Presentation to:
Ontario's Long-Term Care COVID-19 Commission

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PRESENTED BY:

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Introduction

Background

- Senior Advisor to the SARS Commission 2003-2007
- Author of *A Time of Fear: How Canada Failed our Health Care Workers and mismanaged COVID-19*, endorsed by leading international worker safety experts including Dr. Donald Milton and Dr. Raymond Tellier
- Retained as an expert by ONA to author a report examining if the lessons of SARS were applied to the long-term care sector in the following areas:

1. Pandemic Preparedness and Leadership
2. Failure to follow the precautionary approach against a new pathogen
3. Failure to respect and learn from the clinical judgment of registered nurses, many of whom lived through SARS

Introduction

SARS showed that Ontario's public health system is broken and needs to be fixed. Despite the extraordinary efforts of many dedicated individuals and the strength of many local public health units, the overall system proved woefully inadequate. SARS showed Ontario's central public health system to be unprepared, fragmented, poorly led, uncoordinated, inadequately resourced, professionally impoverished, and generally incapable of discharging its mandate.

SARS Commission Report, First Interim Report, Volume 5, pg. 503

Introduction

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.

A Time of Fear, pg. 11

In Perspective: SARS Peers

Canada, China, Hong Kong and Taiwan recorded:

- A combined 94.8 per cent of all SARS cases and 94 per cent of its deaths
- A combined 91.7 per cent of all SARS cases involving health care workers
- Canada - largest outbreak outside Asia and one of the highest health worker infection rates in the world: 44 per cent
    - Seventeen years later, the evidence suggests that China, Hong Kong and Taiwan used that time productively to learn from SARS
    - Canada and Ontario did not

In Perspective: COVID-19 Peers

- As of July 7, 2020, there were 6,371 health-care workers infected with COVID-19 in Ontario. This comprised 16.7 per cent of the total cases in Ontario. As of December 5, 2020, the total number of health-care workers infections has increased to 10,476
- As of December 15, 2020, there is a total of 3,717 current staff infections in long-term care
- As of late July 2020, Chinese health-care workers comprised 3,387 (4.4 per cent) of total COVID-19 cases. Most were infected before airborne precautions were implemented in late January 2020
- As of late July 2020, in Hong Kong, five health-care workers were infected, and in Taiwan, just three health-care workers were infected

COVID-19 Performance:
Ontario v SARS Peers

On pandemic containment, as of December 13, 2020 Ontario had approximately 142,000 cases. This number is greater than the combined total of all cases among its SARS peers:

- China total of 86,725 cases
- Hong Kong total of 7,542 cases
- Taiwan total of 736 cases

- As of December 15, 2020, Ontario Public Health reports 9,462 residents in long-term care infected with COVID-19 and the total number of associated deaths at 2,513
- COVID-related deaths in Ontario long-term care comprise approximately 62.3 per cent of the total COVID-related deaths in Ontario

Pandemic Preparedness

Key differences:

- Asian peers prepared for a future SARS and treated COVID-19 like SARS
- Canada and Ontario treated COVID-19 like influenza and built their pandemic planning on this fatal assumption

Lesson from SARS to prepare for the unexpected not heeded in Ontario:

- *The most serious predictable public health emergency is pandemic influenza… As SARS demonstrated, the next big outbreak might be caused by something completely different, totally new and entirely unexpected. One major lesson from SARS is that we must prepare not only for potential looming threats like H5N1, but also for the unexpected. That does not take away from the urgency of pandemic flu planning*

  SARS Commission Report, Volume 2, pg. 22

Ontario Prepared for Flu, Not COVID-19

*"We have several very high quality randomized controlled trials, **using influenza as the marker**, that show that an N95 respirator is not superior to the protection you get from a procedure mask… We should use that information. That's good science."*

- Dr. Zoutman, Chief of Staff at Scarborough Health Network, formerly of the SARS Scientific Advisory Committee (Quoted on March 12, 2020.)

*"…**Canada based its pandemic planning on an influenza pandemic** and how a respiratory infectious disease typically behaves. But the novel coronavirus had unique characteristics – for example asymptomatic transmission, and airborne transmission by smaller, not just large, droplets – which were not immediately known."*

- Dr. Njoo, Canadian Deputy Chief Public Health Officer (Quoted on November 20, 2020.)

Ontario Prepared for Flu, Not COVID-19

The Ontario Health Plan for an Influenza Pandemic (Health Pandemic Plan) was introduced in 2004 (subsequent to SARS in 2003) and was also last updated in 2013…

Since the Health Pandemic Plan was developed to deal with an influenza (commonly called a flu) pandemic, some aspects of it, such as guidance on anti-viral medication and vaccinations, were not initially relevant to the COVID-19 virus… As with the Health Response Plan, we noted that some parts of the Health Pandemic Plan are outdated. For example, the plan:

- *does not mention the role and responsibilities of Ontario Health; and*
- *refers to the Ministry of Health and Long-Term Care, which in 2019 was separated into two ministries.*

We also noted that the Health Pandemic Plan did not have, or had only limited, coverage of a number of areas that were critical for the COVID-19 response, including guidance on:

- *increasing laboratory testing capacity, speed and reliability;*
- *contact-tracing capacity;*
- *range and efficacy of screening for the virus;*
- *how to balance and deal with competing priorities, such as preserving acute- and intensive-care capacity…*

-Office of the Auditor General of Ontario, COVID-19 Preparedness and Management, Special Report on Outbreak Planning and Decision Making, Chapter 2 (pp. 70-71)

Hong Kong Long-Term Care Prepared for COVID-19

Adelina Comas-Herrera, Assistant Professorial Research Fellow, London School of Economics and Political Science:

> *"Their [Hong Kong's] infection control policies were based not on influenza but on SARS, and perhaps that put them in a slightly better position to deal with this."*

Terry Lum Professor, Department of Social Work and Social Administration, Sau Po Center on Aging, The University of Hong Kong:

> *"While older people, particularly those who are frail and living in residential care homes, are particularly vulnerable to COVID-19 in many countries… as of May 17, Hong Kong recorded zero infections in residential care homes and adult day care centers. Since both SARS and COVID-19 are caused by the novel coronavirus, these lessons have been put into practice from the beginning of the COVID-19 epidemic."*

Hong Kong Long-Term Care Prepared for COVID-19 (continued)

The first and most important thing is to stop the transmission from hospital to nursing home*. The first thing is to stop the transmission or the outbreak within hospital. We have been doing quite well in that area. For example, three months, or close to four months into the epidemic, we do not have a single case of a frontline healthcare professional being infected in Hong Kong.*

That is an amazing statistic.

Secondly, we do a very good job on isolation. ***Once a person is infected, we isolate that person in hospital for treatment. At the same time, we isolate all the people who have been in close contact with them in a separate quarantine centre for 14 days for observation.*** *They are regularly tested during those 14 days to make sure they do not have the virus.*

We have very extensive isolation both for people who are infected and for close contacts. We even use a computer to trace the close contacts of infected people, particularly for cluster outbreaks.

- Peter Lum, Professor at the University of Hong Kong

Ontario's Lack of Urgency in Long-Term Care Response

Date	Ontario Actions
March 17, 2020	Ministry of Health released a Discretionary Policy recommending that only essential visitors should be permitted to enter the building.
March 22, 2020	Directive 3 Version 1 states that homes should **"wherever possible"** restrict HCW to one facility
March 24, 2020	Ministry of Long-Term Care issued a memo to long-term care homes asking that they address severe capacity pressure faced by hospitals by implementing more "nimble" placement requirements
March 30, 2020	Directive #3 was revised stating homes are required to be closed to visitors except for essential visitors
April 8, 2020	Universal masking in long-term care implemented
April 15, 2020	Hospitals required to stop transferring residents to long-term care homes
April 22, 2020	Order restricting long-term care employees to work in one nursing home comes into effect (does not apply to redeployed hospital staff, agency staff and volunteers); prior was only a recommendation

SARS Commission: The Importance of Preparedness

Justice Campbell stated:

> *"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."*

> *"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."*

Ontario established a stockpile of 55 million N95s in the wake of SARS.

The Auditor General report in 2017 revealed that 80 per cent of those supplies expired and were being destroyed. The Report continues to explain:

> *"…. 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****."*

SARS Lesson: CMOH as Independent Public Guardian

- Justice Campbell recommended that the Chief Medical Officer of Health (CMOH) be an independent sentinel to warn legislature and the public if government neglect risked another disaster like SARS – or worse.
- This required statutory independence for the CMOH to safeguard them from political interference.
- On Justice Campbell's recommendation, the *Health Protection and Promotion Act* was amended to give the CMOH the right and independence to warn the public about health risks.

SARS Lesson: CMOH Best Positioned to Warn About Health Risk

Recommendations from SARS

- *The CMOH should have operational independence from government in respect of public health decisions during an infectious disease outbreak.*
- *The CMOH, while accountable to the Minister of Health, requires the independent duty and authority to communicate directly with the public and the Legislative Assembly whenever he or she deems necessary.*
- *Public health requires strong links with nurses, doctors and other health care workers and their unions and professional organizations.*

  - SARS Commission Report, Volume 4, First Interim Report pp. 3-4

Ontario CMOH: Failure to Warn the Public

Following the Auditor General's 2017 findings which disclosed Ontario's ability to protect health-care workers and the public against COVID-19 was severely compromised, there is no indication that the CMOH warned the public and the Ontario legislature about this significant public health risk:

- In 2018, the CMOH issued an annual report addressing health inequalities. He did not use the opportunity of his annual report to address the issue of pandemic preparedness.
- In 2019, the CMOH issued an annual report titled "Connected Communities Healthier Together." Again, he did not use the opportunity to address issues of pandemic preparedness.
- The CMOH did not avail himself of the power to issue an ad hoc report, as provided under the *HPPA*, to warn about Ontario's lack of pandemic preparedness.

Dr. Williams stated the following on January 24, 2020:

> *"Ontario is better prepared because of the SARS experience. Through SARS and through all the work later, we have set in place standard policies and procedures … **We're light years ahead of where we were in 2003**."*

Lack of Urgency: PPE Shortage

The Government failed to act urgently to address the shortage of personal protective equipment (PPE). The shortages appeared to have caught the government off guard and unprepared.

Dr. Williams shared with the public they had found out about the dire situation with PPE, and had not anticipated the global demand in March 2020:

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

Provincial Pandemic Preparedness on PPE

Dates	Alberta	Ontario
2007		Establishes strategic stockpile
2009	Procurement Process for PPE established. Maintains three-month supply.	
2017		Destroys 80% of its N95 stockpile
December 2019	Alberta made two purchases of PPE: • procurement team doubled their regular order for five-days' supply of PPE, including N95s, gloves and gowns. • concerned about news from Wuhan, Alberta bought 500,000 additional N95 respirators.	No public record of any government action
January 2020		Wholesalers selling out of N95s
March 2020		Dr. Williams reveals: "…things changed drastically…the challenge that we found out as we got more into it more and more is that the suppliers were dealing with an ever-increasing demand so you're not just ordering on your volition, you're dealing with a very highly competitive global situation."

The Precautionary Principle

- When facing a new pathogen, it calls for safety: protect health-care workers at the highest level using airborne precautions, until we better understand the new virus; scale the protection down if safe to do so.
- The precautionary principle also extends to other pandemic containment measures, like a-symptomatic transmission, public and universal masking in the LTC sector, and being open to the possibility a new pathogen acts in new unexpected ways.

The Precautionary Principle and the Issue of Airborne Transmission

- The best evidence of SARS' 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."

- Compared to the absence of evidence during the SARS outbreak itself, there has been since the beginning of the Pandemic 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.

COVID-19: Validation of the Precautionary Principle

- On July 6, 2020, a letter to the WHO signed by 239 scientists states:

  "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."*

- On July 9, 2020, the World Health Organization (WHO) acknowledged COVID-19 may linger in the air in crowded spaces, spreading from one person to the next.
- On October 5, 2020, the Center for Disease Control and Prevention ("CDC") recognized that COVID-19 can be spread by airborne transmission, through exposure to virus in small droplets and particles that can linger in the air for minutes to hours.
- On November 4, 2020, the Public Health Agency of Canada (PHAC) updated guidance on COVID-19 modes of transmission to include fine aerosols, as well as large respiratory droplets.

A Preventable Tragedy: Downgrading Precautions for Health-Care Workers

- January and February 2020: Provincial Guidance initially recommended both droplet/contact precautions and airborne precautions
- Some influential doctors on infectious disease were critical of this precautionary approach in leaked letters written to Dr. Williams and 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***."
- March 10, 2020: Ontario downgraded protections to droplet/contact for health-care workers providing routine care to COVID-19 residents.
- During SARS, after an initial spike in health-care worker infections, it moved to airborne precautions, although it ignored the criticality of legally mandated fit testing until after the outbreak.
- During COVID-19, Ontario did the opposite: high rates of health-care worker infections did not lead to similar action.

The Downgrade of Precautions: Supply Shortages and the Failure to Acknowledge Scientific Uncertainty

"In Ontario, recommendations regarding the necessary protection caring for patients when AGMPs were not being performed were changed on March 10, 2020. ***This change was in part associated with evolving evidence that N95 respirators were not needed, and in part because of the on-going shortage of N95 respirators in Ontario and around the world.*** *It is clear that the supply of N95 respirators is insufficient to provide them for all who 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 AGMPTs in the future weeks …*

*…**in my opinion, the continuing outbreaks in long-term care homes are unrelated in any way to which mask/respirator is used to protect healthcare providers**."*

- Dr. Allison McGeer, Affiant for the Attorney General of Ontario in *Ontario Nurses' Association v Eatonville/Henley Place*, 2020 ONSC 2467 (CanLII)

Precautionary Principle: Downgrading Precautions for Health-Care Workers

- Justice Morgan, in his decision, makes the following comments about the conflicting evidence:

  "It is interesting to see Dr. McGeer providing an explanation for the change in Ontario's public health recommendations on March 10, 2020 that was not made clear in the Public Health Ontario brief entitled – Updated IPAC Recommendations – published that day … What Dr. McGeer emphasizes, however, is not so much an analysis of the need for N95 protection with respect to any given patient or procedure, but rather the societal need to preserve a limited supply of these devises."

- Michael Hurley of CUPE, cited in "A Time of Fear":

  "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."*

Failure to Apply the Precautionary Principle in Nursing Homes

- Registered Nurses understood the importance of applying the precautionary principle:

“The virus is aerosolized. Precautionary principle was ignored because of the supply/availability of adequate PPE. Poor understanding of long-term care residents' behaviours.”

“Droplet precautions were insufficient with COVID-19 patients. The precautionary principle was disregarded completely. Employee and resident safety was disregarded and disgraceful.”

“I left my job as an RN in long-term care as a result of how my employer handled the COVID-19 outbreak. ***I felt like a lamb being led to slaughter. I have an infection control background and everything I was taught was thrown out the window.*** *I feel that public health downgraded the use of N95s to surgical masks solely for the purpose of covering their butts because they* ***learned nothing from the SARS outbreak and did not want to answer for the lack of preparedness.*** *If they said you only need a flimsy surgical mask and you became ill (or died) it would not be there fault, as the recommendations were followed. I no longer have trust in public health, my previous employer, and some elected officials. I had to leave my job for mental health reasons. I have been a nurse for over 30 years and no longer trust those in charge. I have worked long-term care for over 16 years, and I feel with all the complaints nothing will ever change in long-term care. The issue is so easy to deal with, but it comes down to dollars and cents…It's not rocket science.”*

Government Failure to Recognize Conditions for Applying the Precautionary Principle

"But the idea of further generation just through air transmission is another matter. That's something that is still very controversial. Not all of the experts agree on that. Most of the experts right now believe that it is generated through water droplets and aerosol-generating procedures; however, not everyone believes that. ***The science is still being developed in that area and we are still awaiting some of the results.*** *Not everyone has come forward, even with some of the Canadian evidence and some of the evidence from the Centers for Disease Control.*

We're continuing to follow it very closely because ***we are making decisions based on clinical evidence and based on science.****"*

- Christine Elliott, Minister of Health, Hansard transcript dated November 30, 2020

- **To date, Ontario has not updated PPE guidelines to reflect the PHAC's acknowledgment of aerosol transmission.**

Failure to Listen to RNs: A Long History

- In the SARS Commission Report, Justice Campbell quotes Justice Murray Sinclair's observations on the silencing of nurses in the Report of the Manitoba Paediatric Cardiac Surgery Inquest released in 2000 which looked at the deaths of 12 infants at a Winnipeg Hospital and concluded that five were preventable.

  "Historically, the role of nurses has been subordinate to that of doctors in our health-care system. While they are no long[er] explicitly told to see and be silent, it is clear that legitimate warnings and concerns raised by nurses were not always treated with the same respect or seriousness as those raised by doctors. There are many reasons for this, but the attempted silencing of members of the nursing profession, and the failure to accept the legitimacy of the concerns, meant that serious problems in the paediatric cardiac surgery programme were not recognized or addressed in a timely manner. As a result, patient care was compromised"

  - SARS Commission Report, Volume 5, Chapter 7: Whistleblower Protection, pg. 281

The Experience at North York General During SARS

- The second phase of SARS erupted below the surface while Ontario was celebrating what it believed to be the end of the outbreak.
- Nurses at North York General were warning that SARS had not gone away and was active in the hospital. No one listened until it was too late.
- The second wave of SARS caused 118 to be infected and 17 died.
  - 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.
- Justice Campbell wrote: ***"It turns out that the nurses were exactly right and the hospital's assurances were exactly wrong."***

Lessons Not Learned: Freedom to Speak without Fear

Justice Campbell cited the importance of nurses having the ability to speak out about public health risk without the fear of reprisal:

> *"The fear of retaliation exists and is very real in the minds of those who might have information highly relevant to the protection of the public against an outbreak of infectious disease. These fears have the potential to impede the reporting of information that is vital to the protection of other health care workers and the public, particularly in the case of an infectious disease, where timely reporting and action is critical."*

- SARS Commission Report, Volume 5, Chapter 7: Whistleblower Protection, pg. 278

Lessons Not Learned: Whistleblower Recommendations

To ensure that the Government hears vital public health risk information from health-care workers in a timely manner, Justice Campbell recommended adding the following whistleblower protections to the *Health Protection and Promotion Act*:

- *It applies to every health care worker in Ontario and to everyone in Ontario who employs or engages the services of a health care worker;*
- *It enables disclosure to a medical officer of health (including the Chief Medical Officer of Health);*
- *It includes disclosure to the medical officer of health (including the Chief Medical Officer of Health) of confidential personal health information;*
- *It applies to the risk of spread of an infectious disease and to failures to conform to the Health Protection and Promotion Act;*
- *It prohibits any form of reprisal, retaliation or adverse employment consequences direct or indirect;*
- *It requires only good faith on the part of the employee; and*
- *It not only punishes the violating employer but also provides a remedy for the employee*

- SARS Commission Report, Volume 5, Chapter 7: Whistleblower Protection, pg. 297

Failure to Listen to the Clinical Experience of RNs

- The following are a few examples of Registered Nurses' clinical judgment being ignored during COVID-19:

"There were COVID-positive residents dying. ***No one really knew if it was droplet or airborne.*** *I raised concerns, we are getting close to residents. I spoke with coworkers and said I think we need N95s...* ***When I spoke with the IPAC lead, she said she spoke to head office, and N95s were only allowed for AGMPs****.... The only time N95s were given is after the [word omitted] died and then the boxes were out no problem."*

"I felt like Homes didn't feel like it could happen to us, even once it started*... The first person who passed away from COVID seemed different, how fast the oxygen went down. The doctor didn't think it was COVID, but the results came back after swabbed positive. Even when residents went on isolation."*

Failure to Listen to the Clinical Experience of RNs

"They insisted they would follow guidelines – but guidelines were insufficient and there was not enough PPE available. They were giving us one surgical mask for four days at the beginning, and insisted we would not need N95 masks, because guidelines were for droplet precautions and we had no aerosolizing procedures. ***I insisted that if we were to have presumed or positive cases – that we would need better protection such as N95 and goggles – they insisted that surgical masks would be sufficient****. As supply got better they began changing their stories. It took way too long to change guidelines to allow a nurse to make her own judgement.* ***And still, I think we all know that airborne precautions are needed but that they will never supply the necessary precautions. It is all about budget and not about safety."***

Failure to Listen to the Clinical Experience of RNs

"Employer was not listening to registered staff. I remember people having symptoms, and I was saying this person should be ***isolated to prevent them from coming and going as they want.*** *But he was still allowed to go around and two weeks later he had a crazy high fever and tested positive, that is when they isolated.* ***We were also saying too many residents with too much proximity, they shouldn't be there****."*

Multi-disciplinary Approach

- Decision-making on precautions for health-care workers and residents should be based on the following principles:
  i. Multi-disciplinary broader community of experts, including infectious disease, registered nurses, and health and safety experts
  ii. Guided by clinical experience on the ground, including RNs
  iii. Not compromising safety of health-care workers and the public while waiting for scientific certainty
  iv. Guided by the precautionary principle to ensure reasonable action where science is uncertain or evolving

Humility in the Face of a New Pathogen

*A: **I think what SARS did is it humbled us and it also made us realize that even when we think we know everything, we don't**. And that disease can, the changing nature of disease emerges gradually and **we have to be very attuned to the clues that come from the ground up, not necessarily from the top to the bottom**, so I think humility makes the better nurse and doctor. I would always err on the side of caution.*

Q: And that applies to protective equipment?

A: Yes, until they're…it's very difficult. We were told there's absolutely nothing to worry about and then we did have something really to worry about, so I don't know when one can ever relax, but I would, as I said, I would err on the side of caution and the 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.

- Interview of an anonymous physician, SARS Commission Report, Volume 2

“Just got to be humble…”

- Dr. Anthony Fauci, Director of the U.S. National Institute of Allergy and Infectious Diseases, commenting on airborne transmission, states that:

  “We’ve really gotten it wrong over many years… the bottom line is there is much [more to] aerosols than we thought...We really got to realize that from day 1, you don’t know it all. And ***you’ve got to be flexible enough to change your recommendations, your guidelines, your policies, depending upon the information and the data that evolves****. Because, if you look at what we knew in February compared to what we know now, there really is a lot of differences that are there right now — the role of masks, the role of aerosol, the role of indoor vs outdoor, you know, closed spaces.* ***You’ve just got to be humble enough to realize that we do not know it all from the get-go and even as we get into it****.”*

Made in Ontario "NIOSH"

- SARS recommendation: *That just as the National Institute for Occupational Safety and Health (NIOSH), the main U.S. federal agency responsible for worker safety research and investigation, is part of the Centers for Disease Control (CDC), so the Ontario Agency for Health Protection and Promotion should have a well-resourced, integrated section that is focused on worker safety research and investigation, and on integrating worker safety and infection control.*
- No organization in Ontario certifies N95 respirators. Ontario's only option is to go to NIOSH in the United States for approval
- Ontario lacked the scientific ability to develop guidance and best practices on the PPE supply chain, including storage, replenishment, distribution and management