joint teams of infection control and worker safety experts. [...]

In Ontario, infection control and worker safety disciplines generally operated as separate silos during SARS. Until this divide is bridged and infection control and worker safety disciplines begin to actively and effectively cooperate, it will be difficult to establish a strong safety culture in Ontario.”¹¹⁴

Reflecting the IRS principles, employers' responsibilities are laid out in provincial occupational health and safety laws and regulations. Employers must work with joint occupational health and safety committees on their pandemic plans, protocols, and other measures and procedures for the protection of workers. They must: provide training for all employees on health and safety measures and procedures; establish a respiratory protection program; and provide fit-testing for N95 respirators to all employees who may need them. Employers are also responsible for making PPE readily accessible and available to health care teams so they can do their jobs safely.

Listening to health care workers

One of the recurring lessons of SARS was the importance of listening to health care workers and respecting their insights, experience, expertise and intelligence.

During COVID-19, workers' concerns were once again ignored or silenced.

In their own voices, and through the interventions of their unions, this report will detail how, once again, the failure to heed the urgent warnings raised by health care unions, and to listen to their membership on the ground, has led to high rates of possibly preventable health care worker infections.

During SARS, the most troubling example of not listening to health care workers occurred at North York General Hospital in Toronto during the second phase of SARS, just after Ontario had declared victory over the new pathogen.¹¹⁵

SARS precautions were lifted on May 13, 2003. Four days later the provincial emergency ended.

There was widespread euphoria at the time in Toronto – not unlike the feelings of relief many Canadians felt after the COVID-19 lockdowns began to ease.

However, at North York General, the mood among nurses was less than euphoric. They wanted to keep wearing N95 respirators but were discouraged from doing so. They didn't think SARS had gone away.

One nurse told the SARS Commission:

"We heard a lot of how it appeared to see us wearing masks, how it frightened them off. [...] It just seemed like they were more concerned with what we looked like to the community, how we appeared. [...]"

"It was ridiculous that they cared more about what we looked like to the general public than they cared about how we could have been exposed."¹¹⁶

Nurses at North York General saw many signs that SARS was still there and appeared to be spreading. Their growing concerns culminated in a May 20, 2003, meeting with hospital officials and infectious disease experts, who told the nurses they were wrong. The meeting with emergency room nurses, as Justice Campbell observed, "[...] seemed focused on convincing them that they were wrong, that SARS was gone."¹¹⁷

One nurse who attended the meeting said her colleagues tried to convince the hospital's infection control expert that a case involving one family was SARS – and not a form of pneumonia:

“The nurses were telling her this is SARS; if it smells like SARS and it looks like SARS and acts like SARS, it’s SARS. [The infection control expert] said no, it was community-acquired pneumonia and they should stop it. You know: Stop talking about it.”¹¹⁸

Justice Campbell wrote: “It turns out that the nurses were exactly right and the hospital’s assurances were exactly wrong.”¹¹⁹

This outbreak resulted in 118 new SARS cases and 17 deaths, including nurse Nelia Laroza.

The fact that nurses had not been listened to had, as Justice Campbell noted, “[...] a terrible impact on the morale of health care workers. Many lost faith in the system and the ability of their employers to protect them.”¹²⁰

One physician at North York General said this outbreak demonstrated the importance of humility and taking a precautionary approach:

“I think what SARS did is it humbled us and it also made us aware that even when we think we know everything, we don’t. [...] I would always err on the side of caution. [...]

I would err on the side of caution and use the most protective equipment I could until I had absolute assurance that a modification was safe. Especially if you’re dealing with someone’s life.”¹²¹

Justice Campbell contrasted the failure to listen to health care workers to the situation at Vancouver General, where listening to workers’ concerns was an integral component of that hospital’s robust safety culture.

An infection control expert at Vancouver General told the Commission:

"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 [...]."¹²²

Ministry of Labour sidelined

Despite its legal mandate to protect workers, Justice Campbell found that the Ministry of Labour in Ontario was largely sidelined during SARS.¹²³

It was not given a role in the SARS response that was commensurate with its statutory duties. Ministry staff assigned to the SARS response needed on occasion to ask the unions for copies of Ministry of Health directives instead of, as Justice Campbell noted, trying to penetrate the information barriers within government.

The Ministry was shut out of important workplace safety investigations, including at Sunnybrook Hospital, where nine health care workers were infected during the intubation of a patient.

Justice Campbell wrote:

“After the Sunnybrook [Hospital] disaster on April 13, when nine health care workers got sick after they did everything they were told they needed to do to be safe, the government called in experts from the Centers for Disease Control and Prevention (CDC) without informing the Ministry of Labour’s experts whose job it was to prevent such future safety lapses.”¹²⁴

The Ministry of Labour did not conduct any proactive inspections of SARS hospitals during virtually all of the outbreak.

Justice Campbell observed:

“Labour’s approach was vastly different from what occurred in British Columbia, where the workplace regulator began proactive inspections in early April 2003 and paid special regulatory attention to a hospital where a nurse contracted SARS. This was a missed opportunity in Ontario, although we will never know what impact that might have had on the SARS response.”¹²⁵

The most egregious example of the Ministry of Labour’s sidelining involved the perplexing circumstance surrounding the decision to cancel an urgent safety meeting on June 13, 2003, at Mount Sinai Hospital. It had been called under the *Occupational Health and Safety Act* to investigate mounting worker safety complaints at the hospital and as a condition of averting a possible walkout by nurses.

The Commission conducted an extensive investigation to determine how and why the safety meeting was cancelled. The results were troubling, to say the least.

No one in a position of authority was able to recall who made the decision, or why.

Justice Campbell wrote:

“Someone made this controversial high-profile decision, but no one in a position of authority remembers who made the decision. This collective lack of recollection becomes more and more pointed with every witness on the direct chain of cancellation who suggests the Commission speak to someone else in the chain of recollection, and that person – indeed, each person in turn – cannot recall who made the decision.”¹²⁶

Justice Campbell concluded:

“Regardless of how the meeting was cancelled, the bottom line is it was called off. If a health and safety inspection is cancelled, the process requires full transparency and accountability. There should be no mystery surrounding its cancellation and surrounding the chain of command that led to its cancellation. [...] [T]he prime consideration should be the safety of health care workers. The safety of health care workers is always paramount. If they are not safe, then neither are patients, visitors or the public.”¹²⁷

Seven Oaks: an attack on the precautionary principle

Justice Campbell discovered that the sidelining of the Ministry of Labour continued after SARS – and was accompanied by efforts to undermine the precautionary approach, and the Ministry of Labour’s independent role as a workplace safety regulator.

In tone and content, these efforts foreshadowed similar issues during COVID-19.

After the outbreak of Legionnaire's disease in the fall of 2005 at the Seven Oaks long-term care facility, the Ministry of Labour was not invited to participate in a Ministry of Health investigation into the response to the outbreak, even though nearly 30 per cent of the victims were health care workers.¹²⁸

The investigation was carried out by three highly respected physicians with SARS experience, but, as Justice Campbell noted, their investigation would have benefited from the inclusion of worker safety experts. Their report contained a number of errors that had to be corrected after the fact by the Ministry of Labour.

For example, the report said Ontario did not have specific standards for environmental maintenance. In fact, as the Ministry of Labour pointed out, provincial laws contained specific requirements to prevent Legionnaire's growth in water and ventilation systems.

Most significantly for worker safety, the medical experts' report came down hard against taking a precautionary approach to personal protective equipment:

“While many think that, in terms of infection prevention and control, ‘more is better – ‘that is not the case. There are serious and inherent risks – to health care providers, to patients and to the system – in using higher-level precautions when they are not required.”¹²⁹

Similar comments and arguments have been made during COVID-19 by public health agencies and their advisers.

The Seven Oaks report listed what its authors felt were risks related to what it called an inappropriate use of higher-level precautions. These alleged risks were presented without evidence and included the following:

- Personal protective equipment is uncomfortable and difficult to put on, so it is often misused or worn improperly.
- Errors are more common.
- Workers tend to become over confident in their equipment and neglect other key measures, such as hand hygiene.
- Health care providers experience health problems (e.g., rashes, problems breathing).
- Patient care may suffer.
- It is costly and uses supplies that may be required when the system is faced with diseases that require that level of protection.

Without evidence, public health agencies and their advisers have cited these same supposed drawbacks during COVID-19 as reasons for why N95s are risky and inferior to surgical masks.

Public health agencies and their advisers often cite the fact that N95s are uncomfortable and difficult to put on, and so can be misused or worn improperly. This paternalistic perspective treats health care workers as far less than the intelligent, highly capable professionals that they are.

The comments by two health care unions, the Ontario Nurses' Association and Ontario Public Service Employees Union, in a joint response to the Seven Oaks report are that:

"The work environment of an HCW [health care worker] is not known for its ease or comfort. It is our experience arising from SARS that most workers are prepared to accept a certain level of discomfort if they believe it may save their lives. We have seen no evidence to support the statement that because the equipment is uncomfortable or difficult to put on that it is often misused or worn improperly. Our experience during SARS was that workers had never been fit-tested, nor had they received prior training about putting on and wearing N95s and other new PPE – consequently, they made errors. However, the problem was lack of training and experience, problems which can be readily addressed."¹³⁰

Perhaps the most pernicious argument in the Seven Oaks report is the one about cost – that N95s are too expensive: "It is costly and uses supplies that may be required when the system is faced with diseases that require that level of protection."¹³¹

The same argument has been used over and over during COVID-19. When compared to the billions spent on pandemic containment, the cost of N95s is negligible – especially had public health officials taken a precautionary approach and stocked up before the pandemic.

It's estimated that before the pandemic, N95s cost 62 cents each. During COVID-19, that price shot up to \$8 per unit.¹³²

If cost was such an important consideration, why did public health officials and their advisers do so little before COVID-19 to establish better stockpiles? Instead, they sat on their hands. This is all the more troubling given that many had experienced SARS, knew first-hand about the SARS-era shortages of N95s and, in some articles, had even written about this issue in medical journals.

In comments as relevant today as they were in 2005, unions representing health care workers took issue with these Seven Oaks Report's arguments:

"A day in the life of a health care worker is replete with all varieties of discomfort. While health care workers (like all workers) would prefer not to wear respirators, they are prepared to adjust to discomfort when necessary to make the very air they breathe safe for themselves and safe to pass on to patients and family. Firefighters, steelworkers, chemical workers and others have for decades routinely crouched in cramped, confined spaces for hours at a time, dragged down by much heavier respiratory protection than the N95 respirators ... Given information and training about hazards and the need for respiratory protection, all workers tolerate the discomfort."¹³³

The Seven Oaks report also recommended that the Ministry of Labour's worker safety standard setting powers be given to the Ministry of Health.

Justice Campbell was sharply critical of this suggestion, which was never carried out:

"SARS demonstrated that worker safety requires an independent regulator with two important roles. First, the regulator must be responsible for the development of worker safety standards that reflect the latest scientific research, occupational health and safety expertise and best practices, and the standards recommended by other agencies, such as the National Institute for

Occupational Safety and Health (NIOSH). Second, once safety standards are set, the regulator must ensure that all workplaces are aware of and in compliance with those standards.

It would be improper for the Ministry of Health, as the ministry that funds and oversees the health care delivery system, to regulate itself and the system for which it is responsible. This would place it in an untenable position.”¹³⁴

The precautionary principle and employers’ duty of care’

One of the most far-reaching impacts of the SARS Commission may involve the worker safety responsibilities of hospitals and other health care employers.

Lawyers at Osler’s, the high-profile Toronto law firm, suggest that the precautionary principle creates a higher duty of care for employers, and they can’t rely on following government directives as a defense for failing to do so.

The lawyers stated:

“Following the SARS outbreak, the SARS Commission Final Report established that hospitals are expected to exercise an elevated duty of care in accordance with the “precautionary principle,” meaning that scientific proof of a particular risk (e.g., airborne transmission of SARS and, therefore, the need for the N95 mask) is not required before taking precautionary measures against that potential risk.

In our view, this sets out a higher standard for the duty of care and expands the scope of the meaning “every precaution reasonable” as required under the [Occupational Health and Safety Act]. As Honourable Mr. Justice Archie Campbell stated in the SARS Commission’s final report, “[t]he point is not science, but safety. [...] We should be driven by the precautionary principle that reasonable steps to reduce risk should not await scientific certainty.”¹³⁵

This elevated duty of care may carry significant legal consequences, even if employers try to rely in their defense that they were following directives from governments and public health agencies:

“Hospitals should be cognizant that it will be the hospital (and potentially the hospital’s officers, directors, supervisors or other personnel) that will be legally liable for any failures to protect patients and staff from harm, even if hospitals have relied on federal, provincial or municipal government directives in establishing its own plans, policies and procedures. Where there are directives issued by public bodies, the hospital should review such directives with an independent perspective as to whether adhering to such directives will enable to the hospital to discharge its duty to exercise elevated reasonable care, skill and diligence to protect its patients and staff.”¹³⁶

The lessons of SARS gave Canada a unique advantage heading into COVID-19. It is an advantage that Canada shared with its SARS peers: China, Hong Kong and Taiwan. Tragically, as will be detailed in the next chapter, our Asian peers took advantage of the lessons from SARS, while Canada did not.

Stories from the front lines

Each day, health care workers risk their lives to protect their communities from COVID-19.

Linda Lapointe, president of the Fédération interprofessionnelle de la santé du Québec, told the Commons' health committee on April 9, 2020:

“Healthcare professionals were already overworked at the beginning of the pandemic, and they are now facing significant overloads. While many people are seeking care, healthcare professionals themselves or their loved ones may become ill. [...]

Our members are under a lot of stress. They feel unprotected in the face of the virus. Right now, they feel that, if they are not well protected, they may become infected and they may infect other patients, colleagues or family members. Even more worrisome is that this feeling is not unfounded: employers deny them access to protective measures when they could provide better safety.”¹³⁷

While there have been many expressions of public support, health care workers have also faced troubling examples of discrimination.

An Ottawa nurse was left homeless when her new landlord reneged on the agreement to rent her a room. The landlord, who suffered from a medical condition, was worried about renting a room to a nurse treating COVID-19 patients. She said she had learned that no one wants to rent to a nurse in the middle of a pandemic.¹³⁸

On the other side of the country, a Vancouver nurse chose to move out after feeling pressured to find new accommodations because of her landlord's COVID-19 fears. She said the experience “definitely made being a nurse a whole lot tougher.”

She contrasted community expressions of support with her personal experience:

“At a time when the 7 p.m. cheer was at its loudest, my landlord and their family made it really difficult for me to focus on what was important, which was supporting my partner with the loss of his brother, as well as on my job as a nurse. I wish fear hadn't gotten the best of them and caused them to act the way they did.”¹³⁹

In Montreal, a nurse alleged that she was refused entry to the big-box store where she usually shops because the security noticed she was still wearing her hospital ID badge.

This left her shaken: “I hate to admit it, but I kind of sat in my car after and cried a little bit. I think that it's sad that we're being called guardian angels and then all of a sudden, we're contaminated.”¹⁴⁰

Many of her colleagues alleged that they had had similar experiences. One said:

“After being here all day, I just feel like forgetting about COVID for a few minutes and I just want to push my little cart through the grocery store for 20 minutes, and not think about work and just be me.”¹⁴¹

To survive financially, many health care workers are forced to take multiple jobs or take on higher-risk positions to stabilize their income.

For financial relief, one nurse moved four hours from her home city to work at a troubled long-term care facility where about half of its residents and 30 of its staff have been infected. Twenty-three residents have died. She said:

“The staffing is very skeletal right now so there really isn't that much time to mourn. We kind of deal with what needs to be done and we move on. I think the time for mourning is going to come after.”¹⁴²

Chapter 2: The World Health Organization (WHO), and How Canada Ignored the Lessons of SARS

Introduction

This chapter tells the story of what may be the WHO's most troubling worker safety failure during COVID-19. It is a story with profound implications for Canadian health care workers and all that they have suffered and endured. It is the story of the most important validation of the precautionary principle during COVID-19, and of the pandemic's most significant natural experiment on health care worker safety.¹⁴³ And it is a story that raises disturbing questions about the WHO and the price paid by Canada for relying so heavily and so uncritically on its guidance.

Of prime concern is the puzzling treatment by the WHO-China Joint Mission of a remarkable worker safety accomplishment in China.

On February 28, 2020, as the rest of the world was preparing for COVID-19 and eager to learn best practices from China, the Mission released its report, revealing that China was so successful at protecting its health care workers that:

“Transmission within health care settings and amongst health care workers does not appear to be a major transmission feature of COVID-19 in China ... among the HCW infections, most were identified early in the outbreak.”¹⁴⁴

When compared with the rates of health worker infections in Canada – comprising almost 20 per cent of all COVID-19 cases as of late July 2020 – the numbers from China are startling. A recent study stated:

“As of May 8, 2020, 3,514 [health care workers] with COVID-19 were clinically or laboratory diagnosed in mainland China [about 4.4 per cent of all Chinese COVID-19 cases]. [...] In Wuhan, out of 110,000 HCWs, 2,897 were diagnosed with COVID-19. The overall infection rate [for health care workers in Wuhan] is 2.63%.”¹⁴⁵

How exactly had China achieved this? What could the rest of the world learn from the Chinese worker safety experience? Did it validate Canada's approach to health care worker safety? Could Canadian health care workers take comfort that they were being protected at the same level as their Chinese counterparts?

Inexplicably, the body of the WHO report is largely silent. It does not detail what PPE Chinese health care workers wore. It was mum on whether they wore surgical masks, as the WHO and Canada recommended, or N95 or higher respirators, as health care workers, unions and safety experts recommended. The body of the WHO report simply stated:

“The Joint Team noted that attention to the prevention of infection in health care workers is of paramount importance in China. Surveillance among health care workers identified factors early in the outbreak that placed HCW [health care workers] at higher risk of infection, and this information has been used to modify policies to improve protection of HCW [health care workers].”¹⁴⁶

Before detailing how China kept its health care workers safe, some background and context.

China had initially been on the same page as the WHO and Canada on health worker protection, but began having doubts as more and more Chinese health care workers became infected.¹⁴⁷

Alarmed by this situation, individual groups of Chinese health care workers decided on their own to treat COVID-19 as if it could be spread through the air, and they turned to wearing N95 respirators.

Staff at Wuhan Central Hospital, the epicenter of COVID-19 in China, were among the first to do so.¹⁴⁸ The *South China Morning Post* reported:

“According to emergency department director [Ai Fen], staff on the front line at Wuhan Central Hospital began wearing N95 respirator masks and other protective gear in January as the number of virus cases jumped – but before authorities confirmed the virus was being transmitted between humans on January 20.”¹⁴⁹

By January 20, 2020, the rising toll of health worker infections prompted the National Health Commission of China to act on a precautionary basis, issuing a directive¹⁵⁰ requiring all health care workers in contact with suspect or confirmed COVID-19 cases to wear airborne precautions, including N95 respirators.¹⁵¹ The directive was posted on the Commission’s website.

However, this momentous decision appears to have been overlooked – and not publicly disclosed – by the WHO-China Joint Mission, even though:

- They visited Wuhan and met with leading Chinese experts on January 20, 2020, the day the N95 decision was announced.¹⁵²
- The Joint Mission met with both officials of China’s National Health Commission (on February 16, 2020) and the Chinese Center for Disease Control and Prevention (on February 17, 2020).¹⁵³
- The Joint Mission included officials from both Chinese agencies.¹⁵⁴

For some still unexplained reason – and despite the above evidence suggesting the WHO had ample opportunity to know the full story – the body of the WHO report did not explain that infection rates among the more than 150,000 China’s health care workers in Wuhan¹⁵⁵ were so low because they had gone to airborne protections.

This vital fact was buried in a technical annex at the back of the WHO report – on page 32 of the 40-page report, 21 pages from the relevant health worker safety section. Isolated there, without context, explanation or reference to the body of the report, the report briefly stated:

“Staff in China wear a cap, eye protection, N95 masks, gown and gloves (single use only). [...] Staff wear PPE continuously, changing it only when they leave the ward.”¹⁵⁶

The motives for the WHO’s actions and omissions are a mystery and warrant further investigation.

Some experts suggest that the complete and transparent disclosure of this information at the start of the pandemic might have changed the course of health worker safety in Canada, providing important support for those advocating a precautionary approach.

A Canadian worker safety expert who tried repeatedly to warn Canadian public health agencies about the Chinese health worker safety experience has wondered: “If this would have been common knowledge in March, would things have turned out differently [in Canada]?”¹⁵⁷

Despite China’s airborne directive, which by its nature explicitly acknowledged the risk of airborne transmission, the WHO and the PHAC continued to assert that COVID-19 does not spread through the air, and that surgical masks were sufficient. All provinces have subsequently relied on the WHO and PHAC’s guidance as the foundation for their own directives.

In a January 27, 2020, situation report, for example, the WHO stated:

“During previous outbreaks due to other coronavirus (Middle-East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS), human-to-human transmission occurred through droplets, contact and fomites, suggesting that the transmission mode of the 2019-nCoV can be similar.”¹⁵⁸

This appeared to be a mischaracterization of the transmission dynamics of SARS, or its coronavirus cousin, Middle-East respiratory syndrome (MERS).¹⁵⁹

A paper by leading Canadian and Hong Kong experts noted:

“... from the various published studies, for both MERS and SARS, it is arguable that a proportion of transmission occurs through the airborne route, although this may vary in different situations (e.g., depending on host, and environmental factors).”¹⁶⁰

With regards to MERS, it is worth noting that the Ontario Ministry of Health itself recommended airborne precautions for health care workers on a precautionary basis:

“The use of Airborne Precautions is a higher level of precaution than is being recommended by the PHAC or the WHO, or that is normally recommended for coronavirus. The ministry is recommending that health care workers apply Airborne Precautions based on its application of the precautionary principle to this novel virus for which little information about transmission and clinical severity is available.”¹⁶¹

One might try to put the best face on the WHO's China report and argue that the omission might have been inadvertent – potentially understandable in the rush to complete a report within an extremely tight timeframe.

If this was the case, why hasn’t the WHO issued a correction or clarification? Why didn’t it explain how this omission might have occurred? Why hasn’t it explained why the Chinese experience did not persuade the WHO to change its worker safety recommendations?

That this omission was never corrected or explained lends weight to the suggestion that it may not have been inadvertent, accidental or unwitting.

Canadian public health agencies and their advisers, for their part, have never explained why they never conducted their own independent assessment of China’s health worker safety performance, why they

have never questioned the WHO report's worker safety findings but, instead, continue to follow the WHO's advice to this day.

It is not as if the Chinese health worker experience was a secret.

Unions and worker safety experts, like the one quoted above, repeatedly raised the Chinese worker safety experience in formal and informal discussions with Canadian public health officials. All their concerns were ignored:

- The information was widely available in the medical community. An online webinar by Harvard Professor of Biostatistics Xihong Lin on March 23, 2020, for example, tried to set the record straight and detailed China's precautionary approach to worker safety, including its use of airborne precautions.¹⁶²
- This issue was highlighted in a presentation to Parliamentarians, organized by the Canadian Federation of Nurses Unions on May 13, 2020¹⁶³
- Appearing as a witness before the House of Commons Standing Committee on Health on July 6, 2020, I detailed this exact issue in my testimony.¹⁶⁴

In the weeks following the release of the WHO-China Mission report, and before the first case of community transmission was identified in Canada in early March,¹⁶⁵ there were no signs that Canadian officials independently tried to determine how and why China had succeeded in protecting its health care workers.

Instead, even though China had the world's most extensive experience with COVID-19, Canada ignored its evidence as a natural experiment and continued to move in lockstep with the WHO on health worker safety guidance.

Consider the following Canadian statements and actions – concurrent to the WHO-China Joint Mission and to China adopting airborne precautions:

- On January 24, 2020, the Public Health Agency of Canada (PHAC) issued its first guidance, recommending contact and droplet precautions.¹⁶⁶
- On January 26, 2020, Chief Public Health Officer of Canada Dr. Theresa Tam advised that, according to scientific evidence, the coronavirus is spread by droplets.¹⁶⁷
- On January 27, 2020, a senior adviser to PHAC assured Canadians: "Every indication that we have so far is that it's transmitted like many other coronaviruses and other respiratory viruses that we call droplet transmission. That's generally larger respiratory secretion droplets, so things that are generated when you cough or sneeze and you're infected with the virus."¹⁶⁸
- On February 3, 2020, PHAC released its first interim infection prevention and control guidance for hospitals and identified droplet and contact precautions as sufficient for anything other than aerosol-generating medical procedures.¹⁶⁹
- On February 5, 2020, Dr. Tam told the Commons health committee: "It's really a droplet-spread disease. It's when someone's coughing most vigorously and they're more symptomatic that we believe, this virus is transmitted."¹⁷⁰

Months later, leading Canadian experts, who exert significant influence in policy-making in Canada and at the WHO, continue to appear to be misinformed about the Chinese health worker experience.

An example is an article in the prestigious *Canadian Medical Association Journal* by an influential Canadian expert who consults with both the WHO and Canadian public health agencies. The article suggested, despite an abundance of evidence showing the opposite, that “... thousands of [Chinese] health care workers acquired the virus” while using airborne precautions.¹⁷¹ This was completely false. The opposite is true.

The WHO’s influence on Canada cannot be overstated.

By uncritically following the WHO’s guidance, Canada was slow to implement – or avoided implementing altogether – precautionary worker and public safety measures. The same is true for such containment measures as public masking and border closings, which are now widely accepted.

The WHO remains an important global institution that Canada should continue to support and fund. However, its scientific leadership during the pandemic on worker safety and pandemic containment has been disappointing.

As the *Financial Times* reported, the WHO’s

“... approach to science – the foundation for any pandemic response – is a ... source of contention. Critics charge that [the] WHO is slow to adapt its public health guidance to the latest research insights. They argue that it is sometimes too cautious when it lacks scientific evidence that meets the highest standards, even in cases where that is hard to obtain and where there are few if any health downsides to endorsing a course of action.”¹⁷²

What has gone wrong at the WHO, including the WHO’s refusal to apply any weight to important areas of research critical to understanding workplace health and safety, parallels much of what has gone wrong in Canada on worker safety and pandemic containment. Canada has been locked into the WHO’s COVID-19 missteps, including its apparent misrepresentation of the Chinese experience.

This is stated with the benefit of hindsight, a tool used in this report to understand root causes and learn the lessons of our experience with COVID-19 thus far, and not to find scapegoats.

It is also said through the lens of the precautionary principle. The principle is a continuum of decision making. It is not a single act. Rather, it offers opportunities as new evidence arises to change course and take a precautionary approach.

As this chapter will detail, the WHO and Canadian public health agencies had opportunity after opportunity to learn from the Chinese health care worker safety experience and to change course, but chose not to.

Canada and the WHO are joined at the hip. They share thought leaders and influencers.¹⁷³ Some of the WHO’s most influential advisers are Canadians who play similar influential roles back home. There is nothing intrinsically wrong with this. In fact, Canada should be honoured that some of its experts are so highly recognized that they are considered global experts and advise the WHO.

Where it becomes problematic is when, as seems to have occurred during COVID-19, Canada and the WHO are seamlessly locked into the same policies and perspectives that are produced by the same experts.

This leaves little room for independent thinking. It leaves little room for critically assessing, as China did, whether the WHO's policies and guidance are in the best interests of Canada and Canadian health care workers.

An important lesson from COVID-19 is that what is good for the WHO is not necessarily in Canada's best interests.

This chapter will investigate the reasons – and consequences – of Canada's seemingly uncritical loyalty to the WHO and aversion to the precautionary principle, despite mounting questions and criticism of the world body's guidance and science.

Canada and the cost of following the WHO uncritically

How to assess the price that Canadians, including Canadian health care workers, have paid for Canada's seemingly uncritical adherence to the WHO's policies?

A revealing and germane comparison is with Canada's SARS peers, China, Hong Kong and Taiwan.

All four jurisdictions:

- Suffered terribly from SARS, recording a combined 94.8 per cent of all its cases and 94.0 per cent of its deaths;¹⁷⁴
- Experienced similarly high rates of health care worker infections, registering a combined 91.7 per cent of all SARS cases involving health care workers;¹⁷⁵
- Most importantly, had the same opportunity to learn from SARS, and plenty of time to put those lessons into practice.

Seventeen years later, the evidence suggests that China, Hong Kong and Taiwan used that time productively to learn from SARS. Canada largely did not, and finds itself on the opposite side of the COVID-19 ledger from its SARS peers.

On health worker safety, China, Hong Kong and Taiwan have significantly outperformed Canada:

- More than 21,000 Canadian health care workers had been infected with COVID-19 as of late July 2020. They comprise over 19 per cent of all COVID-19 infections in Canada,¹⁷⁶ almost double the global infection rate (10 per cent) reported by the WHO;¹⁷⁷
- Chinese health care workers, as noted above, comprise 4.4 per cent of COVID-19 cases. Most were infected before airborne precautions were implemented.
- As of late July 2020, in Hong Kong, five health care workers were infected.¹⁷⁸
- Similarly, in Taiwan, just three health care workers were infected as of late July 2020.¹⁷⁹

On pandemic containment, Canada has done no better. Consider that, as of August 31, 2020:

- Canada had more COVID-19 cases (129,888) than China (85,048), Hong Kong (4,801) and Taiwan (488) combined; and
- Canada had more COVID-19-related deaths (9,164) than China (4,634), Hong Kong (88) and Taiwan (7) combined.

What can account for such divergent outcomes?

China, Hong Kong and Taiwan appear to have learned from SARS, and taken its central lesson – the precautionary principle – to heart on worker safety and pandemic containment. Like China, Hong Kong and Taiwan have disregarded the WHO’s guidance, which has been anything but precautionary.

China, Hong Kong and Taiwan rejected the WHO’s view that surgical masks are sufficient health care worker protection in most cases.¹⁸⁰ Their health care workers are protected at a precautionary level.

Summarily dismissing the risk of airborne transmission, Canadian public health agencies and their advisers have decided that neither a precautionary approach nor airborne precautions are necessary, and that surgical masks are sufficient for everything but aerosol-generating medical procedures.

In the process, they also ignored both the real-time COVID-19 worker safety experiences of China, Taiwan and Hong Kong, and repeated warnings from Canadian health care workers, their unions, occupational health and safety experts, and scientists in other disciplines that this policy would have tragic consequences for health care workers.

Questions on public masking and border closure

Canada has also paid a heavy price for too closely adhering to the WHO’s guidance on pandemic containment measures like public masking and border closings.

Beginning with public masking: although there had been calls for the WHO to recommend public masking since early in the pandemic, it was not until June 5, 2020 that the WHO reluctantly did so.

The New York Times reported:

“Since the beginning of the pandemic, surprisingly, the WHO had refused to endorse masks. The announcement was long overdue, critics said, as masks are an easy and inexpensive preventive measure. Even in its latest guidance, the WHO made its reluctance abundantly clear, saying the usefulness of face masks is ‘not yet supported by high quality or direct scientific evidence,’ but that governments should encourage mask wearing because of “a growing compendium of observational evidence.”¹⁸¹

Dr. George Gao, the Oxford-trained head of the Chinese Center for Disease Control and Prevention, had warned in March that:

“The big mistake in the U.S. and Europe, in my opinion, is that people aren’t wearing masks. This virus is transmitted by droplets and close contact. Droplets play a very important role – you’ve got to wear a mask, because when you speak, there are always droplets coming out of your mouth. Many people have asymptomatic or pre-symptomatic infections. If they are wearing face masks, it can prevent droplets that carry the virus from escaping and infecting others.”¹⁸²

Dr. Gao underscored the importance of public masking to contain a disease whose unusual characteristics included large numbers of ‘silent spreaders’.

Early in the pandemic, Chinese scientists presented evidence and warnings on the issue of asymptomatic spread.¹⁸³ It is now widely accepted that seemingly healthy people can spread the virus. Though estimates vary, models using data from Hong Kong, Singapore and China suggest that 30 to 60 per cent of spreading occurs when people either show no symptoms throughout their infection, known as asymptomatic, or may be pre-symptomatic and develop symptoms later.¹⁸⁴

In March 2020, Canada was not persuaded on public masking or asymptomatic transmission.

Shortly after Dr. Gao's comments, Dr. Theresa Tam, Chief Public Health Officer of Canada, summarily dismissed the advice and the possibility of spread by infected cases who don't show symptoms: "Putting a mask on an asymptomatic person is not beneficial, obviously, if you're not infected."¹⁸⁵

At the time, some experts warned that Dr. Tam was making what they described as a dangerous assumption in dismissing the possibility that a pre-symptomatic or asymptomatic person could be a spreader.¹⁸⁶

One was Dr. K.K. Cheng, director of the Institute of Applied Health Research at the University of Birmingham in the U.K., who said:

"The important thing about this coronavirus is that some patients start to shed virus, and become infectious, even before they have symptoms.

In public health, a principle is we try to limit the source of harmful exposures rather than do mitigation, if we can. Hand-washing is a form of mitigation.

I'm not suggesting in the least that people should stop washing hands. It's very important. But if you're out in public in a supermarket, or in a subway train or on the bus, I think it makes a lot of sense for everyone to wear a mask."¹⁸⁷

About seven weeks after her dismissive comment, Dr. Tam made a remarkable about-face, echoing the advice of Dr. Gao and Dr. Cheng, saying: "It is recommended that the general public wear non-medical masks or facial coverings in situations where you cannot maintain physical distancing of less than two metres."¹⁸⁸

The hesitancy on public masking by the WHO and Canada came despite real-world examples of the effectiveness of public masking in Asia and Europe. Instead, the WHO and the PHAC continued to look for the kind of certainty only possible through randomized trials while ignoring so-called natural experiments. Natural experiments involve studying "something that is really happening – for example when a country introduces a policy of wearing masks."¹⁸⁹

South Korea is a good example of a natural experiment. Its rapid community spread in February closely tracked Italy until South Korea, in late February, began to supply masks to all its citizens.

Dr. Trisha Greenhalgh observes: "From that point, everything changed. As Italy's death count accelerated to horrific levels, South Korea's actually started decreasing."¹⁹⁰

Natural experiments are problematic because, unlike in randomized trials, there is no control group, so it is difficult sometimes to separate the impact of public masking when other measures like social distancing were concurrently being introduced.

Nevertheless, notes Dr. Greenhalgh:

"Even in these cases, we can find relevant comparisons. For instance, European neighbours Austria and Czechia introduced social distancing requirements on the same date, but Czechia also introduced mandatory mask wearing. The Austrian case rate continued its upward trajectory, whilst Czechia's flattened out. It wasn't until Austria also introduced mask laws weeks later that the two counties returned to similar trajectories."¹⁹¹

Despite this mounting evidence, it wasn't until May 20, 2020, that Dr. Theresa Tam recommended that Canadians should wear masks "as an added layer of protection."¹⁹² Two weeks later, the WHO had a similar change of heart.

The issue of border closings is another example of Canada following the WHO's recommendations without question.

On January 24, 2020, the WHO advised against a travel ban on China. But within days, a growing list of countries, including Taiwan, Singapore and the United States, did the exact opposite, restricting travel from China.¹⁹³

This led WHO Director-General Tedros Ghebreyesus to strongly urge other countries not to follow suit. He said: "There is no reason for measures that unnecessarily interfere with international travel and trade. We call on all countries to implement decisions that are evidence-based and consistent."¹⁹⁴

Canada concurred.

On February 3, 2020, Dr. Tam said: "The WHO advises against any travel and trade restrictions, saying they are inappropriate and could actually cause more harm than good in terms of our global effort to contain."¹⁹⁵

Taiwan restricted travel from China on January 26, following by the United States on January 31, Australia on February 1 and South Korea on February 24.

Between January 22 and February 13, 2020, 55,598 travellers arrived in Canada directly from mainland China, and 1,587 came from Hubei.¹⁹⁶

On March 5, 2020, Prime Minister Trudeau defended the decision to keep borders open, dismissing calls to close them as "knee-jerk" and arguing that they were not required to keep people safe.¹⁹⁷

One week later, federal Health Minister Patty Hajdu echoed those sentiments, rejecting travel restrictions:

"It is much better to have targeted measures at the border that helps you identify people who are coming from severely affected areas, that will help you ensure you know who's coming in,

that they have the information about what to do, and we can monitor them as they self-isolate."¹⁹⁸

Neither the federal government nor the PHAC has presented evidence to support that assertion.

By May 2020, however, Dr. Theresa Tam conceded that Canada had been too slow in closing its borders.¹⁹⁹

The result of Canada's reluctance to close its borders, observed national security expert Dr. Wesley Wark, is Canada's "two lost months" in pandemic containment.²⁰⁰

As noted earlier, the precautionary principle is a continuum of decision making.

The history of the pandemic has shown that there are many opportunities to change course and take a precautionary approach.

Each delay in border closure and public masking was a missed opportunity to take a precautionary approach. Each delay was a delay in generating the benefits of border closures and public masking. Even if there is initially a non-precautionary decision, there were subsequent opportunities to reverse course and benefit from a precautionary approach. Sadly for Canada, those opportunities were missed.

We will never know for sure what exact impact an earlier course correction on public masking or border closure might have had. But it would be hard to argue that earlier implementation would not have had a positive impact.

Science vs. supply shortages

Critics are concerned that the WHO's guidance on issues like worker safety is not always based on science, as it publicly asserts, but on other considerations, like shortages of N95s.

Health care worker unions and safety experts have shared similar concerns about decisions made by Canadian public health agencies.

Tammam Aloudat, deputy executive director of the Access campaign at Médecins Sans Frontières, the global medical charity, said: "The sad truth is that global health is a political field, not a medical one."²⁰¹

That science is not always the lead driver of decision making was acknowledged by Dr. Benedetta Allegranzi, the WHO's technical lead on infection control. She said the agency must consider the needs of all its member nations, including those with limited resources, and make sure its recommendations are tempered by "availability, feasibility, compliance, resource implications."²⁰²

Dr. Paul Hunter, a member of the WHO's highly influential infection prevention committee and a professor of medicine in Britain, echoed that sentiment, saying if the WHO were to push for rigorous control measures in the absence of proof, hospitals in low- and middle-income countries may be forced to divert scarce resources from other crucial programs.

He said:

“That’s the balance that an organization like the WHO has to achieve.[...] It’s the easiest thing in the world to say, ‘We’ve got to follow the precautionary principle, ’and ignore the opportunity costs of that.

Experts like Dr. David Michaels, who headed the U.S. Occupational Safety and Health Administration during the Obama administration, are critical of the fact that the WHO is using those kinds of arguments to dismiss evidence that N95s are far more effective than surgical masks in protecting health care workers from COVID-19 exposure.

He stated: “If the problem is the shortage of N95s, the WHO should acknowledge that and not pretend that medical masks are equally effective.”²⁰³

An Application for injunctive relief by the Ontario Nurses’ Association uncovered a similar issue.

Initially, Public Health Ontario took a different approach from other Canadian public health agencies and, on a precautionary basis, required airborne precautions, including N95 respirators, for all COVID-19 contacts.

This reflected an obligation – enshrined in Justice Campbell’s recommendation in section 77.2 of the provincial *Health Protection and Promotion Act* (HPPA) – that required Ontario’s Chief Medical Officer of Health to “consider the precautionary principle” in issuing directives related “to worker health and safety in the use of any protective clothing, equipment or device.”

However, this obligation does not appear to have sat well with a number of infection control experts, who were sharply critical of Ontario’s precautionary approach to health worker safety. They appeared to organize a well-coordinated media campaign to force Ontario to change course.

On March 11, 2020, *The Globe and Mail* reported:

“... numerous infectious disease experts say mounting evidence shows COVID-19 spreads through droplets, such as when an infected person sneezes and coughs, and that airborne precautions are not appropriate nor are they supported by evidence.”²⁰⁴

The article quoted one prominent infection control expert as saying: “I don’t know where the [Ontario] ministry gets its advice.”²⁰⁵

One day later, on March 12, similar sentiments surfaced in leaked letters from other infectious disease experts to Dr. David Williams, Ontario’s Chief Medical Officer of Health.

According to *The Toronto Star*:

“Some of Ontario’s rules for treating COVID-19 infections are outdated, ignore good science and could put health care workers and the sickest patients at risk, say hospital infection control doctors.”

Specifically, the doctors had called on the Ministry of Health to “stop requiring the use of N95 respirator masks and other high level infection control measures when treating any coronavirus patients.” The doctors had raised concerns over supply issues.²⁰⁶

Their campaign proved successful.

That same day (March 12), Dr. Williams, without consulting other health care stakeholders, including health care unions, made a sudden 180-degree turn and fell in line with other Canadian public health agencies and the WHO, reserving airborne precautions only for high-risk procedures.²⁰⁷

Because this new directive was issued under the HPPA, and because of his statutory obligation to “consider the precautionary principle,” Dr. Williams claimed there was sufficient evidence to discard the principle:

“The guidance outlined in this directive is a change in current practices respecting COVID-19 based on a better understanding of the epidemiology of the virus and the spectrum of illness that it causes, three months into this COVID-19 outbreak. It has been made in close consultation with Public Health Ontario and I have considered the Precautionary Principle in issuing this directive.”²⁰⁸

On March 21, 2020, the Ontario Nurses’ Association wrote to Dr. Williams, challenging this downgrading of PPE protection and Williams’ claim that the precautionary principle was being met:

“It is our view, and that of the experts we have consulted, that this [directive] fails to recognize the foundational importance of the precautionary principle when establishing the guidelines for personal protective equipment (PPE) for those on the front line of this pandemic. Given the uncertainty about modes of transmission, and the experience in both China and Europe, nurses require N95 respirators, not simply surgical masks with poor filtration and poor fit, when caring for patients with suspected or confirmed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). This is a novel virus, transmission dynamics are not completely known, and the precautionary principle must be applied, as nurses sadly learned from our experience with SARS.”²⁰⁹

The judgement on the ONA’s application for an emergency injunction disclosed that the main consideration in foregoing a precautionary approach was based on concerns over N95 shortages, and not science.

In his ruling, Justice Edward Morgan cited the affidavit of the Ontario government’s main expert witness, which argued:

“It is clear that the supply of N95 respirators is insufficient to provide them for all care for COVID-19 patients, that that supply is unstable, that re-use is fraught with challenges, and that failure to conserve N95 respirators in Ontario is likely to result in them not being available for workers performing [aerosol generating medical procedures] in the future weeks.”²¹⁰

Ruling in ONA’s favour, Justice Morgan found that “the need to conserve supply [...] is her central point”²¹¹ and was not publicly cited as the reason for Dr. Williams’ change of heart on airborne precautions.

Indeed, according to Michael Hurley, vice-president of the Canadian Union of Public Employees, which represents 30,000 long-term care home workers in Ontario:

“I heard Dr. Williams say that when we get the supply problem dealt with, we can return to the precautionary principle, which I think is an admission that the whole watering down of the safety standards is all supply-related. It's not got anything to do with whether people actually believe this is an airborne virus.”²¹²

It is troubling and disappointing that worker safety decisions at the WHO and in Ontario are framed as being based on science, when the evidence suggests they are not. This endangers health care workers, their patients, residents, clients and the general public, and it breeds distrust in public health leaders. When such decisions are made, the reasons must be transparent – and precautionary.

Mounting criticism of the WHO

Mounting questions are emerging about the WHO's scientific decision making.

Sir Venki Ramakrishnan, president of Britain's Royal Society, a scientific group that dates back to the 17th century and comprises about 1,600 of the world's top scientists, spoke for many critics when he observed:

“My impression is that the WHO treats its scientific advice like some sort of academic research project. They wait for definitive evidence to emerge before they issue guidance. The problem is that in a fast-changing scenario where urgent decisions have to be made, you have to go with the available evidence while you wait for the best evidence to accumulate.”²¹³

The WHO's infection prevention and control committee, in particular, has been described as intransigent.

According to an article by Apoorva Mandavilli of the *New York Times*:

“[T]he infection prevention and control committee in particular, experts said, is bound by a rigid and overly medicalized view of scientific evidence, is slow and risk-averse in updating its guidance and allows a few conservative voices to shout down dissent.

[...]

‘They’ll die defending their view,’ said one longstanding WHO consultant, who did not wish to be identified because of her continuing work for the organization. Even its staunchest supporters said the committee should diversify its expertise, and relax its criteria for proof, especially in a fast-moving outbreak.”²¹⁴

There are suggestions that some WHO experts may be held back by concerns over the impact to their specialization. One WHO committee member and an epidemiologist stated:

“I do get frustrated about the issues of airflow and sizing of particles, absolutely. [...]If we started revisiting airflow, we would have to be prepared to change a lot of what we do. [...]It will cause an enormous shudder through the infection control society.”²¹⁵

An example of this apparent rigidity occurred in April 2020, when a group of experts on aerosols and worker safety experts met with the WHO and urged it to reconsider growing evidence of airborne transmission. Instead of a collaborative dialogue, several participants said the discussion was dominated

by a few WHO-aligned experts who are staunch supporters of hand washing and felt it must be emphasized over aerosols. The committee's position remained unchanged.²¹⁶

A big problem is that before accepting airborne transmission or changing worker safety recommendations, this WHO committee requires the same level of evidence that are usually reserved for assessing drug or vaccine safety.

This has meant that the WHO – and Canadian public health agencies – won't recommend airborne precautions, or even concede the possibility of airborne transmission, unless the supporting evidence meets the certainty of randomized control trials.²¹⁷

Dr. Trisha Greenhalgh, a signatory of the WHO letter, notes that while randomized trials make sense for drug and vaccine safety, this standard is not appropriate for gauging public health measures:

“Randomized trials were developed to test drugs. As we know from thalidomide, new drugs can cause terrible harm. Scientists arguing for caution in the masking debate are almost all medically trained and view the principle “do no harm” (by which they mean, never give a new drug to any patient before it's been tested in a randomised trial) as overriding.”²¹⁸

Randomized trials for health worker safety measures also are neither ethical nor practical.

Dr. Lidia Morawska, a leading aerosol researcher in Australia, has noted:

“There [is] no way to humanly conduct the kind of experiment that would prove unequivocally that SARS-CoV-2 could infect people through respiratory aerosols. It would involve putting healthy people in one room and COVID-19 patients in another, with only an air vent between them. And you'd need to do it in large enough numbers to reach statistical conclusions. No ethical body would sign off on such a study.”²¹⁹

Recall that Justice Campbell said it is precisely in this kind of situation of scientific uncertainty that the precautionary principle should be invoked:

“The point is not who is right and who is wrong about airborne transmission. The point is not science, but safety. Scientific knowledge changes constantly. Yesterday's scientific dogma is today's discarded fable. [...] [W]e should not be driven by the scientific dogma of yesterday or even the scientific dogma of today. We should be driven by the precautionary principle that reasonable steps to reduce risk should not await scientific certainty.”²²⁰

Moreover, say critics, the WHO – and Canadian public health agencies for that matter – do not appear to apply the same high evidentiary standards to the public health measures that they advocate.

As Dr. Greenhalgh noted:

“There are no randomized controlled trials in community settings, for example, of hand washing, social distancing, closing schools, quarantining, closing borders or contact tracing.”²²¹

The experience at Canadian “science tables”

Worker safety participants at “science tables” at Canadian public health agencies report similar experiences.

In discussions with the Public Health Agency of Canada, health care unions have repeatedly brought forward the growing evidence of aerosol transmission and the need to implement the precautionary principle – only to be met with rigid critiques of the evidence. The agency and its advisers repeatedly failed to see that what the unions were presenting was not conclusive proof of airborne transmission but sufficient grounds to take a precautionary approach.

After repeatedly raising the growing body of evidence on aerosol transmission, one safety expert asked the Public Health Agency of Canada during its weekly COVID-19 stakeholder meetings (including health care unions) how many infected health care workers it would take for the agency to change its policies. His comment was met with silence.

At the science table in Ontario, as in other provinces, there has been a similar confrontational approach by the agency’s own experts and advisers to using a doctrinaire approach to rebutting any evidence that questions the status quo.

The WHO and the debate over airborne transmission

A case in point has been the WHO’s handling of the airborne transmission debate.

Since January 2020, the WHO – in tandem with Canadian public health agencies – has steadfastly asserted that COVID-19 was an airborne risk to health care workers only in rare circumstances involving aerosol-generating medical procedures (AGMP).

During an AGMP, the patient’s airways are manipulated in such a manner that aerosols are produced that can potentially spread a pathogen. An example is an endotracheal intubation, in which a tube is placed into the windpipe to open the airway to administer oxygen, medication or anesthesia.²²²

The WHO – like Canadian public health agencies – also has continued to emphasize the importance of hand washing over airborne precautions, even though the evidence suggests that touching infected contacts is a less important transmission route than originally thought.²²³

The New York Times reported that the WHO’s “[...] infection control guidance, before and during this pandemic, has heavily promoted the importance of hand washing as a primary prevention strategy, even though there is limited evidence for transmission of the virus from surfaces. (The U.S. Centers for Disease Control and Prevention now says surfaces are likely to play only a minor role.)”²²⁴

Dr. Julian Tang, a virologist at the University of Leicester in the U.K., says there’s more and better proof of airborne transmission “than contact or droplet evidence for which they’re saying wash [your] hands to everybody.”²²⁵

It was only after months of pressure from leading researchers and worker safety experts, most notably through an open letter from 239 scientists from 32 countries, that the WHO slightly changed its position on airborne transmission in July 2020.

Dr. Linsey Marr, a leading aerosol researcher, described the shift as a “grudging partial acceptance.”²²⁶

Giving little ground, the WHO said:

“Further studies are needed to determine whether it is possible to detect viable SARS-CoV-2 in air samples from settings where no procedures that generate aerosols are performed and what role aerosols might play in transmission.”²²⁷

The WHO's reluctance on airborne transmission was echoed in the comments of leading Canadian infection control experts. Referring to the WHO letter, one such expert said: “We’re just rehashing the same arguments that we’ve heard through February, March, April, up until now. I am not sure what the fuss is all about.”²²⁸

He dismissed the possibility that COVID-19 can be contracted through airborne transmission, using the following example:

“If someone had COVID-19, they were in a room, then they left the room and if someone just went into that room an hour later and they just stood there, they’re not going to get COVID-19.”²²⁹

In fact, according to Dr. Marr and other signatories to the WHO letter, this example suggests he may not fully understand the evidence cited in the letter.

Dr. Marr notes: “Can you walk into an empty room and contract the virus if an infected person, now gone, was there before you. Perhaps, but probably only if the room is small and stuffy.”²³⁰

More likely, says Dr. Marr and other experts, is short-range airborne spread by being near an infected person: “Just like the smoke from a cigarette, aerosols are most concentrated near the infected person (or the smoker).”²³¹

Dr. Julian Tang, a British virologist, uses a similar everyday analogy: “If you can smell what I had for lunch, you’re getting my air, and you may be getting virus particles as well.”²³²

Dr. Marr, Dr. Tang and other experts point to a number of cases of what appears to have been airborne transmission.

One case involved an infected person who spread COVID-19 to 52 out of 60 people at a choir practice in March in the U.S. They used hand sanitizers and practiced social distancing. Dr. Marr concluded: “Aerosols likely were the dominant means of transmission.”²³³

But WHO experts – and their Canadian public health counterparts – have yet to accept the choir example and other similarly compelling case studies.

Dr. Trisha Greenhalgh, a professor at Oxford in the U.K. and a WHO letter signatory, said that in each case, instead of accepting the possibility of airborne transmission, they have “dreamed up an alternative story” in which an infected person spat on his hands, wiped it on something and “magically” infected numerous other people.²³⁴

Failing to listen to warnings from China’s doctors and scientists

The WHO-China Joint Mission report was not the only warning that COVID-19 might spread through aerosols and that, as demonstrated by the Chinese experience, health care workers needed the higher protections of airborne precautions.

Chinese doctors and scientists tried to spread this message to the world in a series of studies and articles in leading Western medical journals.

Consider:

- February 6, 2020: A study by Chinese experts offering guidance on the treatment of COVID-19 patients “strongly” recommended that health care workers wear airborne precautions, including N95 respirators, for all interactions with suspect and confirmed cases.²³⁵
- February 13, 2020: In another study, Chinese experts warned that asymptomatic COVID-19 patients could spread the disease, concluding that their “findings warrant aggressive measures (such as N95 masks, goggles and protective gowns) to ensure the safety of health care workers.”²³⁶
- February 15, 2020: In yet another study into the initial outbreak, Chinese experts warned: “We are concerned that 2019-nCoV could have acquired the ability for efficient human transmission. Airborne precautions, such as fit-tested N95 respirators, and other personal protective equipment, are strongly recommended.”²³⁷
- March 5, 2020: In a study in still another journal, Chinese and U.K. experts used the Chinese pandemic experience to warn other countries that “high-filtration masks such as N95 masks and protective clothing (goggles and gowns) should be used in hospitals where health-care workers are in direct contact with infected patients.”²³⁸
- March 5, 2020: also saw the publication of a study by medical experts in Hong Kong, indicating that its health care workers wore airborne precautions for all interactions with suspect and confirmed cases.²³⁹

There are many valid troubling questions over China’s actions and transparency during the pandemic. But as Richard Horton, editor of *The Lancet*, has noted, it is important to not conflate the actions of the Chinese government, including the stifling of whistleblowers, and the efforts of Chinese doctors and scientists to warn the world through articles like those just cited. Horton said:

“I’d like to distinguish between the Chinese government and Chinese scientists and doctors because Chinese scientists and doctors actually worked tirelessly to describe this new disease, to sequence the genome of the virus, and to tell the world about it. It’s true that we don’t fully know what was taking place in China during December, and that needs to be investigated. But as soon as scientists understood that this was a new virus they did tell the WHO and the WHO informed the world about that in early January.

“The scientists in China actually did a spectacular job of tracking down this agent and telling the world about it. The failure was on behalf of Western governments to not taking their warnings seriously.”²⁴⁰

In an article published in *The Guardian*, Horton is particularly aggrieved that the UK government did not heed the warnings in a series of articles published in *The Lancet* as early as January 2020.

“He still can’t understand why the [UK] government’s scientific advisers didn’t consult their counterparts in China. The world of medicine is a small one, he says, and everyone knows the people responsible for coordinating the Chinese government’s response. These are people they could have literally sent an email to, or picked the phone up to, and said, ‘Hey, we read your paper in *The Lancet*, can it really be as bad as that? What is going on in Wuhan?’ And if they’d done that they would have found out that this was indeed as bad as described.”²⁴¹

The same question could be asked of Canadian public health agencies.

On February 5, 2020, in a hearing of the House of Commons health committee, MP Jenny Kwan (Vancouver East) tried to probe this exact issue. She asked whether PHAC was directly in contact with Chinese experts over, for example, the issue of asymptomatic transmission of COVID-19. But, as Kwan’s frustration mounted, Dr. Tam seemed unable to formulate a simple response:

“Kwan: However, the Minister of Health in China has been reported as saying that it can spread asymptotically.

My question, then, is this. Have we contacted China directly to ask this question for clarification? As was acknowledged last week by the panel, China has the foremost knowledge about the virus. Can we not contact China directly to verify that information? It seems to me that it is a critical question that we should have a definitive answer on.

Tam: The international construct is that the Chinese authorities have been providing data, and in quite a lot of detail, to ...

Kwan: I’m sorry. I’m going to interrupt because we’ve run out of time.

I had a conversation with the minister after she made that statement to privately ask her whether we have the capacity to contact China directly to ask that question. She said yes, and I asked if she would undertake to get that information for us, and she said yes. I haven’t heard back, but I’m wondering if, with the health officials, you have the capacity to do that.

I understand that we are dealing with the international framework, but we also have an opportunity, I think, to have direct contact with China to ask that question for clarification. Can we undertake to do that?

Tam: Of course there are different linkages, whether technical or scientific, or through consular linkages, and also through our actual operation centres, but I think what is difficult is that we actually need to... It’s actually quite a difficult piece of epidemiology to ascertain whether some asymptomatic person could ever transmit. It’s not just a matter of getting that data. The Chinese

have been publishing the studies, and those studies are being critiqued on an international stage.

Kwan: Yes. I understand that, too, but the Minister of Health must have had something on the basis of which that statement was made. I think that going back to the source to ask on what basis that statement was made will provide an abundance of clarity for us. The concern I have is this. I don't think people purposely spread the virus; it's the people who don't know that they might be a carrier.... In those instances, it might be spread. That is a major concern."²⁴²

This dialogue points to a fundamental problem, the failure of public health agencies in the U.K. and Canada and their advisers, let alone the WHO, to listen to China's experts.

As a possible explanation, Horton of *The Lancet* cited Western exceptionalism:

"There was a general skepticism combined with exceptionalism. We thought our health systems are better. Our scientists are better. Our doctors are better. And we will be able to handle this better than the Chinese have done. This is why tens of thousands of our citizens died, and they didn't need to die."²⁴³

Dr. Saverio Stranges, who chairs the Department of Epidemiology at the University of Western Ontario medical school, echoed that sentiment.

"From our Western arrogance, sometimes we believe that our systems are the best and there is nothing to be learned from other countries, especially, if you like, from the Asian continent," said Stranges, who has worked in Europe, Canada and the U.S. "But in these systems, I think there is a lot that can be learned in terms of emergency preparedness for either a second wave or even for the next pandemic."²⁴⁴

In a related article in a medical journal, Stranges added that this failure has cost Canada and other Western countries dearly:

"In case of the ongoing COVID-19 pandemic, most Western countries have missed the boat by not using the golden window period at the early days of the spread of epidemic that the East Asian countries used to halt the COVID-19 epidemic."²⁴⁵

One PHAC analyst told *The Globe and Mail*: "The Agency thought it was China's problem and that, because they had [dealt with] SARS, they were ready."²⁴⁶

A continuum of decision making

The experience of China, Hong Kong and Taiwan demonstrates the value of taking a precautionary approach to worker safety and pandemic containment, and of not slavishly following the directives and guidance of the WHO.

The experience of Canada demonstrates the cost in death and disease of health care workers and others of uncritically adhering to the advice of the WHO, an organization that does not follow the precautionary principle, whose decision making has raised troubling questions, and that issues worker

safety and pandemic containment guidance based on standards more appropriate to drug and vaccine safety.

The precautionary principle is a continuum of decision making. It is not a single decision. On worker safety, on border closings and on public masking, the evidence suggests that Canada missed significant opportunity after opportunity to change course and follow a precautionary approach. It is hard to overstate the benefit to Canada and Canadian health care workers, had a course correction occurred earlier.

Recommendations

When a new pathogen emerges – and experts believe COVID-19 is not the last time we will face this threat – health care workers should be protected at a level consistent with the precautionary principle. This precautionary requirement should be enshrined in all occupational health and safety legislation.

Decisions to forego the precautionary principle, as Dr. Williams did in Ontario on March 12, should not be taken arbitrarily, with a lack of transparency, or without the concurrence of health care worker unions and workplace safety experts. Decisions to forego the precautionary principle should be reviewed by relevant legislative committees and auditors general.

Canada should critically assess WHO guidance on worker safety and pandemic containment through the lens of the precautionary principle, and determine whether it is in Canada's best interests and reflects the best evidence from other countries' natural experiments, and emerging scientific evidence.

It is important that Canadian ministers and senior public health officials continue to participate in relevant WHO decision-making bodies. However, to preserve Canada's independence, Canadian participants in policy and Canadian guidance-making bodies should not wear two hats. They should either participate in policy and guidance making at the WHO or at Canadian public health agencies, but not at both.

Canada should immediately add occupational hygienists, worker safety experts and aerosol experts to PHAC and jointly develop guidance that exercise the precautionary principle and accepts and consider diverse sources of evidence, not just randomized control trials.

On worker safety and pandemic containment measures, Canada should have the resources and capabilities, including sufficient worker safety and aerosol expertise, to independently assess guidance from the WHO and to formulate our own.

A formal national health care table should be established involving health care unions, employers and the PHAC, with a legal requirement for the PHAC to consult that committee in a transparent and meaningful manner before finalizing guidance on infectious disease response

Stories from the front lines

Few COVID-19 issues have caused more worry, anxiety and anguish among health care workers than shortages of personal protective equipment. These shortages were largely preventable.

Health care workers are highly trained professionals. They review and understand the literature on airborne transmission. Through a strong institutional memory, they recall the lessons of SARS and the importance of the precautionary principle. They know that too many health care workers got sick and died during SARS. And they know full well that governments and public health agencies largely ignored the worker safety lessons of SARS.

Paula Doucet, President of the New Brunswick Nurses Union, stated:

“Throughout history, nurses have made clear we will not abandon our patients or communities needing care, regardless of the danger to ourselves. But we are not reckless and want to make informed choices about our own risk exposure based on consistent, clear information, grounded in the best available evidence, and knowing that every possible safeguard will be put in place for protection. It is important to remember that we, as Registered Nurses and Nurse Practitioners, are a voice of leadership in the healthcare field. We need to be well informed, and in order to assist everyone to help slow down the spread of COVID-19.”²⁴⁷

When they are told to wear surgical masks instead of N95 respirators, they know this is not safe, despite the assurances of public health leaders. Yet their concerns over safety are too often met with inappropriate pressure and patronizing comments that, in tone, intent and effect, seem to diminish the professionalism and competence of health care workers.

Health care workers have been shocked by the PPE shortages and the way they have been treated by their superiors.

One nurse said she and her colleagues have been caught off guard by the shortages:

“We’re scared. This has never happened ... Because of the scale in which we are working, there just isn’t the proper amount of protective equipment. We’re all terrified, and that goes for nurses, doctors and any other bedside health professionals.”²⁴⁸

Another nurse said she wore an N95 when treating a patient who was confirmed to have COVID-19. But she was told by her manager to wear a surgical mask instead. The manager claimed that COVID-19 spreads only by large droplets, even though the nurse was well aware of the growing evidence of airborne transmission. She said: “I wasn’t feeling comfortable or protected.”²⁴⁹

A third nurse said she started feeling unsafe when her employer, a large hospital, sent an email to all staff that they would be limited to two surgical masks per shift. The nurse recalled:

“[The message stated]: ‘When you come into work tonight, starting at 7 p.m. tonight, you will be receiving two masks if you’re in a patient-facing area.’ And you have two masks for your whole shift. You’re expected to use those two masks and no more. And if you want another one, you have to contact your manager.”²⁵⁰

Vicki McKenna, president of the Ontario Nurses' Association, said:

“For a decade, funding has failed to keep up with the rate of inflation ... We have crises in long-term care, hospital care, home and community care and public health ... It is evident to ONA and its frontline members that we need every available funding dollar to be able to provide safe, quality care to our patients, residents and clients.”²⁵¹

Chapter 3: Pound-Wise and Penny-Foolish: Canada, and Why We Were So Desperately Short of Personal Protective Equipment

Introduction

If any country brimmed with confidence at the dawn of the pandemic, it was Canada. Politicians, public health officials and medical experts repeated the same message over and over that Canada had learned from SARS, and that it was well resourced and ready.

- January 21, 2020: “Experts say the Canadian health care system is well equipped to handle any potential coronavirus cases thanks to the lessons learned during the SARS outbreak,” CTV News reported.²⁵²
- January 26, 2020: “We have much better preparedness this time around,” said Dr. Peter Donnelly, President and CEO of Public Health Ontario, the province’s public health agency.²⁵³
- January 29, 2020: Prime Minister Justin Trudeau told the House of Commons: “Our health system is very well prepared to deal with the coronavirus in Canada.”²⁵⁴
- February 26, 2020: “Experts say that Canada has all of the necessities for widespread disease outbreak ... [including] supplies,” reported Global News.²⁵⁵
- February 28, 2020: “Hospital staff have personal protective equipment at their disposal – masks, face shields, gloves – to protect them from virtually any high-consequence pathogen,” said a Toronto medical expert.²⁵⁶
- February 28, 2020: “We’ve stockpiled more [N95 respirators] than most countries,” said another medical expert.²⁵⁷

Far from being ready, Canada was woefully unprepared; the lessons of SARS largely ignored.

With the benefit of hindsight, we can see their rose-coloured sentiments acting as a bridge linking two largely preventable disasters:

- The failure to build up sufficient PPE supplies ahead of time; and
- The laconic, at times seemingly uninterested, pace of governments’ and public health agencies’ response to those shortages in what looked, for all intents and purposes, like shutting the barn door after the horses have bolted.

Except for Alberta, which maintains a three-month supply of N95s,²⁵⁸ Ottawa and the other provinces appeared to enter the pandemic in similar dire straits:

- In 2017, Ontario quietly began destroying as many as 55 million N95 respirators that had been stockpiled on the recommendation of the SARS Commission in preparation for a public health emergency. These respirators had been allowed to expire and were not replaced.²⁵⁹
- Two years later, the Public Health Agency of Canada (PHAC) destroyed up to two million expired N95 respirators when it closed its Regina warehouse – an undisclosed event that did not come to light until COVID-19. This left the federal stockpile with just 100,000 N95s at the start of the pandemic.²⁶⁰
- British Columbia’s stockpile of medical equipment, including N95 respirators, shrank by more than 60 per cent between July 2013 and January 2020.²⁶¹ Over that period, \$2.76 million in

supplies owned by B.C.'s five regional health authorities had expired, become obsolete or had been donated to anti-Ebola efforts in Africa.²⁶²

- In Quebec, despite a 2012 recommendation from a senior government committee for the establishment of a strategic stockpile, the province entered the pandemic “without any provincial medical equipment reserves,” reported the Fédération interprofessionnelle de la santé du Québec.²⁶³
- Newfoundland and Labrador decided to stock up on PPE after the 2009 H1N1 pandemic. The largest regional health authority procured pivotal supplies, including 500,000 N95 masks. By September 2016, the regional health authority had let much of the inventory expire, only to then dispose of it and close the warehouse. Other health authorities similarly let their supplies expire and dwindle.²⁶⁴
- In the midst of the COVID-19 crisis in Saskatchewan, reports surfaced that in 2014, 166,000 N95 respirator masks were disposed from a storage room at a Regina hospital.²⁶⁵

Alberta may have been the best prepared jurisdiction thanks to the preparedness actions of previous governments. But it did not take advantage of that stockpile to protect health care workers at a precautionary level.

COVID-19 revealed that when it came to preparedness, Canada was penny-wise and pound-foolish.

While the cost of the up to two million N95s destroyed by Ottawa is not known, the total cost of Ontario's pandemic stockpile, including 55 million N95s, was just \$45 million.

As *The Globe and Mail* noted in an editorial:

“Set against the approximately \$400 billion in combined federal-provincial deficits the pandemic is expected to deliver this year, the cost of being better prepared is minuscule.”²⁶⁶

Justice Campbell had presciently noted in 2006:

“Whenever one speaks of cost, the cost to the government to protect us better, the cost to hospitals of better infection control, surveillance, and worker safety, we should never forget the cost of SARS in sickness, pain, suffering, and unspeakable loss.”²⁶⁷

Like other unprepared countries, most of whom did not have the benefit of the lessons of SARS, Canada was forced to wade into the chaotic “wild west” of the exorbitantly priced and uncertain Chinese personal protective equipment market. Desperate buyers from around the world scrambled for N95s and were at the mercy of fraudsters and quick-buck artists. Although Canadian officials worked valiantly and diligently, the Chinese market was so lawless that Canada unwittingly bought eight million sub-standard N95s.²⁶⁸ Global prices soared. After one unidentified government placed an order for 200 million N95s in China, the price of Chinese respirators is said to have trebled.²⁶⁹

If federal and provincial stockpiles of N95 respirators had been properly established, maintained, refreshed and available at the start of the pandemic, it would have gone a long way to ensuring that all Canadian health care workers could be protected at a precautionary level.

For a sense of what that might have meant, let's look at the possible burn rate – or rate of consumption – of respiratory protective equipment during COVID-19.

A study²⁷⁰ that examined COVID-19 burn rates suggests the significant potential impact of the millions of N95 respirators that Ottawa and the provinces allowed to expire.

Based on current worker safety guidelines, the study²⁷¹ estimated that Ontario health care workers using N95s solely for aerosol-generating procedures²⁷² and surgical masks for all other patient contacts would consume 152,174 N95 respirators and 4.5 million surgical masks over a 60-day period. If accurate, we can extrapolate that sufficient supplies would have allowed Ontario to substitute N95s for those 4.5 million surgical masks and protect its health care workers at a precautionary level.

Throughout COVID-19, health care workers and their unions have been stonewalled when they asked for information about the state of Canada's PPE supplies.

Ontario Nurses' Association president Vicki McKenna said:

“There is a supply problem but government officials will not confirm supply. ... This question is asked at every meeting with ministry officials.”²⁷³

National security expert Dr. Wesley Wark is critical about the secrecy surrounding PPE supplies:

“How much usable PPE is in the stockpile is not known ... The reasons for this all-out secrecy are hard to fathom. The lid has begun to come off the US stockpile, in the midst of growing controversy about shortages of crucial medical supplies. It is time it came off the Canadian stockpile.”²⁷⁴

This chapter will examine how Canada found itself in a largely avoidable predicament and then tried to fix this problem in a lackluster fashion. It will do so in three parts:

- Part 1 will examine the failure to sufficiently stockpile PPE before the pandemic;
- Part 2 will probe efforts to address those shortages in the early days of the pandemic;
- Part 3 will examine the issue of accountability on this important COVID-19 issue.

Part 1 – From SARS to the dawn of COVID-19

The (forgotten) lessons of SARS

With no domestic manufacturers, shortages of N95s were a constant fixture of SARS, much as they are now. The major difference was that SARS was relatively contained and barely touched the United States – it had just 27 cases and no deaths – where a significant portion of Canada's N95s are made.

An article written by Canadian medical experts shortly after SARS and published in *The Lancet* noted:

“With 211 hospitals in Ontario alone requiring these supplies, Canadian suppliers rapidly ran out of stock. There was no pre-existing supply stockpile, and our mask supplies were obtained from foreign manufacturers.”²⁷⁵

Echoing COVID-19 supply chain problems, *The Lancet* article also noted:

“Because SARS was a worldwide threat, there was great difficulty in acquiring masks from other countries, since foreign governments understandably wanted to keep such supplies for their own citizens.”²⁷⁶

Recognizing these supply chain issues, Justice Campbell highlighted the importance of sufficient stockpiles of protective equipment:

“SARS not only underlined the importance of having an effective emergency management structure, it also emphasized the need to have sufficient quantities of medical supplies, secure supply chains and the means to distribute the supplies.”²⁷⁷

To ensure there were sufficient supplies of N95s and other protective equipment, Justice Campbell recommended:

“Measures resulting from advance planning require resources of people and equipment. Examples are surge capacity for human resources and medical equipment such as N95 respirators, gloves, gowns, visors and other protective equipment, and a secure source of supply and an effective logistical system to distribute them.”²⁷⁸

A case study: after SARS – lessons learned and forgotten in Ontario

In the months following SARS, the Ontario government began building up stockpiles of personal protective equipment.²⁷⁹

This was detailed in the SARS Commission’s first interim report released in April 2004:

“In order to address the serious problem of the lack of a sufficient supply of personal protective equipment for health care workers, patients and others that arose at the outbreak of SARS I, the Ministry has begun to stockpile and secure its supplies. The Ministry reported that a two-month stockpile of personal protective equipment, including masks, gloves, gowns, eye protection and other clinical supplies, for a community the size of Toronto is available and could be distributed quickly through a central distribution system.”²⁸⁰

Three years later, the Auditor General of Ontario reported that significant progress had been made to build up a provincial stockpile:

“During an outbreak, health-care workers and patients would need additional protective equipment and medical supplies to protect themselves from the virus. The 2003 Ontario Nurses’ Association survey, mentioned earlier in this report, found that more than half of the respondents had concerns about the adequacy of protection they had been given.

Medical supplies such as masks, gloves, gowns, and hand sanitizers are mostly made outside Canada, in places where the influenza pandemic may originate and where border closure is a possibility during a global epidemic.

The Ministry had therefore, in early 2007, contracted with a number of vendors to provide a four-week supply of such equipment and supplies for health-care workers who are in contact with patients with infectious diseases. As of March 31, 2007, the Ministry had obtained more than 60 per cent of the required quantities and planned to have all items stockpiled by March 2008.”²⁸¹

The purchases included 55 million N95 respirators.²⁸²

Ten years later, when the Auditor General of Ontario revisited the stockpile, a completely different picture emerged. Eighty per cent of its supplies had expired, and the province had begun destroying them:

“... [M]ore than 80% of these supplies have reached their expiry date. The original cost of the expired supplies is approximately \$45 million. Although the ministry has donated a small amount of supplies to two other countries for emergency situations, it did not put the majority of these supplies into circulation within the health-care system so that they could be used before expiring. The ministry informed us that its budget for these supplies only allowed for storage and not the management of them.”²⁸³

In a stunning revelation, not only had those supplies been allowed to expire, but no one had thought to circulate them in the health care system.

The Toronto Star reported that by 2017,

“... Ontario had disposed of 80 per cent of the stockpile [of N95s] because they were deemed not up to 100 per cent par. Elastic bands had degraded and were susceptible to snapping. The crucial filtering material had deteriorated.”²⁸⁴

A case study: the Canadian pandemic plan

In the wake of SARS, the federal government commissioned a national pandemic plan. Co-chaired by Dr. Theresa Tam, who was then Director of the Immunization and Respiratory Infections Division of the PHAC, it was released in 2006 and ran to more than 500 pages.

A scan of the index page shows detailed appendices on many important pandemic planning elements.

For example, much attention was paid to the National Antiviral Stockpile, established in the fall of 2004 to stockpile antiviral medicines, like Tamiflu and Relenza, against influenza.²⁸⁵ The stockpile held an initial supply of 16 million doses of antivirals.²⁸⁶ A subsequent meeting of experts in 2006 led to an increase to 55 million doses.²⁸⁷ The pandemic plan goes into great detail on how the antiviral stockpile would be used during an influenza pandemic.

Vaccine sections of the pandemic plan were equally in-depth.

One would think that after the worker safety experience of SARS, including shortages of N95 respirators, gloves, head coverings, gowns, etc., the pandemic plan would be just as detailed on issues related to stockpiling personal protective equipment.

That was not the case.

The word “stockpile” is found 24 times in the text of the 2006 plan. Each use involves either antivirals, vaccines or laboratory testing. None involves personal protective equipment.

The one brief mention of stockpiles of protective equipment during a pandemic is the following:

“There will be shortages of the materials and supplies needed during the pandemic period. Therefore, plans are required to allow for a consistent 16-week supply (i.e. two pandemic waves) of both influenza and non-influenza related materials to address sporadic interruptions of supply chains (e.g., resulting from mail and courier disruptions, border closures, supply limitations).”²⁸⁸

While a 16-week supply is a commendable and potentially reasonable target, the rest of the report is silent on how this should be accomplished, including detailing:

- Who would coordinate between Ottawa and the provinces?
- Who would be responsible for maintaining the 16-week supply – Ottawa or the provinces?
- Would purchases be centralized at the provincial and/or federal level through group purchasing organizations?

While this level of detail was abundant in the plan’s section on antivirals and vaccines, it is silent on worker safety preparations. And it appears to reflect a marked lack of health worker safety expertise, awareness and understanding in the preparation of the pandemic plan.

It is worth noting that questions about potential antiviral-related conflicts of interest and transparency were also raised about some of PHAC’s experts.

A Radio-Canada investigation in 2011 found three high-profile members of the team that prepared the Canadian pandemic plan and continued to advise the PHAC had received research funding, or acted as a consultant or speaker for Roche, the producer of the antiviral Tamiflu, during the period when Tamiflu was being heavily promoted by Roche.

Radio-Canada reported that the PHAC said it was aware of these affiliations, but this was not publicly known:

“Public Health Agency says it has always been aware of the drug industry affiliations of its private sector advisers and takes these into account. But these relationships were rarely reported in broader public forums, in the media or even when some of these individuals would appear in marketing videos or flu-warning commercials on television produced by Roche.”²⁸⁹

There is no suggestion that the three individuals might have acted improperly. This issue was raised to indicate the focus of some of the key people who prepared Canada’s pandemic plan. The contents of the pandemic plan suggest that worker safety wasn’t one of their priorities.

Citing privacy, the PHAC suggested it would be inappropriate to release information on drug company connections of its advisers “without their consent.”²⁹⁰ The agency thus appeared to view the privacy of its advisers as being more important than the public’s need for transparency. This imbalance should be

corrected: if you're going to advise governments on pandemic planning and response, you should be prepared to disclose potential conflicts of interest.

Preparing for an influenza pandemic?

Canada's pandemic plan was geared towards influenza and not to a new unexpected pathogen – like SARS or COVID-19.

To be fair, there were valid worries at the time the pandemic plan was released in 2006 of an influenza pandemic:

“Concerns about the likely occurrence of an influenza pandemic in the near future are increasing. The highly pathogenic strains of influenza A (H5N1) virus circulating in Asia, Europe, and Africa have become the most feared candidates for giving rise to a pandemic strain.”²⁹¹

These concerns appear to have been borne out with emergence of the H1N1 flu pandemic in 2009 caused by a novel influenza virus.²⁹²

Nonetheless, the Canadian pandemic plan did not appear to foresee the possibility of a public health emergency created by a non-influenza pathogen like SARS.

However, on a dissonant note, the plan was published in December 2006 at the same time that Justice Campbell was warning health authorities to be prepared for the unexpected:

“SARS taught us that we must be ready for the unseen. That is one of the most important lessons of SARS. Although no one did foresee and perhaps no one could foresee the unique convergence of factors that made SARS a perfect storm, we know now that new microbial threats like SARS have happened and can happen again. However, there is no longer any excuse for governments and hospitals to be caught off guard and no longer any excuse for health care workers not to have available the maximum level of protection through appropriate equipment and training.”²⁹³

The pandemic plan reflected an influenza orientation not just in its emphasis on antivirals but also in its limited worker safety recommendations, which advised that health care workers wear surgical masks, not N95 respirators. This is the exact same advice that the PHAC has been giving from the start of COVID-19.

The plan stated:

“Masks may be worn by HCWs to prevent transmission of other organisms from patients with undiagnosed cough. For the purpose of this document the term mask refers to surgical masks, not to special masks or respirators. Special masks, i.e. high-efficiency dust/mist masks, are required for patients with infectious tuberculosis and for non-immune HCWs entering the room of a patient with measles or disseminated varicella.”²⁹⁴

Faced with a similar set of facts, experts in other jurisdictions have wondered whether too much of a pandemic planning focus on influenza might help explain the COVID-19 containment shortcomings in places like the U.K. Their point is that influenza and influenza treatments, like antivirals, are a much

more known quantity, although there is growing evidence that influenza can also spread through the air.²⁹⁵

Testifying before British MPs, a senior Hong Kong official, for example, attributed the territory's remarkable achievements during the pandemic, including on enviable low health worker infections, to Hong Kong treating COVID-19 as if it was SARS – and not influenza.²⁹⁶

Dr. Richard Horton, editor of *The Lancet*, has made a similar point about the U.K.:

“The UK imagined the pandemic would be much like influenza. The influenza virus is not benign – the number of annual deaths from influenza in the UK varies widely, with a recent peak of 28,330 deaths in 2014-15 – but influenza is not COVID-19.

China, by contrast, was scarred by its experience of SARS. When the government realised that a new virus was circulating, Chinese officials didn't advise hand washing, a better cough etiquette and disposing of tissues ... As one former secretary of state for health in England put it to me, our scientists suffered from a “cognitive bias” towards the milder threat of influenza.”²⁹⁷

One wonders whether – based on the influenza orientation of the 2006 pandemic plan – Canadian public health officials might have suffered from a similar “cognitive bias.”

A case study: NESS

The National Emergency Stockpile System (NESS), part of the Public Health Agency of Canada (PHAC) and thus under the responsibility of the federal Chief Medical Officer of Health, was established during the Cold War as a stockpile in case of a nuclear strike.

In the aftermath of SARS, this mandate came to include pandemic preparedness.

A 2011 audit of NESS noted:

“The SARS outbreak triggered preparations for a new global threat, pandemic influenza, with the subsequent initiation of substantial NESS stockpiling of pandemic response supplies. This surge supply included antiviral agents, antibiotics specific to pandemic response, syringes, ventilators and related oxygen supply equipment, personal protective equipment (masks, face shields, gloves), and other supplies such as gowns, disposable sheets, pillows, needles, syringes and body bags.”²⁹⁸

At the dawn of the pandemic, there were suggestions that NESS was fully prepared for COVID-19.

A senior PHAC official assured the House of Commons health committee as late as February 26, 2020, that NESS had sufficient stockpiles of supplies to assist provincial requests.

Canada's Deputy Chief Public Health Officer Dr. Howard Njoo told the House of Commons health committee that “should a province require additional support ... we're certainly able to meet that request.”²⁹⁹

Two days later, another medical expert was quoted as saying: “We’ve stockpiled more [N95 respirators] than most countries.”³⁰⁰

Sadly, these assurances, though well intended, were misplaced. It soon became clear that NESS was unable to meet provincial requests for N95s and other medical equipment. The shortcomings of NESS revealed by COVID-19 were not a mystery. They had been raised – and apparently left unanswered – in the aforementioned 2011 audit.

The audit had recommended a central role for NESS in pandemic preparedness, including continuing “... to ensure the following stock is available for provincial/territorial surge: pandemic preparedness supplies.”³⁰¹

The audit also highlighted the need for proper stockpile management: “For stock being acquired and retained, attention should also be paid to its life-cycle management – such as methods of procuring and storing supplies.”³⁰²

The destruction of up to two million respirators in May 2019 – together with the fact that NESS held only 100,000 respirators entering the pandemic – indicated that these recommendations were ignored.

That is not the only audit recommendation that, if implemented, might have improved Canada’s pandemic response.

The audit highlighted the importance of effective communication and coordination between Ottawa and the provinces. But it found significant impediments:

“Information about the NESS is not routinely shared within the federal government and across jurisdictions. Provinces/territories and other federal government departments have expressed concern that there is not a universal understanding about the current scope of what the NESS program is and does, its potential and its links with other public health related stockpiles.”³⁰³

To address these shortcomings, the audit recommended:

“The Agency needs to develop a strategy to clarify processes, affirm responsibilities and raise awareness of the stockpile, ensuring that knowledge and expertise on stockpiling are shared within the federal government and across Canadian jurisdictions. This effort will help build confidence in the stockpile and allow others who rely on this service to better understand what the stockpile can and cannot provide.”³⁰⁴

The evidence suggests that this never occurred, and inter-provincial communication was troubled in the early stages of the pandemic.

As evidence, *The Globe and Mail* reported that, entering the pandemic:

“The federal agency did not have a target for the levels of personal protective gear it should maintain in the stockpile, did not know what level of stockpiles the provinces and territories had and did not advise lower-level governments about how much should be stockpiled, the officials said. This, despite calls in the wake of the 2003 SARS outbreak for governments to stockpile personal protective equipment and secure supply chains.”³⁰⁵

Indeed, COVID-19 demonstrated that little or no NESS-related planning or coordination had been done, according to national security expert Dr. Wesley Wark.

He noted few efforts “... to integrate the federal government's stockpile system with those held by the provinces and territories. It's not until February – a month into the COVID-19 crisis – [that] the federal government wakes up to the fact that they don't even know what is held in provincial and territorial stockpiles, nor do provinces and territories know what's held in the federal stockpile. That points to a basic strategic failure.”³⁰⁶

By March, when the reality of serious PPE shortages began to bite, NESS went from strategic stockpile to distribution portal for Ottawa's panicked efforts to source supplies in China.

Concluded Dr. Wark:

“The whole thing was just a desperate scramble. And it didn't need to have been that way, if proper attention had been paid to the important role that the stockpile system was meant to play.”³⁰⁷

The PHAC and its allies have tried to refute the criticism of Dr. Wark and others, suggesting it was based on a mistaken understanding of NESS's mission.

Canada's first chief public health officer, David Butler-Jones, stated that the intention of the federal stockpile was not to replace provincial and territorial responsibilities but to act as an “additional level of security.” He said that security fell short, but so did the provinces.³⁰⁸

Health Minister Patty Hajdu, for her part, said the stockpile was “never meant” for a pandemic of this size, adding that Ottawa was not alone in this predicament: “Provinces and territories were also struggling.”³⁰⁹

No Canadian jurisdiction was well prepared, except for Alberta, where its efficient procurement system had been in place since 2009.

But the excuses and explanations about NESS's shortcoming – valid as they may be in some cases – do not hide the facts that something went terribly wrong in the years leading to COVID-19, and that no one in a position of authority seems to have noticed.

University of Toronto associate professor, Dr. Alison Thompson, an expert on pandemic planning, stated:

“It's a bit shocking ... They were caught off guard by this, which is really ridiculous.” She noted that NESS's problems show that governments failed to meet “... their reciprocal obligations to protect health care workers ... and that's because of a failure to stockpile and procure these resources.”³¹⁰

With respect to the failings of NESS, Canadians are left asking some key questions:

- Did no one at the PHAC, including its leadership, ask whether the up to two million respirators destroyed in May 2019 should be replaced?
- Did no one ask whether the poor handling of up to two million N95s was an indication that the supply management system at NESS was broken and needed to be fixed before a pandemic or other public health emergency?
- Did no one investigate whether any of the N95s could still be used?
- Did no one ask if Canada, as a whole, was prepared to protect health care workers at a precautionary level during a pandemic?

At the time of writing, these vital questions remain unanswered.

Part 2 – The response to COVID-19

Off to a shaky start

Alberta was one of the few Canadian bright spots on the eve of the pandemic.

It maintains a three-month supply of protective equipment, including N95 respirators.³¹¹ With one centralized health authority, Alberta uses the bulk buying power of a population of more than four million to get better prices and terms.³¹²

In mid-December 2019, when the first inklings of possible problems were surfacing in Asia, Alberta’s procurement team doubled their regular order for five-day supply of PPE, including N95s, gloves and gowns. A few weeks later, concerned about news from Wuhan, they bought 500,000 additional N95 respirators.³¹³

If the writings of Dr. Theresa Tam are any indication, the PHAC – echoing the sentiments of Canadian politicians and medical experts – entered COVID-19 on a self-assured note.

In an article published in March 2020, but apparently completed on the eve of COVID-19 in November 2019,³¹⁴ Dr. Tam confidently painted a picture of pandemic preparedness:

“The Public Health Agency of Canada, established following SARS as the national coordinating body for health emergencies, has made significant investments in order to increase emergency preparedness and response capacity in Canada, build on the lessons learned from past experiences, and facilitate cross-sector preparedness and resiliency. This work has been multi-focal, ranging from the production and updating of plans, protocols, and technical guidance to conducting training, stockpiling vaccines, and therapeutics, to running exercises to test current knowledge and capabilities ...

Although there is a strong existing system in place, ongoing work is still needed to achieve a state of flexible and scalable readiness for the next public health emergency.”³¹⁵

The article did not attempt to explain how the “significant investments” cited by Dr. Tam squared with the destruction of up to two million N95 respirators just months earlier, and the fact that NESS only had 100,000 N95s in its stockpile in February 2020.

Dr. Tam even went so far as to laud the global ranking of Canada's pandemic preparedness:

"Canada has met the International Health Regulations 2005 core capacity requirements and was ranked 5th in the world in the Global Health Security index, assessing global health security and capabilities."³¹⁶

When the rubber met the road in February – and dire shortages of PPE became glaringly evident – Ottawa and the provinces seemed distracted and unfocused. Surprisingly, Ottawa didn't know how much PPE each province had and where the shortages might be. So, in early February, as COVID-19 was raging in China, the PHAC sent a survey to the provinces, asking about their stockpiles and their expected needs.

As national security expert Dr. Wark noted, it's a huge "strategic problem" that Ottawa didn't know what supplies the provinces held, and the provinces didn't know what was in Ottawa's reserves.³¹⁷

As early as February 13, 2020, officials at the PHAC warned that NESS contained only "a modest supply of personal protective equipment including surgical masks, respirators, gloves, gowns and coveralls."³¹⁸

The PHAC officials added:

"We anticipate increased demand and further requests, and also shortages, limits to availability and impacts on the global supply chain. We want to be as ready as possible to meet immediate needs."³¹⁹

This warning does not appear to have been turned into action. Urgent federal efforts to replenish supplies do not appear to have started until mid-March 2020. Documents indicate that the first orders for N95s were not finalized by Ottawa until March 18, 2020 – about three months after Alberta Health Services made its urgent order in late December 2019.³²⁰

Indeed, in the week before PHAC's February 13, 2020 internal warning, Canada had decided to ship 16 tons in medical supplies, including PPE, to China.

This decision caught Dr. Amir Attaran, a professor at University of Ottawa's school of epidemiology and public health and its faculty of law, by surprise:

"It was absolutely certain in early February that we would need this equipment ... This decision went beyond altruism into high negligence and incompetence because Canada did not, and does not, have surplus equipment to spare."³²¹

There are indications of what urgent action by Ottawa might have accomplished. At the same time, in early February 2020, a major American hospital moved quickly to shore up its stockpile, spending about \$5 million on PPE and other supplies, before world markets exploded in chaos. Said a hospital official: "It turned out to be a wise move ... one of the lessons learned is that you have to stockpile PPE."³²²

One wishes that Canadian officials had been as wise.

Provincial officials also appeared to have been caught off-guard by the lack of PPE.

In March 2020, as PPE shortages were growing, Dr. David Williams, Ontario's CMOH, said the province's advance planning was thrown into a loop as it jostled on the global market to purchase personal protective equipment:

“... things changed drastically ... The challenge that we found out as we got into it more and more is that the suppliers were dealing with an ever-increasing demand so you're not just ordering on your own volition, you're dealing with a very highly competitive global situation.”³²³

In other words, Ontario had apparently not planned for the possibility of a mad scramble by every country in the world for personal protective equipment during a pandemic. This, in a province that was the epicenter of SARS outside of Asia. This, in a province that had already faced those exact same kinds of supply chain problems. This, in a province where the SARS Commission warned repeatedly about PPE shortages during a public health emergency.

The situation was similar in Quebec.

In late January 2020, Quebec's CMOH, Dr. Horacio Arruda, seemed unaware of his province's lack of preparedness. He confidently predicted that his province was ready to deal with COVID-19, having learned its lessons from SARS, saying: “Our network of health is ready to detect and to treat.”³²⁴

Quebec subsequently became the epicenter of COVID-19 in Canada, accounting for close to half of all the country's COVID-19 cases. Amid dire shortages of PPE, including N95s, health care workers comprised about one in four Quebec cases.³²⁵

In an admission of his province's pandemic preparedness failure, Quebec Premier François Legault said, “nobody anticipated we would use so many [N95s] so fast. There is a race for protective equipment. We are all in the same situation.”³²⁶

Even British Columbia's highly regarded CMOH, Dr. Bonnie Henry seems to have been caught off-guard by her province's lack of preparedness.

The Breaker News reported:

“On March 23, she [Dr. Henry] said she was unaware of PPE shortages in B.C. Just two days later, on March 25, a 180-degree pivot: Henry revealed that hospitals were “going through way more personal protective equipment than we expected, so we are on a tenuous level.”³²⁷

While shortages of N95s are expected to persist into the fall and winter, some health worker safety experts have wondered why so little effort has been made by federal and provincial public health agencies to consider reusable alternatives like elastomeric respirators. Equipped with replaceable cartridges, some are more protective than N95s and are said by some wearers to be more comfortable. Not only are they readily available, but they may also be more cost-effective than N95s.^{328 329}

As Dr. Lisa Brosseau, a respiratory protection and infectious diseases scientist at the University of Illinois, Chicago, noted:

“The elastomeric material and design fit much better against your face,” and they are cleanable and washable. “Especially in pandemic situations, why not give everyone an elastomeric respirator, fit-test them, and they’ll have it forever?”³³⁰

In the early days of the pandemic, there appears to have been no governmental efforts to acquire supplies of N95s already in the Canadian wholesale and retail systems.

In late January 2020, drug stores and medical supply wholesalers began reporting that N95 respirators and other supplies were rapidly selling out.

The experience of a major wholesaler in Toronto was typical. A senior official said that in early January there was a two-to-three-hour line-up outside his Toronto-area office. Ontarians with family in China were evidently buying up N95 respirators by the crate to send to family and contacts in China. The wholesaler said provincial health bodies did not start calling until March, but the shelves were long since bare.³³¹

By March 2020, the situation had become so dire – and the lack of urgent government attention so worrying – that a group of volunteers began doing what provincial governments should have been doing from the dawn of COVID-19.

Chris Houston, who has worked overseas in health care logistics for various humanitarian agencies, including Doctors Without Borders, said:

“Our group of volunteers started in March what the provincial health authorities should have started in January. We began holding PPE-collection drives at which people and companies dropped off surplus PPE and hand sanitizer; local alcohol companies, which had pivoted to sanitizer production, donated it by the crate. We registered as a non-profit organization called Conquer COVID-19 so we could process donations. Support from hockey legend Hayley Wickenheiser and actor Ryan Reynolds sparked national attention. We sold T-shirts to raise funds for more supplies.”³³²

Houston was shocked that Canada needed the kind of volunteer grassroots effort more typically needed for developing nations. Despite the enthusiasm around this effort, he cautions that:

“This is not a feel-good story. The responsibility to provide PPE to health care facilities should not rest with volunteers. In light of the WHO’s warning in January, failing to source and distribute the equipment needed to protect frontline workers and patients was – and remains – a serious failure. It’s unacceptable that it fell to private citizens to fill these gaps in a country such as Canada.”³³³

By April 1, 2020, federal Health Minister Patty Hajdu was forced to admit that “we likely did not have enough” personal protective gear in the national stockpile heading into the COVID-19 pandemic:

“To your question about whether we had enough – no, we likely did not have enough. I think federal governments for decades have been under-funding things like public health preparedness ... I would say that, obviously, governments all across the world are in the same exact situation.”³³⁴

A ray of hope

Canada is slowly moving to being self-sufficient in N95 respirators.

While subject to much criticism, Ottawa should be commended on kick-starting significant domestic production:

- In August 2020, the federal and Ontario governments announced a deal with a 3M plant that will see the company's Canadian facilities eventually produce 100 million N95 respirators a year. Unfortunately, production will not begin until early next year.³³⁵
- In April 2020, Ottawa signed a ten-year deal with Montreal-based Medicom to produce 20 million N95s each year. Medicom's production was expected to be available in the fall of 2020.³³⁶

Canada also has contracts for 154.5 million N95 and KN95 masks but, as of August 3, only 54 million N95 and KN95 respirators had been delivered – all imported from outside the country. It is not known how many of those imported respirators have passed quality tests and are available for a potential second wave in the fall.³³⁷

But, as domestic production ramps up, Canada is nearing a potential milestone: being able to protect all health care workers at a precautionary level with airborne precautions.

There will likely be some prominent public health and infection control experts who may fall back on arguments first raised during SARS that:

- N95s are costly, and the universal use of airborne precautions may consume supplies that should be reserved for what they claim are higher-risk situations;
- N95s are uncomfortable and difficult to put on, so they are often misused or worn improperly;
- Workers who use N95s tend to become over confident in their equipment and thus neglect other key measures, such as hand hygiene;
- Health care providers experience health problems (e.g., rashes, problems breathing); and
- Patient care may suffer.

Argument number one is largely ruled out by a potentially abundant supply – assuming that governments and public health agencies take a precautionary approach and see the end goal as protecting health care workers with airborne precautions.

While some issues have been identified with N95s, worker safety experts say those problems often can be addressed through training and education.

The other arguments are unfounded – there is no evidence that protecting health care workers with N95 respirators leads to either lower levels of patient care or the neglect by health care workers of other hygiene measures.

In remarks as relevant today as they were in 2006, the SARS Commission quoted the following responses from health worker unions to these unfounded and unsubstantiated arguments:

“The work environment of an HCW [health care worker] is not known for its ease or comfort. It is our experience arising from SARS that most workers are prepared to accept a certain level of discomfort if they believe it may save their lives. We have seen no evidence to support the statement that because the equipment is uncomfortable or difficult to put on that it is *often* misused or worn improperly.”³³⁸

Part 3 – A question of oversight and accountability

How can the PPE fiasco be prevented in the future?

Memories fade; priorities change.

The arc of failed preparedness exposed by COVID-19 and detailed in the opening two sections of this chapter – from building up stockpiles just after SARS to letting those stockpiles wither away a few years later— is not unusual.

History is littered with such examples of preparedness fading as memories of a disaster dim. Researchers suggest that collective memories of disaster, and of the accompanying community consensus of collective prudence, can dissolve in less than a generation, or nearly as much time as has elapsed since SARS.³³⁹

The question is, as time passes and as memories fade: who acts as the public's guardian? Who ensures that the focus on pandemic preparedness is not diminished by time and changing political priorities?

Some might say this is the role of the federal and provincial auditor generals. While they play an important function as public watchdogs, they have a limited ability to force governments to change course.

Look at what happened when the Ontario auditor general revealed in 2017 that as many as 55 million N95s had expired: nothing. The provincial government did not decide to fix the problem and replenish this stockpile. The opposition parties did not raise the issue in question period in the provincial legislature. The media did not seem to notice. The Ontario Chief Medical Officer of Health did not publicly speak out, warning that, in the event of a pandemic, this might compromise the province's ability to protect health care workers at a precautionary level. Just the sound of crickets.

This is what happens with systemic problems. When red flags are raised, as they were in Ontario in the 2017 auditor general report, they are often no match for the inertia inherent in systems gripped by the deep-seated problems revealed by COVID-19.

So, what is to be done to ensure that we remain vigilant, that the lessons of COVID-19 are not forgotten as the lessons of SARS were?

It may be time to revisit the solution put forward by Justice Campbell and implemented in Ottawa and in Ontario. It was a solution of great merit and insight. But it was no match for the systemic immobility revealed by COVID-19.

Oversight by CMOH

Justice Archie Campbell was acutely aware that as time passes and the urgency of a public health emergencies like SARS fade, governments may be less and less willing to devote resources to pandemic preparedness.

He also recognized that the public health problems exposed by SARS were systemic, years in the making, and resulted from long-term neglect by all political parties:

“These problems developed during regimes of successive governments and no government or political party is immune from responsibility for the decline of public health protection.”³⁴⁰

Systemic problems afflict an organization as a whole. They pervade its culture. They are not caused by an individual or a group of individuals. Even if you change personnel or modify organizational charts, systemic problems can persist because they are experienced by the whole of an organization, and not just particular parts of it.

Justice Campbell reasoned that if it took years to create systemic problems, it would also take years, potentially under different governments of different political orientations, to fix them. And, as occurred in the past – as different parties assume power, or hold influential positions in minority government situations, and as memories of a disaster ebb – there is the danger that public health funding could fall victim to changing political winds and stifle efforts to address systemic failings.

Justice Campbell wrote: “Competition for tax dollars is fierce. It is not easy in a time of fiscal constraint for any government to make additional funds available for any public programme.”³⁴¹

What was needed, he reasoned, was an independent sentinel to warn legislative assemblies and the public if government neglect risked another disaster like SARS, or worse.

His solution was to put that responsibility on the shoulders of Chief Medical Officers of Health (CMOH). Pandemic planning and containment were already their prime responsibility. Risk communication was already part of their job, and historically had played a key role in curbing cigarette smoking and other health risks. Public health leaders were already using their risk communication powers on a wide range of issues, including obesity, inequitable access to health care by radicalized minorities, and substance abuse.

To allow CMOHs to act as sentinels on a potentially politically charged issue like pandemic preparedness, Justice Campbell suggested that they needed to have sufficient rights, duties and independence to critically assess, on behalf of the public, their governments’ public health policies and actions. Independence was vital because of the risk of political expediency and interference. This would help ensure, he believed, that on important public health risks like pandemic preparedness the public and legislators would be informed and not be left unprotected.

His proposed solution thus had two elements:

- Statutory independence for chief medical officers of health to safeguard them from political interference; and
- The right and duty to communicate directly to legislative bodies and the public about public health hazards both regularly and as required.

Justice Campbell wrote: “The public must be assured that if there is a public health hazard the Chief Medical Officer of Health will be able to tell the public about it without going through a political filter.”³⁴²

He recommended:

“That the Chief Medical Officer of Health be given independence in respect of medical matters, with the right and the duty to report directly to the public on the risk from infectious diseases, and on the measures necessary to protect the community from communicable disease.”³⁴³

Because the SARS Commission was established by the Province of Ontario, his recommendation was directly applicable only to the province. However, the federal government of the day also consulted with Justice Campbell on this issue when the office of the federal CMOH was being established in 2004.

In establishing the federal and Ontario Chief Medical Officers of Health in 2004, the federal and Ontario governments sought and acted on Justice Campbell’s advice and recommendations. The resulting federal and provincial legislation reflected his analysis and recommendations. Not surprisingly, the wording on rights and duties of the federal and Ontario chief medical officers of health are quite similar.

Rights and duties of the federal and Ontario chief medical officers of health

Section 12 of the *Public Health Agency of Canada Act*³⁴⁴, which established the position of the federal Chief Medical Officer of Health, sets out the officer holder’s rights and duties to independently communicate on public health risks and hazards:

Annual report on public health

12 (1) The Chief Public Health Officer shall, within six months after the end of each fiscal year, submit a report to the Minister on the state of public health in Canada.

Tabling in Parliament

(2) The Minister shall cause the report to be laid before each House of Parliament on any of the first 15 days on which that House is sitting after the Minister receives the report.

Other report on public health

(3) The Chief Public Health Officer may prepare and publish a report on any issue relating to public health.

Data and methodology

(4) The Chief Public Health Officer shall, to the extent possible, in any report submitted or published under this section, set out the source of the data and information used in the preparation of the report and the methodology employed to arrive at the report’s findings, conclusions or recommendations.

Contents of a report

(5) The Chief Public Health Officer may, in any report submitted or published under this section, refer to public health problems and their causes, as well as any measures that may, in his or her opinion, be effective in preventing or resolving those problems.

The similarly worded Section 81 of Ontario’s *Health Promotion and Protection Act*³⁴⁵, which also created the position of the province’s chief medical officer of health, sets out similar rights and duties to communicate with legislators and the public on public health risks and hazards:

Annual report

(4) The Chief Medical Officer of Health shall, in every year, make a report in writing on the state of public health in Ontario, and shall deliver the report to the Speaker of the Legislative Assembly. 2004, c. 30, s. 1 (2).

Laying before Assembly

(5) The Speaker shall lay the report before the Assembly at the earliest reasonable opportunity. 2004, c. 30, s. 1 (2).

Minister's copy

(6) The Chief Medical Officer of Health shall deliver a copy of the report to the Minister at least 30 days before delivering it to the Speaker. 2004, c. 30, s. 1 (2).

Other reports

(7) The Chief Medical Officer of Health may make any other reports respecting the public health as he or she considers appropriate, and may present such a report to the public or any other person he or she considers appropriate. 2004, c. 30, s. 1 (3).

Did anyone speak out?

And yet, despite these rights and duties, despite the fact that risk communication is part of the integral duties and responsibilities of CMOHs, neither the federal or Ontario CMOHs appear to have publicly raised the alarm that their jurisdictions were unprepared for a pandemic and that urgent action was needed to fix this problem.

We use the word “appear” because it is possible that they did publicly speak out. It is always difficult to prove a negative. However, we were unable to find any instances of this in our extensive media searches, though we caution that media searches have their limitations and blind spots. Neither have opposition parties, who have been searching high and low for this kind of politically charged ammunition.

We do not know whether the federal or Ontario CMOHs privately warned government about the lack of preparedness.

This possibility on the federal side was raised in May during an appearance before the Commons health committee by federal Health Minister Patty Hajdu and CPHO Dr. Theresa Tam.³⁴⁶

The Minister was initially asked whether in the past decade the PHAC had warned cabinet that the federal stockpile could not meet the challenges of a pandemic. The Minister answered that the agency has been “extremely responsive in terms of communicating to multiple governments the needs to which they have.” But when Dr. Tam was asked whether she personally had ever given cabinet that advice, the Minister intervened, saying: “Actually I’ll answer that, because the conversations at cabinet are private as the member knows.”³⁴⁷

We may never know what warning, if any, Dr. Tam or her agency might have given the federal government.

We conducted extensive media searches to see whether any CMOH outside of Ottawa or Ontario publicly warned their legislators and their citizens about a lack of pandemic preparedness. We found none. Again, as with the federal and Ontario examples cited above, our searches were limited by the nature of those search capabilities. However, we did not find evidence that media or opposition politicians had themselves uncovered instances of warnings by provincial CMOHs that had gone unheeded.

The conclusion is that on the limited available evidence no CMOH appears to have spoken out and warned about a lack of pandemic preparedness in their jurisdictions with the weight, authority and urgency that they typically communicate other public health risks.

This is not a reflection on Canada's dedicated, hard-working and highly trained CMOHs. Rather, it's another example of the consequences of the systemic failures revealed by COVID-19 and of the immense gravitational pull they exerted.

Recommendations

Oversight and accountability

Having regard to the systemic failures revealed by COVID-19, and of the vital role of CMOHs in public health risk communication, we thus recommend that:

- Federal and provincial chief medical officers of health be statutorily required, on an annual basis, to report to their respective legislatures, and to the public that they're mandated to protect, on the state of their jurisdiction's public health emergency preparedness, and make recommendations on addressing any shortcomings. The preparation of this report should reflect the concerns and perspectives of health worker unions and safety experts.
- The reports of the CMOHs be required to go to a standing committee of their respective legislatures, which will hold annual hearings into the report and related issues.
- Chief medical officers of health be statutorily required to consider and apply the precautionary principle in assessing their jurisdiction's public health emergency preparedness, thus ensuring that their health care workers are protected at a precautionary level.
- Chief medical officers of health be given the statutory independence – in jurisdictions where they do not have this right – to speak publicly on vital issues like pandemic preparedness without fear of political interference or retribution.
- Qualified outside auditors with sufficient expertise and resources independently audit, on a biannual basis, CMOHs' preparedness resources and their statutory declarations on pandemic preparedness, and publicly report their findings. These auditors should be required to have advisory committees of health care worker unions and worker safety experts.
- Guidance on the safety of health care workers be made on a precautionary basis by workplace regulators, health care worker unions and worker safety experts working collaboratively, and that those decisions form the basis of health worker safety guidance issued by public health agencies.

Personal protective equipment

We will never know how many of the more than 21,000 Canadian health care workers infected with COVID-19 might have been kept safe had there been sufficient stockpiles at a precautionary level. What we do know, as outlined earlier in this report, is that jurisdictions like China, Hong Kong and Taiwan, that took a precautionary approach to worker safety, have significantly lower levels of health worker infections.

The PPE supply shortcomings exposed by COVID-19 need to be addressed on an urgent basis.

- The precautionary principle should be the primary driver in setting and properly maintaining levels of personal protective equipment in national and provincial stockpiles. Stockpiles should be set and maintained at levels that ensure that all health care workers are protected at an airborne level.
- Building on its contracts with 3M and Medicom to produce N95 in Canada, the federal government should ensure that Canada has sufficient domestic production capability to protect health care workers at a precautionary level.
- Recognizing that while sufficiently protective, N95s have their drawbacks, including comfort, the federal and provincial governments should collaborate on standards and sufficient supplies of alternative respiratory protective equipment, like elastomeric respirators, that protect at the same level or better than N95s, and that, evidence suggests, may have comfort and cost advantages.
- With regards to efficiently and cost-effectively maintaining stockpiles of PPE, governments may want to consider Taiwan's three-tier stockpiling framework. It has proven its ability during COVID-19 to optimize the PPE stockpiling efficiency, including through regular cycles of refreshing, ensure a minimum stockpile, use the government's limited funds more effectively, and achieve the goal of sustainable management.³⁴⁸
- Governments and public health agencies be open and transparent on levels of PPE stockpiles.

Stories from the front lines

The stories of health care workers in long-term care is one of courage, dedication, anguish and fear.

“We are in crisis mode,” said a PSW at Anson Place Care Centre, a retirement and nursing home near Hamilton, Ontario where eight residents had died of COVID-19 and several dozen more were infected. “These people are dying, gasping for air.”³⁴⁹

A nurse in Quebec, who later contracted COVID-19, said:

“ Health care workers have been gagged and left to their own device, all that on a paltry pay.... They have been forced to choose between Ms. A., who’s been soaking in her urine for hours, Mr. B., who hasn’t had food or drink yet, or Ms. C., who is screaming in pain because she hasn’t been moved since the morning.”³⁵⁰

Miranda Ferrier, President, Canadian Support Workers Association, described how PSWs are afraid of catching the coronavirus, and afraid of what it might do to the vulnerable people they care for; they are exhausted from a workload that was heavy even before the pandemic began, resulting in chronic staff shortages. “PSWs are crying before they go in for their shifts in long-term care,” she said “They cry in their cars.”³⁵¹

Chapter 4: Long-Term Care in Canada and COVID-19: They Deserve Better

For decades, health care workers have witnessed firsthand the understaffing, overcrowding and persistent lack of funding that have chronically impoverished long-term care facilities and are now revealed by COVID-19. And for decades, governments, long-term care owners and operators have largely turned a blind eye, relying on the dedication and courage of health care workers to act as the fragile glue to mend the unmendable – the many, deep, persistent and long-standing cracks in this sector.

The many warnings about the systemic problems in long-term care give rise to a troubling question: how much of the death and disease suffered in this sector during COVID-19 was preventable?

At the beginning of September 2020, about eighty per cent of Canadian deaths from COVID-19 had been in the long-term care sector, exceeding by far deaths from COVID-19 in hospitals or within the community. During the same period, approximately one in five seniors' homes in Canada had experienced outbreaks.³⁵²

As COVID-19 has exposed this sector's fissures and shortcomings, health care workers have paid a heavy price. Since the start of the pandemic, over 10,000 health care workers have contracted COVID-19 in long-term care, representing about a third of all cases in nursing homes.³⁵³

The SARS Commission identified in its final report many of the same shortcomings in the long-term care sector, described in this chapter in its final report. It examined an outbreak of Legionnaires' disease at the Seven Oaks facility in suburban Toronto in 2005, two years after SARS. In an echo of what was to come during COVID-19, the 2005 outbreak infected 70 residents, 39 staff, 21 visitors and five other people who lived or worked nearby. Twenty-three residents died.³⁵⁴

The SARS Commission found that problems identified in hospitals during SARS had not been addressed in the long-term care sector:

“Seven Oaks demonstrated that many worker safety lessons of SARS have not been learned... The Seven Oaks outbreak also demonstrates the continuing reluctance of the health system to fully accept the importance of the precautionary principle in worker safety. Until this precautionary principle is fully recognized, mandated and enforced in our health care system, nurses and doctors and other health care workers will continue to be at risk from new infections like SARS.”³⁵⁵

That the long-term sector suffered so much disease and death during the COVID-19 pandemic shows that the lessons of the SARS Commission were not heeded. Military medical staff who provided emergency assistance to long-term care facilities in Ontario and Quebec found some of the same worker safety problems identified by the SARS Commission that should have been fixed long ago.

For example, at one long-term care home in suburban Toronto, the military observed that N95s were provided to staff without a fit-test.³⁵⁶

Fit-testing is a legally required process that helps users select a respirator that best fits their face and teaches them how to get a proper seal each time they use a respirator, a procedure known as a seal

check, as well as how to safely don and doff a respirator. A test verifies that the chosen respirator works properly. There are two types of tests. One is called a qualitative fit test and relies on the user's subjective response to taste, odour or irritation. The other is a quantitative fit test and relies on an instrument to quantify the fit of a respirator.³⁵⁷

Justice Campbell said to send health workers like this into SARS without training and fit-testing does not reflect well on the way the health care system protected its workers.³⁵⁸

The warnings went beyond the SARS Commission.

Seniors' advocates, academics, geriatricians, health care unions and associations have warned about the sectors' inherent weaknesses in dozens of reports going back decades. They have repeatedly called for investments and leadership on the part of federal and provincial governments.

Daniel Fontaine, chair of the Canadian Association for Long Term Care, noted presciently in 2019 that "the cost of government action now will be dwarfed by the cost of inaction later."³⁵⁹

While the financial impacts of inaction are still being experienced by both federal and provincial governments as of early September 2020, COVID-19 had taken the lives of more than 7,000 seniors in long-term care facilities and 16 long-term care staff.³⁶⁰ In June 2020, the Canadian Institute for Health Information (CIHI) reported that Canada's COVID-19 mortality rate in long-term care was the highest among all OECD countries and almost double the OECD average (42 per cent).³⁶¹

Health care workers in the LTC sector remain the underpaid, underprotected, under-resourced, undertrained, understaffed and underappreciated lynchpins who have held together a fractured, broken system that has been decaying for decades under successive governments, whatever the political stripe. This chapter will tell their stories.

The pre-COVID context: the conditions of work are the conditions of care

There is much that is wrong in the long-term sector. None of it comes as a surprise. Much was fixable and preventable if only governments and many employers had acted.

The problems are many: few, if any, minimum standards of care; insufficient staffing; low-paid precarious employment; residents with complex medical needs; outdated and crowded facilities; and ownership models that often appear to prioritize profits over investing in staff, resources and facilities. It is thus perhaps not surprising that Canada experienced its worst COVID-19 outcomes in long-term care.

The lack of regular proactive on-site inspections in many homes³⁶² meant it took Canadian provincial authorities weeks to realize the impacts of COVID-19 on long-term care residents in some regions. Unobserved by regulators, the virus thus spread like wildfire through many homes, especially in Ontario and Quebec, where community infections were at the highest levels in the country.

Nursing homes/long-term care residents in Canada are typically seniors and others with chronic conditions that require the availability of 24-hour-a-day, seven-day-a-week professional health care. In addition to dementia and cognitive impairment, residents in long-term care also suffer from multiple and co-existing conditions, including diabetes, chronic heart disease and lung or kidney disease.

Some of Canada's most vulnerable live in long-term care homes. Sixty-nine per cent of residents have dementia, and 87 per cent have some form of cognitive impairment (including dementia and other conditions such as stroke); 82 per cent require extensive assistance or are heavily dependent.³⁶³ About a quarter of seniors in long-term care take 10 or more different medications.³⁶⁴ The average age in long-term care/nursing homes is 85 or older.³⁶⁵

Staff in long-term care – totaling 100,000 in Ontario alone – are knowledgeable and skilled. They sustain their patients' quality of life through tasks like bathing, dressing, feeding, toileting, ensuring medications are taken when and as required, diaper changing and repositioning.³⁶⁶

Long-term care staff must have a detailed and intimate knowledge of the needs of residents, especially given the frequent cognitive and communication difficulties. Dementia, in particular, requires a specialized skill set. For example, staff must consider the risk of infections, pressure ulcers, responsive behaviours, and know who has difficulty eating, swallowing or walking. They must know their residents' characteristics.³⁶⁷

This means that health care workers in long-term care need sufficient time to care for residents. It also means that having regular full-time staff – rather than casual or agency staff – provides direct benefits to long-term care residents.

Unfortunately, even as the population of long-term care has become increasingly older, with more and more complex health conditions, there has been a move towards unsustainable staffing levels and higher resident-to-staff ratios.³⁶⁸

Unions have highlighted the lack of sufficient staffing, and other issues such as violence in long-term care, in numerous reports.³⁶⁹

For example, the Ontario Health Coalition (OHC) found in a January 2020 report prepared for Unifor, Canada's largest private sector union, that some of Ontario's long-term care homes were short as many as 20 to 50 personal support workers. According to the OHC report: "Ministry of Health data [shows], after a slight improvement from 2006-2012, care levels have dropped to their lowest levels of the decade, despite the increases in levels of resident acuity."³⁷⁰

In testifying on Parliament Hill before the Standing Committee on Health, Amanda Vyce, Senior Researcher with the Canadian Union of Public Employees (CUPE), and Lou Black, Research Director, Hospital Employees' Union (HEU), reported similar staff shortages in a B.C. union survey:

"...staff at one site reported their staffing ratio at night was as low as one care aide for 75 residents. Residents were reported to routinely go without their weekly bath or without being toileted in a timely manner."³⁷¹

Employers appear to have also lowered staffing costs by reducing the proportion of regulated nursing staff. The majority of frontline care in long-term care is now provided by unregulated personal support workers/aides who, the evidence shows, are routinely underpaid, overworked and forced to work multiple jobs in order to make ends meet. Many make little more than minimum wage for work that is socially vital and is both physically and psychologically demanding.^{372 373}

Residents and their families, health care workers and their unions regard investments in staff, facilities and resources as investments in quality of life and worker safety. Private sector operators, while acknowledging the importance of quality of life and worker safety, position such investments on the cost side of the ledger. Return to shareholders is the essential purpose of all private sector corporations. While making a profit is part of our free-market economy, in view of the failures revealed by COVID-19, it would be reasonable to ask whether the significant profits generated in the long-term sector should go to shareholders or be re-invested in staffing, facilities and resources.

A *Toronto Star* investigation found that:

“Three of the largest for-profit nursing home operators in Ontario, which have had disproportionately high numbers of COVID-19 cases and deaths, have together paid out more than \$1.5 billion in dividends to shareholders over the last decade.”³⁷⁴

Across Canada, there appear to have been two concurrent trends: the downward trend in investments in staffing appears to have coincided with the move to increased private delivery of long-term care services.

Over the past decade, Alberta reduced its beds in public facilities; by 2016, 43 per cent of the beds in the province were in for-profit facilities. The same trend emerged in B.C.: approximately 25 per cent of B.C. LTC facilities are government owned and operated, with non-profit and for-profit owned facilities making up equal parts of the remainder. In Ontario, about 60 per cent of facilities are for-profit.^{375 376}

In Ontario, only one registered nurse is required on site in long-term care, regardless of the number of residents (which might be 100 or more) or the shift time. In Quebec, a nurse working in long-term care routinely cares for 100 patients. During the height of the pandemic’s first wave, there were reports of 160 patients to a single nurse.³⁷⁷

Personal support workers in Ontario routinely care for as many as 32 residents each on night shift, according a recent provincial staffing report, which recommended a guideline of one support worker to eight residents during day and evening shifts.³⁷⁸

Data from Ontario suggests that for-profit long-term care facilities have 17 per cent fewer staff than non-profit nursing homes.³⁷⁹

Canada does not fare well, compared to its international counterparts.

In terms of staffing levels at seniors’ facilities (2017-2019), Canada had just 1.3 nurses and 2.3 personal care aides/personal support workers per 100 residents 65 and over, a rate much lower than many other OECD countries, including Australia and the United States. Canada had half the staffing complement of the Netherlands and Norway.³⁸⁰

The expert panel set up in February 2020 to advise the Ontario government on long-term care staffing confirmed there was a staffing crisis, with “critical staffing shortages” throughout the pandemic. It recommended a minimum of four hours of direct care per resident each day, and additional funding to realize this objective.³⁸¹

In addition, most work in long-term care is poorly compensated, is part-time or casual, and offers workers few, if any, benefits, including paid sick leave.

As the *Toronto Star* reported:

“There are many reasons why the long-term care system collapsed during the pandemic, among the most obvious is the fact many homes pay minimum wage and limit the workers to part-time hours with few benefits, forcing most to work in two or three homes. That is how a virus spreads.”³⁸²

Even before COVID-19 entered the scene in Canada, long-term care facilities were known to be particularly at risk of infectious disease spread. The buildings and their infrastructure are outdated, a factor exacerbated by chronic overcrowding.

While the age and quality of long-term care facilities varies across the country, long waiting lists in most parts of Canada,³⁸³ and the limited finances of families, mean that there is no market incentive to improve facilities. Regardless of how poorly performing they are, there are always desperate families on lengthy waiting lists seeking institutional care for their elderly loved ones.

Saskatchewan health policy expert, Stephen Lewis, noted:

“Most homes are owned and operated either by non-profit societies with limited capital or for-profit companies. In both cases there is an incentive to extend the life of the buildings for as long as possible, and to house the maximum number of revenue-generating residents...”³⁸⁴

Ontario provides a good example of how outdated facilities, and a failure of successive governments to invest in long-term care, may have led to dire consequences for both residents and long-term care workers.

Changes in 1998 to Ontario’s structural safety standards for long-term care meant that nursing home rooms could no longer house more than two residents. However, under the legislation, existing homes were grandfathered in and allowed to operate under a previous standard from 1972, which allowed for rooms with up to four beds.

While a third of the 78,163 beds in Ontario’s homes remain at the 1972 standard (‘C’ standard), CBC’s *Marketplace* found these beds disproportionately account for COVID-19 deaths: 57 per cent of the province’s reported COVID-19 deaths in long-term care homes were in overcrowded wards. In addition, according to the CBC, most of the C-level beds (80 per cent) remaining in Ontario are in for-profit homes, meaning about half of the beds in for-profit facilities are still at the 1972 standard or below.³⁸⁵

Health care workers raised the alarm very early in the pandemic that some of these overcrowded homes were failing to properly isolate and cohort residents who had tested positive for COVID-19. Experts say there is an obvious fix to the infrastructure issue:

“So how can we ensure our homes are safe for all? We can design them so that more people can live in single-bed rooms, with enough space to spread them out in the event that they need to be isolated,” said Dr. Samir Sinha, Director of Geriatrics, Sinai Health System and University Health Network.³⁸⁶

Ontario and Quebec

During the pandemic, COVID-19 had the greatest impact on long-term care facilities in Ontario and Quebec, although Nova Scotia also had a major outbreak at one of its long-term care facilities.

Ontario

At the beginning of the pandemic, perhaps understandably, the province's attention was focused on fears that COVID-19 would overwhelm hospitals, as it had in Italy and China. To ensure hospitals had sufficient capacity, elderly patients were transferred from hospitals to long-term care facilities. This practice continued in homes across Ontario throughout much of March and April, despite an increasing number of outbreaks in long-term care facilities. It did not end until about a month after the province declared a state of emergency, when hospital occupancy rates were at a historic low, averaging 69 per cent, down from 96 per cent before the pandemic.³⁸⁷

Further, beds freed up in hospitals were not allocated to those sick in long-term care.³⁸⁸ Most residents who died from COVID-19 remained in understaffed facilities even as many hospital beds sat empty.³⁸⁹

Distribution of PPE was also largely focused on hospitals, rather than long-term care. On late March, for example, the provincial CMOH Dr. David Williams said health care workers in long-term care did not need PPE every day unless the home was in the midst of an outbreak.³⁹⁰ Even after a directive called for universal masking of staff and visitors at long-term care homes, positive – but asymptomatic – health care workers were told to come into work if deemed critical and told to “work under work isolation.” This, despite growing evidence of the risks posed by “silent carriers” of COVID-19.³⁹¹

In March 2020, The Ministry of Labour received a complaint from a staff member at the Anson Place facility, with concerns about confirmed cases of COVID-19 in the workplace and the lack of information provided to workers regarding those positive cases, as well as concerns about PPE.³⁹²

In response to this complaint, on March 30, 2020, the Ministry conducted a telephone interview. No orders were issued in response, according to *The Globe and Mail*:

“Anson Place breezed through the first review on March 30, without a single order issued against it. In the second review on April 8, also by phone, the inspector told Anson Place to make face masks available for night staff, the report says.”³⁹³

The use of telephone interviews, as opposed to on-site, in-person inspections, was a continuing problem during COVID-19, much as it had been during SARS. During the first two months of the pandemic, Ministry of Labor inspectors relied almost exclusively on phone calls to assess health care worker risks in seniors' homes: of the 612 COVID-19-related inspections in March and April 2020, only 25 were in person, according to ministry figures.³⁹⁴

When asked by *The Globe and Mail* about this practice, a spokesperson at the Ministry of Labour said it halted in-person inspections during the pandemic to help stop the virus from spreading in long-term care homes. The spokesperson said that many complaints involved PPE, and “often, these concerns could be dealt with remotely to the satisfaction of both the worker and employer without orders being issued.”³⁹⁵

Managers gave direction to inspectors not to enter long-term care homes, according to Smokey Thomas, the president of Ontario Public Service Employees Union, the union representing the long-term care home inspectors. He added that there were not enough inspectors for all Ontario long-term care homes, and that inspectors needed to be provided with appropriate PPE.³⁹⁶

Court filings, regulatory documents and investigative media articles highlight systemic failures and the reluctance of officials to heed frontline workers warnings:

“Everyone from the management of the home to the Premier’s Office was slow to respond to cries for help from frontline health care workers, who were forced to ask both an Ontario Superior Court judge and the province’s quasi-judicial Labour Relations Board to intervene.”³⁹⁷

The executive director of Anson Place Care Centre said:

“The home was guided in its handling of the outbreak by public health officials, and has worked closely with the local health unit and the provincial government to update its infection-control and outbreak-management policies as health experts continue to improve their understanding of the new virus. “Due to COVID-19’s impact,” she said, “our team was faced with unprecedented challenges.”³⁹⁸

In an effort to address the situation, on April 9, 2020, the CEO of the Ontario Nurses’ Association (ONA) wrote to the Medical Officer of Health for Haldimand-Norfolk Health Unit about their concerns that Anson Place Care Centre could be in breach of the Chief Medical Officer of Health’s Directive #3 stating ONA had received information that “there are four-bed rooms in which some of the residents have COVID-19, and the others do not.”³⁹⁹

Subsequently, in mid-April 2020, ONA filed an *Application for Injunctive relief* against Anson Place Care Centre and three other homes, Eatonville Care Centre, Hawthorne Place Care Centre and Henley Place to:

“Provide [staff] with appropriate access to the PPE that they need to protect themselves and the residents of the facilities and to implement the required administrative controls for LTC facilities. This includes allowing nurses to make PPE decisions on an ongoing basis at the point of care, as well as isolating and cohorting residents and the staff attending to them so that those who are infectious are kept separate from and treated by different nurses than those who are not.”⁴⁰⁰

“They Turned a Blind Eye to their Residents,” ONA Member Says of LTC Home⁴⁰¹

N95 respirators locked in management offices. So much red tape to obtain, staff stopped asking. Residents dying at alarming rates. Nurses and other workers getting sick – and worse.

These are just some of the heartbreaking realities experienced by many long-term care members of the Ontario Nurses’ Association as COVID-19 ravaged that sector – and the reason ONA was compelled to launch an injunction against four of the worst for-profit offenders where dozens of residents lost their lives: Eatonville Care Centre, Anson Place, Hawthorne Place and Henley Place. As ONA President Vicki McKenna, RN, put it, “As nurses and health-care

professionals, as unionists – and as human beings – what choice did we have? Someone needed to speak up for our suffering LTC residents, members and other staff.”

“As COVID-19 made its way to our already vulnerable sector, we were not given proper PPE to protect ourselves and our residents in the very place they call home and should feel safe,” said one such member, an RN who works at a for-profit home in northern Ontario. “Safeguards were not put in place. Staffing reached critical levels as those on the front lines became exhausted and completely overwhelmed, and some got sick. The employer turned a blind eye to their residents, as only the bottom line mattered. Many needlessly passed away – most without being able to see or say goodbye to their loved ones. It’s something I will never forget.”

Thankfully, in its wide-reaching decision on April 23, the Superior Ontario Court of Justice sided with ONA and ordered the four homes to immediately rectify health and safety issues that resulted in these deadly COVID-19 outbreaks and comply with public health directives, quoting the precautionary principle (erring on the side of caution). As a result, nurses and other workers were finally given access to PPE and were able to make decisions on its use and other health and safety measures based on their assessments.

“ONA and those of us working in LTC advocate for our residents daily, so why did it take so many tragic deaths before we were finally heard?” asked the member. “How many more residents will we lose before these homes take accountability for their misgivings and show true compassion and concern, and the government addresses the shortcomings in this sector once and for all?””

A spokesperson for the owner of three of the homes said they were “comfortable with the decision...it confirms that the directives from Ontario’s chief medical officer of health are appropriate to protect staff in long-term care.”⁴⁰²

Meanwhile, Sharleen Stewart, President of SEIU Healthcare, which also represents many workers at Anson Place Care Centre and Eatonville Care Centre, took a different tack, asking the province to take control of the two facilities for the duration of the pandemic.

Regarding the dire situation in the two facilities, she said: “It’s like sending people into war and they can’t see where the bullets are coming from. ... It’s totally mismanaged and reckless.”⁴⁰³

Stewart pointed out there was precedent for taking over troubled homes in British Columbia and Quebec. The Ontario Government refused the request.⁴⁰⁴

The Executive Director of Eatonville said:

“We have always strived to provide a safe and healthy home to our residents as well as a fulfilling workplace for our staff... That goal has not changed at this time and we are committed to working alongside the Government of Ontario to find long-term solutions to ongoing challenges within long-term care and to ensure an outbreak like this never happens again.”⁴⁰⁵

SEIU filed urgent applications with the Ontario Labour Relations Board (OLRB) on April 20, 2020,⁴⁰⁶ seeking government action in three Toronto area care homes: Eatonville Care Centre, Anson Place Care

Centre and Altamont Community Care Centre. SEIU alleged in its applications for each home that the “employer is, quite frankly, failing the members, the residents, their families, and the public at large by its unlawfully inadequate response to this crisis.”⁴⁰⁷ The homes disputed the allegations.

SEIU Healthcare’s application alleged the homes failed to:^{408 409}

- Provide proper equipment, materials and protective devices in accordance with OHSA and regulations
- Provide information, instruction and supervision to the union's members to protect the health or safety of the workers and residents
- Take every precaution reasonable in the circumstances for the protection of a worker

SEIU Healthcare’s application detailed allegations of a lack of transparency about COVID-19 infections, severe staff shortages and critical shortages of PPE.⁴¹⁰ According to the *Toronto Star*, one staff member wrote that despite requests for the employer to provide fitted N95s, these were not provided until the day after a co-worker, Christine Mandegarian, died from COVID-19. “The day after Christine died, April 16, 2020, was the first time frontline workers were given N95 masks,” says the written declaration from personal support worker Karen Ellington, who has also since fallen ill with the virus. She said, “We were told to keep and reuse them as they were not sure if or when they would receive another.”⁴¹¹

Following mediation, on April 24 2020, the Board ordered weekly physical inspections for two months, and that the inspector attend the facilities’ joint health and safety meetings. The ruling also mandated access to appropriate protective gear for all workers, and instructed the three homes to update workers and their union daily about COVID-19 cases and deaths, and provide weekly staffing reports to help address staff shortages.^{412 413 414}

On April 27, 2020, an inspector from the Ministry of Labour visited Anson Place in person. This time, Anson Place was cited with nine violations of provincial occupational health and safety laws. The list included staff not wearing the recommended PPE, “boxes of surgical masks left open in a hallway, exposing them to potential contamination, and workers leaving the home during breaks and returning wearing the same, potentially contaminated, face masks.”⁴¹⁵

But this was not the end of litigation in Ontario over long-term care.

Prior to seeking its emergency injunction, ONA had filed many grievances against homes throughout the province, claiming that the homes were violating collective agreement. In early May 2020, these grievances were brought before the arbitrator John Stout.⁴¹⁶

According to legal experts, the Stout award “suggests there is a high standard imposed on employers when it comes to taking all “reasonable precautions” to ensure the health and safety of staff and residents, and to reduce risk – regardless of whether that risk is supported by scientific evidence.”⁴¹⁷

Legal experts suggest that together with Justice Morgan’s ruling in *Ontario Nurses’ Association v. Eatonville/Henley Place*, 2020, the Stout award reinforces the importance of the point-of-care risk assessment and respecting nurses’ professional and clinical judgement when determining what PPE is necessary: “Nurses must be provided with PPE, including N-95 masks if, in the nurses reasonably professional and clinical judgment, they determine such PPE is necessary.”⁴¹⁸

Litigation has helped to clarify the rights of health care workers in long-term care in Ontario, but the fight continues.

Shortly after these legal decisions in favour of workers' health and safety, CUPE went public, suggesting that the province was trying to "water down" existing requirements for access to N95s by staff in long-term care:

"The province asked the Canadian Union of Public Employees to begin discussions about removing that access from the provincial rules because it believed the masks weren't necessary in every setting in the facilities, the union said."⁴¹⁹

Similarly, ONA continued to receive numerous complaints from its members that many long-term care homes were failing to adhere to the terms of the Stout award. For example, two of Ottawa's long-term care homes were brought separately by ONA and Unifor before the arbitrator, John Stout, for the failure to provide workers with sufficient access to fit-tested N95s.⁴²⁰

In late April, the military was sent to assist in a number of Toronto-area homes, including Altamont Care Community, Eatonville Care Centre and Hawthorne Place Care Centre. Their findings confirmed some of the reports from ONA and SEIU members. According to the *National Observer*, "All five homes faced staffing shortages and failed to meet basic standards of care for their patients."⁴²¹ Among the findings in the military report,⁴²² according to the *Observer*:^{423 424}

- At Eatonville Care Centre, the military reported that residents were allowed to wander and reported a "general culture of fear to use supplies because they cost money";^{425 426}
- At Hawthorne Place Care Centre, the military reported protocols that allowed for a "near 100 per cent contamination rate for equipment, patients and overall facility";⁴²⁷
- At Altamont Care Community, according to the military report, "most residents were reported to not having received three meals per day". "Severe bed sores" [pressure ulcers] and residents not being moved, repositioned in bed or washed were reported.^{428 429}

It was only after the military report was released that the Ontario government finally agreed to take over operations at five care homes, including Altamont Care Community, Eatonville Care Centre and Hawthorne Place Care Centre, something Ontario health care unions had petitioned the government to do for more than a month.⁴³⁰

As of mid-June, data revealed an apparent link between ownership status and the severity and potential for death in long-term care homes in Ontario. Although outbreaks of COVID-19 were about as common in for-profits, non-profits and municipal homes, five per cent of residents died in for-profits, three per cent died in non-profits and 1.1 per cent died in municipal homes.⁴³¹

And the Ontario Health Coalition found that the results of a survey in July 2020 showed staffing will continue to be a significant issue over the long term:

"Conducted over the week from July 10 to July 17 in every region of Ontario, the survey found that 95 per cent of the staff report that their long-term care homes are short staffed and 53 per cent of those report that they are short shortages every day."⁴³²

Quebec

In Quebec, as of July 26, 2020, there were 4,856 deaths related to COVID-19 in long-term care facilities, or about 85 per cent of Quebec's total. Eight long-term care staff have died in Quebec.⁴³³

On September 23, 2020, the Quebec government released two reports commissioned to investigate major outbreaks that had swept through two homes: Résidence Herron, a private facility in Dorval, and Sainte-Dorothée, a public facility in Laval, where 100 residents died from COVID-19 and a total of 211 residents contracted the virus, along with 173 workers.⁴³⁴

According to the government's report, Résidence Herron had a total of 38 people die between March 26 and April 16, including 23 who died in less than a week between April 5 and April 10. The health authority took over management of the facility on April 7.⁴³⁵

On March 29, local public health officials had entered the home to find three employees caring for 133 residents.⁴³⁶ According to a media source:

"There were patients who hadn't had any basic care for a number of days, diapers that hadn't been changed for three or four days, excrement that was covering their skin and patients who hadn't been fed."⁴³⁷

The media reported that some staff, who had not been provided with sufficient PPE, had fled the facility.⁴³⁸

The government's report noted that the home's reliance on temp agencies to fill staffing shortages and a high turnover rate left it vulnerable when the pandemic struck.⁴³⁹

The government report concludes that "the managers of the facility did not have full control over their facility and they lacked understanding of what was required to respond to residents' needs." The report thus concludes that the authorities of the Herron CHSLD demonstrated "organizational negligence".⁴⁴⁰

Katasa Group, the company that owns the Herron, said it is reviewing the report. "We will take the time to carefully analyze the conclusions and recommendations," said Katherine Chowieri, a manager with the company.⁴⁴¹

At Sainte-Dorothée, the Quebec government's report noted "staffing shortages, a lack of protective equipment and poor managerial oversight contributed to the fatal outbreak."⁴⁴²

Two employees at Sainte-Dorothée said in interviews that there were no N95 respirator masks, only procedural masks, which weren't readily available but instead locked in a manager's office.⁴⁴³ "We didn't have enough gowns, not enough masks. People were coughing," one employee said.⁴⁴⁴

At Sainte-Dorothée, the outbreak began around March 22, according to an occupational safety board report. As the numbers of those infected increased, "a COVID-19 hot zone was set up in the cafeteria, with curtains separating the beds. There were no toilets and no running water, so workers had to go outside the zone to fetch water to clean residents."⁴⁴⁵

Conditions at the home had led to a complaint to the provincial occupational safety board. According to *The Globe and Mail*, the board's investigative report found that 'things took an acrimonious turn' on April 3, 2020:

"...when auxiliary nurses were told to perform procedures in the hot zone on residents who were wearing oxygen masks. Fearing this could create airborne particles that could carry the virus, they refused to work without N95 respirator masks. They received "intimidation and threats," their union said."⁴⁴⁶

A hospital nurse, Audrey Power, who was deployed to Sainte-Dorothée, recounted in a Facebook post shared with *The Globe and Mail* how she arrived with five other nurses in "a new and strange environment" and faced poor conditions:⁴⁴⁷

"They worked shifts of 12 to 16 hours. Their group shrank to two after the others developed symptoms or tested positive. She found herself responsible for 40 residents. She couldn't take breaks to eat or sip water. She broke into tears on the job and had nightmares and insomnia."⁴⁴⁸

Asked to comment on Sainte-Dorothée, the spokeswoman for the local health authority said that during the month of March they followed standards set by the province's health department and public health institute. "These evolved daily as the situation and our knowledge of the disease changed."⁴⁴⁹

By mid-April, so many workers were absent in Quebec's long-term care sector that the media reported that officials ordered social workers and speech therapists with only two hours of training to work in seniors' homes where there were COVID-19 outbreaks. There were reports of the threat of dismissal if redeployment was refused.⁴⁵⁰

Workplace safety inspection reports, resulting from staff safety complaints obtained by *The Globe and Mail* in May through access-to-information requests, confirmed the "disarray and poor conditions" in a number of Quebec's long-term care residences hardest hit by the COVID-19 pandemic.⁴⁵¹ In general, *The Globe's* investigation found that problems stemmed from "lack of staff, lack of protective equipment, [and] confusion about steps needed to counter the contagion."⁴⁵²

Quebec had asked Ottawa for military help with its long-term care facilities in crisis on April 15. Military personnel were initially deployed to five Quebec facilities; the number later grew to 25.

While the Canadian Armed Forces reported that conditions had improved at the 25 homes, the report noted that "inadequate" staffing and a lack of proper equipment continued. The military found that "there still aren't enough patient attendants, who provide much of the basic care in the homes."⁴⁵³

The military deployment in Quebec and Ontario: military personnel contract COVID-19, confirming health care worker unions concerns

Dubbed Operation Laser, the military ultimately deployed more than 1,600 troops in long-term care homes in Quebec and Ontario.⁴⁵⁴

What was apparent is that within weeks of being deployed to long-term care homes, the military serving in homes became infected in large numbers, despite wearing the PPE recommended by public health

officials, including surgical masks (rather than N95 respirators). Ultimately, the military reported 55 members contracted the virus, likely from exposure in the homes.⁴⁵⁵

That staff working at long-term care homes had good reason to fear they would become infected with COVID-19 was something health care unions had been saying since the start of the pandemic. The number of military infected in long-term care, wearing the recommended PPE, confirmed long-standing union concerns about inadequate protections.

As evidence has mounted that aerosols remained suspended in the air, particularly in rooms with poor ventilation, health care workers are demanding more protection – N95 respirators or higher.

Vignette: Nova Scotia's Northwood LTC Facility⁴⁵⁶

Overlooking a busy port-city harbour, built on the foundation of hope and safe shelter for Halifax senior and most vulnerable population, stands Northwood Halifax campus.

It is the largest in Atlantic Canada not-for-profit continuing care organization with 485 beds. Some residents share double- and triple-occupancy rooms, shared bathrooms are common, with residents spending significant time in communal areas. Administrators and staff have long understood that the outdated facility modelled on a hospital ward could create problems with infection control – a concern that is now a dark legacy in its 55-year history.

It is at this towering, multi-storey site that 90 per cent of the deaths to COVID-19 in Nova Scotia occurred, a grim statistic and a heart-wrenching reality for fifty-three families whose loved ones perished between April and May 2020. In total, Northwood experienced 345 cases of the virus, involving 246 residents and 99 employees.

Amid early calls from health care unions and their members at numerous LTC facilities across Nova Scotia for more PPE, staffing reinforcements and guidance was a high degree of uncertainty from public health about how the virus spreads and whether masking was necessary, even though sites in Ontario and Quebec were already experiencing distress.

Northwood contested claims about the lack of PPE: Janet Simm, CEO of Northwood, said health care workers have "adequate" supplies of personal protective equipment. "This is an unprecedented demand for those supplies, but we have enough," she said.⁴⁵⁷

While the Chief Medical Officer of Nova Scotia Dr. Robert Strang said the union was "using hyperbole" and "fear-mongering", Nova Scotia Government and General Employees Union (NSGEU), which represented some workers deployed to the facility, responded that the CMOH was clearly out of touch with the reality on the ground at Northwood, and that its role was to pass on the direct comments it was hearing from frontline workers.⁴⁵⁸

By mid-April, overwhelmed by the speed at which the relentless and insidious virus was taking hold, Northwood asked for assistance. It came in abundance. Business and local communities rallied together to support workers, residents and their families with generous offers of gifts, PPE, kind words, song, prayer, food and other donations. Health care workers from outside Northwood and throughout the province came to the rescue to provide relief, without hesitation, placing themselves and their own families at greater risk of infection.

Nurses and others assumed the roles of care provider, communicator, friend, confidant, family liaison and more, once families were restricted from visiting Northwood and other long-term care sites. They provided emotional support and, in many cases, full palliative care in the absence of family members. These added responsibilities were willingly fulfilled but took a physical and emotional toll on workers.

In the months following the worst of the outbreak, there remains much discourse about what could have been done differently to avoid the staggering death toll at Northwood.

Could interventions based on recommendations on staffing and other issues from NSNU's 2016 *Broken Homes*⁴⁵⁹ report on the state of long-term care in Nova Scotia have made a difference?

Could funding for increased rooming capacity and other provisions, requested by Northwood dating back several years, have prevented the outbreak?

Would an early implementation of mandatory masks have made an impact?

The Nova Scotia government has convened a review committee in response to lingering questions. The NSNU has been called upon to provide testimony. However, some are calling for a full inquiry into the matter, and a class action lawsuit is pending, further evidence of a province and people in need of more answers and healing.

Whatever the outcome, and whatever failures are addressed following the investigation, nothing can erase the pain from profound loss suffered by the families and friends whose loved ones died due to COVID-19, and the Northwood family of workers who are also grieving.

It is difficult to predict if the lessons learned in this first wave of the novel coronavirus will better prepare Northwood and other long-term care sites against this invisible adversary, but that is the expectation. We know that masking and appropriate PPE are vital, and that nursing homes are not hospitals; that is an important distinction and a practical place to start.

COVID-19 robbed victims of their last moments with loved ones, leaving families and friends to mourn in isolation. It reminded health care workers, nurses, that sacrifice and self-care are both compulsory in order to cope with the instability of a global pandemic.

COVID-19 has been one of several traumatic events to strike Nova Scotia in 2020, but it has not diminished the compassion and resilience of those who made Northwood Strong, Nova Scotia Strong, their rallying cry.

Long-term care and COVID-19 in Canada: a preventable tragedy

The tragic illness and many deaths in long-term care in Canada, with the resulting toll it has taken on health care workers, residents and residents' families, did not have to happen. It is hard to argue that this tragedy was not largely preventable.

We are left trying to explain the unexplainable to the health care workers who contracted COVID-19 and their families. This need not have happened.

If workers had been provided with appropriate PPE, if staffing levels were designed to meet the needs of residents, if LTC homes had been of proper design to avoid overcrowding, and if facilities had properly cohorted and isolated positive cases of COVID-19, among other measures, the outcomes of outbreaks would likely have been very different.

What the tragedies in Quebec and Ontario make clear is that there was, just as during the SARS tragedy in Ontario, a catastrophic failure to listen to health care workers warnings with respect to the imminent danger of outbreaks in long-term care. This failure to listen and heed health care worker warnings contributed to many deaths.

In Ontario, it has been left up to the courts to ensure that worker safety and resident safety in long-term care are ensured.

Meanwhile, in the midst of the pandemic, adding insult to injury, it was reported by SEIU Healthcare and Unifor that for-profit facilities paid out millions to their shareholders:

“...while families and care staff were dying throughout the pandemic, three of the largest long-term care businesses combined paid shareholders more than \$58 million in dividends in the past three months alone.”⁴⁶⁰

Early warnings

Starting early in 2020, the international community had sent out strong and consistent messaging that seniors were at high risk of death, and infection, from COVID-19. By mid-March, when the pandemic began in Canada, this was abundantly evident.

Consider:

- In mid-February, the Chinese Center for Disease Control and Prevention releases an analysis of 72,314 patient records. The age group 80 and older had the highest case fatality rate of all age groups – at 14.8 per cent.⁴⁶¹
- On March 4, 2020, an analysis of data from Italy found that of the 105 patients who had died of the virus the average age was 81.⁴⁶²
- In Spain in mid-March, after seniors living in squalor were found by the army when disinfecting homes, the Spanish government announced that it would take over control of senior care facilities from private companies.⁴⁶³
- A U.S. CDC report on a major outbreak of COVID-19 in King County, Washington State, in late February concluded that staff members working in multiple facilities contributed to the virus

spread and recommended that proactive steps be taken in long-term care to protect residents and preserve the health care workforce.⁴⁶⁴

Thus, it was evident early on that the outbreaks in homes would be spread by the movement of workers between homes. While most provinces in Canada recommended single-site orders, the degree to which they helped workers adhere to this measure varied greatly.

The measure clearly had large ramifications for workers' finances. To offset the financial impacts for workers whose total hours have been reduced by single worksite policies, the provinces of British Columbia and Alberta mandated that employers increase an employee's scheduled hours of work. In other provinces, it was left to employers to try to pressure staff to work in one home, but full-time work was not guaranteed to workers.⁴⁶⁵ As a result, in Ontario, for example, long-term care workers were still working at multiple facilities well into April 2020.⁴⁶⁶ Similar issues existed in Quebec.

At the beginning of April, the B.C. government agreed to a "single-site transition framework" in conjunction with bargaining agents, that included making all long-term care workers full-time at a single site, and boosting hourly wages for long-term care workers so they would earn not less than the equivalent wages in the applicable HEABC (Health Employers Association of British Columbia) collective agreement. B.C. has since announced it will provide on the job training to 7,000 new health care workers for long-term care at a starting salary of \$20.00 per hour.⁴⁶⁷

Similarly, faced with a growing course of action on the part of the public after the release of the military report into long-term care in Quebec at the end of May, the Quebec government announced it would hire 10,000 orderlies at an annual salary of \$49,000 to help address the current crisis.⁴⁶⁸

Ontario has also taken steps to limit the number of beds in rooms in long-term care. As of July 2020, all new admissions may only be placed in a room with no more than two beds.⁴⁶⁹

Governments across Canada have now publicly pledged their commitment to improving long-term care. Some have announced new funding. Others have initiated inquiries or other investigations into what happened in long-term at the beginning of the pandemic.

What is apparent is that action is needed now to address our dysfunctional long-term care system, if we are to avoid further deaths as we enter a potential second wave.

Inquiries and subsequent reports cannot, and should not, be a way for governments to avoid accountability and deflect responsibility. Health care workers, the families of those who have died and the Canadian public will hold them accountable for their failure to act.

Recommendations

- Fixing a historical anomaly, the *Canada Health Act* should be amended to include long-term care, making it available to Canadians on a universal basis. Government programs aimed at assisting Canadians with long-term care needs vary by jurisdiction and typically are income-based. This is not consistent with the principle of universality at the heart of Canada's publicly funded health care.
- Convene a national commission to develop short-, medium- and long-term strategies for the structure of the long-term care sector in light of the shortcomings revealed by COVID-19.

- Develop and implement a long-term care labour force strategy to address the multiple labour force problems revealed by COVID-19, including the problems of inadequate compensation, staff shortages, overreliance on part-time staffing, and training failures.
- Improve wages, benefits (including paid sick leave) and conditions of employment for health care workers in the long-term care sector to levels that commensurate with the social importance of their work, the complexity of their duties and the daily hazards they face, even in non-pandemic times.
- Offer all part-time workers in this long-term care sector full-time employment (with full-time wages and benefits) and limit their work to one single facility.
- Examine best practices of jurisdictions like South Korea, Hong Kong and Singapore that have a strong track record of limiting COVID-19 in their long-term sectors. In South Korea, for example, anyone with suspected COVID-19 is immediately isolated and moved out to a separate emergency quarantine centre or hospital. In Hong Kong, all long-term care facilities have, as a minimum, a three-month supply of N95 respirators and other PPE. Also in Hong Kong, all long-term care facilities conduct emergency exercises every year to coincide with the advent of flu season to ensure infection control measures and resources are in an acceptable operational state.
- Because systemic infrastructure shortcomings limit the ability of many long-term care facilities to isolate COVID-19 cases, it is vital that on an urgent basis separate emergency isolation facilities be created, resourced and staffed. This would permit COVID-19 cases to be transferred out of long-term care facilities that are unable to isolate them.
- Ensure that any surge in COVID-19 hospitalizations does not result in shifting patients to already overburdened, under-resourced and understaffed long-term care facilities which may be unable to isolate new admissions.
- Reflecting a best practice developed in the U.S., consider establishing, where space and resources permit, a cohort unit for exposed and new admissions as an effective way to separate and screen higher-risk individuals for the 14-day incubation period. Keeping these patients on isolation and with dedicated staff would make contact tracing for exposure identification easier.
- Ensure that all long-term care facilities are staffed by a dedicated infection control professional with occupational health and safety training. Require that professional to provide quarterly publicly accessible assessments of the state of infection control and occupational health and safety at their facility.
- Ensure that relevant workplace regulators conduct in-person proactive inspections of all long-term care facilities to ensure compliance with occupational health and safety laws, regulations and best practices.
- On an urgent basis, ensure that all health care workers in the long-term sector are properly trained and fit-tested on the use of N95 respirators and other protective equipment.
- Respect and enforce the health and safety rights of workers:
 - Ensure adequate supply of personal protective equipment (PPE), including N95 and better (e.g., elastomeric respirators), and that workers and essential family visitors have access to appropriate PPE.
 - Ensure workers have the right to know about the hazards in their workplace and receive the training they need to be able to do their jobs safely.
 - Ensure workers have the right to participate in decisions that could affect their health and safety.
 - Ensure workers have the right to refuse work that could endanger their health and safety or that of others.

- Provide hands-on training on infection prevention and control, including training testing and drilling workers on donning, doffing, safe use and limitations of PPE – for all workers and essential family visitors working in and entering long-term care homes.
- Ensure that provincial labour ministries have the resources and ability to act independently from provincial health ministries and fully enforce occupational health and safety laws.

Stories from the front lines⁴⁷⁰

Health care workers are placed in a terrible position. They are being told that contact and droplet precautions are sufficient, but are aware – based on their training, knowledge and expertise – that airborne precautions should be standard PPE.

One nurse in Atlantic Canada said:

“I go to work scared. My days off are spent wondering if I have brought the virus home. Each person I care for could be carrying the virus.

I walk into droplet precaution rooms wearing a procedure mask while aware of the evidence-based literature on SARS and the use of N95s. I know that procedure masks are disposable and are unsafe to reapply to my face, yet I am forced to do this. I feel like a thief when I need a new mask.

My biggest fear is that I will bring the virus home and my loved ones will become sick.”

A nurse in Ontario described her on-the-job fears because her hospital and her government were unable to protect her:

“I was told to wear a mask until grossly soiled. To cycle through four masks because ‘if it’s in a paper bag between shifts it will ‘self-sanitize’. As a medical professional I know a mask is soiled after four hours of use regardless if it appears dirty. This made me so afraid I would bring home this virus and kill either my mother or boyfriend.

I was forced to live in a vehicle in my driveway for months. My back ached not only from my work but from sleeping in awkward positions on tough surfaces. My spirit was drained.

I cried every day alone or at work to my colleagues who were just as stressed as me.”

An Alberta nurse works in a home care office where social distancing was not possible because of the close proximity of their desks in the open-concept workplace.

“As soon as this pandemic became apparent, many of us home care nurses asked that the same guidelines recommended for the public be applied to our offices. We could not social distance due to the proximity of our desks. We were gathering for morning huddles. The initial request for additional PPE was denied and all masks and hand sanitizer were removed from our stock room to prevent “stealing.” We were to ask if we needed a mask for a visit and initially told we did not need to wear masks in the office. Many of us expressed concern that we would be a danger to each other especially if there was an asymptomatic incubation period. We were told it was “business as usual”.

It felt like we were the canaries in the mine since this pandemic started. It felt surreal and awful to be continuously told by management that it was “business as usual” when we could all clearly see that nothing was usual.”

Chapter 5: Health Care Unions and the Fight to Protect Health Care Workers

Introduction

The evidence demonstrates that the health care worker safety failures of COVID-19 are deep, broad and may have been largely avoidable. This chapter will tell the story of how health care unions have fought on many fronts to protect their health care workers because current health and safety systems have proved unequal to the challenge.

The federal and provincial governments failed to protect health care workers. Occupational laws and regulations were often disregarded or, at best, appeared to be reluctantly enforced. Ministries and regulators, whose mission it is to ensure that occupational health and safety laws were properly applied, often failed to proactively inspect and monitor health care workplaces as required by law.

The number of Canadian health care workers infected with COVID-19 is a national shame. While globally, the International Council of Nurses reports that health care workers represent 10 per cent of cases on average, in Canada health care workers represent almost double this number.⁴⁷¹

As of late July 2020, 21,842 health care workers were infected in Canada, or about one in five total cases. In Quebec and Ontario, the two hardest-hit provinces: health care workers represent 24 per cent of cases in Quebec and 16.7 per cent of total cases in Ontario.⁴⁷²

Since the start of the pandemic, health care worker unions have been raising the alarm, as the numbers of infections amongst their membership continues to rise.

Health care worker unions have repeatedly urged governments to follow the precautionary principle – meaning that, in the event of scientific uncertainty about transmission routes for the virus, health care workers be provided with PPE to address contact, droplet and airborne protection.

This did not happen. Instead, Ontario, the only province which had airborne precautions in place – requiring the use of N95 respirator masks for health care workers caring for presumed or confirmed cases of COVID-19 – downgraded protections at the very start of the pandemic on March 12, 2020.

This chapter will examine the following issues:

- Governments' failure to adhere to occupational health and safety laws designed to protect workers, including the right to know, the right to participate and the right to refuse;
- The limits on health care workers' duty of care during a pandemic;
- The governments' failure to follow the precautionary principle and the impacts on health care workers;
- Health care unions' efforts to protect worker and patient safety through negotiations, grievances and litigation; and
- The roles and actions of ministries of labour and workers' compensation boards.

"A clear demonstration of regulatory failure"

Echoing the views of many worker safety experts, Professor Katherine Lippel, Canada Research Chair on Occupational Health and Safety Law at the University of Ottawa, has concluded that, across Canada, occupational health and safety legislation, which requires employers to protect workers, including providing appropriate PPE, was not followed.

Noting that some employers failed to protect workers, Dr. Lippel said:

"Evidence is abundant that workers were and are endangered because they are exposed to obvious hazards with insufficient protective equipment and with inadequate effort to eliminate the hazards at source. This is a clear demonstration of regulatory failure."⁴⁷³

Dr. Lippel writes that in both Quebec and Ontario, occupational health and safety legislation provides workers with certain rights, including information, training and PPE. In Ontario, in particular, occupational health and safety principles are explicitly framed around the right to know and the right to participate. Both provinces provide the right to refuse unsafe work.⁴⁷⁴ Every "reasonable precaution" must be taken to protect health care providers, regardless of their employment status, and whether they are regulated or unregulated care providers.⁴⁷⁵

Having reviewed a response to health care unions from a Superior Court injunction, a decision of the Ontario Labour Relations Board (OLRB) and an order rendered by an arbitrator, Dr. Lippel concludes that "all of these rights have been violated in many workplaces."⁴⁷⁶

"Workers are not provided with adequate protective equipment, they are not consistently informed of the hazards, and they are not told who among their colleagues or patients has COVID-19.

[...]

These judgments show that access to appropriate masks and gowns was denied to frontline workers, and workers' rights to participate have been stymied by a lack of transparency."⁴⁷⁷

Health care workers' jobs routinely involve more risks and hazards than those faced by the general population. Regulated health care professionals agree to assume greater risks based on their professional obligations and a duty of care, a moral duty which arises from the relationship between health care worker and patient. However, a pandemic represents an extraordinary circumstance and goes well beyond the normal risks inherent to the job.

In fact, experts make clear that "the duty of care is neither limitless nor fixed".⁴⁷⁸

The B.C. government's ethics framework for COVID-19 states that health care professionals have a duty of care which can only be discharged if there is a "certain" and "significant" risk of harm.⁴⁷⁹

Commentators have questioned this focus on certainty in the course of a pandemic, noting the practice of medicine is inherently uncertain. When our understanding of the virus and the inherent risks is in flux, they suggest, certainty isn't possible.⁴⁸⁰

This focus on certainty has troubled many worker safety experts and ethicists.

According to Dr. Udo Schuklenk, professor of philosophy and Ontario Research Chair in bioethics, the focus on 100 per cent certainty puts the onus on health care workers to take care of patients, potentially at a high cost.⁴⁸¹

“What if someone faced a 70-per-cent probability for life-threatening illness?” he asks. “They’re expected to work? You can’t expect any HCW to accept any higher than average risk of on-the-job injury without them volunteering to do so. It’s that simple.”⁴⁸²

The Globe and Mail op-ed asks:

“Do they tend to patients with the virus despite not having all the protective equipment they need to completely feel safe in that environment?”⁴⁸³

And concludes:

“... it shouldn’t be our health-care workers who pay a price for our failure to live up to our end of the deal.”⁴⁸⁴

During a pandemic, health care workers have a responsibility to care for patients unless there is significant risk of harm.

But the employer also has a reciprocal obligation to health care workers to provide timely and accurate information to team members to enable risk assessments, appropriate personal protective equipment, training and a safe environment, accommodation, screening, as well as counselling and other psychological supports.⁴⁸⁵

Given the infection rates in Canada among health care workers, and Dr. Lippel’s conclusions on the violations of occupational health and safety, there are grounds to question whether this reciprocal obligation is being met.

Science or supply? What was the rationale for abandoning the precautionary principle?

The precautionary principle is intrinsic to Canada’s occupational health and safety laws.

“OHS legislation exists throughout Canada requiring employers to ensure that workers are not exposed to hazardous situations that can lead to injury or death because of their work. The precautionary principle that provides that prevention measures be put in place when scientific uncertainty prevails is intrinsic to OHS law.”⁴⁸⁶

Since January 2020, health care worker unions have repeatedly warned employers and governments that the precautionary principle was not being followed, that the science was in flux and that, given what we knew about the SARS coronavirus and even influenza, evidence pointing to aerosol transmission was mounting.

It is in this precise situation that the SARS Commission recommended:

“...the precautionary principle, which states that action to reduce risk need not await scientific certainty, be expressly adopted as a guiding principle throughout Ontario’s health, public health

and worker safety systems by way of policy statement, by explicit reference, in all relevant operational standards and directions, and by way of inclusion, through preamble, statement of principle, or otherwise, in the *Occupational Health and Safety Act*, the *Health Protection and Promotion Act*, and all relevant health statutes and regulations.”⁴⁸⁷

In early February, Canada’s protections for health care workers (except for those in Ontario) were lower than those in the U.S., the U.K. and the European Union,⁴⁸⁸ all of which called for airborne precautions. Ontario, at the time, was an outlier in Canada and required airborne precautions. The precautionary principle had been embedded in Ontario worker safety law as recommended by the SARS Commission.

As we now know, China had moved towards airborne precautions early in its outbreak in order to stamp out the virus. Hong Kong and Taiwan also implemented airborne precautions for workers.⁴⁸⁹ All of these jurisdictions followed the precautionary principle when Canada did not, and as noted throughout this report, they recorded much lower infection rates among health care workers and better pandemic containment outcomes.

Throughout January and February, the Canadian Federation of Nurses Unions (CFNU) and its provincial member unions, along with all other health care unions in Canada, urged provinces and the federal government to move towards the Ontario PPE precautions and to offer health care workers caring for COVID-19 patients the higher protections of N95 respirators.

Globally, similar meetings were being held on the international stage, advocating for the protection of workers, and uniting health care workers worldwide in a shared experience through Global Nurses United (GNU), the International Council of Nurses (ICN), Public Services International (PSI) and the International Trade Union Confederation (ITUC).

The CFNU and its member organizations pointed out in letters and meetings with governments:

- That the website of the Public Health Agency of Canada (PHAC) stated there was little known about the transmission of the virus;
- That the PHAC, rather than adhering to the lowest standard of personal protection, including surgical masks, should act to protect health care workers given the uncertainty about transmission routes;
- That the PHAC should commit to preparing any future updates to its guidance with health care worker unions as essential partners as had happened during H1N1 and Ebola in Canada, citing health care unions’ legislated role as a participant in matters related to occupational health and safety.

In late February, in a meeting with the Health Minister Patty Hajdu and the Deputy Chief Medical Officer (CMOH) Dr. Howard Njoo, the CFNU reiterated its message on the precautionary principle and noted that Canada was an outlier compared to many other jurisdictions.

The Minister and the Deputy CMOH recognized at this meeting that infection control and prevention (IPC) were impossible if unions were not at the table. Health care workers, they acknowledged, had a central role to play in ensuring IPC measures were carried out. Dr. Njoo indicated he would direct the PHAC to include unions in all meetings about guidance that impacted health care workers.

Asked about supply at this meeting, the Minister indicated decisions about appropriate PPE were not being made on the basis of supply.

However, PHAC-updated COVID-19 draft guidance for health professionals working in acute care appeared to reinforce the primacy of supply issues in decisions about PPE. The preface to the guidance document indicated policies were not being driven by supply concerns, but reference was made to the ‘security’ of supplies to ‘prevent pilfering’.⁴⁹⁰

The draft guidance also appeared to blur the lines between different kinds of protective equipment, referring to N95 respirators as not a higher level of protection but a ‘different level’ of protection. It also referred to some of the negative side effects of N95s and fatigue from wearing them. N95s were reserved in the document for aerosol-generating medical procedures.⁴⁹¹

On March 12, Ontario abruptly downgraded its precautions, ruling out airborne transmission because it claimed the science on COVID-19 transmission characteristics had been settled. In response, the Ontario Nurses’ Association wrote to Ontario’s Chief Medical Officer of Health Dr. David Williams, asking that airborne precautions be reinstated, declaring the directive “completely contrary” to the conclusions of the SARS Commission.⁴⁹²

Union official Michael Hurley was taken aback by the about-face during a meeting with Williams:

“When it becomes clear that there aren't enough supplies in Ontario, the Ontario government responds by changing the safety protocols,” said Hurley, a vice-president of Canadian Union of Public Employees, which represents 30,000 long-term care home workers in Ontario.”⁴⁹³

Hurley added that he had heard Williams say that supply was a problem, and once this was resolved, there could be a return to the precautionary principle.⁴⁹⁴

In addition to issues with PPE supply, there were also concerns about a lack of transparency on the part of governments. A statement by the Canadian Federation of Nurses Unions reads in part:

“As nurses’ unions, we have repeatedly asked governments to identify both the supply and demand of personal protective equipment, in order that we can work with governments and health authorities to implement strategies that focus on reducing hazardous exposures.”⁴⁹⁵

In British Columbia, the nurses’ union also asked the government to be transparent about PPE supply:

“If they are having difficulty accessing personal protective equipment, we are asking them to advise the union, advise the nurses, make sure they’re transparent and tell us exactly what the supply is,” Christine Sorensen, head of the B.C. nurses' union, said of health authorities.⁴⁹⁶

A BCNU survey found 72% of employers had restricted members’ access to PPE and over a third of members feel pressured to not use PPE due to supply issues. The majority also felt decisions about PPE were being driven by supply, not science.⁴⁹⁷

From early in the pandemic, Alberta had the most transparent approach to sharing PPE supply data with union representatives. On April 16, 2020 it began sharing PPE supply numbers – broken down by each PPE type (face shields, surgical masks, N95 respirators, etc.) – indicating the current inventory, burn-

rate, and projected burn rate with details of incoming inventory. The data also specified the days until inventory would be depleted based on current supply and burn rate.⁴⁹⁸

Even for medical procedures that experts had acknowledged in the past were potentially aerosol-generating, there was evidence that the precautionary principle was not followed, despite the potential for harm.

For example, in 2009, the WHO's PPE guidance for the H1N1 influenza outbreak called for airborne protections for the collection of nasopharyngeal swabs, noting that, "Nasopharyngeal swabbing and the vigorous swabbing of tonsils for sample collection may trigger intense cough at very close distance to the person doing the procedure."⁴⁹⁹

However, in provinces across Canada as health officials ramped up testing, health care unions were informed that nasopharyngeal swabbing no longer generated aerosols sufficient to warrant the protection of N95 respirator masks.

In Newfoundland and Labrador, the province began with a precautionary approach to nasopharyngeal swabbing, calling for N95s, but then suddenly the CMOH Dr. Janice Fitzgerald downgraded airborne protections for swabbing on March 19, 2020 stating that "much more information is now available about this disease."⁵⁰⁰

In a letter to the Chief Medical Officer of Newfoundland and Labrador protesting this decision, Debbie Forward, President of the Registered Nurses' Union Newfoundland and Labrador, cited expert evidence to warn:

"The efficiency of the filters of surgical masks to block penetration of nasopharyngeal-sized particles is unknown. The lack of a sealed fit on a surgical mask will allow for the inhalation of an unknown quantity of nasopharyngeal-sized particles."⁵⁰¹

Similarly, in Alberta, the United Nurses of Alberta (UNA) reported in late March 2020 there were several work refusals by nurses not provided with N95 masks for nasopharyngeal swabbing.⁵⁰²

Nurses in Newfoundland and Labrador sent 1,700 emails to their Ministry of Health and Community Services, asking that proper PPE, including N95s, be accessible to nurses, and that the precautionary principle be followed. In an interview, Minister of Health and Community Services the Hon. Dr. John Haggie appeared dismissive referring to N95 respirator masks as a 'security blanket' for health care workers.⁵⁰³

Rather than provide for appropriate protection in its guidance, the Public Health Agency of Canada's infection prevention and control guidance for acute care acknowledges the inherent potential for coughing as a result of nasopharyngeal swabbing. It recommends health care workers performing the specimen collection "... stand to the side of the patient, not directly in front of them, and should move away from the patient (to more than 2 metres distant) when the procedure is complete."⁵⁰⁴

Unions indicated that given that copious coughing could be caused by taking a swab from deep inside the nasal cavities, and standing beside the patient, and then rapidly moving backwards to more than two metres immediately after the procedure is completed might prove difficult. As unions have

repeatedly stated, often government guidance seems to be disconnected from the reality faced by workers on the front line.

In a health care setting it is impossible to try to maintain the safe social distancing suggested by the PHAC, and properly look after a patient. This is a dynamic environment. Which is why it is simpler – and safer for everyone – to protect health care workers at the higher levels of airborne precautions.

As Dr. Elizabeth Bryce, head of Infection Control at Vancouver General Hospital, told the SARS Commission:

“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.”⁵⁰⁵

In Quebec, ambulance technicians and first responders also had their PPE downgraded early in the pandemic. They were originally provided with an N95 respirator when dealing with any patient diagnosed with COVID-19 but were later told, unless the patient had “serious respiratory problems” and required procedures such as intubation, a simple surgical mask, gloves and a gown were deemed to be sufficient.⁵⁰⁶

On April 7, 2020, Linda Silas, President of the CFNU, appearing before the House of Commons Standing Committee on Health, lamented the failure of governments to act to protect workers. Silas said:

“Frontline workers across the country who are directly involved in the care of presumed and confirmed COVID-19 patients are not being provided with the PPE they need to do their jobs. That’s simply outrageous and unacceptable in a world-class health system like ours.”⁵⁰⁷

New Brunswick Nurses Union member:⁵⁰⁸

“I wouldn’t wish this on my worst enemy.” This is how Elisabeth French, an RN from New Brunswick, described her experience after contracting COVID-19 on the job.

When her employer put out a call for RNs to go and work at a special care home which was experiencing a COVID-19 outbreak, Elisabeth felt compelled to help. She commuted from Moncton to provide her nursing expertise. Upon arrival, Elisabeth noted the “working conditions were terrible,” but decided to stay in hopes of making an improvement and aiding her fellow health care workers.

When she requested an N95 mask, Elisabeth was informed by her employer that it was not required since she was not working on an impacted unit. However, after several days, she had to call 911 and confess that she had tested positive for the virus. Not surprising, considering every patient on her unit also tested positive.

As ambulance and hospital workers came to her aid, all wearing N95 masks and the appropriate PPE, she became increasingly upset about being denied protection, even when she specifically requested it.

As a frontline worker, Elisabeth trusted her employer and the government to take care of her. Instead, she felt let down by the very system she was trying to assist. She had been provided with an N95 mask and proper PPE, it is likely that she would have avoided contracting COVID-19. Elisabeth hopes the government can learn from their mistakes and provide proper PPE to all frontline workers going forward. A grievance has been filed by NBNU.

The risks to pregnant, immunocompromised/medically at risk, and older health care workers

Human rights legislation in every province provides for the accommodation of employees who have a medical condition up to the point of “undue hardship.”

As the pandemic intensified, one issue that was of significant concern to health care unions was the safety of at-risk groups: pregnant workers, workers with underlying medical conditions, those who might be immunocompromised, and older workers.

Unions also raised the issue of physical changes due to pregnancy and recommended accommodation because these changes could make it difficult for a pregnant health care worker to don and wear the required personal protective equipment in a safe manner (i.e. fit-tested N95s and gowns).

While the data was still emerging on the risk to pregnant workers,⁵⁰⁹ public health officials across Canada advised employers that workers with underlying medical conditions, those who might be immunocompromised and older workers were at risk of severe illness if they contracted the virus.

One pregnant nurse in Regina, Saskatchewan, expressed her fears for herself and her baby, highlighting the gap between the approach to COVID-19 and towards new medications:

“Because [COVID-19] is an illness, we’re being told that, ‘We have a little bit of research that says it’s probably okay so you should go and expose yourself and hopefully you’ll be okay. Hopefully, your unborn child will be okay.’”⁵¹⁰

“The studies that we have are so tiny and they’re studying such a small group of people. It’s reassuring that they’re saying, ‘You’re probably okay’, but if the tables were turned and this was a new medication as opposed to an illness that was spreading, pregnant women would be told that, ‘We don’t have enough research to support that it’s safe for you, so please, by all means, avoid it.’”⁵¹¹

Early on in the pandemic, the Quebec government accepted that health care workers who were pregnant, over 70 or immunocompromised should not be working in care settings. These groups of health care workers would be reassigned, or in some cases, be paid to stay home.⁵¹²

Quebec’s approach – to take precautions for at-risk workers, recognizing the heightened and potentially deadly consequences of contracting COVID-19 – contrasted sharply with other provinces.

Some provincial and federal public health officials – such as those in Alberta – insisted that if health care workers donned and doffed PPE properly, workers who were medically at risk or pregnant were no more at risk than other workers. United Nurses of Alberta asked, “Why would AHS want to take this risk with these groups of healthcare workers?”⁵¹³

Similarly, in Manitoba, the government took a hard line on accommodating health care workers who were pregnant or immunocompromised. Manitoba maintained that even if health care workers were told by their own primary care provider they required medical accommodation, the government’s Occupational and Environmental Safety & Health office could overrule any medical note by a medical professional. The Manitoba government and Manitoba Nurses Union, after weeks of negotiating a settlement – and with a grievance arbitration hearing scheduled in the event that no reasonable terms could be achieved – finally reached an agreement that restored the rights of workers to accommodation based on their primary care provider’s medical note.⁵¹⁴

Putting families at risk

Many health care workers, while fearing for their own safety, expressed greater concern for their families.

Precy Miguel, a cleaner at a hospital in Vancouver, who lives with her elderly parents and two brothers, described her ritual upon returning to home from work:

“When she gets home, her parents open the door and then dash away, so she can hop in the shower without touching anything. Sometimes, paranoia sets in, and she double and triple cleans.”⁵¹⁵

Many health care workers chose to live apart from their families during the pandemic, either in hotels, others’ houses or RVs at the back of properties.⁵¹⁶

In B.C., in light of widespread reports of inadequate PPE supplies, the president of the British Columbia Nurses’ Union Christine Sorensen appealed to the government to help nurses find hotels near hospitals where they could stay instead of going home:

“They would like to be able to stay somewhere that they don’t have to potentially put other family members or the community at risk, so they are asking if accommodations can be provided in hotels or other arrangements around the hospitals,” said Sorensen, adding that some nurses are now working up to an 18-hour day.⁵¹⁷

A Registered Nurses Union NL member:

“Uncertainty. The fear of the unknown can really affect the way you go about your daily life. The questions that I asked myself daily: What patient will I have today? Will I have a COVID-19 positive patient? What PPE should I be wearing and what will be available? Why are some healthcare professionals wearing different (and possibly better) PPE? Do I have what I need to keep myself and my patients safe?”

“It was frustrating when we didn’t have what we felt we needed for our own protection. It’s like asking a firefighter to run into a burning building without guaranteeing them that their gear was fireproof. We as critical care nurses will all run into the fire, as long as we know we are safe.”

“Another challenging moment for me was one day when I realized I hadn’t had a hug in months. It was somewhat overwhelming to think that I had not seen my family in such a long time. Thankfully, a fellow RN dressed in full PPE was nearby and gave me the much-needed reassuring hug that brought tears to my eyes.”

A Winnipeg nurse, Emma Cloney, penned an emotional poem about her fears of bringing COVID-19 home to her family:

My hands are cracked from washing,
My heart heavy with fear,
Knowing that the enemy we’re fighting
Can follow me home from here.⁵¹⁸

Every day, Cloney stays late at work to take a shower to ensure she is decontaminated before returning home.⁵¹⁹

In response to the potential contamination of uniforms that workers then bring home to families, Quebec negotiated an agreement with health care workers, stating that uniforms would be supplied and maintained by the employer in priority sectors, units dedicated to COVID-19, and CHSLDs with an outbreak of COVID-19, as well as during transfers between institutions.⁵²⁰ Alberta Health Services also agreed to issue uniforms for workers in certain designated units,⁵²¹ as did Nova Scotia health authorities.

Reuse, substitution and decontamination: efforts to stretch PPE supply

A nationwide survey by the Occupational Health Clinics for Ontario Workers Inc., which was undertaken in the midst of the first wave of the pandemic, reported in late June that there was a wide gap between PPE needs and what health care workers were provided. Specifically, for surgical masks the gap was 53 per cent. The deficiency was even greater for N95s, with 56 per cent of need being unmet according to survey participants.⁵²²

As governments rationed supply, health care workers across Canada were asked to reuse, substitute masks or save masks for decontamination in an effort to stretch existing supplies. Each of those measures carried serious potential risk.

In April, health care workers and their unions were informed that used N95 respirator masks would start being collected for decontamination and reuse in the eventuality that supplies were depleted.

Health care workers and their unions were concerned that Health Canada’s approval process for decontamination and reuse was hurried and did not meet the specific criteria of N95 manufacturers such as 3M which included inactivating the target organism, not damaging the respirator’s filtration, not affecting the fit, and ensuring the respirator was safe for the person wearing it.⁵²³ Concerns were also expressed by unions about N95s being used beyond the manufacturers’ expiry date.⁵²⁴

Unions have been assured that decontamination will only be used in the case of severe supply issues. Notably, Alberta Health Services, which is confident that supplies will be sufficient, has since informed health care unions that they have paused their decontamination program. The quantity that has already been decontaminated is stored and is at capacity."

In April, after universal masking policies involving surgical masks in health care facilities became ubiquitous across Canada, policies limiting surgical masks to one or two per shift were introduced in several provinces. Health care workers were told to only change their mask if it was wet, damp, soiled or damaged. This was a complete deviation from proper infection control practices.

This measure introduced potential risks to health care workers, as donning and doffing of masks (and storing them in paper bags over breaks and lunch) are known to increase the risk of cross-contamination. It also presented a risk to residents, patients and clients, who often touch health care workers when being repositioned, toileted, fed or just wanting their attention and then inadvertently touch their own eyes, nose or mouth.

In some health care workplaces, workers were discouraged from asking for a surgical mask to be replaced, even after their mask might not be functional. Workers were told supplies were at risk. Some workers were made to feel selfish for wanting even the lowest levels of protections, let alone an N95 or better protection.

Darlene Jackson, President of the Manitoba Nurses Union, said of the practice:

"Reusing PPE is nothing but a form of rationing. I don't believe it's safe. Nurses don't believe it's safe. And this situation is just declining as the days go by." She added, "It sends a message...that nurses are "dispensable," and that "if they become exposed, if they become ill, they can always be replaced."⁵²⁵

Tracy Zambory, President of the Saskatchewan Union of Nurses, said the same thing was happening in her province:

"Well, there is rationing going on. ... I've heard from members in busy emergency rooms in this province, that they are being told to keep it to two masks per shift. I just got another message from another in a northern hospital that that members are being told that the masks are locked [up] and they have to ask permission and they get to have two and they're worried of discipline if they require more than two masks. So yes, it is happening."⁵²⁶

In some provinces health care workers were also asked to preserve their N95 respirators by using one per shift. Nurses were asked to label their mask with their name and to take it off as little as possible (because of the risk entailed in donning and doffing).

Christine Sorensen, president of the British Columbia Nurses Union, also noted that N95s need to be accessible, on the unit where care is provided. Instead, she said:

"Some hospitals keep personal protective equipment at only a central location where nurses are expected to sign it out as strict counts of N95 masks are kept, which could result in delayed patient care."⁵²⁷

The risk of reuse practices were raised at the federal Standing Committee on Health by Member of Parliament, Don Davies, in questioning the President of the Canadian Federation of Nurses Unions:

Don Davies: You know, an alarming memo was recently sent to frontline health care workers in Hamilton, Ontario. It stated, “Staff should be keeping their first surgical mask on until grossly soiled or wet, or until an N95 respirator is needed for an aerosol-generating procedure. ... After the procedure, the N95 will be kept on until grossly soiled.” Do you have any comment on that memo?

Linda Silas: Sick, sick, sick. It goes against all our training in disease prevention. Any training that we ever got is that you have to derobe after you leave the patient. You have to throw away anything from one patient to the other. And of course, as soon as it is soiled, never mind grossly soiled, you have to discard it.⁵²⁸

Alberta Health Services, in contrast to many other provincial health authorities, regularly provided detailed reports to unions on the status of PPE supplies, and with sufficient PPE on-hand, health care unions in Alberta had fewer concerns about the rationing of surgical masks and N95s.

There were many examples of workers being provided with alternative PPE that was inadequate, potentially putting their safety at risk:

- In May 2020, the nurses’ union in Newfoundland and Labrador expressed concerns that one health authority was distributing European-rated surgical masks that had not been approved by Health Canada.⁵²⁹
- A surgical mask (Vanch, i.e. level 1 type) distributed in Alberta led to numerous complaints that they did not seal properly as well as about their smell. Complaints included headaches, rashes and other skin irritations as a result of wearing them.⁵³⁰
- Some supplies of KN95s (the Chinese version of the N95) purchased by the federal government were quickly withdrawn after they were found to be sub-standard and did not fit workers properly, nor did they provide the 95-per-cent particle filtration of a respirator. Health Canada subsequently announced a recall.⁵³¹
- The nurses’ union in British Columbia complained that nurses “have sometimes been given masks with straps that don’t tie or gowns that don’t fully cover them.”⁵³²

These decisions regarding accommodation (or the lack of it), supply rationing, reuse, alternative PPE and decontamination were largely being made without consultation with joint health and safety committee members, appointed by their unions, as was required under occupational health and safety laws.

United Nurses of Alberta member⁵³³

I work in the Intensive Care Unit at the Misericordia Hospital in Edmonton. I’m sure most of you have heard of the place by now. I’m vice-president of Local 11 of United Nurses of Alberta.

ICU staff watched in horror and nervous anticipation as nurses from around the world described their experiences with COVID-19. We were devastated for them and terrified for ourselves. So in early July, when multiple cases around the hospital began appearing, we were on a full-facility

outbreak within days. I had three exposures in a week. I have been “contract traced” and swabbed more times than I care to count.

I have young children and for the first time this became real. Very real. Very fast. I experienced what I had read so many times: being afraid of hugging my kids goodnight. Every hour of my two weeks of isolation felt like an accomplishment.

I did not contract COVID during my exposures in the workplace. That meant I got to walk back into a hospital during an outbreak. I learned many UNA members had become sick, some very sick, some requiring ICU care. People I know and love. Having to look after our own was not something anyone can prepare you for. And it will take a very long time to recover from.

Our local executive heard stories that would break anyone’s heart: Being denied access to appointments, even family members of staff being denied surgery, all due to where we work. These are people who are “fit to work” and are not isolated. This became more than we could bear. With help from UNA’s OHS Advisor and others, this was corrected, but the damage was done.

We are somehow not the same coming out of this. Our hospital is now open again. We did it. We kicked this thing’s butt. But at a price we will all pay for a very long time.

Health care unions negotiate joint statements with governments/employers

Early in the pandemic, health care unions joined together to insist that the precautionary principle be followed and that employers provide airborne protections to all workers caring for presumed or confirmed COVID-19 patients. But the rejection of the precautionary principle and the anxiety and fear expressed by their membership led health care unions to pragmatically change their strategy.

Faced with PPE supply issues – and burdened by the lack of sufficient preparedness on the part of most governments and employers in Canada – health care unions focused on providing their members with practical tools they could use to help protect patients and themselves.

The result were a number of agreements based on point-of-care risks assessment (PCRA). These agreements acknowledge that individual health care workers are best positioned to determine the appropriate PPE required based on the situation or their interaction with an individual patient.

This approach was pioneered in Alberta.

PCRAs were at the heart of March 2020 agreement between Alberta Health Services, Covenant Health (one of Canada’s largest Catholic health care providers) and three provincial health care unions, including the United Nurses of Alberta.⁵³⁴

The agreement set PPE standards for frontline health care workers dealing with suspected, presumed or confirmed COVID-19 patients, including:

- Access to N95 respirators if a worker is within two metres of a patient;

- The requirement to perform a point-of-care risk assessment (PCRA) before every client interaction;
- If a health care worker determines on reasonable grounds that specific PPE, including N95 respirators or better, is required, it will not be unreasonably denied; and
- Use of N95 respirators by all health care workers in rooms where AGMPs being performed are frequent or probable, or with any intubated patients.

Heather Smith, President of the United Nurses of Alberta (UNA), said about this achievement:

“UNA staff have been at the forefront of ensuring appropriate personal protective equipment (PPE) is available when you need it. We were the first province to obtain an agreement between unions and employers that recognizes the expertise of front-line staff to determine what PPE is appropriate based on your point of care risk assessment.”⁵³⁵

Over the next four months, all provinces with the exception of Nova Scotia and Quebec have negotiated similar joint agreements between unions and employers and governments.

Nova Scotia’s failure to enter into a memorandum of understanding to respect the professional judgement of nurses – even as the evidence on airborne transmission continued to mount – prompted an open letter to the Premier of Nova Scotia from the Nova Scotia Nurses’ Union (NSNU) President Janet Hazelton on July 29, 2020, in anticipation of a second wave in the province:

“Earlier this year, you and [Nova Scotia CMOH] Dr. Strang revised your recommendation on public masking in response to the emergence of new evidence. We are asking you to do the same thing with respect to the precautions used with confirmed and suspected COVID-19 patients. We ask that you enter into a memorandum of understanding that ensures access to fit-tested N95 respirators and respects nurses’ and other health care workers’ point-of-care risk assessment. An example of the agreement reached in Alberta is provided with this letter. Further, we ask that the province increases its stock of N95 respirators, ensure nurses and others are fit-tested for their use, and ensure they have access to them when required.”⁵³⁶

While these agreements represent a step forward for a membership that was feeling besieged, they put the onus on union members to ask for PPE, rather than holding the employers accountable to proactively protect them as required by OH&S legislation.

Moreover, the agreements acknowledge the ongoing issue of PPE supply; for example, the joint agreement between health care unions and the two main health care employers in Alberta states:

“In the event that the supply of PPEs reach a point where current supplies are anticipated to last for only 30 days (i.e. a shortage), or where utilization rates indicate that a shortage will occur, the employers will be responsible for developing contingency plans in consultation with the unions and applicable Joint Worksite Health and Safety Committees to ensure the safety of health care workers,” the agreement says.”⁵³⁷

Early on in the pandemic, unions representing as many as one million health care workers had issued a joint statement stating that “safety is not negotiable for anyone, including health care workers” and demanding respect for their members’ professional judgement:

“To health ministers and health employers, we say: this responsibility lies with you. To stop the transmission of COVID-19, health care workers must be equipped with the appropriate fit-tested personal protective equipment. Employers must provide the necessary training and supports – and they must mandate point-of-care risk assessments that empower health care workers to assess their own risk and act accordingly.”⁵³⁸

However, even where supplies were not at issue, it became immediately evident, even after agreements were signed, that governments and employers would need to be held to account for failing to respect the joint agreements.

Consider:

- In June 2020, the president of the nurses’ union in Newfoundland and Labrador, citing two provincial health authorities’ failure to respect the principles of the joint agreement noted: “Providing no access at all is unreasonable. Simply dismissing the PRCA before it even happens is unacceptable. The only reason a health care worker should be denied is because of supply.”⁵³⁹
- In Ontario, the Ontario Nurses’ Association took a number of employers to court, and made appeals to the Ontario Labour Board about the Ministry of Labour’s failure to make orders requiring employers to provide N95s based on the outcomes of PCRA’s. ONA was successful in getting the Ministry of Labour to agree that Directive #5 would be interpreted consistent with Justice Morgan’s Eatonville/Henley 2020 decision.⁵⁴⁰
- In Alberta, an issue arose over cardiopulmonary resuscitation (CPR), another medical procedure likely to generate aerosols in the air. The nurses’ union in Alberta has repeatedly raised the issue with Alberta Health Services (AHS) over the direction given to its members at numerous sites across Alberta that CPR (specifically, chest compressions) is not an aerosol-generating medical procedure and that an N95 is not required. Even some of AHS’s own guidance has designated CPR as an official aerosol-generating medical procedure,⁵⁴¹ and it was agreed to as a procedure requiring an N95 respirator mask in the joint agreement. AHS is still reviewing this issue and lists chest compressions as unresolved in terms of aerosol-generating classification.⁵⁴²

A case study: Where is the Ontario Ministry of Labour?

One of the Ministry of Labour’s key jobs in Ontario is the enforcement of the *Occupational Health and Safety Act*. During a pandemic, where risks to workers are dramatically heightened, the Ministry of Labour is supposed to assume a larger and more important role, acting to protect workers at risk.

At least it should. But this has not been workers’ experience in Ontario during COVID-19 or during SARS

The SARS Commission reported that the Ministry of Labour was largely sidelined during the 2003 outbreak. The SARS Commission final report referred to:

“...widespread, persistent, and ingrained failures by the health care system to comply with, and by the Ministry of Labour to enforce, Ontario’s safety laws, including the *Occupational Health and Safety Act* and Ontario Regulation 67/93, Regulation for Health Care and Residential Facilities.”⁵⁴³

Similarly, during COVID-19, the Ontario Federation of Labour (OFL) reported that:

“... [A]n internal ministry committee, the Work Refusal Advisory Committee now known as the COVID-19 Advisory Team, rather than inspectors, has been making decisions on how the health and safety inspectors will address COVID-19 issues, including work refusals. For example, work refusals have been downgraded to complaints; occupational health has been ignored in favor of less stringent public health directives, and advice from unions and workers has been ignored. The end result of Committee decisions is that workers are not properly protected from exposures to the virus that causes COVID-19.”⁵⁴⁴

Even in the midst of ongoing outbreaks at long-term care homes, on a number of occasions, health care unions have been forced into the courts to protect their workers because of the lack of labor ministry actions.

In reaction to the Ontario Nurses’ Association v. Eatonville/Henley Place order “to provide nurses working in their respective facilities with access to fitted N95 facial respirators and other appropriate PPE when assessed by a nurse at point of care to be appropriate and required, as set out in Directive #5 issued by the CMOH.”⁵⁴⁵

Dr. Eric Tucker, a professor at Osgoode Hall Law School in Toronto, asked:

“In what world is a court order needed to require employers to provide frontline health care workers with the personal protective equipment that they, in their professional judgment, relying on best practices and government directives, determine is needed to perform their jobs safely?”⁵⁴⁶

Workplace complaints and refusals across Canada

COVID-19 has seen a flurry of complaints across Canada about unsafe workplaces and unsafe work practices:

- In Ontario, more than 4,300 COVID-related complaints were made between March and the end of May, up from just 33 complaints in the first two months of 2020.⁵⁴⁷
- Quebec, meanwhile, has seen the total number of labour complaints from March 1 to May 31 more than double from the same period in 2019.⁵⁴⁸
- In British Columbia, between March 20 and early May, there were 1,700 complaints filed with BCNU from its members across the province.⁵⁴⁹

Provincial ministries of labour can either respond to complaints – where a problem has already been identified – or it can do proactive inspections of workplaces. SARS demonstrated the importance of proactive inspections during a public health emergency like COVID-19.

The ministry can also do its inspections in person or by telephone, but the latter form of inspection is far less likely to ensure ministry orders on infection control are being met.

The situation in Ontario is particularly enlightening.

The United Steelworkers requested information on Ministry of Labour COVID-related inspections in the

province between March 11 and July 13. It found that the ministry conducted 14,031 field visits related to COVID-19; 5,572 were conducted by phone/email, and 8,441 were conducted in person.⁵⁵⁰

Of the field visits to health care facilities, the vast majority were reactive rather than proactive (1,305 versus 457). Most visits were to long-term care homes. Of the 1,305 reactive field visits, 705 were in response to complaints.⁵⁵¹

The largest proportion of the 705 complaints related to ‘multiple issues’ and PPE, specifically mask/N95.

Field visits related to COVID-19 in all sectors led to 9,875 orders and requirements between March 11 and July 13, 2020. Only 323 improvement orders and requirements were issued in the health care sector. Meanwhile, the Ministry issued 7,513 orders in the construction industry and another 1,795 orders in the industrial sector.⁵⁵²

It is profoundly disappointing to see this level of inaction to safeguard the highest risk sector during a pandemic. What makes it even worse is that this is occurring in a province where the absence of labour ministry involvement during SARS had tragic consequences in death and disease.

In the face of the health authorities’ refusal to uphold the precautionary principle, and faced with the failure to follow even joint agreements negotiated in good faith with governments, there have been work refusals by health care workers. Most work refusals have not been accepted. This is detailed below in the following table with data from March until June 2020⁵⁵³.

Work refusals		
Province	Claims submitted	Accepted
Ontario	278	1
Newfoundland and Labrador	27 (all in health care)	0
Quebec	24	1
Alberta	18	0
Saskatchewan	10 (resolved without Ministry of Labour Relations)	n/a
Manitoba	9	1 (improvement order)
New Brunswick	12	1 (improvement order)
Nova Scotia	10 (3 involved Department of Labour)	1 (was still under investigation)
PEI	0	n/a
B.C.	Data not provided	Data not provided

Nurses' unions across Canada, along with other health care worker unions, including Unifor, the Service Employees International Union (SEIU) Healthcare, The National Union of Public and General Employees (NUPGE), the Canadian Union of Public Employees (CUPE) and their provincial affiliates have received work refusals, complaints and grievances related to COVID-19 from their membership.

Workers compensation claims: the campaign for COVID-19 presumptive legislation

Workers whose employers pay worker compensation premiums cannot sue their employers. In return, workers look to the workers' compensation board when they are injured at work.

This is the bargain public health care workers have made with the government. This is the historic trade-off that workers, including public health workers, have made with Canadian governments for more than a century.

However, prior to, and during this pandemic it has become increasingly evident to workers that this agreement may be benefitting one party more than the other.

The World Health Organization declared early on in the pandemic: "Health workers are at the front line of the COVID-19 outbreak response and as such are exposed to hazards that put them at risk of infection."⁵⁵⁴ "In mid-July, the WHO announced that health care workers represented more than 10 per cent of infections and that over 1.4 million health care workers had been infected with COVID-19."⁵⁵⁵

Similar figures have been provided by the International Council of Nurses, which has reported that on average 10 per cent of global infections are health care workers.⁵⁵⁶ In Canada, in late July over 21,000 health care workers had been infected with COVID-19, representing about one in five of the total cases in Canada.⁵⁵⁷

You would think that the high number of infections among health care workers would alarm governments and public health agencies across Canada, as the January rise in health care work infections did in China. You would think that they would respond, as China did, and rapidly escalate protections for airborne precautions.⁵⁵⁸

That has not been the case. Though the evidence shows otherwise, they appear to act as if Canadian health care workers were as safe as anywhere in the world. Instead of seeing China's low rate health care worker infection as the goal, they appear to be satisfied by the status quo. If they were dissatisfied by the status quo, they would have acted. Sadly, they have not.

Some officials have suggested that health care workers were infected outside the workplace. This, despite the self-evident risk of being exposed for long periods of time to COVID-19 patients.

Some have gone as far to suggest that the health care worker infection rates are no greater than the general population, and any discrepancies are due to other extraneous factors.

Alberta Health Services (AHS) notes:

"Alberta based data synthesized from the WHS dashboard [not including private long-term care] indicated a current absolute occupational risk of documented COVID-19 infection in healthcare workers to be 0.01%, with an overall HCW risk of 0.14%, on the basis of detailed case

investigation. This is compared with the overall current 0.1% risk in the community in Alberta. The elevated HCW non-occupational risk as compared with the general population may be explained in part by higher rates of testing in the HCW population (15% tested versus 2.9% of the general population tested), and by differences in travel patterns amongst HCWs compared with other populations prior to recognition of the pandemic and the implementation of travel restrictions.”⁵⁵⁹

The Alberta agency points to “the absence of reliable risk data” and that HCW perceptions of personal COVID-19 risk “being driven by preferential media reporting of cases in HCWs”.⁵⁶⁰

In Alberta, as the end of July 2020 approached, 75 per cent of health care worker infections had been deemed to result from community exposure. In Ontario, the percentage was 40 per cent.⁵⁶¹

British Columbia was the first province to adopt presumptive legislation for COVID-19. In late July, Work Safe BC amended the *Workers Compensation Act* to add a presumption for infections caused by communicable viral pathogens, including COVID-19, which “are the subject of a B.C.-specific emergency declaration or notice”.⁵⁶²

Similar measures have been called for in provinces across the country by worker safety advocates and health care worker unions.

The impact of COVID-19 on the long-term health of health care workers is also evidenced in the data: roughly 13,000 workers have filed workplace injury claims related to COVID-19.⁵⁶³

Whether these claims are successful, or whether a long battle with employers is required, may depend on whether COVID-19 infections are presumed by provincial compensation boards to be workplace-related.

A deep moral failure

Justice Archie Campbell wrote that health care workers must feel safe and trust the measures being taken to protect them. It is shameful that 17 years after SARS this is not the case. It is shameful that 17 years after SARS, employers, governments and public health agencies too often appear to regard a safe work environment as something to be bargained. It is shameful that health care worker unions have to go to court to protect their members, because laws are not enforced and regulators are not doing their jobs.

Safety, as many health care workers and union leaders have said, is not negotiable. It is not negotiable in construction, or in mining, or in smelting, or in auto factories. Health care workplaces should be treated no differently.

Over and over, during the course of the research for this report, we have seen case after case of health care workers being told to be quiet and to not speak publicly about their workplace safety concerns.

The Vitalité Health Network, the health authority that runs the Campbellton Regional Hospital in New Brunswick, was accused of silencing doctors who were speaking out against the lack of availability of PPE.

After 10 workers rapidly became infected at the hospital, Dr. Vona MacMillan spoke about her unease during shifts on the COVID-19 unit. She wanted the health authority to allow staff to wear N95s while treating COVID-positive patients, regardless of the procedure being performed. She later retracted her comments.⁵⁶⁴ Employees at the hospital were ordered not to speak to the media after she retracted her comments about the working conditions on the COVID-19 units.⁵⁶⁵

In other provinces, there have been similar efforts to silence health care professionals who speak out about the lack of appropriate protective equipment:

An Ontario nurse said:

“Hospitals are telling us to keep quiet about this information and even threatening to fire staff should we speak out on social media or to the public.” Another health care worker reported feeling “belittled” when she spoke out.⁵⁶⁶

Similarly, in Quebec, health care workers are expressing their frustrations with the lack of PPE on twitter using the hashtag #BasLesMasques (Down with Masks): “People speaking out were not doing it to be petty or because we’re angry at our employers. We’re doing it because we are afraid,” said Natalie Stake-Doucet, a nurse who started practicing again after the pandemic started.⁵⁶⁷

There have been many other media reports where nurses are afraid to be identified because they fear being disciplined or being fired.

It is unconscionable that Canadian health care workers are being treated this way. What makes it worse is that no government has come to their support. No Canadian health care worker should feel afraid to express their concerns about workplace safety. This right is at the heart of our country’s values.

Governments have a duty to ensure all workplaces are safe. May fulfilling this duty voluntarily, without the need of labour union-initiated legal actions, be a lasting legacy of COVID-19.

Recommendations

- That the precautionary principle, which states that action to reduce risk need not await scientific certainty, be expressly adopted as a guiding principle throughout health, public health and worker safety systems by way of policy statement, by explicit reference in all relevant operational standards and directions, and by way of inclusion, through preamble, statement of principle or otherwise, in all relevant health statutes and regulations.
- That the health and safety concerns of health care workers be taken seriously, and that in the spirit of the precautionary principle, health care workers be made to feel safe.
- That the right of health care workers to speak out about unsafe working conditions be protected from retaliation by their employers.
- That in any future infectious disease crisis, the precautionary principle guide the development, implementation and monitoring of procedures, guidelines, processes and systems for the early detection and treatment of possible cases.
- That provincial ministries of labour use their enforcement and standard-setting activities, and ministries of health use their funding and oversight, to promote organizational factors that give rise to a safety culture in health workplaces.

- That in any future infectious disease crisis, ministries of labour have clearly defined decision-making role on worker safety issues, and that this role be clearly communicated to all workplace parties.
- That provincial ministries of labour have the capabilities and resources to safely, effectively and comprehensively conduct in-person, on-site inspections during public health emergencies.

Stories from the front lines⁵⁶⁸

With all their experience, expertise and training, nurses across Canada reported being the subject of patronizing attitudes by infectious disease and other specialists.

A nurse in British Columbia said:

We do not have enough PPE. The first time I donned PPE to enter the COVID-19 isolation room, I was sternly told not to by a senior hospital employee and reported to my manager for donning an N95 mask. That's what I was taught to don in nursing school for [protection against] aerosolized particles ... After that incident, I don a surgical mask, a yellow gown, safety glasses, and hair cover. I felt completely under dressed."

An Ontario nurse said:

"Our hospital had our Infectious Disease Specialist and other doctors go around on a weekly basis to each unit in the hospital and have huddles about how N95 masks ... are not needed!"

A nursing colleague in Saskatchewan was critical of:

"... constantly changing and conflicting recommendations that do not seem to be based on any science or evidence, but based on product availability. For a while our PPE recommendations changed daily ...

I've been a nurse for 20 plus years and never before in my career have I been advised to reuse a single use product. We have been advised to wear a procedure mask until our break or it's soiled. Procedure masks have always been for a single procedure. We had hand sanitizer that was recalled. These are my personal examples. This makes me very uncomfortable and makes me feel like my life is not valued by my employer. You walk away feeling like you are expendable."

Another Ontario nurse said she and her colleagues were told N95 respirators were not necessary when assisting COVID-19 patients receiving dialysis:

"Nurses were told N95 is not required unless we are doing aerosolized procedures but ... they kept removing their [procedure] masks to breathe and cough as patients felt suffocated under mask during dialysis. Nurses were not given proper PPE when were asked to screen patients for COVID-19, and manager locking up surgical masks and asking nurses to wear [surgical] masks when screening patients."

Chapter 6: Health Care Workers and the Pandemic Data “Black Hole”

Introduction

Bringing a canary into a coal mine was one of the earliest occupational safety devices. Starting in 1911, these birds protected miners by detecting carbon monoxide and other toxic gases long before they reached levels dangerous to humans.⁵⁶⁹

More than 100 years later, good data on health care worker infection can similarly serve as an early warning system, helping to identify issues and trends before they mushroom into major crises.

Accurate data on the location and extent of outbreaks was all important as governments worked to “flatten the curve” in the first phase of COVID-19.

Data on COVID-19 infections among health care workers and in health care settings could have served a similar purpose, giving public health officials a roadmap on the path of the virus in workplaces, and a picture of the risks faced by those on the front lines.

That has not been the case, despite the best efforts of health care workers and their unions to press for this vital information. It would help frontline staff better understand their workplace risks. Inexplicably, some provinces, like Quebec, Nova Scotia and British Columbia, have gone as far as to refuse to release some health care work infection data.

Dr. Amir Attaran is by training an immunologist and lawyer, but he is also the Canada Research Chair in Law, Population Health and Global Development Policy, and a professor at the University of Ottawa in both the faculties of law and medicine. This is how he describes the importance of data in pandemic containment:

“Without complete, timely data, it is *impossible* for scientists to analyze the epidemic optimally in real time ... I cannot exaggerate how dangerous such blindness is. Without complete, accurate, timely data Canada fights COVID-19 not by skating to where the virus’s puck is going, or even where it is now, but where it was several weeks ago.”⁵⁷⁰

Instead of providing a roadmap, the data on health care worker COVID-19 infections remains an uneven patchwork without consistent data classifications and collection procedures.

Even more than 200 days after Ottawa activated its emergency operations centre on January 15, there was a marked absence of comprehensive data on the extent, severity and causes of COVID-19 cases among Canadian health care workers.

Over and over, in consulting extensively with public health agencies, unions, Statistics Canada and other agencies in an attempt to form a complete picture of COVID-19’s impact on health care workers, the available data was fragmented, incomplete and insufficient.

Such data is needed not just to tell us how many health care workers are infected but also to make informed health care worker safety decisions.

The best (albeit incomplete) information was released in early September by the Canadian Institute for Health Information (CIHI) and indicates that more than 21,000 health care workers had been infected as of late July 2020, comprising about one in five cases in Canada.⁵⁷¹ As of September 2020, national data could not be broken down by provider type, nor by health care sector (acute, long-term care, community, etc.).

The Chinese COVID-19 experience is an example of how better data can inform better policy.⁵⁷² The Chinese authorities closely tracked the initial circumstances surrounding COVID-19 cases, and early case data enabled them to identify high health worker infection rates, a clear sign of human-to-human transmission.

On January 20, with a clear picture of health worker infection before them, they immediately upgraded to airborne precautions. As the infections among health care workers declined, they could see the success of their approach and never downgraded precautions.

However, as this investigation has discovered – and as frustrated health care workers and their unions have reported – the muddled system across Canada for collecting, analyzing and distributing public data on COVID-19 health care infections is largely ineffective, siloed and disorganized. It is far from being up to the task.

This chapter will examine the failings of national, provincial and local systems that collect, analyze and disseminate health worker safety data, and will provide recommendations for addressing these shortcomings.

National-level data

A fragmented patchwork

The problems with public health data were a feature of SARS. In his 2004 interim report, Justice Archie Campbell noted that:

“Problems with the collection, analysis and sharing of data beset the effort to combat SARS,” and that this was largely due to “a lack of federal-provincial cooperation.”⁵⁷³

Of the 23 problems set out in the interim report, six were directly related to failures of public health information systems and the sharing of data.⁵⁷⁴

Two decades later, Dr. Amir Attaran and Adam Houston, both at the University of Ottawa, in their evaluation of data sharing during the COVID-19 pandemic, concluded:

“... it remains true that nearly two decades after data sharing proved a catastrophic failure in the 2003 SARS epidemic, epidemiological data still are not shared between the provinces and the federal government. This is largely due to a baseless and erroneous belief that health falls purely within the jurisdiction of the provinces, despite the Supreme Court of Canada’s clear conclusions to the contrary, which has misled Canada to rely on voluntary data sharing agreements with the provinces that are not merely ineffective, but actually inhibit data sharing.”⁵⁷⁵

The failure to properly track and share data between individual provinces and the federal government appears to be due to the historical jurisdictional conflict over ownership of this data. Reports from the Auditor General of Canada and from public health professionals have raised warnings about Canada's dysfunctional system of public health data sharing for decades.⁵⁷⁶

Provinces have historically insisted on ownership of epidemiological data and how it is shared. This is reflected in the current data sharing agreement between Ottawa and the provinces, which is non-binding and gives the provinces 30 days to comment before any publication of their data and a veto under certain circumstances.^{577 578}

Flying blind

The patchwork of data creates delays, deficiencies and errors.

Early in the crisis, experts noted that PHAC's national modelling of the pandemic lagged behind the modelling conducted by provinces and other countries.⁵⁷⁹

At various points during the first phase of COVID-19, the PHAC seemed less than well informed on the pandemic's progress:

- As of April 30, only 56 per cent of total cases in the PHAC's daily epidemiological update contained detailed data. Data on health care workers, for example, indicated there were 3,810 cases "exposed in a healthcare facility."⁵⁸⁰ This data was incomplete. At the time of the April 30 report, data from Ontario alone showed that almost 3,000 workers had already contracted the virus.⁵⁸¹
- As of May 31, the PHAC possessed detailed data on just 36 per cent of known COVID-19 cases, because either the data from the provinces were late or the provinces declined to share, "leaving Canada dangerously blind" and making it "impossible for PHAC to know, until weeks later, whether efforts are succeeding to keep the virus's effective reproductive number (called "Re") well below one."⁵⁸²
- As of August 8, 24 per cent of cases provided by Statistics Canada data (supplied by the PHAC) lacked any occupational coding. When excluding Quebec, that number increases to 47.5 per cent. This means that any attempt to calculate the number of health care worker infections using this data would be riddled with errors.⁵⁸³

Health care workers and their unions were understandably frustrated. They raised the issue of inadequate national data with the PHAC in several weekly teleconferences. It wasn't until late June, however, that the PHAC published a draft work plan to address the health care worker data gaps. It included the acknowledgement that the existing data had many limitations. For example, data could not be disaggregated by provider type or setting, and demographics were limited to age and gender. There were also some completeness issues with some jurisdictions.⁵⁸⁴

Statistics Canada

Statistics Canada, drawing upon information by the Public Health Agency of Canada, has scrambled to paint a picture of COVID-19 across country.

Statistics Canada produces a single data file that, in theory, records COVID-19 cases among health care workers.⁵⁸⁵

Its publication has been irregular, often shifting between weekly and biweekly publication and providing data up two weeks out of date. These delays are compounded by deficiencies and openly acknowledged errors.

For example, provincial data in this file is grouped into regions like Atlantic Canada and the Prairies, reducing the value of the data by rendering interprovincial comparison impossible. To make matters worse, data is also published with outdated figures as some provinces simply do not submit updated data on categories as pivotal as occupation.

Provincial-level data

A fragmented patchwork

Data on COVID-19 cases originate in hospitals, long-term care homes and public health authorities across the country. It is then compiled by provincial health authorities. The extent to which this data is then shared with the federal government and made accessible for public health partners varies from province to province.

The Atlantic Provinces do not seem to publicize the number of COVID-19 cases among health care workers. Nova Scotia justifies the decision to not provide the exact number of infected employees at health authorities “because it's so low that it could identify the workers who became patients.”⁵⁸⁶

Public Health Ontario publishes this statistic in their accessible data dashboard, and their weekly epidemiological reports provide the status of all infected health care workers in both acute and long-term care.⁵⁸⁷

In Quebec, the data has been provided intermittently through the PHAC or media reports, but granular data broken down by health care provider type or health care sector has been difficult to obtain. In contrast, the city of Montreal regularly publishes very detailed situation reports which include health care worker infections.⁵⁸⁸

The Prairie Provinces all report their figures in different formats. Alberta provides their statistics through a geographic breakdown of health worker infections. Manitoba only identifies the source of infection of their health care workers. Saskatchewan merely reports a figure with no timeline or context.

The most problematic jurisdiction may be British Columbia. Its publicly disclosed data has been incomplete, inconsistent and on occasion, seemingly contradictory.

British Columbia

British Columbia’s data on health worker COVID-19 infections can be found in four separate locations: surveillance reports, press briefings, the media and Statistics Canada. While our researchers have worked long and hard to make sense of the situation in B.C., none of these numbers seem to add up.

The British Columbia Ministry of Health May 4 press briefing on COVID-19 projections stated that “as of April 28, health-care workers represented 428 (21 per cent) of COVID-19 cases reported in BC.”⁵⁸⁹ The provincial epidemiological surveillance report for the same day had a different number: it identified 144 staff infected by an “outbreak” in care facilities.⁵⁹⁰

The slides used in all subsequent press briefings by the BC Centre for Disease Control have not included the number of health care worker infections.

In mid-June, a media article published internal figures provided by the BC Centre for Disease Control, showing that 24.9 per cent of COVID-19 cases were health care workers.⁵⁹¹ This alarming figure was missed in the aforementioned Statistics Canada data file on COVID-19 cases, because in June British Columbia did not provide the occupation of any of their cases.⁵⁹²

From July to August, British Columbia’s reporting to the Public Health Agency of Canada and Statistics Canada has shown a slightly decreasing number of health care worker infections: in early July the figure was 346, in mid-July this figure slipped to 344, and in early August this number was 343.⁵⁹³

When Statistics Canada was reached out to for comment, they provided this message:

“The data is sent by the provinces and territories (PTs) to PHAC. The information provided by the PTs varies for each province and territory. PHAC has ongoing discussions with each PT to determine what is in-scope for sharing with the federal health agency. Recently, the province of British Columbia updated all of their records and stopped sharing the ‘Occupation’ information with PHAC. A reconciliation was done to retrieve the ‘Occupation’ variables for the old cases but the new cases do not have that information. This makes it impossible to get a number of healthcare workers who are getting infected by COVID-19 in BC.”⁵⁹⁴

British Columbia appears to have simply refused to continue providing the number of health care workers being infected by COVID-19. It has not provided a reason for doing so.

As such, when the data was released by CIHI on September 3 2020 with a ‘snapshot’ of health care worker infections in the province, the number of health care workers infected had declined to 258, reducing the proportion of health care worker cases in relation to the provincial total from almost 25 per cent (24.9%) in early June to 7.6 per cent in late July 2020.⁵⁹⁵

Ontario

Even in provinces which publicly report data on health care worker infections, media outlets have noted glaring deficiencies.

In mid-April, the *Toronto Star* grew frustrated with Ontario’s apparently incomplete and outdated data on long-term care outbreaks. They filled in the government’s information gaps by providing a provincial map of care homes, listing number of cases and deaths by residents and health staff, sourcing the information directly from the health regions.

“Every day, Public Health Ontario publishes some information on confirmed cases and deaths in long-term care home outbreaks, but *The Star* has found this data vastly under-reports the true number of people dying in these settings, as well as in retirement homes.

Provincial health officials began this week to quote in their daily press briefings more up-to-date death numbers collected by the Ministry of Long-Term Care. But this data has limitations too; it only includes deaths at long-term care homes and not retirement homes, it doesn't tell where the deaths are occurring, and it doesn't tell you which homes are experiencing outbreaks."⁵⁹⁶

Throughout the spring and into the summer, the *Toronto Star* continued to highlight the Ontario government's significant underreporting of COVID-19 cases due to contradictory and delayed information.⁵⁹⁷

By mid-May, the *Toronto Star* reported that after two months of pressure from unions and media outlets, the province was also beginning to collect data on the type of health care worker in its data system known as iPHIS, or integrated Public Health Information System.

Of the 3,722 Ontario health care workers infected at that time, the data included numbers for doctors, nurses, laboratory workers, first responders and other (or unknown) health care worker type (2,887). Personal support workers – who comprised the largest proportion of workers in long-term care and retirement homes – were still included under the heading of “other” with no further data delineations.⁵⁹⁸

In late June, the Ontario government finally agreed to overhaul iPHIS, which still relied on fax machines and manual data entry, and move to a cloud-based system. Under the existing iPHIS system, testing labs could not enter the results directly; instead they were sent to public health units in batches by fax, and then the results were manually entered, which delayed data for many days (and introduced the potential for errors).⁵⁹⁹

The problems with iPHIS echoed problems during SARS that were supposed to have been fixed long ago.

Efforts to address the problem

Throughout the pandemic there have been efforts to improve the reporting of data on COVID-19 cases that should be recognized.

The PHAC, Health Canada, Statistics Canada, Canadian Institute for Health Information (CIHI) strategy

In late June, the Public Health Agency of Canada, Health Canada, Statistics Canada and the Canadian Institute of Health Information outlined a draft strategy to address what they acknowledged as a deficiency in health care worker data at the national level (and within provincial data collection efforts). The draft work plan acknowledged that health care workers “not only experience greater risk of exposure to COVID-19, but are also exposed to other hazards that increase their risk of infection and/or secondary health impacts,” and conceded the lack of granular data.⁶⁰⁰

The document outlined some of the gaps in health care worker data with respect to gender, race/ethnicity, work setting (LTC, hospital, home care), job type (nurse, personal support worker, etc.), and job status (casual, part-time, full-time, agency). The work plan also recognized the importance of cataloging clinical outcomes, exposure settings, access to personal protective equipment (PPE) and perceived organizational support as important variables.⁶⁰¹

However, the draft acknowledged that many challenges remain with national-level data gathering. As noted earlier, national data is dependent on the granularity of data provided at the provincial/territorial level as well as the degree to which data is standardized.⁶⁰²

While the data working group acknowledged that the PPE access and provision issue, as identified by unions, was ‘a critical issue,’ there was general acknowledgement that there is no readily available source of information with respect to PPE through provincial reporting. A short survey to ‘crowdsource’ better data on PPE was proposed.⁶⁰³

Non-governmental organizations’ data gathering efforts

In the absence of government sources of data, numerous surveys have been conducted independently of the PHAC to make up for this data gap, including by the Manitoba Nurses Union, SEIU Healthcare, British Columbia Nurses’ Union,⁶⁰⁴ Ontario Nurses’ Association and the Occupational Health Clinics for Ontario Workers (OHCOW).⁶⁰⁵

As noted earlier, journalists such as those at the *Toronto Star* have made extraordinary efforts to fill the data gap, documenting infections and deaths the government has seemingly failed to report.

On long-term care, the National Institute of Aging (NIA) at Ryerson University launched a long-term care tracker on April 29. They believed that “the lack of clear data on nursing and retirement home outbreaks was preventing responsive interventions at provincial/territorial front lines.” The NIA tracking map compiles and publishes data online weekly, sourcing its information directly from public health units, the media and information posted by homes.⁶⁰⁶

While the NIA has been largely successful at compiling COVID-19 long-term care data from across Canada, Quebec has declined to provide provincial data to the NIA on long-term care infections among residents and staff since mid-May.

A path forward

To understand the importance of adequate data in tracking health care worker safety, imagine fighting a forest fire. To get ahead of it, you might fly over it, figure out how big it is, where it’s going and how fast, so you can build barriers and deploy firefighters at strategic locations to try and contain it.

In battling the COVID-19 pandemic, the latest data reflects not where you are today in terms of the total number of cases, but the situation when today’s confirmed cases were themselves infected. Today’s situation won’t be known for a week or more from now – when cases infected today begin showing signs of infection.

“... you are always behind where you are if you think that today reflects where you really are,” observed Dr. Anthony Fauci, director of the U.S. National Institute of Allergy and Infectious Diseases.⁶⁰⁷

Without adequate timely data, it is impossible to spot and address health worker problems in a timely manner, endangering the health of all health care workers, their families, their patients, and visitors to their facilities.

But, as revealed in this chapter, amid all the COVID-19 data that federal, provincial and local public health agencies and ministries collect in Canada, public data on infections among health care workers and in health care settings remains weak, ineffective and unhelpful.

It is impossible to answer in a timely, comparable, sufficiently detailed manner the following essential questions:

- How many Canadian health care workers have been infected with COVID-19?
- Where has the infection occurred (i.e., in what kind of health care setting)?
- Under what circumstances and when?
- Which category of health care worker functions are most at risk, and under what circumstances?
- What kind of personal protective equipment (PPE) was worn at the time of the infection?
- What was the status at the time of infection of engineering and other components of the hierarchy of controls against exposure to COVID-19 hazards? and
- Was the infection investigated by the workplace joint health and safety committee, or by provincial worker safety regulators?

Recommendations

- That all jurisdictions be required to publicly report to their stakeholders – and to the federal government – in a consistent, detailed and timely manner the number of health care worker infections in their area.
- That significant good faith effort be made to iron out federal-provincial jurisdictional conflicts hindering timely data sharing on health care worker infections.
- That Statistics Canada be given the authority and resources to implement and operate a transparent national system on health care worker data. The resulting data sets must have consistent terminology and criteria. They must have significant granularity to allow monitoring and trend analysis by occupation and sector at a detail level (e.g., PSW, nurse, physician; or LTC, nursing homes, hospitals, pandemic wards within hospitals, direct patient care and other key roles such as triaging). The data has to be shared in real time, not delayed by weeks or even months. And the performance of the system must be monitored and tested regularly.

Stories from the front lines

Justice Campbell wrote that health care workers must be kept safe and made feel safe. Health care workers across Canada at union town halls and in media interviews tell the same troubling story over and over. They do not feel safe. Their employers don't make them feel safe. Public health agencies and provincial labor regulators don't make them feel safe.

In comments echoing those often heard during SARS, one nurse commented on mistrust in guidance provided by her employer:

“Within my organization, due to different sources including WHO, CDC, and local health authorities having different (infection prevention and control) recommendations, there is a sense of mistrust brewing between frontline care staff and the administrative upper management.”⁶⁰⁸

An emergency physician says:

“I'm on the front lines of the COVID war as an emergency physician. I see the stress being worn by my team of nurses and respiratory therapists. We are scared and tired, for ourselves, for our families, for each other.”⁶⁰⁹

A survey of health care workers conducted in April 2020 found that 47 per cent of Canadian health care workers surveyed who were on the front lines of COVID-19 felt they need mental health support.⁶¹⁰

In testimony before the Commons Health Committee, Linda Silas, President of the Canadian Federation of Nurses Unions, stated:

“As you know, the Public Health Agency of Canada was created in the wake of the SARS crisis. Since its beginning, it has taken its public health duties very seriously. However, workplace safety has never been PHAC's primary focus, and the agency has unfortunately failed, over and over, to consider and appropriately protect the health and safety of health care workers. That's why I'm here. It's to implore you to take a stand for the health care workforce by calling for the Prime Minister and the government to invoke the measures of the *Emergencies Act* to help our health care system survive this global pandemic. The CFNU believes that the current situation in both acute and long-term care settings across Canada fits the law's definition of an emergency that rises above the ability of one province to cope, thereby representing a risk to other provinces. The time for our government to act is now.”

Chapter 7: The Precautionary Principle, and Who Decides How Health Care Workers Are Protected

Introduction

COVID-19 has revealed how little has changed since SARS: worker safety experts and expertise remain sidelined from public health agencies' occupational health and safety decision making.

Much continues as it did in 2006, when Justice Archie Campbell observed:

“There were two solitudes during SARS: infection control and worker safety.

Infection control insisted that SARS was mostly spread by large droplets which do not travel far from an infectious person. Given that case, in their view, a surgical mask was sufficient to protect health care workers in most situations.

Worker safety experts said workers at risk should have the higher level of protection of an N95. They said not enough is known about how SARS is spread to rule out airborne transmission by much smaller particles, and besides, hospitals are dynamic places where unforeseen events and accidents can always happen.

Infection control relied on its understanding of scientific research as it stood at the time. Worker safety experts relied on the precautionary principle that reasonable action to reduce risk should not await scientific certainty.”⁶¹¹

Seventeen years later, the status quo remains largely unchanged. The voices of health care workers, unions, occupational hygienists, physicians who specialize in worker safety, environmental engineers, and aerosol specialists are still missing when occupational health and safety decisions are made.

To be sure, worker safety experts and unions have been invited by federal and provincial public health agencies to participate in COVID-19 forums, known as “science tables.” These forums are supposed to be collaborative, but appear to be anything but. The evidence reveals that the participation of unions and worker safety experts has been grudging, perfunctory and belies the statutory central role of unions and health care workers in occupational and safety laws and regulations.

This chapter will have three parts.

- Part 1 will contain observations regarding the absence of worker safety expertise as integral components of worker safety decision making.
- Part 2 contains an updated version of Justice Campbell's recommendations intended to ensure that worker safety expertise is an integral part of public health agencies.
- Part 3, the final one, will feature an analysis that John Oudyk, a Canadian occupational hygienist, has presented at federal and provincial “science tables.” The excellence of the analysis demonstrates the depth and quality of the worker safety submissions summarily dismissed by

public health agencies, and underlines that the expertise gap they are unwilling to concede exists or address.

Part 1 – A vast chasm

For a sense of the great divide between public health agencies and worker safety, look no further than the response to the letter by 239 experts from 32 countries, including 10 Canadians. That letter urged the WHO in July 2020 to re-consider its view of airborne transmission.

The 239 scientists comprised a wide range of expertise – from epidemiologists to virologists, from occupational hygienists to environmental engineers, from occupational physicians to bio-aerosol engineers.

Many saw the group’s multidisciplinary diversity as a big plus, as something that enhanced their letter’s scope, breadth and credibility.

Indeed, many scientists have come to believe that the complex challenges of researching airborne transmission – an important reason why it is called the “the elusive pathway”⁶¹² – require scientific collaboration across a range of disciplines.

One year before the pandemic, this approach was recognized by a group of leading Canadian researchers:

“The transmission of infectious microbes via bioaerosols is of significant concern for both human and animal health. However, gaps in our understanding of respiratory pathogen transmission and methodological heterogeneity persist. New developments have enabled progress in this domain, and one of the major turning points has been the recognition that cross-disciplinary collaborations across spheres of human and animal health, microbiology, biophysics, engineering, aerobiology, infection control, public health, occupational health, and industrial hygiene are essential.”⁶¹³

A year later, the WHO saw the letter’s underlying multidisciplinary expertise not as a strength, but as a fundamental flaw undermining its relevance and value.

This point was most directly made by Dr. Benedetta Allegranzi, technical leader of the WHO’s task force on infection prevention and control. She questioned the relevance of the expertise of many of the letter’s signatories:

“There is this movement, which made their voice very loud by publishing various position papers or opinion papers ...

Why don’t we ask ourselves ... why are these theories coming mainly from engineers, aerobiologists, and so on, whereas the majority of the clinical, infectious-diseases, epidemiology, public health, and infection-prevention and control people do not think exactly the same? Or they appreciate this evidence, but they don’t think that the role is so prominent?”⁶¹⁴

Dr. Allegranzi seems to have overlooked the fact that 40 of the WHO letter signatories, including two Canadians, Dr. Raymond Tellier and Dr. Nelson Lee, are physicians, virologists and infectious disease epidemiologists.⁶¹⁵

Some leading Canadian public health and infectious disease experts also dismissed the WHO letter in similar tones and on similar grounds.

The Globe and Mail reported:

“Many of the signatories are experts with backgrounds in engineering, chemistry and the environment and they point to evidence of studies that demonstrate the airborne presence. Members of Canada’s infectious disease community take issue with the letter, saying there’s a major difference between laboratory studies that demonstrate a theoretical possibility of airborne spread and the real world, where months of experience with COVID-19 have proven the majority of cases occur through close contact with an infected person.”⁶¹⁶

Canadian public health experts and their advisors seem to believe that only epidemiology – the admittedly invaluable public health discipline that investigates the characteristics and dynamics of disease outbreaks – is capable of identifying how infectious diseases are transmitted. They seem to have little regard for the lab-based studies relied upon by the letter’s signatories.

One expert said:

“Although we recognize airborne transmission can occur, the fact of the matter, the epidemiology of this disease tells us it is not a major contributor to transmission of the virus around the world.”⁶¹⁷

Another expert said that unlike the evidence of the engineers, chemists, bio-aerosol researchers who signed the WHO letter, she relies on the findings of epidemiologists like herself:

“We have epidemiological real-world experience.”⁶¹⁸

Part of the problem, say health worker experts, is that while epidemiology is vital to identifying and tracking the contacts of infected cases, it is limited in its ability to determine what precise transmission route or routes might have caused the infection.

As an editorial in a leading aerosol research journal noted:

“When an infected individual reports to a hospital there is no way to assess *definitively* how they were infected. The “contact-tracing” performed by epidemiologists carefully tracks who came into “close contact” with a patient under investigation, but it cannot tell you how the virus itself was transferred from the contagious person to those whom they infected.”⁶¹⁹

The irony, say worker safety experts, is that epidemiologists interpret their findings through a disease transmission model that was itself developed in labs in the 1930s. This model, which divides respiratory exhalations into small and large droplets, is “by modern standards ...overly simplified.”⁶²⁰

This model was developed by Dr. W.F. Wells in the early 1930s at Harvard's School of Public Health. What made his work possible was a then-revolutionary "instrument for the bacterial examination of air" that measured only large respiratory droplets. It was the brainchild of Harvard's Department of Industrial Hygiene.⁶²¹

Since then science's ability to measure, track and understand respiratory droplets has progressed in leaps and bounds, especially since SARS.

Now, new instruments and techniques allow scientists to demonstrate that when people sneeze, cough and speak, they emit "turbulent gas clouds" of various-sized respiratory particles, including the large ones that Dr. Wells identified. The behaviour and dynamics of these moist particles are best understood through the modern-day capabilities of physics and engineering⁶²² – not instruments nearly a century old.

It should be noted that Dr. Wells himself seemed to be a fan of cross-disciplinary collaboration. On the first page of his seminal 1934 study, he cites the importance of the new instrument that made his findings possible, and gratefully acknowledges the roles and technical assistance of engineering and industrial hygiene faculties. He hoped this paper would not be seen as an end-all and be-all but would rather spur further laboratory research:

"No claim is made that the results are final in character. They are presented as found in order that they may stimulate wider and more thorough studies into the important subject of airborne infection."⁶²³

It seems ironic that the man who developed the disease transmission model relied upon by the infectious disease community worked collaboratively with engineers and industrial hygienists (the American term for the engineers known in Canada as occupational hygienists), and appeared to hold these disciplines in high regard.

Sadly, Dr. Wells' outdated disease transmission model seems to be embedded in current medical training and thinking.

An American epidemiologist noted:

"Though infection prevention experts know there's a fuzzy boundary between drops that fall and specks that float, the dichotomy between airborne and droplet-borne is baked into how health care workers are trained to respond to outbreaks.

We've trained [health care workers] for decades to say, airborne is tuberculosis, measles, chickenpox, droplet is flu and pertussis and meningitis," Dr. Saskia Popescu, a hospital epidemiologist in Arizona, says. "And that's, unfortunately, kind of antiquated. But that's how we've always done it."⁶²⁴

Part 2 – Fixing the problem: revisiting SARS Commission recommendations

Justice Campbell tried to address the lack of worker safety expertise and collaboration in public health through a series of structural recommendations. They were ignored by governments of the day, unfortunately, but in view of the lessons of COVID-19 should be revisited.

He valued the model of the Centers for Disease Control and Prevention (CDC) in the United States, which has the National Institute for Occupational Safety and Health (NIOSH) as an integral part of its operation.

Canadians may best know the NIOSH as the entity that sets standards for respirators like the N95. But it does much more than that. Since its founding in 1970, it has been among the world's top agencies in occupational safety and health research. It is committed to empowering "employers and workers to create safe and healthy work places."⁶²⁵

Germane to this chapter, its 1,300 employees come "... from a diverse set of fields including epidemiology, medicine, nursing, industrial hygiene, safety, psychology, chemistry, statistics, economics, and many branches of engineering."⁶²⁶

Justice Campbell recommended that like the CDC, Ontario's new public health agency should similarly have a well-resourced, integrated organization that is focused on worker safety research and investigation, and on integrating worker safety and infection control.

While Ontario's public health agency has hired some worker safety experts, these efforts, while commendable, appear to fall far short of Justice Campbell's recommendation of a well-resourced separate entity modelled on NIOSH that can report independently on health care worker safety issues.

Recommendations

On a national level – 17 years after SARS and in the wake of the worker safety failures and shortcomings revealed by COVID-19 at the PHAC – we recommend that the federal government re-consider Justice Campbell's recommendations and establish a NIOSH-type organization at the heart of the federal agency. Such an entity, we recommend, would have a formal stakeholder table that would play a significant statutory role in preparedness and response to public health emergencies.

Reflecting the spirit of Justice Campbell's roadmap on this issue, we further recommend that in the interim and on an urgent basis, any section of the PHAC involved in worker safety have, as integral members, experts in occupational medicine and occupational hygiene, and representatives of workplace regulators, and consult on an ongoing basis with workplace parties.

Like NIOSH, the worker safety section of the PHAC should be sufficiently well-resourced and with sufficient expertise to be able to:

- Investigate potentially hazardous working conditions as requested by employers or employees. During SARS, for example, NIOSH was part of a CDC team that investigated a worker safety incident at Sunnybrook Hospital in Toronto that saw nine health care workers infected with SARS.⁶²⁷
- Evaluate hazards in the workplace, ranging from chemicals to machinery.
- Create and disseminate methods for preventing disease, injury and disability in the work place.
- Conduct research and provide scientifically valid recommendations for protecting workers.

Thus re-organized and re-focused, the PHAC could serve as a model for bridging the two solitudes of infection control and worker safety, and become a centre of excellence for both infection control and occupational health and safety.

Seventeen years after SARS, amid the failures of COVID-19, Justice Campbell's recommendations are more relevant and important than ever. COVID-19 revealed the systemic worker safety failures and shortcomings of federal and provincial public health agencies. His recommendations for embedding an occupational health and safety lens at the heart of the PHAC are an important path forward.

Part 3 – Observations and analysis by John Oudyk on evidence of COVID-19 airborne transmission

The final section of this chapter is a paper on airborne transmission, written by occupational hygienists John Oudyk.

During COVID-19, John has consulted with both the federal and Ontario public health agencies, providing the kind of thoughtful, scrupulously researched advice – that has largely been ignored by Canada's public health leaders.

Oudyk's paper is being included in this report to demonstrate the vital gap in worker safety knowledge at public health agencies.

First, a brief biography.

Since 1989, John Oudyk has been an Occupational Hygienist with the Hamilton Clinic of the Occupational Health Clinics for Ontario Workers Inc. (OHCOW). Prior to working at OHCOW, John had health & safety and environmental responsibilities for three factories and three cast iron foundries with a mid-sized auto parts firm.

John graduated from Chemical Engineering at the University of Waterloo in 1983 and from the McMaster University Health Research Methods Program in 2005. He has an appointment as an Assistant Professor (part-time) in the McMaster University Department of Health Research Methods, Evidence & Impact (HEI). He is certified both with the Canadian Registration Board for Occupational Hygienists and the American Board of Industrial Hygiene.

To put John's paper in context, it arose in response to Ontario's ill-advised decision in March 2020 to stop taking a precautionary approach to worker safety. The decision, according to Dr. David Williams, Ontario's CMOH, was made on the basis of new data and science. As John eloquently demonstrates, Dr. Williams' argument appears to lack a firm foundation in science.

A Consideration of the Rationale Provided to Downgrade PPE Precautions for COVID-19

Public Health Ontario (PHO) has updated their review of the evidence for the case against the airborne transmission of the COVID-19 virus⁶²⁸ (to be referred to as the "PHO document"). This document has two previous versions (dated March 6 and April 28) which were quite similar. This current PHO revision represents a more detailed rewriting of their document, so I have also extensively revised my previous version of the critique to update them with the new information available.

Beginnings

When we first heard about the outbreak of pneumonia disease in Wuhan, China, the reports suggested the outbreak was associated with the Huanan Seafood Wholesale Market, although this market is no longer thought to have been the epicenter of the pandemic.⁶²⁹ Early speculation suspected the species of origin was the pangolin, a creature most of us had never heard of that looks like an armadillo or an anteater. Bats were also mentioned, however, there was thought to be an intermediate species between the bats and humans. At that point in time the most likely transmission path for the pneumonia was assumed to be animal-to-human, which was later disproven.⁶³⁰

On December 30, 2019, Dr. Li Wenliang sent a message to colleagues, warning them of a possible outbreak of a SARS-like disease.⁶³¹ Local government officials coerced him to sign a retraction. He was one of eight people who were detained by local authorities for “spreading rumours”. On January 12, Dr. Wenliang was hospitalized with symptoms of the disease. He died on February 7, 2020, at the age of 33, and according to his obituary in *The Lancet*⁶³², the circumstances of his death were to be investigated by the National Supervisory Commission, the country’s highest anti-corruption agency. Municipal leaders were later disciplined for how they handled the situation.

Early on in the pandemic, one of the issues of scientific contention was whether this new disease could be transmitted from human-to-human. The association with the ‘wet market’ in Wuhan, and the speculation around which species was responsible for transmission, diverted attention from the possibility of human-to-human transmission.

The early sign of human-to-human transmission is usually “close contact” transmission to those who have no connection to the animal-to-human transmission path, namely, family members of the patient or health care workers attending to the patient. With family members there can always be the doubt whether they also had direct or indirect contact with the animal of suspicion. However, unless the HCW also frequented the wet animal market, any case of a HCW is a clear indication of human-to-human transmission.

Thus, HCWs are essentially treated as canaries in the coal mine – canaries were used in the coal mines in England to warn miners of dangerous concentrations of carbon monoxide: if the canary was overcome by the gas, then the miners knew they had to quickly evacuate.⁶³³ As such, “a canary in a coalmine” has become the symbol of early warnings in health and safety.

Despite a number of HCWs becoming infected during the early days of the pandemic (e.g., Dr. Li Wenliang admitted to hospital on January 12), Chinese and WHO officials continued to say that there was insufficient evidence to support human-to-human transmission. It was not until January 20 that officials finally admitted that human-to-human transmission was occurring.⁶³⁴ The decision was made based on the infection experience of HCWs. An early case series report of the first 138 patients with COVID from one of the hospitals in Wuhan indicated that 40 (29 per cent) of the patients were HCWs.⁶³⁵

When human-to-human transmission was finally officially accepted, the Chinese government acted promptly to declare the new disease a Class B disease (same category as SARS and MERS), but they declared the protective measures to be applied would be those prescribed for Class A infectious diseases (cholera and plague).⁶³⁶

Wang et al.⁶³⁷ report that by February 24 there were 2,055 HCWs infected, comprising 2.6 per cent of all confirmed infections in China. Most of these infections occurred between January 18 and February 5. Wang et al. attributed the early infections to inadequate personal protection, intense workloads and extended shifts, shortages of personal protective equipment, and inadequate training. A later report⁶³⁸ put the confirmed number of HCW infections at 2,457 workers (3 per cent of all confirmed cases up to March 26), including 17 deaths.

A number of handbooks for dealing with the pandemic in hospitals were published in China, and some of these were translated into English. One of these was produced by the First Affiliated Hospital – Zhejiang University (FAHZU).⁶³⁹ It describes the personal protective equipment required for the protection of HCWs. These measures include the use of N95 respirators for anyone treating a patient with COVID, along with multiple layers of other equipment. A recent paper⁶⁴⁰ in the *Canadian Medical Association Journal (CMAJ)* claimed that despite “complex and extensive” protective measures, “thousands of health care workers acquired the virus” in China – implying the Chinese preventive efforts were unsuccessful. In what seems to be a characteristic misrepresentation of papers being cited, the handbook cited by Ng-Kamstra et al. actually states the opposite in the foreword:

“Over the past 50 days, 104 confirmed patients have been admitted to FAHZU, including 78 severe and critically ill ones. Thanks to the pioneering efforts of medical staff and the application of new technologies, to date, we have witnessed a miracle. No staff were infected, and there were no missed diagnosis or patient deaths.”⁶⁴¹

Obviously, this report is specific to the FAHZU, but it does demonstrate that a zero infection rate of exposed HCWs is possible.

From January 24 to March 8, the government of China recruited 42,600 HCWs to assist the 100,000+ HCWs in Hubei province. These HCWs used the protective measures similar to those described in the handbook. A number of publications report that, as of April 16 (when the last recruits finished their work in Hubei), none of those HCWs had been infected.^{642 643 644}

Transmission pathways

Generally, in the infection prevention and control (IPC) community, there are three major pathways of transmission: droplet, contact and airborne.

Droplet is considered transmission by exposure to particles generally larger than 5-10 micrometers (μm), or microns (μ) (e.g., the diameter of a human hair is generally 50-100 μm), that spread in the air quickly within a distance of 1-2 meters from the source (e.g., coughing or sneezing). These particles are expelled by a person and are either inhaled or splash onto to the mucous membranes on another person’s face (nose and eyes). The prescribed protection for droplet transmission focused on preventing these particles from reaching the face (i.e. a face shield/goggles and a surgical/procedural mask). There is no concern about any particles that are smaller than 5-10 μm , so the mask is not meant to filter out these smaller particles (although it does to a limited degree). The idea is to provide a barrier that will prevent the face being hit by larger particles. A National Academies of Science, Engineering and Medicine virtual workshop on Airborne Transmission of SARS-CoV-2 (August 26-27, 2020) suggested that the cut-off point for defining a droplet should be any particle with a diameter larger than 100 μm which would be expelled with a ballistic trajectory as opposed to the particles smaller which would eventually be carried by room air currents after initial plume dispersion.

Contact transmission occurs when a person touches the expelled particles (called fomites) which have fallen onto surfaces (such as exposed skin on the hands, or the protective clothing covering the skin, e.g., gloves). That person then touches the face and gets infected. This is called direct contact. Indirect contact happens when a surface (e.g., hand sanitizer bottle) is contaminated by one person, and another person touches that surface and then touches the susceptible regions of the face (e.g., eyes and nose). Extensive cleaning and disinfection are needed to prevent this type of transmission. Ebola is a classic example of a disease that can be spread by contact transmission.

Airborne transmission is the category reserved for those diseases that can be transmitted by particles smaller than 5-10 μm (or $<100 \mu\text{m}$ as per the NASEM virtual workshop mentioned earlier) and can travel a distance infecting those farther away from the source. Two of the classic examples of this type of transmission are tuberculosis and measles. In order to be infected by these pathogens, you don't even have to be in the same room as the person who is the source of the particles. These smaller particles are swept up by air currents and can be carried to other parts of the building through ventilation systems or other air pathways and infect those who inhale these particles at a "far" distance from the person emitting the particles containing the pathogen. While this definition is well understood by the IPC community, outside that community and especially among particle scientists, this distinction of "close contact" and "distant" infections is blurred by their view of particle dynamics as a continuum rather than dichotomous. Particle scientists (and others with passing familiarity with the science such as occupational hygienists) view particle size distributions as a continuum – emitted particles being a continuous range of sizes from very small to large depending on the source characteristics.

Categories or a continuum?

So, whereas the IPC community see distinct categories differentiating droplet from airborne transmission based primarily on the distance between the source and the recipient, aerosol scientists see a continuous spectrum of particles being emitted, the larger of which quickly "fall" out of the air, but the smaller of which get swept up with the air currents and distributed throughout the room and possibly entrained into the ventilation system. Thus, when the IPC community calls something "airborne," they are using a category that was established about 100 years ago to describe infections that occur at a distance from the source; however, when particle scientists hear the word "airborne," they don't segregate between large and small particles, except as a part of a spectrum of particle sizes often classified into groups based on where in the lungs these particles settle. Here we see the basis of confusion which impacts the differing recommendations for respiratory protection for HCWs.

For the IPC community, if the category of transmission is deemed to be droplet, then the prevention strategy is based on preventing particles from impacting the face (face shield, surgical mask). On the other hand, particle scientists will look at the emitted particles and, if they see particles in the respirable range ($< 5\text{-}10 \mu\text{m}$), they will recommend inhalation protection as well, i.e. respirators (N95 masks or other with similar or higher filtering efficiencies such as N99s, P100s, PAPRs, etc.) that will prevent these smaller particles from entering the lungs. Surgical masks (prescribed to prevent splashes of large droplets from hitting vulnerable parts of the face) will also filter out some of these smaller particles but not as efficiently as N95 respirator masks. Surgical masks were initially designed to prevent the emissions from the person wearing the mask to infect others (e.g., in surgery preventing pathogens exhaled by the surgeon from infecting the wound of the patient), they were never designed to protect the person wearing the mask from inhaling the emissions from patients (N95s were designed to do that).

Dr. Mark Nicas & Dr. Rachael Jones in their modelling paper⁶⁴⁵ suggested a better way of looking at the problem of transmission is to assume that all infectious agents can theoretically be transmitted along all the pathways, and that the job of researchers is to quantify what proportion of the transmission follows each path. Jones recently applied the method she and Nicas pioneered and suggested that given the limited knowledge at the time she did the estimation, the proportion of transmission attributable to droplet was 35 per cent, 57 per cent due to inhalation, and 8.2 per cent due to contact.⁶⁴⁶

It should be noted that different environments may favour different paths of transmission. For instance, in a crowded and poorly ventilated space with the presence of a ‘superspreader’ (a person who emits particles with an extremely high viral load), the close-range airborne transmission path may predominate, whereas in a highly ventilated infection containment hospital room (AIIR) with HCWs wearing appropriate PPE, the predominate route might be contact or droplet or a combination of the two, while close-range airborne transmission might be minimal.

Ontario background

Ontario has a particularly unique history in the SARS outbreak in 2003. While the history and outcomes of this episode are not explained in the PHO report, one of the scientific issues associated with that outbreak was how the virus was transmitted. Initially droplet transmission was assumed, but when these proved inadequate to prevent HCWs from being infected, contact and airborne transmission pathways were considered. The Toronto SARS experience in 2003 is often cited as proof that N95s are no better than surgical masks, however, if you look at the studies published at the time, you get a different picture:

“Experiences in Toronto (5), Taiwan (4), and globally (9) indicate that the primary mode of SARS transmission is through direct contact and respiratory droplets. However, the cluster of SARS cases in Toronto healthcare workers after the intubation of a patient (10), as well as other reported super-spreader events, suggest the possibility of limited airborne transmission under certain circumstances.”⁶⁴⁷

“During the Toronto outbreaks of SARS, we investigated environmental contamination in SARS units, by employing novel air sampling and conventional surface swabbing. ... These data provide the first experimental confirmation of viral aerosol generation by a patient with SARS, indicating the possibility of airborne droplet transmission, which emphasizes the need for adequate respiratory protection, as well as for strict surface hygiene practices. ... Confirmation that the SARS virus can be shed into the air of a patient room will guide the response to any future SARS outbreaks.”⁶⁴⁸

“When we compared use of N95 to use of surgical masks, the relative SARS risk associated with the N95 mask was half that for the surgical mask; however, because of the small sample size, the result was not statistically significant. Our data suggest that the N95 mask offers more protection than a surgical mask.”⁶⁴⁹

In Ontario prior to March 9, 2020, the prescribed protection for COVID-19 included an N95 respirator for all health care encounters with a patient suspected or known to have COVID-19. This was a hold-over from the 2009 H1N1 pandemic experience. At that time N95s were recommended for any new, unknown influenza-type pathogen. Thus, at the beginning of the pandemic experience in Ontario, which

began in late January 2020, all HCWs working with patients with COVID were required to wear N95 respirators or PAPR in addition to their droplet and contact precautions.

In early March, a newspaper article⁶⁵⁰ reported that IPC experts in Ontario were objecting to the fact that Ontario was the only province requiring the use of N95 respirators for all COVID contacts, whereas other provinces deemed surgical masks to be sufficient except for AGMP exposures. As proof of the effectiveness of surgical mask in preventing HCW infections, the IPC experts noted that none of the HCWs in B.C. who were using only droplet precautions (i.e. surgical masks rather than N95s) had been infected (again treating HCWs like canaries in a coal mine). This pressure from the IPC community in Ontario convinced the government officials to downgrade the PPE requirements for HCWs in Ontario.

However, within days of the published newspaper article, it was noted in the press that two HCWs in B.C. had been infected.⁶⁵¹ Since the IPC experts quoted in the newspaper article had set the B.C. HCW infection experience as their standard of proof of the efficacy of the surgical mask to protect against infection, one would expect this new evidence of B.C. HCW infections might raise questions about the adequacy of the droplet and contact precautions. However, the HCW infections in B.C. did not precipitate a change in policy.

Earlier versions of the PHO document compared to the latest revision

Just days before the downgrading of HCW protective measures, Public Health Ontario (PHO) produced a document explaining the rationale for the change. The document *COVID-19 – What We Know So Far About... Routes of Transmission* (March 6, 2020)⁶⁵² explained how they came to the conclusion that:

“There is currently no evidence that COVID-19 is transmitted through the airborne route. As more epidemiological data emerge on cases globally, information is becoming available that suggest that airborne transmission is not occurring.”⁶⁵³

This statement is followed by five points⁶⁵⁴ which provide the scientific evidence against airborne transmission:

- “... WHO-China Joint Mission on COVID-19 summarizing 75,465 cases indicates that airborne spread has not been reported. ... The absence of significant clusters in other settings [outside of households] suggests that the mode of COVID-19 transmission is not airborne.”
- “... active follow-up of individuals exposed to first 10 cases of COVID-19 in the United States describes secondary transmission only to close household contacts.”
- “Healthcare workers caring for COVID-19 patients in other jurisdictions, including British Columbia, have not acquired COVID-19 while using Droplet and Contact Precautions recommended in the province.” (Citation is a newspaper article quoting IPC experts.)
- “The lack of transmission to passengers seated nearby cases who have travelled on airplanes does not support an airborne transmission route of COVID-19.”
- “In two studies conducting air sampling around confirmed cases, COVID-19 has not been detected.”

In an updated version of this document, dated April 28,⁶⁵⁵ rationale #5 was expanded and altered, and a sixth item was added (all others were left identical to the original, including rationale #3 despite the opposite being the case):

- “Studies have inconsistently detected virus in air sampling.”
- A review of an investigation of a COVID-19 outbreak in a restaurant in Guangzhou, China

Rationale #3 seems to be the most absurd of the six. The reference cited was a newspaper article⁶⁵⁶ which quoted IPC staff:

“Ontario is the only province recommending airborne precautions. B.C. uses droplet precautions and none of the COVID-19 cases there have spread to health-care workers.”

and

“... the evidence shows that droplet precautions are sufficient at protecting workers from infection. For instance, B.C. hospital workers who are treating COVID-19 patients have been using droplet precautions since the outbreak began and, so far, none has contracted the infection.”

On March 7, 2020, *Global News* reported an outbreak in Lynn Valley Care Centre, where two residents and one worker had tested positive.⁶⁵⁷ By March 21, 18 health care workers associated with the care centre were infected (at that time making up 33 per cent of the total infections associated with the outbreak).⁶⁵⁸

Just over a month later:⁶⁵⁹ “Dr. Bonnie Henry said that, as of April 28, health-care workers represented about 21 per cent of the virus cases reported in the province.” And: “Of the 428 health-care workers who have tested positive for the virus, 33 were hospitalized and one died.” Dated the same day (April 28), the PHO updated their document *COVID-19 – What We Know So Far About... Routes of Transmission*,⁶⁶⁰ still contained the statement: “Healthcare workers caring for COVID-19 patients in other jurisdictions, including British Columbia, have not acquired COVID-19 while using Droplet and Contact Precautions recommended in the province.”⁶⁶¹

Not until July 31, 2020 (although dated July 16), was this PHO document finally revised removing this section.⁶⁶² While the identification of HCWs as an indication of the effectiveness of preventive measures is appropriate (probably the best criteria), the fact that the levels of infection among the HCWs were ignored and misrepresented as there being no HCWs in B.C. infected, is an affront to the 428 HCWs who were infected and the one HCW in B.C. who had died by April 28, not to mention those infected afterwards.

In a previous document we reviewed the logic and the science behind the six rationales for declaring SARS-CoV-2 not to be transmitted by airborne transmission.⁶⁶³ The following table is a summary of the previous critique.

Rationale/evidence	Critique
1. WHO-China joint report	<ul style="list-style-type: none"> - no evidence provided for any claims - appeal to authority
2. no HCWs infected among the first 10 U.S. COVID cases	<ul style="list-style-type: none"> - assumes close-contact excludes airborne - jumping to conclusions (now 124,000+ U.S. HCWs)
3. no HCWs using droplet precautions have been infected	<ul style="list-style-type: none"> - obviously no longer the case! - actually provides evidence for the contrary
4. lack of transmission during travel	<ul style="list-style-type: none"> - “evidence of absence” fallacy - subsequent studies confirm transmission
5. inconsistent air sampling results	<ul style="list-style-type: none"> - verification fallacy - selection bias (positive studies not included)
6. restaurant in Guangzhou	<ul style="list-style-type: none"> - insufficient follow-up - subsequent study contradicts PHO interpretation

Both earlier versions of the PHO document^{664 665} unequivocally stated:

“There is currently no evidence that COVID-19 is transmitted through the airborne route. As more epidemiological data emerge on cases globally, information is becoming available that suggest that airborne transmission is not occurring.”

However, when discussing the details further on in the document, the tenor of the claims seems to have been adjusted over time:

March 6: “Airborne spread has not been documented for COVID-19.”⁶⁶⁶

April 28: “Airborne spread has not been documented for COVID-19, but aerosols may be generated during aerosol generating medical procedures which could theoretically lead to transmission through this route.”⁶⁶⁷

July 16: “Airborne spread has not been a dominant or common mode of transmission. Aerosols may be generated during aerosol generating medical procedures (AGMPs), which may increase the risk of transmission.”⁶⁶⁸

While the tone has changed from a confident denial to a more conditional statement (allowing only for the exception of AGMPs), there has been no change in the guidelines to reflect this grudging admission. The evidence against airborne transmission is largely based on the argument that it is droplet transmission and therefore can’t be airborne (except under AGMP circumstances). Again, the categories seem to be mutually exclusive, not a continuum.

The evidence supporting droplet transmission

There are four main references provided to support the premise that SARS-CoV-2 is transmitted via the droplet pathway. These references are also included in both earlier versions of the PHO document. Interestingly, the evidence presented for droplet transmission is extremely weak and often contradicts the recommendations from the cited papers. For instance, a report by the European Centre for Disease Prevention and Control⁶⁶⁹ states:

“Although there is no evidence of airborne transmission so far, ECDC recommends a cautious approach for all patient contacts, with placement of patients in airborne isolation rooms with negative pressure and use of FFP2 or FFP3 respirators with appropriate fit testing.”⁶⁷⁰

What is so significantly different from the PHO approach is the way the ECDC document deals with uncertainty, namely, using the precautionary principle they suggest using N95-equivalent respirators (FFP2 or FFP3).

The Imai et al. document⁶⁷¹ (also from January 2020) is also cited as evidence for droplet transmission, however, the word “droplet” is not even found in the reference.

The Schneider et al.⁶⁷² reference is a text book on the control of infectious disease, which was published in 2016 – the chapter cited deals with SARS and MERS, which we have noted above as being in dispute with respect to the role of airborne transmission.

The Wilson et al. citation actually contains the following quote:

“The weight of combined evidence supports airborne precautions for the occupational health and safety of health care workers treating patients with COVID-19.”⁶⁷³

Thus, two of the four references cited contradict the point that they were cited for. One of the other two does not address the topic, and the last reference is purely an analogy to SARS and MERS, published prior to COVID. The evidence is not particularly convincing to support the contention that SARS-CoV-2 is transmitted by droplet and therefore airborne protections are not needed (except for AGMP).

Three bullets supporting this overall view are listed next, the first being: “The majority of COVID-19 cases have been linked to person-to-person transmission through close direct contact with someone with respiratory symptoms.”⁶⁷⁴ It is interesting to note that “close direct contact” seems by definition to exclude airborne transmission, although no rationale is given for this underlying assumption (other than exclusive categories, but as mentioned above; but, what if a continuum is the more appropriate model of transmission?). A paper by Chen et al. cited later in this PHO document deals specifically with this issue:

“Close contact in itself is not a transmission route, but a facilitating event for droplet transmission. Note that the use of ‘droplets’ in the remaining text refers to all sizes, down to and including all fine droplets, such as the sub-micron ones. Two major sub-routes are possible in close contact transmission. The large droplet sub-route refers to the deposition of large droplets on the lip/eye/nosril mucosa of another person at close proximity, resulting in his or her self-inoculation. Dry surroundings enable the exhaled droplets to evaporate, and some rapidly shrink to droplet nuclei. The fine droplets and droplet nuclei can also be directly inhaled,

which is the short-range airborne sub-route. ... The work presented here poses a challenge to the traditional belief that large droplet infection is dominant.”⁶⁷⁵

Again, the PHO document provides evidence which contradicts the point the paper is referenced for. The other two bullets in this section deal with contact-tracing studies establishing the phenomenon of pre-symptomatic and asymptomatic transmission of SARS-CoV-2. Similar to the other close contact-tracing studies, it is hard to see how this constitutes evidence for droplet transmission and disproves airborne transmission without the assumption of the equivalence of “close contact” with “droplet transmission” (i.e. a circular argument).

When every piece of evidence can be interpreted as supporting one’s claim

Karl Popper⁶⁷⁶ (a philosopher of science) noted that if every and any piece of evidence can be interpreted as supporting a particular hypothesis (even those which on their face seem to contradict the hypothesis), then we are no longer dealing with a testable (falsifiable) scientific statement, but rather with dogma and opinion. It is clear from the progression of the three versions of the PHO document that we are dealing with a “moving target.” For instance, the lack of infections among HCWs using droplet precaution was stated as proof that droplet precautions were adequate and airborne precautions were not needed. However, once the number of infected HCWs (using droplet precautions) could no longer be ignored, this criterion was dropped. Rather than try to explain why over 6,500 HCWs in Ontario were infected using the precautions prescribed, this very significant failure is being ignored.

Continually raising the bar

Another example of the “moving target” standard of evidence is the initial claim that air sampling efforts were not able to measure virus in the air around patients with COVID-19. This is a classic example of the fallacious argument, namely, that “the absence of evidence is the evidence of absence.” Two of the studies^{677 678} cited as being unable to detect any airborne virus, specifically stated in the body of the text that they presumed that they had not collected a sufficient amount of air in order to detect airborne viral RNA – which is not mentioned in the PHO discussion of these studies.

Later, when studies were published that were able to demonstrate the presence of viral RNA in the air,^{679 680 681} the PHO pointed out that those studies combined with the negatives studies are obviously inconsistent, which in itself was taken as evidence against airborne transmission. The argument then became “the inconsistent evidence is the evidence of absence,” which is a verification fallacy. If one presents the premise “all swans are white,” it does not matter how many observations of white swans you collect, the observation of a single black swan is sufficient to refute the premise.

Once further studies were published,^{682 683} and researchers were able to show the presence of viral RNA in air samples, the PHO counter argument became that the viral RNA collected was not infectious (the collected samples with viral RNA were unable to cause infections in test cells). Recently this has also been refuted, with two reports of researchers being able to culture viral infections from the material collected in air samples. In response, an Ontario IPC expert has now publicly suggested the amount of viable virus detected in the air is insufficient to cause an infection.⁶⁸⁴ As each piece of new evidence refuting the PHO position emerges, the bar for sufficient evidence keeps rising.

The “need” for an RCT

In fact, some PHO staff have suggested the only sufficient evidence would be a large randomized control trial (RCT). However, as has been pointed out, performing such a study adequately would be nearly impossible given the number of variables contributing to all the paths of transmission.

You can randomize over individuals wearing masks or respirators (although ethically this is problematic given the knowledge we now have); however, to expect randomization to take care of the differences in contact and droplet transmission paths, differences in IPC practices in institutions, differences in ventilation rates and exposure to COVID patients, and other factors shown to affect infection susceptibilities? It will be very difficult to conduct an RCT that will not be subject to significant scientific objections.

Even if such a study were possible and it showed there was no benefit to wearing a respirator over a mask, one could ask the question what actions such a finding would imply. Would it justify the use of the inferior protection, or would it imply the need to do better, i.e. redesign the respirator, or re-educate users, or improve user support programs so that HCWs can realize the additional protection the respirators are capable of providing? A failure in practice does not mean a failure of the device if it has been shown to provide the protection required in laboratory conditions. It may mean a failure in implementation of the protective equipment, poor ergonomic design, a failure in user support/training/education, a failure in the match of the product to the demands and conditions of use, a lack of addressing the full spectrum of the hierarchy of controls, etc.

The evidence from contact tracing and transportation investigations

Four contact-tracing studies are cited by the PHO as evidence that the virus does not transmit along an airborne path since most transmissions occurred mostly within households. The interpretation of these studies falls prey to the fallacy of “affirming the consequent.” Namely, household contacts assume close contact transmission which, in turn, is assumed to exclude airborne transmission and thus by default supports droplet transmission – a circular argument.

Interestingly, two of the four contact-tracing studies cited only investigated household contacts so clearly there could not be any non-household contacts in half of the studies referenced. Furthermore, these studies were done in China and Taiwan during the time of a severe lockdown period – thus, it was very difficult to have any non-household contacts.

If one had performed a time study of the total time spent with all contacts (inside and outside the household), the percentage of time spent among household contacts was likely similar to the percentage of transmissions: the 78-85 per cent household transmission frequency corresponds quite reasonably to the percentage of time spent with household contact as opposed to non-household contacts during a lockdown period. Thus, if there was an even likelihood of transmission among all contacts whether at home or not, the percentage of time spent with these contacts would be directly proportional to the frequency of transmission. If, due to the lockdown (very strictly enforced in China), one spent 80 per cent of their time with household contacts, then it should not be a great surprise if 80 per cent of transmission are among household contacts.

In another study not cited in the PHO document, Liu et al.,⁶⁸⁵ looking at 11,580 contacts of 1,361 cases between January 10 and March 15, calculated secondary attack rates: by spouse – 23.3 per cent;

non-spouse family members – 10.6 per cent; close relatives – 7.0 per cent; other relatives – 4.1 per cent; social activity contacts – 1.3 per cent. One sees in the progression, that the results parallel the proportion of one’s contact time that one would expect was spent with such contacts.

Cultural factors also play a role, and all the contact-tracing papers cited by the PHO were from China and Taiwan – while an Italian contact-tracing study⁶⁸⁶ calculated the following secondary attack rates: cohabitant – 14.1 per cent; non-cohabitant (friend/family) – 12.9 per cent; work colleague – 15.8 per cent; other – 9.0 per cent. Again, this perhaps can be explained by a cultural difference in the time spent with different contacts and the effectiveness of the implementation of social lockdown policies between countries. While these are all fascinating findings and may have valuable implications for prevention, it is difficult to see how the attack rates in different cultures with different contacts prove any of the routes of transmission, let alone disproves airborne transmission.

Transmission during transportation

Liu et al.⁶⁸⁷ also looked at contacts from different modes of transportation: flight – 0.8 per cent; train – 1.2 per cent; other public transportation (bus, cab, subway) – 2.1 per cent; private car – 4.2 per cent; “Dream Cruises” – 9.5 per cent. The early PHO document versions focused a lot of attention on a letter to the editor of a scientific journal, that they themselves authored, about the absence of transmission in an aircraft with a single infected passenger. Again, we have the absence of evidence fallacy being used to prove the case against airborne transmission. The current version of the PHO document cites two additional studies as corroborating evidence, however, one of the studies concludes:

“... we believe that the most plausible index case resulting transmission of SARS-CoV-2 in the other nine passengers was patient 1, the 45-year-old man from Wuhan, who had onset of fever during this flight.”⁶⁸⁸

As per Liu et al. above, air transport seems to be the mode of transportation with the least risk compared to riding trains, taking buses/subways/cabs, sharing a private car with someone with an infection or, worst of all, cruise ships, which rival an attack rate of non-spouse family members.⁶⁸⁹ The study traced a large number of passengers and crew after requirements to wear face masks was implemented:

“We screened 4492 passengers and crew with suspected COVID-19 infection, verified 161 confirmed cases (mean age 28.6 years), and traced two confirmed cases who may have been infected in the aircraft. The overall attack rate was 0.14‰ (95% CI 0-0.34‰). ... We found that the universal use of face masks on the flight, together with the plane's ventilation system, likely prevented all secondary cases of COVID-19.”⁶⁹⁰

If the transmission of SARS-CoV-2 is not by airborne pathway, then why are masks and ventilation so effective in preventing infection?

The Restaurant in Guangzhou outbreak

The PHO document mentions the Lu et al. (April 2, 2020) study *COVID-19 Outbreak Associated with Air Conditioning in Restaurant, Guangzhou, China, 2020*⁶⁹¹ and marvels at how such a study could be interpreted as supporting airborne transmission when the authors conclude: “We conclude that in this outbreak, droplet transmission was prompted by air-conditioned ventilation. The key factor for infection

was the direction of the airflow.”⁶⁹² However, the authors also pointed out: “Our study has limitations. We did not conduct an experimental study simulating the airborne transmission route.” – which the PHO reiterated in their critique of the paper: “A weakness of this report is that the authors did not conduct any aerodynamic testing to support their hypothesis. In addition, the authors focused on potential droplet transmission at the restaurant and did not explore other possibilities, such as indirect transmission of fomites.”⁶⁹³ What the PHO ignored was a follow-up study by Li et al., which addressed these limitations and, in doing so, came to a different conclusion:

“We collected epidemiological data, obtained a video record and a patron seating-arrangement from the restaurant, and measured the dispersion of a warm tracer gas as a surrogate for exhaled droplets from the suspected index patient. Computer simulations were performed to simulate the spread of fine exhaled droplets. We compared the in-room location of subsequently infected cases and spread of the simulated virus-laden aerosol tracer. The ventilation rate was measured using the tracer decay method. ... In summary, our epidemiologic analysis, onsite experimental tracer measurements, and airflow simulations support the probability of an extended short-range aerosol spread of the SARS-CoV-2 having occurred in the poorly ventilated and crowded Restaurant X on January 24, 2020. ... Specifically, although close contact and fomite exposure may play a major role in the transmission of SARS-CoV-2, extended short-range aerosol transmission of the virus is possible in crowded and poorly ventilated enclosures. Our study suggests that it is crucial to prevent overcrowding and provide good ventilation in buildings and transport cabins for preventing the spread of SARS-CoV-2 and the development of COVID-19.”⁶⁹⁴

Another set of outbreaks not mentioned in the PHO documents are related to choirs. A number of case studies have suggested airborne transmission during choir practices combined with the presence of a “superspreader.” As noted above by McDonald et al. in the context of SARS1: “...the cluster of SARS cases in Toronto healthcare workers after the intubation of a patient (10), as well as other reported superspreader events, suggest the possibility of limited airborne transmission under certain circumstances.”⁶⁹⁵

Commentaries

The PHO document cites two commentaries, one signed by 239 experts, which stated:

“The evidence is admittedly incomplete for all the steps in COVID-19 microdroplet transmission, but it is similarly incomplete for the large droplet and fomite modes of transmission. The airborne transmission mechanism operates in parallel with the large droplet and fomite routes, e.g. [16] that are now the basis of guidance. Following the precautionary principle, we must address every potentially important pathway to slow the spread of COVID-19.”⁶⁹⁶

The second commentary is seemingly cited to provide a counter argument to the 239 experts’ opinion:

“The balance of evidence, however, seems inconsistent with aerosol-based transmission of SARS-CoV-2 particularly in well-ventilated spaces. ... It is impossible to conclude that aerosol-based transmission never occurs and it is perfectly understandable that many prefer to err on the side of caution, particularly in health care settings when caring for patients with suspected or confirmed COVID-19. However, the balance of currently available evidence suggests that

long-range aerosol-based transmission is not the dominant mode of SARS-CoV-2 transmission.”⁶⁹⁷

It is telling to see the similarities and differences in the two arguments. They both agree that the evidence is not sufficient to conclude airborne transmission. The 239 experts stress that the state of evidence for droplet and fomite transmission is also incomplete, a point which the opposing commentary ignores.

Both arguments mention the precautionary principle, however, the 239 experts recommend following it, while the opposing commentary view the option as an “understandable” preference, but then imply that such a preference is not justifiable on a scientific basis. However, they couch the argument against in such language that they create a strawman argument by specifying “long-range aerosol-based transmission.” As per Chen et al. (cited in the PHO document and quoted above): “Short-range airborne transmission is dominant beyond 0.2 m for talking and 0.5 m for coughing.”⁶⁹⁸ – implying that droplet transmission extends 0.5 m or less away from the source and beyond that “short-range” airborne transmission predominates. The fact that Klompas et al. qualify their conclusion as applying particularly to “well-ventilated spaces”⁶⁹⁹ again implies the possibility of short-range airborne in poorly ventilated spaces.

In a recent Harvard Medical Grand Rounds, Dr. Klompas stated the following:

“...what’s been remarkable is how much has changed and how much has been assumed ... and has rapidly been overturned and that what we all, I think, need to appreciate is what we think is true today might not be true tomorrow, and therefore, as we go about saying what we ought to do today, that should be in line with the recognition that it might be completely wrong. That, therefore we need to be expansive; we need to embrace the sort of, the precaution principle as we set about creating our next steps. I think that’s the lesson to then apply to the inevitable next pandemic that we face again – is to go in there not with certainty but with humility.”⁷⁰⁰

The bottom line: preventing any HCW infections

Finally, when the IPC people do address the infection rate of HCWs, it is often done in comparison to community rates, implying that the infections came from the community and the HCWs brought them into the workplace.

With respect to LTC outbreaks, Fisman et al.⁷⁰¹ suggests that “The greater mobility and connectedness of staff, compared with residents, lends biological plausibility to this association,” meaning because staff are out in the community and residents are stationary within the home.

However, what they fail to consider is that residents have family and friends who were still visiting in the early days of the pandemic. Also, the demographic of the family members visiting elderly parents would suggest the retirement age Baby Boomer generation – a demographic with a lot of travel experience. Fisman et al. seem to have completely missed this aspect of the possible transmission. In the early days of the pandemic, travel outside the country was the major risk factor for infection. HCWs with minimum wage and part-time work were not as likely to travel as the children of elderly parents in LTC.

Similarly, one particular hospital in Toronto was quite proud of the performance of their infection control program and boasted that 2.8 per cent of frontline COVID staff had been infected while four per

cent of other frontline staff and 4.3 per cent of non-clinical staff were infected. Assuming an overall average of four per cent of staff infected and assuming 10,000 total staff members, this would mean about 400 workers were infected!

The suggestion was that non-clinical staff rates of infection were comparable to the general population, however, at that time (May 22) in Toronto the rate of infection was 0.28 per cent – more than 10 times lower.

However, one must take into consideration the fact that all HCWs in Ontario were being tested at the time, while not everyone in the general population was being tested, so one would expect a higher rate among the more fully tested population. However, given that the sero-prevalence in Toronto as measured in June was 1.5 per cent (95 per cent CI 0.9-2.1 per cent), this would mean that working at this particular hospital implied a two to three times higher risk of infection than in the general Toronto population. If we compare this to the 46,200 Chinese COVID HCW cohort, who did not record a single infection, we can contrast the difference in performance between the IPC programs.

It is possible to prevent SARS-CoV-2 infections, but we haven't been able to do that in Ontario.

Worldwide, as was reported by the WHO on Sept. 17, 2020, 4.16 million HCWs had been infected so far:

"While health workers represent less than 3% of the population in the large majority of countries and less than 2% in almost all low- and middle-income countries, around 14% of COVID-19 cases reported to WHO are among health workers. ... Thousands of health workers infected with COVID-19 have lost their lives worldwide."⁷⁰²

It is somewhat conflicting to see the empathy expressed in the quote yet knowing that if the Chinese experience had been shared through WHO guidelines, this number would have been much smaller, yet the WHO seems to be very resistant to improving protection for HCWs – stating it requires more studies to determine the paths of transmission and more time to review the results.

In contrast, on January 20 the Chinese government, when they finally were willing to accept human-to-human transmission (based on the number of HCWs being infected), immediately increased protections and were ultimately able to prevent HCW infections. The nature of this heightened response was not described in the Joint WHO-China report.

On August 10, 2020, the PHO reported 6,537 confirmed HCW cases (16.4 per cent of all confirmed cases),⁷⁰³ which is higher than the 14 per cent the WHO reports worldwide and much higher than the four per cent reported among Chinese HCW (most occurring at the beginning of the pandemic prior to the increased preventive measures). It is obvious, that HCW infections can be prevented – we may not understand all the details of the paths of transmission, but the Chinese have shown that such detailed scientific information is not required to prevent infections.

Using the precautionary principle one can protect oneself from incompletely understood hazards. Tobacco companies also objected to being held responsible for deaths and disease caused by their products by claiming there was not sufficient scientific evidence to make the connection.⁷⁰⁴ There is no need to wait for “the perfect RCT” in order to justify providing more protection for HCWs today.

John Oudyk, August 11, 2020 (minor updates September 22, 2020)

Conclusion

COVID-19 did not have to be this bad. This is worth repeating. COVID-19 did not have to be this bad.

COVID-19 was a perfect storm.

On worker safety, it exposed the failure to learn from SARS and protect health workers at a precautionary level, and to stockpile the means of doing so.

In contrast, Canada's SARS peers, China, Hong Kong and Taiwan, protected their health workers at a precautionary level and ensured they had sufficient supplies.

The experiences of health workers battling COVID-19 echoed over and over those of their colleagues during SARS:

“Again and again, health workers in Ontario were told they were safe if they would only do what they were directed to by the hospitals and the government. Again and again, these confident scientific assurances turned out to be tragically wrong.”⁷⁰⁵

COVID-19 exposed systemic failures in the long-term care sector decades in the making, that are a national shame. The deep-seated problems were raised over and over in inquiries and by unions, residents and their families. Recommendations were made and ignored. Problems were swept under the rug year after year, decade after decade.

Under-resourced, overworked and underappreciated health workers were the glue that held together this dysfunctional health sector with their courage and dedication. But even their courage and dedication could not hold back the tsunami of COVID-19. The result is that far too many health workers and far too many residents of the long-term care sector have been infected and died.

COVID-19 exposed the systemic failure to take a precautionary approach on pandemic containment. Canada too closely followed the WHO and failed to benefit from an earlier adoption of such, now widely accepted, containment measures as public masking and border closings.

The dismissal of such measures by government and public health leaders – Dr. Theresa Tam highlighting “the potential negative aspects of wearing masks”⁷⁰⁶ and Prime Minister Trudeau's referring to border closures as “a lot of knee-jerk reaction that isn't keeping people safe”⁷⁰⁷ – looks with the benefit of hindsight more unfortunate by the day.

Could we have done better?

We will never know how much better our response would have been with adequate preparation and the application of the precautionary principle to health worker safety and pandemic containment.

While imperfect and hypothetical, the more successful experiences of other jurisdictions provide a rough barometer of how much better Canada could have performed.

More than 20,000 health care workers in Canada have been infected with COVID-19 (as of June 28, 2020).⁷⁰⁸ Nationally, they comprise about 20 per cent of all COVID-19 infections in Canada,⁷⁰⁹ a rate that is double the global health care worker infection rate (10 per cent) reported by the WHO.⁷¹⁰

This suggests that if Canada had been able to protect its health workers at global average rates, as many as 10,000 health workers might have been spared COVID-19 infections.

Chinese health care workers comprise 4.4 per cent of its COVID-19 cases. If Canada had been able to match that accomplishment, the number of infected Canadian health workers might have been as low as 5,080.

On pandemic containment, we must not forget that:

- Canada has more COVID-19 cases (115,470) than China (83,830), Hong Kong (2,505) and Taiwan (458) combined; and
- Canada has more COVID-19-related deaths (8,929) than China (4,634), Hong Kong (18) and Taiwan (7) combined.

Canada's performance also looks wanting when measured by per capita deaths.

Hong Kong has recorded 1.05 COVID-19 deaths per 100,000 people. Taiwan had 0.03 deaths per 100,000. Singapore had 0.46 deaths per 100,000. South Korea had 0.61 deaths per 100,000. China had 0.32 deaths per 100,000, although this achievement must be tempered by its totalitarian excesses in implementing lockdowns. Germany had 11.08 deaths per 100,000. And Canada? It recorded 24.22 deaths per 100,000.⁷¹¹

With better preparation, with the lessons of SARS heeded, with the precautionary principle observed, the toll on Canadians and Canadian health care workers might have been less tragic.

Justice Campbell concluded his seminal work with an important warning:

“If we do not learn from SARS and we do not make the government fix the problems that remain, we will pay a terrible price in the next pandemic.”⁷¹²

He added:

“If we do not learn this and other lessons of SARS, and if we do not make present governments fix the problems that remain, we will leave a bitter legacy for those who died, those who fell ill and those who suffered so much. And we will pay a terrible price in the face of future outbreaks of virulent disease, whether in the form of foreseen outbreaks like flu pandemics or unforeseen ones, as SARS was.”⁷¹³

Sadly, Canada has paid the terrible price that Justice Campbell warned us to avoid.

May his warnings and recommendations finally be heeded. May this be the final legacy of COVID-19.

Recommendations

Precautionary principle

- That the precautionary principle, which states that action to reduce risk need not await scientific certainty, be expressly adopted as a guiding principle throughout Canada's public health, employer infection policies, measures, procedures and worker safety systems by way of immediate action in: policy statements; all relevant operational standards and directions; and by inclusion, through preamble, statement of principle, or otherwise, in all relevant legislation.
- That in any infectious disease public health emergency, the precautionary principle guide the development, implementation and monitoring of measures, procedures, guidelines, processes and systems for the early and ongoing detection and treatment of possible cases.
- That in any infectious disease public health emergency crisis, the precautionary principle guide the development, implementation and monitoring of worker safety measures, procedures, guidelines, processes and systems.
- That federal and provincial/territorial governments collaboratively act on an urgent basis to ensure that there are sufficient supplies of N95 respirators, or better, or equivalent, to ensure that all health care workers can be protected at a precautionary level. This must include maintaining and regularly refreshing strategic stockpiles and developing a made-in-Canada supply chain.
- The precautionary principle should be the primary driver in setting and properly maintaining levels of personal protective equipment in national and provincial stockpiles. Stockpiles should be set and maintained at levels that ensure that all health care workers are protected at an airborne level. Building on its contracts with 3M and Medicom to produce N95 in Canada, the federal government should ensure that Canada has sufficient domestic production capability to protect health care workers at a precautionary level.
- When a new pathogen emerges – and experts believe COVID-19 is not the last time we will face this threat – health care workers should be protected at a level consistent with the precautionary principle. This precautionary requirement should be enshrined in all occupational health and safety legislation.
- Chief medical officers of health (CMOHs) should be statutorily required to consider and apply the precautionary principle in assessing their jurisdiction's public health emergency preparedness, thus ensuring that their health care workers are protected at a precautionary level.
- Decisions to forego the precautionary principle should not be taken arbitrarily, with a lack of transparency, or without the concurrence of health care worker unions and workplace safety experts. Decisions to forego the precautionary principle should be reviewed by relevant legislative committees and auditor generals.
- That the health and safety concerns of health care workers be taken seriously, and that in the spirit of the precautionary principle, health care workers should also feel safe.
- Canada should critically assess WHO guidance on worker safety and pandemic containment through the lens of the precautionary principle, and determine whether it is in Canada's best interests, and reflects the best evidence from other countries' natural experiments and emerging scientific evidence.

Occupational health and safety

- Canada should immediately add occupational hygienists, worker safety experts and aerosol experts to PHAC and jointly develop guidance that exercises the precautionary principle and accepts and considers diverse sources of evidence, not just randomized control trials.
- On worker safety and pandemic containment measures, Canada should have the resources and capabilities, including sufficient worker safety and aerosol expertise, to independently assess guidance from the WHO and to formulate our own.
- A formal national health care table should be established involving health care unions, employers and the PHAC, with a legal requirement for the PHAC to consult that committee in a transparent and meaningful manner before finalizing guidance on infectious disease response.
- Guidance on the safety of health care workers be made on a precautionary basis by workplace regulators, health care worker unions and worker safety experts working collaboratively, and that those decisions form the basis of health worker safety guidance issued by public health agencies.
- Ensure that provincial labour ministries have the resources and ability to act independently from provincial health ministries and fully enforce occupational health and safety laws.
- That provincial ministries of labour use their enforcement and standard-setting activities, and ministries of health use their funding and oversight, to promote organizational factors that give rise to a safety culture in health workplaces.
- That in any future infectious disease crisis, ministries of labour have clearly defined decision-making role on worker safety issues, and that this role be clearly communicated to all workplace parties.
- That provincial ministries of labour have the capabilities and resources to safely, effectively and comprehensively conduct in-person, on-site inspections during public health emergencies.
- Establish a worker safety research agency as an integral part of the Public Health Agency of Canada, with legislated authority for decision-making on matters pertaining to worker safety, including the preparation of guidelines, directives, policies and strategies. It would be modeled on NIOSH, an essential part of the U.S. CDC, and would be focused on worker safety and health research, and on empowering employers and workers to create safe and healthy workplaces. Like NIOSH, its staff would represent all fields relevant to worker safety, including epidemiology, nursing, medicine, occupational hygiene, safety, psychology, chemistry, statistics, economics, and various branches of engineering.
- In the interim and on an urgent basis, any section of the PHAC involved in worker safety have, as integral members, experts in occupational medicine and occupational hygiene, and representatives of workplace regulators, and consult on an ongoing basis with workplace parties.

Accountability, transparency and independence

- It is important that Canadian ministers and senior public health officials continue to participate in relevant WHO decision-making bodies. However, to preserve Canada's independence, Canadian participants in policy and Canadian guidance-making bodies should not wear two hats. They should either participate in policy and guidance making at the WHO or at Canadian public health agencies, but not at both.
- Federal and provincial chief medical officers of health (CMOHs) be statutorily required, on an annual basis, to report to their respective legislatures, and to the public that they're mandated to protect, on the state of their jurisdiction's public health emergency preparedness, and make recommendations on addressing any shortcomings. The preparation of this report should reflect the concerns and perspectives of health worker unions and safety experts.

- The reports of the CMOHs be required to go to a standing committee of their respective legislatures, which will hold annual hearings into the report and related issues.
- Chief medical officers of health be given the statutory independence – in jurisdictions where they do not have this right – to speak publicly on vital issues like pandemic preparedness without fear of political interference or retribution.
- Qualified outside auditors with sufficient expertise and resources independently audit, on a biannual basis, CMOHs' preparedness resources and their statutory declarations on pandemic preparedness, and publicly report their findings.
- That all jurisdictions be required to publicly report to their stakeholders and to the federal government – in a consistent, detailed and timely manner – the number of health care worker infections in their area.
- Governments and public health agencies be open and transparent on levels of PPE stockpiles.
- With regards to efficiently and cost-effectively maintaining stockpiles of PPE, governments may want to consider Taiwan's three-tier stockpiling framework. It has proven its ability during COVID-19 to optimize the PPE stockpiling efficiency, including through regular cycles of refreshing, ensure a minimum stockpile, use the government's limited funds more effectively, and achieve the goal of sustainable management.
- That significant good faith effort be made to iron out federal-provincial jurisdictional conflicts hindering timely data sharing on health care worker infections.
- That Statistics Canada be given the authority and resources to implement and operate a transparent national system on health care worker data. The resulting data sets must have consistent terminology and criteria. They must have significant granularity to allow monitoring and trend analysis by occupation and sector at a detail level (e.g., PSW, nurse, physician; or LTC, nursing homes, hospitals, pandemic wards within hospitals, direct patient care and other key roles such as triaging). The data has to be shared in real time, not delayed by weeks or even months. And the performance of the system must be monitored and tested regularly.

Long-term care

- Fixing a historical anomaly, the *Canada Health Act* should be amended to include long-term care, making it available to Canadians on a universal basis. Government programs aimed at assisting Canadians with long-term care needs vary by jurisdiction and typically are income-based. This is not consistent with the principle of universality at the heart of Canada's publicly funded health care.
- Convene a national commission to develop short-, medium- and long-term strategies for the structure of the long-term care sector in light of the shortcomings revealed by COVID-19.
- Develop and implement a long-term care labour force strategy to address the multiple labour force problems revealed by COVID-19, including the problems of inadequate compensation, staff shortages, overreliance on part-time staffing, and training failures.
- Improve wages, benefits (including paid sick leave) and conditions of employment for health care workers in the long-term care sector to levels that commensurate with the social importance of their work, the complexity of their duties and the daily hazards they face, even in non-pandemic times.
- Offer all part-time workers in this long-term care sector full-time employment (with full-time wages and benefits) and limit their work to one single facility.
- Examine best practices of jurisdictions like South Korea, Hong Kong and Singapore, which have a strong track record of limiting COVID-19 in their long-term sectors. In South Korea, for example, anyone with suspected COVID-19 is immediately isolated and moved out to a separate emergency

quarantine centre or hospital. In Hong Kong, all long-term care facilities have, as a minimum, a three-month supply of N95 respirators and other PPE. Also in Hong Kong, all long-term care facilities conduct emergency exercises every year to coincide with the advent of flu season to ensure infection control measures and resources are in an acceptable operational state.

- Because systemic infrastructure shortcomings limit the ability of many long-term care facilities to isolate COVID-19 cases, it is vital that on an urgent basis separate emergency isolation facilities be created, resourced and staffed. This would permit COVID-19 cases to be transferred out of long-term care facilities that are unable to isolate them.
- Ensure that any surge in COVID-19 hospitalizations does not result in shifting patients to already overburdened, under-resourced and understaffed long-term care facilities, which may be unable to isolate new admissions.
- Reflecting a best practice developed in the U.S., consider establishing, where space and resources permit, a cohort unit for exposed and new admissions as an effective way to separate and screen higher-risk individuals for the 14-day incubation period. Keeping these patients on isolation and with dedicated staff would make contact tracing for exposure identification easier.
- Ensure that all long-term care facilities are staffed by a dedicated infection control professional with occupational health and safety training. Require that professional to provide quarterly publicly accessible assessments of the state of infection control and occupational health and safety at their facility.
- Ensure that relevant workplace regulators conduct in-person proactive inspections of all long-term facilities to ensure compliance with occupational health and safety laws, regulations and best practices.
- On an urgent basis, ensure that all health care workers in the long-term care sector are properly trained and fit-tested on the use of N95 respirators and other protective equipment.

All sectors (community, acute and long-term care)

- Respect and enforce the health and safety rights of workers.
- Ensure workers have the right to participate in decisions that could affect their health and safety.
- Ensure workers have the right to know about the hazards in their workplace and receive the training they need to be able to do their jobs safely.
- Ensure workers have the right to refuse work that could endanger their health and safety or that of others.
- That the right of health care workers to speak out about unsafe working conditions be protected from retaliation by their employers.
- Ensure adequate supplies of personal protective equipment (PPE), including N95 respirators or better (e.g., elastomeric respirators), and that workers and essential family visitors have access to appropriate PPE.
- Recognizing that while sufficiently protective, N95s have their drawbacks, including comfort, the federal and provincial governments should collaborate on standards and sufficient supplies of alternative respiratory protective equipment, like elastomeric respirators, that protects at the same level or better than N95s, and that, evidence suggests, may have comfort and cost advantages.
- Provide hands-on training on infection prevention and control, including training testing and drilling workers on donning, doffing, safe use and limitations of PPE – for all workers and essential family visitors working in and entering long-term care homes.

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