

INVESTIGATIONS

Why did Canada drag its feet on N95 advice? Some experts say it's because we had none to spare

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The transfer of 16 tonnes of COVID-fighting respirator masks, face shields and goggles from Canadian medical stockpiles to China on Feb. 4 marked a key plot point in Canada's pandemic narrative.

Initially, the country's humanitarian gesture became a rallying cry for angry Canadian doctors, nurses and personal care workers alleging shortages that have exposed them to avoidable — and potentially deadly — [COVID-19](#) transmission.

But more recently, it has served as backdrop for a quietly expressed hypothesis among researchers and public health experts: Did a shortage of personal protective equipment influence Canada's decision to hold back on aggressive protective protocols for health-care workers other countries have adopted?

Public health agencies in Canada have told health-care workers that N95 respirator masks aren't necessary for routine care of patients during the pandemic — a policy that contrasts with advice provided to their colleagues in the U.S., Europe, Australia and China, a Star analysis has found.

The approach has generated criticism as new evidence emerges that the coronavirus might spread through the air. And it has conjured fresh reminders from the 2006 Commission report into the SARS outbreak that urged future public health officials to adopt a "precautionary principle" to health-care worker protection.

"Scientific uncertainty and scientific debate can go on forever," wrote Justice Archie Campbell at the conclusion of a public inquiry he led into Ontario's handling of the SARS outbreak that killed dozens and sickened hundreds nearly two

decades ago.

“What we need to do is to follow the precautionary approach that reasonable steps to reduce risk need not await scientific certainty ... 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 the maximum level of protection through appropriate equipment and training.”



Since January, nearly 14 per cent of confirmed COVID-19 cases in Ontario — 2,144 — have been health-care workers, according to Public Health Ontario. Those working in nursing homes have been hardest hit with an infection rate twice that of the patients they’re caring for, according to provincial data released last Wednesday.

“At this rate, this could prove to be catastrophic,” says Mario Possamai, a forensic investigator who served as a senior adviser for the SARS commission. “When you see the devastation, it really breaks my heart that the precautionary principle was not adhered to.”

Around the world, there are different standards and guidance for what health-care workers need as personal protective equipment (PPE). Consensus has been undermined by still-unsettled science over whether the virus can spread through tiny droplets expelled into the air by breathing, talking or coughing and remain aloft until inhaled by others.

Initially dismissed, the theory of airborne transmission has been gaining credibility through a string of published studies, most recently in the journal Nature on Monday, which reported traces of the virus found in airborne droplets inside two hospitals in Wuhan, China, where the outbreak began.

The still-developing evidence of airborne transmission has prompted many governments to take the precautions for health-care workers conducting routine care of patients.

The U.S. Centers for Disease Control recommends PPE, including N95 respirators to protect health-care workers. Even as shortages emerged in the U.S., the agency remained cautious, telling health-care workers to reuse N95 masks or use them beyond their expiry date only until supplies are restored.

The European Centre for Disease Prevention and Control, in a March 12 technical report on COVID-19 prevention, advises that health-care workers who contact even “suspected cases” of the virus “should wear PPE for contact, droplet and airborne transmission of pathogens.”

Australia’s health officials recommendations N95 masks be used for “prolonged or very close contact” with patients in routine care.

The Public Health Agency of Canada, meanwhile, continues to recommend surgical masks — which offer less robust protection from airborne transmission — as acceptable protection for health-care workers treating COVID patients.

The agency’s April 15 technical brief also notes “ongoing concerns about diminishing supplies of PPE in Canadian hospitals and increasing focus on strategies to conserve existing PPE.”

Ontario’s public health agency, Public Health Ontario, initially recommended N95 use for health-care workers in January citing the “precautionary principle.”

Then, on April 6, the province pulled back after concluding that “global clinical experience and updated scientific and epidemiological evidence” shows there is “no evidence that COVID-19 is transmitted through the airborne route,” a ministry of health statement reads.

The province did caution that a health-care worker who believes added protections are required for the work they’re doing “shall have access to the appropriate health and safety control measures, including an N95 respirator. The employer will not unreasonably deny access to the appropriate PPE.”

Health-care workers report a different reality on the ground.

K.B., a nurse working at a GTA hospital who asked not to be identified for fear of retribution on the job, says that when her colleagues raise concerns about a lack of N95 masks with managers, they are told the equipment isn’t mandated.

“It’s only provided in situations of Code Blue,” she says. “And we aren’t allowed to order anymore. I was recently told we have a six- to 20-day supply. But I don’t know how realistic that is.”

There has been plenty of speculation among her colleagues about PPE shortages impacting N95 guidelines, she says.

“At first, it was suggested that (COVID-19) was airborne and we should wear N95 masks. And it felt like days later I was deployed and it was a (surgical) mask. The struggle nurses have had is that you don’t feel protected but it is shoved in your face that this is your job and this is what you’re expected to do and if you don’t, you’re abandoning patients. So, we’ve just done what we needed to do.”

Overall, she calls Canada’s response to health-care worker safety during the outbreak “reactive.”

“I’ve heard staff being told by managers, ‘This is what you signed up for.’ But I think there were warning signs that things were coming and I don’t understand why we didn’t do something sooner. Now we don’t have enough PPE and it was on the backs of the nurses.”

In a written statement, the provincial ministry of health said the decision to withdraw the N95 recommendation for health-care workers in April was based on, “a better understanding of the epidemiology of the virus and the spectrum of illness that it causes” and has “nothing to do with the supply of Personal Protective Equipment.”

Dr. Gary Garber, infection prevention and control physician with the agency, says it is closely following scientific debate over airborne transmission of COVID-19 and is aware of “theoretical information” about the spread through air.

“We don’t want people to think we are ignoring these issues. We’re very aware of it,” he told the Star. “If we see something compellingly different we will act on it ... Science evolves. Knowledge evolves. And sometimes, the guidance, policies, implementation often take longer to evolve than sometimes the evidence does.”

PHO’s April decision to remove N95 recommendations for health-care workers was based on scientific literature reviews by a committee of experts, including Garber, who recommended the change to the ministry.

“It was becoming more clear that this was not an airborne disease. In terms of the specific wording (of the public statement), the correct wording would be there is no epidemiologic evidence for airborne transmission.”

He also said N95 masks are not without their own risks. Because they are uncomfortable to wear for long periods of time, many health-care workers end up with headaches or repeatedly touching their faces to adjust the devices for comfort.

“Any theoretical advantage is often eliminated because of those issues,” he said.

Lydia Bourouiba is a Canadian associate professor at the Massachusetts Institute of Technology and co-author of the newly published article in the *Journal of Infectious Diseases* that concludes “the weight of combined evidence supports airborne precautions for the occupational health and safety of health workers treating patients with COVID-19.”

That means use of a high-grade respirator like N95 masks in a health-care setting, Bourouiba said in an interview.

Her theory on why that hasn’t happened in countries such as Canada — echoed by seven other researchers and public health experts interviewed by the Star — explores the delicate tensions between science and public policy.

“I cannot help but think that (the shortages of PPE) could be a factor in driving some of these decisions. There could be political aspects. If you mandate it but can’t provide it that could be a liability issue. That needs to be corrected.”

Managing shortages is a legitimate challenge, she said. But from a scientific perspective, “mounting evidence” has made clear the need for greater health-care worker protections.

“I think about this at night. I know what the reality is. The toll on health-care workers is going to be clear. It’s heartbreaking. I wish we were doing a lot more. It’s understandable that policy takes time. But the precautionary principle should be in place.”

Vicki McKenna, president of the Ontario Nurses Association, has thought a lot about why Canada has stuck to a lower protection standard rather than a precautionary approach.

“In my own mind, I ask the question, is this hesitance to take the proper steps to protect health-care workers about supply?” she said in an interview. “Some organizations, like hospitals or long-term-care facilities, had a month of supply, others had a week ... If there’s an issue about supply, let’s not get into a spin cycle around N95.”

On April 17, McKenna and the ONA filed legal action on behalf of health-care workers inside several long-term-care homes in Ontario hit hard by COVID-19 infections and deaths. They allege N95 respirators were unavailable or “locked up.”

A lack of available N95 protection, the claim alleges, represents a “denial to provide scientifically accepted, life-saving personal protective equipment,” the unproven allegations read.

For a contrasting approach, McKenna points to China.

“When you see what’s happening in China and places that are ahead of us in the COVID situation, they’re in full HAZMAT suits in their ICUs, and where they’re not in an ICU they are in N95 or above with full respirator hoods.”

While the early days of the outbreak in China featured dramatic spikes in health-care worker infections, Chinese officials quickly imposed mandatory N95 mask use in January that dramatically decreased infections among health-

care workers there.

“Transmission within health-care settings and amongst health-care workers does not appear to be a major transmission feature of COVID-19 in China,” a February World Health Organization report concludes. “Surveillance among health-care workers identified factors early in the outbreak that placed (health-care workers) at higher risk of infection, and this information has been used to modify policies to improve protection of (health-care workers).”

At the same time that Chinese officials were taking action, Possamai wrote to federal Health Minister Patty Hajdu on Jan. 31 urging her to adopt precautionary protections for health-care workers.

“I am profoundly disappointed that the Public Health Agency of Canada is risking health worker safety by recommending lower protections against the novel coronavirus,” the letter reads.

Failing to act with tougher policies “would be to do a grave injustice to the victims of SARS and their families. Half of SARS victims in Ontario were health workers.”

That day, Hajdu appeared on CBC responding to questions about Canada’s preparedness and said: “We’re comfortable that we’re completely up to date in terms of our approach and what the science says. There is a very low risk to Canadians.”

Behind the scenes that same day, an internal government email indicates Hajdu provided “notional agreement” to the Chinese donation of PPE gear.

“We have some stock in (a) national emergency stockpile (incl. stuff that is expiring in Feb and March) that we are able to donate without compromising Cdn supply,” reads the Jan. 31 email written by Public Health Agency of Canada chief of staff Marnie Johnstone.

Possamai, who says his letter to Hajdu did not receive a response, says a flat-footed Canadian response to COVID-19 has ignored compelling evidence about airborne transmission.

“It is preposterous to claim that surgical masks are sufficient protection,” says Possamai. “What you have is a scientific approach in the public health agencies of Canada and Ontario that is really rigid and not open to new findings. They say the science is settled ... (But) they’re ignoring a huge body of science that is growing and is very persuasive.”

A few days before Canada’s first shipment of PPE to China, the World Health Organization had warned of an international public health emergency from the global spread of the virus. A handful of Canadian COVID-19 cases had been confirmed and a global run on N95 masks was beginning.

A press release from Global Affairs Canada at the time announced the shipment to China was “vital to helping those affected and protecting the health and safety of people around the world.”

The donation has been since explained by Canadian officials as an act of altruism with payoffs for Canada.

“Any effort that could be made to limit the exportation of cases to the rest of the world was directly of benefit to all countries, including Canada,” Tina Namiesniowski, president of the Public Health Agency of Canada, told a House of Commons committee on March 3.

On Feb. 6, two days after the initial shipment, a Chinese study recommended virtually every Chinese hospital employee, from administrative staff and assistants to medical staff in wards, wear N95 masks, coveralls, eye protection, latex gloves and “barrier gowns.”

Not long after, doctors, nurses and other health-care staff in Canada began speaking out about supply shortfalls and mixed messaging on proper safety measures.

A survey of nearly 5,000 doctors by the Canadian Medical Association in late March reported one in five said they had

run out of N95 respirators or would within two days or less without stock replenishment.

There was also confusion over proper safety protocols.

“If there were national or even international guidelines based on good quality evidence, I think that would go a long way to easing some of this uncertainty,” says Montreal-based epidemiologist Christopher Labos, who has been closely monitoring the pandemic from its beginnings. “The problem is a lot of this is based on consensus opinion rather than randomized trials that can prove one way or the other if one type of mask or PPE is really needed.”

There has been a steady drum beat of studies into COVID transmission in recent weeks, many calling for precautionary respirator use in the absence of scientific certainty.

A paper published March 1 in *The Lancet* calls for N95 masks, goggles and protective gowns by health-care workers even around patients who don't show symptoms.

“These findings warrant aggressive measures ... to ensure the safety of health-care workers during this COVID-19 outbreak, as well as future outbreaks, especially in the initial stages where limited information about the transmission and infective potency of the virus is available,” the paper reads.

Dr. Charles Dela Cruz, a co-author and associate professor at Yale School of Medicine, says science has provided clear evidence that health-care workers need strong protective equipment in treating COVID-19 patients. What remains is policy that reflects it.

“The science should not be compromised because of policy issues with regards to supply,” said Dela Cruz, who grew up in Toronto. “Science is science. I think the confusion comes when you start changing your bar in terms of what is needed and neglect what science and medicine tells you.”

Another article posted earlier this month in the academic journal *Environment International* predicts failure to protect against transmission through the air “will result in additional cases of infection in the coming weeks and months, which would not occur if these actions were taken ...

“Based on the trend in the increase of infections, and understanding the basic science of viral infection spread, we strongly believe that the virus is likely to be spreading through the air. If this is the case, it will take at least several months for this to be confirmed by science. This is valuable time lost that could be used to properly control the epidemic ... and prevent more infections and loss of life.”

The paper issues a “plea” to the international and national authorities to impose protective measures, including personal protective equipment.

Evidence of airborne transmission of coronavirus dates back at least 15 years to a key Toronto study in the aftermath of SARS, when the same questions about the travel route of the virus were being debated.

The 2005 study published in the *Journal of Infectious Diseases* confirmed the possibility of airborne droplet transmission “which emphasizes the need for adequate respiratory protection,” the study concludes, noting that 51 per cent of 144 SARS cases in Toronto occurred among health-care workers.

“Confirmation that the SARS virus can be shed into the air of a patient room will guide the response to any future SARS outbreaks.”

Little appears to have been retained from SARS, says Dela Cruz.

“Experiences like SARS should have alerted us how to do this,” he says. “It’s unfortunate that we haven’t really learned much.”

A reading of the [SARS Commission Final Report](#) might have discouraged the emptying of medical equipment closets in Canada and a safer-than-sorry policy approach.

After the outbreak, a survey of 1,536 Ontario nurses found 54 per cent expressed concern with the protection they were given.

Their specific concerns echo many heard from health-care workers on the front lines of the COVID-19 outbreak: a lack of equipment, changing protocols and “general confusion.”

Overall, 46 per cent of respondents surveyed felt that the supply of masks and other PPE equipment during the SARS crisis was “inadequate.”

Current ONA president McKenna, reminded of those survey results this week, said the conclusions “take my breath away.”

“It feels like déjà vu,” said McKenna, who worked as a nurse in Ontario during SARS. “Here we are again. We’ve repeated some of the same mistakes. We let down our guard. And we can’t allow that to happen again. Ever.”



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