Kitchener Court File No.: CV-21-00000095-0000
St. Thomas Court File No.: CV-21-08

***ONTARIO***
**SUPERIOR COURT OF JUSTICE**

B E T W E E N:

**THE ATTORNEY GENERAL OF ONTARIO**

Applicant (Responding Party)

-and-

**TRINITY BIBLE CHAPEL, JACOB REAUME, WILL SCHUURMAN, DEAN WANDERS, RANDY FREY, HARVEY FREY and DANIEL GORDON**

Respondents (Moving Parties)

A N D B E T W E E N:

**HER MAJESTY THE QUEEN IN ONTARIO**

Applicant (Responding Party)

-and-

**THE CHURCH OF GOD (RESTORATION) AYLMER, HENRY HILDEBRANDT, ABRAM BERGEN, JACOB HIEBERT, PETER HILDEBRANDT, SUSAN MUTCH, ELVIRA TOVSTIGA, and TRUDY WIEBE**

Respondents (Moving Parties)

# AFFIDAVIT OF DR. RICHARD SCHABAS
**(Sworn May 29, 2021)**

**I, RICHARD SCHABAS**, of the City of [redacted] in the Province of Ontario, MAKE OATH AND SAY:

1. I am a retired physician with specialist qualification in Public Health, and as such have knowledge of the matters hereinafter deposed to.

2. I also have specialist qualification in Internal Medicine and a Master's degree in Epidemiology. I practised clinical medicine for forty years, initially as a general practitioner and then as a general internist. I practised public health for twenty-five years at a local and provincial level, including ten years as Ontario's Chief Medical Officer of Health, between 1987 and 1998.

3. I worked in hospital management as Chief of Staff at York Central Hospital and was directly involved in the 2003 SARS outbreak. I have held academic appointments at three Ontario universities - Toronto, Waterloo and Queen's. I gave testimony at three Royal Commissions on public health issues - the Krever Commission on blood safety, the O'Connor Commission on Walkerton and the Campbell Commission on SARS. I have contributed to 28 peer reviewed published papers.

4. My curriculum vitae is attached hereto and marked as **Exhibit "A".**

5. The Moving Parties' counsel contacted me about providing expert testimony in support of their motion to set aside the enforcement order against them. I have been asked to address the following issues surrounding the virus SARS-CoV-2 and Covid-19 disease:

   a. **Data analysis** -- How serious is Covid-19? How does it compare to previous pandemics? What does the data tell us about who this disease is impacting? Can you put this into context so we can understand the severity of Covid across various demographics and relative to other causes and numbers of deaths?

   b. **Public health & policy** -- Do current public health responses reflect the data and analysis noted in your answer to question 1? What should public health be concerned with? Have our "lockdown" measures been in keeping with previous public health practices, standards and plans for pandemic management? Are population-wide lockdowns an appropriate public health response? If not, why not?

c. **Lockdown harms** -- Has an appropriate cost/benefit analysis been done by the government? Do lockdowns work in preventing unnecessary mortality? What are the unintended or ignored secondary consequences and harms? What are the public health concerns with curtailing the activities of healthy people or those with limited risk?

d. **Limits on gatherings** -- Should Ontarians be allowed to attend religious services, gather with their families and friends, go to restaurants or small businesses, and peacefully protest? What is the data on outbreaks in these settings? Do we know whether this translates into hospitalizations and/or deaths? Is a limit of 10-persons based on any scientific and evidentiary foundation? Is it appropriate, from a public health perspective, for governments to make all decisions on risk assessment or tolerance on behalf of individual citizens?

6. I acknowledge that in preparing this report and providing expert evidence, the Moving Parties' counsel explained that my role is to assist the court to determine the matters in issue. I further acknowledge that it is my duty to provide evidence that is fair, objective and non-partisan and to opine only on matters that are within my area of expertise. This duty prevails over any obligation that I may owe to any party on whose behalf I am engaged.

7. Covid-19 is a novel respiratory virus that has caused a global outbreak over the past 16 months. Public health has been preoccupied by its response to Covid-19. The issues around Covid-19 are complex and much of the science is uncertain. Ontario has responded to Covid-19 with a variety of restrictive measures generally characterized as "lockdown". Many of these measures have been arbitrary and capricious. I will focus on the specific issue of restricting the size of religious gatherings.

8. “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”[1] A wholistic view of health has long been a cornerstone of public health practice. For the past year public health in Ontario has obsessed with controlling just one disease to the detriment of all other diseases and other aspects and determinants of health. The ability to practice religion in a time-honoured fashion is important to the mental and social well-being of many people. Not allowing some people to practice their religion in person is bad for their health.

9. “First do no harm.”[2] Many lockdown measures, including restrictions on normal religious practices, cause substantial harm. When a medical intervention can cause harm there is an onus to show strong evidence that the intervention is both necessary and is effective. Furthermore, there is a responsibility to take all reasonable measures to mitigate the harms from the intervention. There is no strong evidence that limiting the size of religious gatherings is necessary and effective to control Covid-19. Ontario public health has rigidly applied the same rules to all public gatherings regardless of the relative harms.

10. The measures broadly described as lockdown were mostly invoked in a period of panic in March 2020. Covid-19 was suddenly and unexpectedly causing large outbreaks in Western Europe and, in Italy at least, threatened the integrity of health care. Spurious mathematical models posited a microbiological apocalypse with tens of millions of deaths in a matter of a few months. China first and then Italy locked down. And then, in a matter of days, so did we. We did this without any substantial scientific foundation, and we did it without any clear idea of our goals and objectives other than a vague notion of “flattening the curve”.

11. Public health has relied heavily on mathematical models in its Covid response. These models are inherently simplistic and are dependent on unreliable inputs.[3] The most contentious input into the models was (and is) the estimate of the Infection Fatality Rate (IFR). The models that drove our response in Covid-19 used IFR estimates of about 1% (one in one hundred). Analysis based on

seroprevalence studies shows that the actual IFR was much lower at 0.23% or less.[4] Perceptions, however, remained anchored at a much higher rate. For example, Dr. David Fisman, a prominent Canadian modeller, in his testimony to the Health Committee of the House of Commons on May 20, 2020, a transcript of which is attached hereto and marked as **Exhibit "B"** to this Affidavit, used an IFR estimate of 1.2% to project 280,000 deaths from Covid-19 in Canada. In my opinion, a more reasonable estimate of IFR in Canada at that time was at least four times lower and since two-thirds of our deaths occurred in Long Term Care the IFR for people living in the general community was much lower again - probably in the range of 0.1-0.2% (one death in a thousand to one in five hundred people infected. Immunization of vulnerable people has probably pushed Canada's IFR well below 0.1%.

12. A mathematical model is only a hypothesis. To qualify as a scientific hypothesis, an hypothesis must make testable predictions. To be relied upon for public policy, a model must demonstrate that it can make accurate predictions.

13. The models used for Covid-19 do not make testable predictions. They produce a range of values that is so broad they cannot be disproven. This is not scientific.

14. Typically, public health has been directed by the worst-case predictions of the models. These worst-case predictions are consistently wrong and often wildly wrong. This is true not only for Ontario but also for jurisdictions such as Sweden, Brazil and Florida that have used much less restrictive measures. Mathematical models for other infectious diseases have a track record of wildly wrong predictions - SARS, H5N1 (bird flu) and H1N1 influenza are examples. Models that have not proven themselves reliable should not determine public health policy.

15. These lockdown measures had never been employed before on this scale and duration, anywhere, ever. They were not envisioned by our plans for pandemic influenza that our governments and public health had spent years developing. Pandemic influenza plans should have been the template for our response to Covid-19 because Covid-19 is very similar in its disease dynamics to a severe

influenza pandemic. Instead, these carefully crafted plans were abandoned in the blink of an eye.

16. Canada's plan for pandemic influenza embraces two overarching principles. First, to minimize the impact of death and illness, not just death and illness from the pandemic infection. Second, to minimize the disruption of normal life.[5] Attached hereto and marked as **Exhibit "C"** to this Affidavit is a copy of the Canadian Influenza Pandemic Preparedness: Planning Guidance for the Health Sector report, dated August 2018.

17. Ontario specifically endorsed these principles in the Ontario Plan for an Influenza Pandemic, March 2013 (p. 10).[6] The 4$^{th}$ chapter of the plan, pertaining to Public Health Measures, is attached hereto and marked as **Exhibit "D"** to this Affidavit.

18. Ontario's response to Covid-19 abandoned both of these principles. The focus has been almost exclusively on the pandemic infection Covid-19, virtually ignoring all other causes of illness, disability and death. The disruption of society has been profound and, unlike with pandemic influenza where any disruptions were expected to last a few weeks, with Covid-19 these disruptions have lasted interminably - now well over a year and with no end in sight.

19. The World Health Organization identified several potential interventions that were "not recommended in any circumstance", including contact tracing, quarantine, entry and exit screening and border closure.[7] Notwithstanding the parallels between the Covid-19 pandemic and an influenza pandemic, and the lack of any new evidence, Canada and Ontario adopted precisely these measures in their panicked reaction.

20. Lockdown measures were not based on strong science. Nor has there been any serious effort by governments to the evaluate the effectiveness of the different components of lockdown. Worst of all, we entered into lockdown without any clear goals and objectives. As a result, lockdown in various forms has continued for more than a year causing great harm[8] and dubious benefit.[9,10]

21. The harms from lockdowns are real and substantial - harms to education, to employment, to business, to arts and culture, to social interactions and to quality of life.

22. A recent report from Statistics Canada[11] confirms that the period of lockdown corresponds to a substantial increase in non-Covid deaths. While the number of these deaths is only about 15% of the number of Covid deaths during the same period, the non-Covid deaths are predominantly in younger people suggesting that the impact on years of life lost, a valid and important epidemiological measure, may be similar to deaths caused by Covid. Furthermore, we can expect the mortality impact of lockdown to stretch on for many years to come. Lockdown has scarred a generation.

23. Covid-19 has proven to be a serious public health problem. There have already been close to three million reported deaths worldwide and it is likely that more than a one billion people have already been infected - perhaps closer to two billion. However, to understand the public health significance of these numbers they need to be put in some context. Since about 60 million people die every year,[12] three million deaths represents about 3% (one in thirty) of global deaths over 17 months. Covid-19 deaths have been disproportionately among the frail elderly, particularly among the institutionalized frail elderly. Therefore the impact on premature mortality - potential years of life lost - has been substantially less than 3%. For comparison, almost two million people - overwhelming children - will die this year and every year from diarrheal illness[13] making a much greater impact on premature mortality, this year and every year, than Covid-19.

24. Canada has had about 25,000 deaths attributed to Covid-19. About 300,000 people die every year in Canada from all causes - on average about 800 deaths every day. Deaths from Covid-19 represent about 7% (one in fifteen) of all deaths in Canada during this period and, because of the high average age and frailty of people dying from Covid-19, the impact on premature mortality is almost certainly less than this. Furthermore, since two-thirds of deaths from Covid-19 in Canada

have been in LTC residents, there have been about 7,000 deaths in people living in the community spread over two waves of the disease, i.e., about 3,500 Covid-19 community deaths per wave. This is comparable to the number of deaths we would expect in a typical annual wave of seasonal influenza. This means that, while Covid-19 is a significant public health problem, the risk it poses to the vast majority of Canadians is not out of keeping with other more familiar problems, such as influenza. Outside of LTC, for every person who had died from Covid-19 in Canada, about 40 people have died from something else.

25. Tobacco addiction accounts for an estimated 40,000 preventable deaths every year in Canada - about twice the number of deaths we have seen from Covid-19. Taking into account the relatively younger average age of people who die from the effects of tobacco, the impact of tobacco addiction on premature mortality is likely four to eight times greater than Covid-19 in the past year. Tobacco addiction has had this tragic impact every year for seventy years and there is no end in sight. Tobacco addiction dwarfs Covid-19 as a threat to public health.[14,15,16]

26. A global outbreak of a novel respiratory virus is not unique. There were similar outbreaks in 1957 (H2N2 “Asian Flu”) and 1968 (H3N2 “Hong Kong Flu”). The Asian Flu is estimated to have caused between one and four million deaths globally in its first wave alone.[17] Asian Flu then returned on a seasonal basis for ten years causing many more deaths. In 1957 the global population was one-third what it is now and the proportion over 65 was about one-half current. Adjusting for population differences, an outbreak of comparable severity in 2021 would be expected to kill 6 to 24 million people in its first year. Covid-19 has not come close to this.

27. Any interaction between two people carries a risk of transmitting Covid-19. Since people must interact for us to continue living, we must balance risk of Covid transmission with the costs of intervention.

27. Large, indoor public gatherings can pose a risk of Covid transmission. Virtually all jurisdictions have taken some measures to control these sorts of gatherings.

However, there is very little real evidence beyond anecdote to support this concern. Furthermore, the specific measures to limit the spread of Covid-19 in these settings - including the size of the permitted gatherings and the rules of procedure - are highly variable between jurisdictions. There are no established, evidence-based protocols. The devil is in the details.

28. It is wrong for Ontario to limit arbitrarily the size of all religious gatherings. Instead, public health should work constructively with religious congregations to find ways to allow religious services to continue to function at an acceptable risk. Examples could include determining attendance limits based on characteristics of the venue, social distancing, screening at entrance, masks, limited singing, improved ventilation and shorter services.

29. There have been case reports of clusters of Covid-19 transmission events traced to religious gatherings reported from various jurisdictions. However, to assess the level of risk it is important to compare these instances with documented spread to the total number of attendances at religious gatherings - undoubtedly many billions globally. Covid-19 can spread in religious gatherings, but the rate appears to be negligible, based on Public Health Ontario's own data.[18] Furthermore, in many of these anecdotal reports of Covid-19 spread at religious gatherings, there was clear evidence of practices such as over-crowding, choir singing or poor ventilation that contributed to the risk.

30. To estimate the risk of contracting Covid-19 by attending a religious service in Ontario it is necessary to have an estimate of the number of people infected at religious services (numerator) and the number of people attending (denominator). I don't have access to either of these pieces of data for Ontario. However, there is some useful data from Manitoba that can advise this estimate. Specifically, in an affidavit[19] in a similar legal proceeding, a government epidemiologist was only able to identify a single Covid-19 fatality linked to a religious service over the past year. I have no direct data for the denominator but if I assume that during this period on average 10% of Manitobans attended a religious service weekly, this would

represent about six million attendances over the past year. One death in six million attendances is a very low risk, roughly the equivalent to the risk of death from driving 40 miles. Even a risk an order of magnitude higher would not, in my opinion, be sufficient to justify the inflexible restrictions on religious gatherings. For some people, a tiny risk of death or serious illness from Covid-19 (or driving their car to church) is worth facing for the benefit of attending a religious service.

31. There are many plausible explanations for the low risk of Covid-19 death from attendance at a religious gathering, based on the Manitoba experience. It is not essential to untangle these possible explanations to change public health policy. The proof of the pudding is in the eating.

32. A properly managed religious gathering in Canada would carry only a very small risk of Covid-19 transmission. Public health should reasonably allow gatherings of this type. People attending should be advised about the potential risk and people at increased risk of serious complications from Covid-19, based on age or infirmity, should be advised not to attend, although the choice should be left up to the individual. The impact of these events on Covid-19 transmission should be monitored and further measures adjusted based on evidence.

33. There have been two major developments with regard to Covid-19 in the past four months - vaccines and “variants”.

34. Safe and effective vaccines became available starting in late 2020. Ontario, quite appropriately, initially focused on immunizing Long Term Care residents and staff and then on the elderly. Although our vaccine roll-out has been slower than some other jurisdictions, we are already seeing remarkable benefits. Individuals who have been immunized are almost entirely protected from serious illness or death from Covid-19 and are much less likely to transmit the virus.

35. The “variants” represent the natural evolution of Covid-19 in response to the reproductive pressure from population immunity. The “variants” are somewhat more infectious than the original Covid-19 virus. The more infectious a virus the

less effective any lockdown measures. Furthermore, the current “variants” are almost certainly just the beginning of the changes in Covid-19. It has already shown itself capable of evolving quickly and there is no reason to expect the process to stop. On the contrary, as population immunity from infection and immunization increases globally, the reproductive pressure on the virus will increase and we can expect the process of evolution to, if anything, speed up.

36. This puts us on a very slippery slope with regard to lockdown measures. If we persist with this strategy we will need to be more and more stringent measures with less and less impact. Lockdown is a path that takes us nowhere.

37. Perhaps the greatest error public health has made in managing Covid-19 is the use of fear as a tool of public policy. This is short-sighted, cynical, and counterproductive. The great majority of Canadians - those under age sixty and healthy people to an older age - face about the same risk of dying from Covid-19 as they would from influenza.

38. The fear generated by public health messaging makes religion even more important to the health of believers. Promoting fear and then denying people their means of dealing with fear compounds the harm.

39. The science about many important aspects of Covid-19 is still uncertain. The non-pharmaceutical interventions that collectively constitute lockdown are not based on high-quality scientific evidence. Public health authorities have been required to make decisions to deal with a crisis in the context of scientific uncertainty. These decisions are of necessity based on judgement as much as science. Fair enough. However, when public health takes actions that are not based on strong science these actions need to be nuanced, flexible, balanced and constantly under review.

40. Ontario has applied a different standard for liquor stores than for other retail stores. It should use the same nuanced approach for religious services. There is no strong evidence that an arbitrary limit on the size of religious gatherings is an important element of Covid-19 control. There is no strong evidence that larger religious

based on strong science these actions need to be nuanced, flexible, balanced and constantly under review.

40. Ontario has applied a different standard for liquor stores than for other retail stores. It should use the same nuanced approach for religious services. There is no strong evidence that an arbitrary limit on the size of religious gatherings is an important element of Covid-19 control. There is no strong evidence that larger religious gatherings cannot be held at an acceptable risk, particularly with the full cooperation of the religious group. The harms from the arbitrary limits on the size of religious gatherings are obvious and substantial.

41. I make this affidavit *bona fide*.

SWORN REMOTELY by videoconference by Dr. Richard Schabas at the City of [redacted], before me at the City of London, in the County of Middlesex, this 25th day of May, 2021 in accordance with O.Reg. 431/20 Administering Oath or Declaration Remotely

A Commissioner, etc.

**LISA D.S. BILDY**
**BARRISTER & SOLICITOR**

DR. RICHARD SCHABAS

## REFERENCES CITED


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2. Hippocratic Oath. en.m.wikipedia.org

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5. Canadian Pandemic Influenza Preparedness Planning Guidance for the Health Sector. https://www.canada.ca/en/public-health/services/flu-influenza/canadian-pandemic-influenza-preparedness-planning-guidance-health-sector/table-of-contents.html

6. Ontario Health Plan for an Influenza Pandemic. March 2013 www.health.gov.on.ca.

7. Global Influenza Program. Non-pharmaceutical public health measures for mitigating the risk and impact of epidemic and pandemic influenza. World Health Organization 2019 ISBN 978-92-4-151683-9

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9. Chin, Ioannidis, Tanner and Cripps. Effects of non-pharmaceutical interventions on Covid-19; a tale of three models. https://doi.org/10.1101/2020.07.22.2016034

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19. The Queen's Bench Winnipeg Centre. File No. CI 20-01-29284. Affidavit of Carla Loeppky. March 4, 2021

# EXHIBIT A

This is Exhibit "A" referred to
in the Affidavit of
Dr. Richard Schabas

Sworn before me this 29th day
of May A.D., 2021

A Commissioner for Oaths in and for Ontario

LISA D.S. BILDY
BARRISTER & SOLICITOR

May 7, 2021

**CURRICULUM VITAE:**

**RICHARD SCHABAS MD, MHSc, FRCPC**

[redacted]

**Professional Experience:**

| | |
|---|---|
| 2008-2016 | Antibiotic Steward<br>Campbellford Memorial Hospital<br>Campbellford, Ontario |
| 2005-2016 | Medical Officer of Health<br>Hastings and Prince Edward Counties Health Unit<br>Belleville, Ontario |
| 2005-2016 | Consultant in Internal Medicine<br>Campbellford Memorial Hospital<br>Campbellford, Ontario |
| 2003-2005 | Chief of Staff<br>York Central Hospital<br>Richmond Hill, ON |
| 1997-2007 | President<br>Schabas Associates Inc.<br>Health Consultants |
| 2001-2002 | Vice President, Medical Affairs<br>GlycoDesign Inc. |
| 2000-2001 | Vice President, Corporate Development<br>GlycoDesign Inc. |
| 1998-2001 | Head, Division of Preventive Oncology<br>Cancer Care Ontario |
| 1997 | Director of Screening Programs<br>Cancer Care Ontario |
| 1987-98 | Chief Medical Officer of Health and<br>Director, Public Health Branch, |

Ontario Ministry of Health

1983-87 Medical Officer of Health,
Borough of East York Health Unit,
Toronto, Ontario

1981-99 Consultant in Internal Medicine
Orthopaedic and Arthritic Hospital,
Toronto, Ontario

1983-97 Consultant in Internal Medicine
Eastwood Medical Clinic
Toronto, Ontario

1977-78 General Practitioner,
Parry Sound, Ontario

**Degrees:**

1983 Fellowship in the Royal College of Physicians and Surgeons of Canada in Community Medicine (now called Public Health and Preventive Medicine)

1982 Master's in Health Sciences,
University of Toronto

1982 Fellowship in the Royal College of Physicians and Surgeons of Canada in Internal Medicine

1976 Medical Doctor (with Honours)
University of Toronto

1970 General Certificate of Education (Advanced) in History, English Literature and Geography,
University of London Board,
London, England

**Academic Appointments:**

2007-2016 Associate Professor
Faculty of Medicine
Queen's University

1996-2009 Associate Professor,
Department of Public Health Sciences,
Faculty of Medicine,

University of Toronto

1994-2000 Adjunct Associate Professor,
Department of Health Studies and Gerontology,
University of Waterloo

1987-1996 Assistant Professor,
Department of Biostatistics and Preventive Medicine,
Faculty of Medicine,
University of Toronto

1983-1987 Lecturer,
Department of Biostatistics and Preventive Medicine,
Faculty of Medicine,
University of Toronto

**Previous Appointments (Selected List):**

2003-2005 Infection Control Committee
York Central Hospital (Chair)

2001-2002 Health Policy Sub-committee
BIOTECanada

1998-1999 Ontario Expert Panel on Colorectal Cancer Screening (vice Chair)

1998-1999 Expert Panel on Cancer Epidemiology in Cape Breton (Chair)
Cancer Care Nova Scotia

1998-1999 Ontario Tobacco Strategy Expert Panel

1998 Expert Panel on Hepatitis C Epidemiology (Chair)
Health Canada

1998 Multidisciplinary Assessment Committee for New Opportunities
Canadian Foundation for Innovation

1997-1998 Steering Committee (Chair)
Canadian Consensus Conference on a National Immunization Records System
Health Canada

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|---|---|
| 1987-1998 | Advisory Committee on Communicable Diseases (Chair)<br>Ontario Ministry of Health |
| 1987-1998 | Residency Committee,<br>Community Medicine Program,<br>Faculty of Medicine,<br>University of Toronto |
| 1987-1998 | Federal/Provincial Advisory Committee on Occupational and Environmental Health |
| 1993-1998 | Editorial Board,<br>"Health News",<br>University of Toronto |
| 1996-1997 | Federal/Provincial/Territorial Implementation Team<br>National Blood Agency |
| 1996-1997 | Board of Directors<br>Canadian Blood Agency |
| 1994-1997 | Children At Risk Advisory Committee,<br>Laidlaw Foundation |
| 1996 | Federal/Provincial/Territorial Working Group on Blood Governance (Co-chair) |
| 1994-1996 | Provincial (Ontario) Cancer Network |
| 1994-1997 | Advisory Committee,<br>Centre for Health Economics and Policy Analysis,<br>McMaster University |
| 1994 | Task Force on the Primary Prevention of Cancer (Miller Report) |
| 1992-1994 | Expert Advisory Committee<br>National Population Health Survey |
| 1988-1992 | Federal/Provincial Advisory Committee on Community Health (Chair, 1992) |
| 1990-1992 | National Health Information Council |

| | |
|---|---|
| 1990 | Canadian Delegation,<br>World Health Assembly,<br>Geneva, Switzerland |
| 198619-92 | Public Health Committee<br>Ontario Medical Association |
| 1987-1991 | Provincial (Ontario) Advisory Committee on AIDS |
| 1987-1988 | Expert Advisory Committee on Immunization,<br>College of Physicians and Surgeons of Ontario |
| 1983-1987 | Health Protection and Promotion Committee,<br>Metropolitan Toronto District Health Council |
| 1985-1987 | Emergency Services Committee,<br>Metropolitan Toronto District Health Council |
| 1986-1987 | Working Group on AIDS Services, (Chair)<br>Metropolitan Toronto District Health Council, |
| 1985-1987 | Executive Committee,<br>Association of Local Official Health Agencies |

**Consultation Contracts for Schabas Associates Inc.** (Selected List)

Biochem Pharma: Adviser on influenza vaccine issues

Cameco Corporation:  Adviser on epidemiology

Canadian Blood Agency: Observer, GAT Task Force, June 25, 1998, Washington D.C.

Canadian Cancer Society: Cancer Control in Canada: Strategic Priorities for the Next Decade

Capital Health Authority (Edmonton, Alberta): Strengthening Population Health

Health Canada:

Biotechnology Surveillance, Centre for Surveillance Coordination
Health Protection Branch Surveillance Project

Setting Priorities in Public Health

Canadian Consensus Conference on a National Immunization Records System

Expert Panel on Hepatitis C Epidemiology

Expert Opinion of Canadian Red Cross Society Frozen Blood Samples

Laboratory Centre for Disease Control Business Plan Development (with HDP Consultants)

Evaluation of the Canadian Health Network

Surveillance Transition: Principles of Data Collection

Ontario Ministry of Health:

Ministerial adviser on blood issues

Primary Care Reform

Aventis Pasteur Ltd: Advisor on vaccine issues

**Hospital Appointments:**

| | |
|---|---|
| 2005- | Campbellford Memorial Hospital<br>Campbellford, Ontario |
| 2002-2005 | York Central Hospital<br>Richmond Hill, Ontario |
| 1981-1999 | Orthopaedic and Arthritic Hospital,<br>Toronto, Ontario |
| 1983-1987 | Toronto East General and Orthopaedic Hospital,<br>Toronto, Ontario |
| 1977-1978 | Parry Sound District General Hospital,<br>Parry Sound, Ontario |
| 1977-1978 | St. Joseph's Hospital,<br>Parry Sound, Ontario |

**Professional Training:**

| | |
|---|---|
| 1981-1983 | Senior Resident in Community Medicine,<br>University of Toronto |
| 1980-1981 | Senior Resident in Internal Medicine,<br>Wellesley Hospital,<br>Toronto, Ontario |
| 1979-1980 | Junior Resident in Internal Medicine,<br>Toronto General Hospital,<br>Toronto, Ontario |
| 1978-1979 | Junior Resident in Internal Medicine,<br>Women's College Hospital,<br>Toronto, Ontario |
| 1976-1977 | Rotating Intern,<br>St. Joseph's Hospital,<br>Toronto, Ontario |

**Scientific Publications:**

I. Peer Reviewed Journals:

Schabas, Fisman and Schabas,*Control of Clostridium difficile-associated diarrhea by antibiotic stewardship in a small community hospital*. Canadian Journal of Infectious Diseases and Medical Microbiology. 2012;23(2):82-83.

Schabas, *Is the Quarantine Act relevant*? CMAJ 2007; 176: 1840 - 1842

Schabas, *Severe acute respiratory syndrome: Did quarantine help?* Canadian Journal of Infectious Diseases and Medical Microbiology July/August 2004, Volume 15, Number 4

Schabas, *Pre-Hospital Intubation and SARS*. CMAJ (Published On-line August 25, 2003).

Dwosh, Hong, Austgarten, Herman and Schabas, *Identification and containment of an outbreak of SARS in a community hospital.* CMAJ 2003; 168: 1415-1420.

Schabas, *SARS: prudence, not panic.* CMAJ 2003 168: 1432-1434

Schabas, *Colorectal Screening - Time to Act*. CMAJ 2003 168: 178-179

Schabas, *Is public health ethical?* Can J Public Health. 2002 Mar-Apr;93(2):98-100.

Schabas, *Population Screening for Colorectal Cancer; perspectives from the Canadian health care system.* J Psychosocial Onc 2001 19(3/4):21-28

Shapero, Alexander, Hoover, Burgis, Schabas, *Colorectal cancer screening: video-reviewed flexible sigmoidoscopy by nurse endoscopists--a Canadian community-based perspective.* Can J Gastroenterol. 2001 Jul;15(7):441-5.

Schabas, *"Mass influenza vaccination in Ontario: a sensible move."* CMAJ. 2001 Jan 9;164(1):36-7.

Schabas, *"Adolescent and adult pertussis. A problem and a solution."* Can Fam Physician. 2000 Nov;46:2169-70, 2176-7.

Schabas, *"Pertussis in Adolescents and Adults."* Can J Public Health. 2000 Jan-Feb;91(1):73

Elliot, Taylor, Cameron, Schabas, *"Assessing Public Health Capacity to Support Community-based Heart Health Promotion: the Canadian Heart Health Initiative, Ontario Project (CHHIOP)."* Health Educ Res. 1998 Dec;13(4):607-22

Glasgow, Schabas, Williams, Wallace, Nalezyty, *"A Population-based Hepatitis B Seroprevalence and Risk Factor Study in a Northern Ontario Town."* Canadian Journal of Public Health 88(2):87 March/April 1997

Schabas *"Promoting Heart Health Promotion."* Canadian Journal of Public Health 87(Supplement 2) November/December 1996

Whiting, Schabas, and Ashley *"Hib Vaccine Coverage in Children Attending Day Care/Nursery School in East York."* Canadian Journal of Public Health 81(2):152 March/April 1990

Leake, Locker, Price, Schabas, and Chia *"Results of Socio-dental Survey of People Age 50 and Older Living in East York, Ontario."*

Canadian Journal of Public Health 81(2):152 March/April 1990

Frank, Schabas, Arshinoff, Brant, *"Diphtheria-Tetanus Overimmunization in Children with No Records."* Canadian Medical Association Journal, 1989

Leake, Price and Schabas, *"Oral Health Status and Need for Dental Care Among Elderly in East York, Ontario Collective Residences - 1985."* Canadian Journal of Public Health 78(5):323 September/October 1987

Schabas, *"Spreadsheet Epidemiology: an easy route into the computer age."* Canadian Journal of Public Health, 1985

Keystone and Schabas, *"An Unusual Reaction to Azothioprine."* Journal of Arthritis and Rheumatism, 1981

II. Other Journals:

Schabas, *"The Real Lessons of SARS."* Ottawa Citizen, 2007

Schabas, *"Don't Chase Phantom Flu."* Globe and Mail, 2006

Schabas, *"Much Ado About Clucking."* Globe and Mail, 2005

Schabas, *"Don't cry wolf on every flu."* Globe and Mail, February 2, 2004

Schabas, *"SARS, it's a nasty bug but it's not the next plague."* Globe and Mail. April 24, 2003.

Schabas, *"Petussis: New Challenges, New Opportunities".* Canadian Journal of Clinical Medicine. December 1999 p. 112-3

Schabas, *"Pertussis Immunization: Time for Action."* Canadian Journal of Allergy and Clinical Immunology. 5(5):209-10 June 2000

Schabas, *"Colorectal Cancer Screening; what's ahead for Ontario?"* Ontario Medical Review, April 1999

Schabas, *"Re-engineering the Ontario Breast Screening Program."* Ontario Medical Review, April 1998

Schabas, "*Public Health Home Visiting*", IMPrint 17(Winter

1996-7):2-3

Schabas, *"Public Health and the Health of Populations"*, Centre for Health Research News, Winter 1997, No. 16

Schabas, *"Measles Elimination: Time to Catch-Up"*, Measles Update 3(3): 1

Schabas, *"High Risk: Is It Real?"* Ontario Medicine, 1991

Schabas, *"Burkitt: More Foods for Thought."* Ontario Medicine, 1991

Schabas, *"Public Health: New Challenges."* Ontario Medicine, 1990

Heinmann, Mikel, Naus, Goel, Tischler, Carlson, Schabas, Pasut, Borczyk, Krishnan, *"Meningococcal Disease in Ontario During the Winter of 1988-1989."* Canadian Diseases Weekly Report, 1989

Goel, Carlson, and Schabas, *"Lyme Disease, an update."* Ontario Medical Review, May, 1989

Gilmour, Matsamura, Kelly and Schabas, *"Bacterial Contamination of Bowling Alley Water Wells."* Ontario Diseases Surveillance Report, 1984

Barretto, Chung-James, and Schabas, *"An outbreak of Rubella in a Toronto High School."* Ontario Diseases Surveillance Report, 1983

**Public Reports as Chief Medical Officer of Health:**

*1996: Tobacco - sounding the alarm*
increasing smoking rates in Ontario teenagers, attributable to tax cuts and cigarette promotion are a public health crisis - this report recommends wide-ranging action to curtail this problem

*1995: Immunization - the next steps*
a review of the successes in immunization and a strategic plan for expansion of Ontario's immunization program, with a second dose measles catchup, a hepatitis B high school catchup and introduction of a pneumococcal program

*1994: Opportunities for Health - progress against cancer* a description of the epidemiology and etiologies of cancer - a discussion of strategies for cancer control - a strong emphasis for promotion of non-smoking and healthy eating as our best means of controlling cancer - over 100,000 copies distributed

*1993: Opportunities for Health - promoting heart health*
a description of the underlying determinants of ischemic heart disease - smoking, blood cholesterol, blood pressure, body weight and physical activity - their distribution in Ontario and strategies for promoting heart health - over 100,000 copies distributed

*1992: Opportunities for Health - a report on youth*
an analysis of the main health challenges facing year old in Ontario with wide-ranging policy recommendations in areas of tobacco control, alcohol abuse, fitness, nutrition, pregnancy planning, control of sexually transmitted diseases, motor vehicle crashes and mental health promotion

*1991: Tobacco and Your Health*
a descriptive review of the patterns of tobacco use in Ontario and their health impacts over 200,000 copies distributed

**Research:**

1996- Co-Investigator (Rena Mendelson, Principal Investigator)
Ontario Nutrition Survey
Health Canada Grant (Project #E311212)

1994- Principal Investigator (with Prof. R. Cameron, Prof. Susan Elliot, and Prof.M. Taylor)
Canadian Heart Health Initiative - Ontario Project
National Health Research and Development Program Grant
1991-93 Principal Investigator
Ontario Heart Health Survey
National Health Research and Development Program Grant

1985-87 Principal Investigator (with Dr. John Frank)
A study to test of efficacy of the Schick test and
tetanus ELISA antibody in determining primary immunization

**Awards:**

| | |
|---|---|
| 2006 | Smoke Free Champion Award<br>Association of Local Official Health Agencies/Ontario |

Public Health Association

1997 Amethyst Award for outstanding achievement in the Ontario public service

1997 *Salute to the City* Award
Presented to honour the 20th Anniversary of the Toronto Eaton Centre

1990 Distinguished Service Award
Association of Local Official Health Agencies

1981 Milton H. Brown Award
Department of Biostatistics and Epidemiology,
Faculty of Medicine,
University of Toronto

**Public Presentations (Selected List):**

2010 SARS, H5N1 and H1N1 – three panic-demics
Curso Internacional de Medicina Interna de America del Norte
Mexico City, Mexico

2009 H1N1 – What lies Ahead
Ontario Agency for Health Protection and Promotion
Toronto

SARS – The Real Story
Internal Medicine Interest Group
Faculty of Medicine
Queen’s University
Kingston Ontario
SARS – Did Quarantine Work?
American Association for the Advancement of Science
Washington DC

2007 Confessions of a Public Health Doctor
Public Health Interest Group
Faculty of Medicine
Queen’s University
Kingston Ontario

Does Vitamin D Prevent Cancer?
Department of Public Health Sciences
University of Toronto

SARS, the Precautionary Principle and Public Health
Centre de recherche en droit public
Université de Montréal

2006 Pandemic Planning in Perspective
Continuing Professional Development
Queen’s University
Kingston, Ontario

Flu Fraud
Pandemics and the Media
Department of Public Health Sciences
University of Toronto

Prudent Pandemic Planning
Plenary Panel on Pandemic Planning
National Healthcare Leadership Conference
Victoria, British Columbia

2004 Toronto SARS Outbreak
National University of Ireland
Galway, Ireland

My Biotech Career – a cautionary tale
Dublin Molecular Medicine Centre
Dublin Ireland

Lessons from SARS
Department of Public Health Sciences
University of Toronto

2003 Lessons from SARS
Ontario SARS Commission
Toronto

Lessons from SARS
SARS Symposium
University of Toronto

SARS Lessons from the Toronto Outbreak
International Science Symposium on SARS
Beijing, China

Why Public Health in Canada Fails
University of Toronto Alumni Lecture
Canadian Public Health Association Annual Meeting
Calgary, Alberta

The Future of Public Health in Canada
Canadian Institutes for Health Research Symposium
Calgary Alberta

Colorectal Cancer Screening
Medical Rounds
York Central Hospital

Opportunities for Cancer Prevention
Department of Health Studies and Gerontology
University of Waterloo
Waterloo, Ontario

2002 Controversies in Cancer Screening
Annual Clinic Day
Toronto East General Hospital

Politics of Colorectal Cancer Screening
McGill Conference on GI Cancers
Montreal, Quebec

Colorectal Cancer Screening
Cape Breton Cancer Symposium
Sydney Nova Scotia

Feasibility of Eradication of *H.pylori* to Prevent Stomach Cancer
Cancer Care Ontario Workshop, Toronto
Progress Towards a National Immunization Registry

National Immunization Conference
Victoria, British Columbia

2001 Cancer Prevention
Helping Hands Conference
North Bay, Ontario

Colorectal Cancer Screening
Canadian Digestive Diseases Week
Banff, Alberta

2000 Updates in Oncology - Screening
Royal Victoria Hospital
Barrie, Ontario

1999 "Colorectal Cancer Screening - What's ahead for Ontario?"
Focus on the Future Conference
Thunder Bay, Ontario

Colorectal Cancer Screening
Fabian Curry Memorial Clinic Day
Minet, Ontario

"Politics, the Environment and Cancer in Cape Breton."
Joint Preventive Oncology Seminar
Toronto

"Colorectal Cancer Screening - What's ahead for Ontario?"
Annual Preventive Oncology Seminar
Cancer Care Ontario
Toronto

"Preventive Oncology at Cancer Care Ontario."
Ontario Hospital Association
Toronto

1998 "Colorectal Cancer Screening - What's ahead for Ontario?"
Annual General Meeting
Ontario Association of Gastroenterology
Toronto

"Colorectal Cancer Screening - What's ahead for Ontario?"

Colorectal Cancer Symposium
Ottawa Regional Cancer Centre and University of Ottawa
Ottawa, Ontario

Labelle Lecture (Responder)
McMaster University
Hamilton, Ontario

"The Evolving Role of the Community Medicine Specialist" (panel chair)
Annual Meeting
Royal College of Physicians and Surgeons of Canada
Toronto

"Adolescent and Adult Pertussis" (afternoon chair)
Canadian Public Health Association
Toronto

1997 "The State of Public Health in Ontario" (keynote speaker)
Ontario Public Health Association Annual Conference
Kingston, Ontario

"Public Health and the Health of Population"
University of Waterloo

"Public Health and Who Does What"
Annual Meeting
Association of Local Public Health Agencies
Hamilton, Ontario

"What Ahead for Public Health"
Spring Exchange
Ontario Society of Nutrition Professionals in Public Health
Kempenfelt Bay, Ontario

"Genetic Screening and Public Policy"
Association of Genetic Colleagues of Ontario
Mississauga, Ontario

"Promoting Heart Health" (keynote speech)
Peel Heart Health Network,Mississauga, Ontario
"Public Health and Environmental Health"
Seminar, Diploma Program in Environmental Health
McMaster University

"Public Health in the Age of Krever"
2nd National Conference on Communicable Disease Control
Canadian Public Health Association
Toronto

"Ministry of Health and the Blood System"
Update on Transfusion Medicine
Michener Institute and the Canadian Red Cross Society
Toronto

"Immunization Update"
*Saturday at the University* Series
University of Toronto

Keynote Address
Tobacco Control Enforcement Conference
Toronto

"Community Health Research and Public Health Policy"
Panel presentation
Community Health Research Day
University of Toronto

1996 "Barriers to Implementation and Achievement of National Goals"
(plenary presentation) and
"An Anti/Anti Immunization Panel" (breakout session)
Canadian National Immunization Conference
Health Canada
Toronto, Ontario

"Program Evaluation in Public Health (panel presentation)
Association of Public Health Epidemiologists in Ontario Workshop
Toronto, Ontario

"Tobacco - sounding the Alarm" (keynote presentation) and
"Public Health Reform" (concurrent session) and
"Community Action and Public Health in Ontario" (panel presentation)
Ontario Public Health Association Annual Conference
Toronto, Ontario

"Priorities for Tobacco Control in Ontario" (panel presentation)
Preventive Oncology Seminar
Ontario Cancer Treatment and Research Foundation
Toronto, Ontario

"Restructuring Public Health"
Association of Local Official Health Agencies Annual Conference
Gananoque, Ontario

"Cancer Control and Public Health"
Future Directions in Cancer Control
University of Toronto

"Public Health and Confidentiality"
Health Information and Privacy
Canadian Institute of Law and Medicine
Toronto, Ontario

1995 "Immunization - the next steps" (keynote presentation) and "Future Directions in Public Health" (panel presentation),
Ontario Public Health Association Annual Conference
London, Ontario

"Promoting Heart Health Promotion"
Canadian Conference on Dissemination Research
University of British Columbia

2nd International Heart Health Conference
Barcelona, Spain
presented three papers and one poster about the Canadian Heart Health Initiative - Ontario Project

1994 "Implementing New Vaccine Programs"
National Conference on Immunization in the 90's
Health Canada

1992 "What is Safer Sex"
Annual Conference
Canadian Public Health Association
"Understanding Population Health"
Annual Conference

Ontario Public Health Association

1989 "New Directions for Public Health in Ontario"
Annual Conference
Canadian Public Health Association

1987 "High Risk versus Population Strategies - a debate"
Annual Conference
Ontario Public Health Association

1986 "Planning for Change in Public Health"
Annual Conference
Ontario Public Health Association

**Educational Activities (University of Toronto):**

Supervision of Community Medicine Residents: Joel DeKoven, Robert Gin, Medhat Gindi, Paul Gully, Robert Kyle, Verna Mai, Paul Martiquet, Cordell Neudorf, Lynn Noseworthy, Howard Njoo, Sandor Demeter, Elizabeth Richardson, Eric Young, Shelley Deeks, Troy Herrick, Donna Reynolds, David Buckeridge, Matthew Hodge, Christine Kennedy

Supervision of MHSc Students: Jane Colonna, Walter Ewing, Bromwyn Mears, Anthony Shardt, Catherine Whiting, Luba Wolchuk, Barbara Stolz, Jennifer Bridge, Paul Alexander

Course Lectures: Canada's Health Care System, Health Administration, Health Politics

Course Seminars: Cancer Epidemiology

**Educational Activities (other)**

1996 "Public Health and Environmental Health" (seminar)
Diploma Program in Environmental Health
McMaster University

**Memberships:**

Canadian Medical Association
Canadian Medical Protective Association
College of Physicians and Surgeons of Ontario
Ontario Medical Association

Medical Staff Association, York Central Hospital
Royal College of Physicians and Surgeons of Canada

# EXHIBIT B

This is Exhibit "B" referred to
in the Affidavit of
Dr. Richard Schabas

Sworn before me this 29th day
of May A.D., 2021

L Bildy

A Commissioner for Oaths in and for Ontario

LISA D.S. BILDY
BARRISTER & SOLICITOR

HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

43rd PARLIAMENT, 1st SESSION

# Standing Committee on Health

EVIDENCE

**NUMBER 022**

Wednesday, May 20, 2020

Chair: Mr. Ron McKinnon

# Standing Committee on Health

**Wednesday, May 20, 2020**

● (1615)

[*English*]

**The Chair (Mr. Ron McKinnon (Coquitlam—Port Coquitlam, Lib.)):** I now call this meeting to order.

I'd like to welcome everyone to meeting number 22 of the House of Commons Standing Committee on Health. Pursuant to the orders of reference of April 11 and April 20, 2020, the committee is meeting for the purpose of receiving evidence concerning matters related to the government's response to the COVID-19 pandemic.

In order to facilitate the work of our interpreters and ensure an orderly meeting, I would like to outline a few rules to follow.

First, interpretation in this video conference will work very much like in a regular committee meeting. You have the choice at the bottom of your screen of floor, English or French. Please speak slowly and clearly and hold your microphone in front of your mouth.

If you will be speaking in both official languages, please ensure that the interpretation is listed as the language you will speak in before you start. For example, if you're going to speak in English, please switch to the English feed and then speak. This allows for better sound quality for interpretation.

Before speaking, please wait until I recognize you by name. For witnesses, the questioner will basically identify who they would like to respond to the questions. When you're ready to speak, click on the microphone icon to activate your mike. Should members need to request the floor outside of their designated time for questions, they should activate their mike and state that they have a point of order.

As a reminder, all comments by members and witnesses should be addressed through the chair. Should any technical challenges arise, please advise the chair or the clerk immediately and the technical team will work to resolve them. It may be necessary to suspend the meeting in such cases in order to sort things out.

Before we get started, could everyone check on the upper right-hand corner of their screen if they're using a personal computer. In the top right-hand corner there's a choice between speaker view and gallery view. Gallery view will ensure that all video participants can see each other.

I'd now like to welcome our witnesses. Each witness will have 10 minutes for an opening statement, followed by the usual rounds of questions from members. First, as an individual, we have Dr. Amir Attaran, professor, faculty of law, University of Ottawa. As an individual, we have Dr. David Fisman, professor of epidemiology, University of Toronto; and as an individual, Dr. Richard Schabas, former chief medical officer of health for Ontario. From BlueDot we have Dr. Kamran Khan, chief executive officer and founder; and from Dynacare we have Vito Ciciretto, president and chief executive officer.

Welcome everyone. Thank you for joining us today.

We will begin with Dr. Attaran. Welcome back. You have 10 minutes. Please go ahead.

**Professor Amir Attaran (Professor, Faculty of Law, University of Ottawa, As an Individual):** Thank you.

Good afternoon, ladies and gentlemen. Thank you for having me back at the health committee. I hope you've been well.

**Mr. Tony Van Bynen (Newmarket—Aurora, Lib.):** Mr. Chair, I'm sorry. The interpretation is overriding the English language.

**The Chair:** Dr. Attaran, are you on the appropriate translation channel? You should be on the channel for the language you're speaking.

**Prof. Amir Attaran:** I'm sorry, I forgot that. Let's start over.

**The Chair:** Thank you.

**Prof. Amir Attaran:** Good afternoon, ladies and gentlemen.

Thank you for having me back at the health committee. I hope you've been well and that your families have been keeping safe.

When we last met, Canada was in a full lockdown, and I strove to explain how we might get out of it. I offered a road map for exiting the lockdown gradually. That road map remains valid. First, a nationwide lockdown to bring disease transmission to virtually nil, and simultaneously a massive push to increase testing and contact tracing by a factor of ten or more, followed by a sequence of gradual reopenings and infection wavelets that are well calibrated by disease forecasts and monitored by testing to minimize deaths. No competent expert disagrees with this basic strategy.

I said that following this road map would be long and difficult, and I reassured you that there is light at the end of the tunnel. Sadly, some weeks on, today I am here to tell you that the light seems dimmer than I imagined, not for scientific reasons, but for political reasons, which you can fix.

As you know, countries like Australia, Denmark, New Zealand and Norway are executing successful reopenings. Meanwhile, Canada is flying somewhat blind because provincial and federal governments have still not solved their massive failure to co-operate in sharing and analyzing epidemiological data. Without data and analysis, many experts think reopening is arriving too early in some places like Toronto, which will kill people needlessly, and arriving too late in others, like Kingston or the Maritimes, after crippling the economy and ballooning the deficit. This isn't good.

My goal today is to offer a frank reality check, franker than Dr. Tam and Dr. Nemer delivered. I was saddened and frustrated that yesterday many of you asked excellent questions, but got evasive and, at times, mealy-mouthed answers. Please feel free to ask me those same questions. If I can help, I promise I will.

First, let's start with some data and the big question. Is Canada really bending the curve? The answer is sort of.

Many Canadians think we have done well because we are better than the United States, a country that has no public health care, vocal COVID-19 deniers and a president who recommends injecting bleach. The Americans are obviously not the right comparison for us. It's better to compare Canada with other wealthy countries, especially confederations, because they have federal-provincial complications like our own.

Please turn to the line graph I've provided to the committee. It's one of two graphs that were provided.

This graph shows confirmed COVID-19 cases, adjusted for population, starting on the day that a country exceeded the threshold of one case per million population. Canada was the last country to face COVID-19. That's luck, and it gave us extra time to prepare and the benefit of learning from others who went before us. With those advantages we achieved a lower infection peak. However, we come to the question of bending the curve down, we're doing poorly. Instead of the successful nosedive the graph shows for France, Germany, Spain or Switzerland, which they achieved despite a faster and higher peak than ours, our curve looks more like an undulating plateau that gradually drops off like a bunny ski hill. By May 18, our daily confirmed cases were tied with those on April 4. Between those dates are weeks of squandered time, lives and money, the latter being around $12 billion a week to the macro economy.

● (1620)

I find the comparison with Australia the most interesting. It proves that Canada could have done better. It is a large confederation of states, much like our own provinces, and it crossed the threshold of one case per million just one day before we did. In other words, we started off tied, but instead of dithering, Australia smacked down its curve hard and fast. Its results are almost as impressive as South Korea's, which many reckon to be the world's most successful country. Now Australia is opening thoroughly, and we are not, so the costs of this failure are just massive. The next time you hear the Prime Minister and Dr. Tam say that Canada is bending the curve, be skeptical. Be much more skeptical than you have been.

Let's now talk about testing. You heard from nearly everyone that Canada is doing a poor job and that without more and faster testing it is impossible to reopen without unnecessarily risking and losing Canadian lives. The scientific goal is not simply testing the sick, but over-testing the vulnerable and anyone else who might have come been contact with the sick so as to isolate them for 14 days and nip outbreaks in the bud, yet Canada's testing remains awful, especially in Ontario and Quebec.

The bar graph I furnished to the committee shows over-testing as the ratio of total COVID-19 tests per positive test. The higher that ratio, the better the chance of spotting infections and avoiding outbreaks. If one chooses not to worry about the price of testing—and one shouldn't, because testing costs peanuts compared to hospitalizations or lockdowns—then it is far better to test too much than too little.

On this measure of testing, Canada lags behind not just top performers like Australia and South Korea, but also behind Ethiopia, Rwanda, Kenya, Cuba and Ghana. We are such testing tightwads that low-income countries in Africa surpass us. Africans also outclass Canada on contact tracing. Addis Ababa's extensive testing and contact tracing puts Montreal and Toronto to shame.

For Canada to be beaten by the world's poorest countries has got to puncture the myth of competence and success. It cannot be that Canada lacks Africa's scientists, laboratories, equipment or chemicals, any of that. No. The reason we have failed is the cupidity and stupidity of certain governments, and this is where I put my constitutional lawyer hat on to talk about federalism. American lawyers have a great saying. They say that the Constitution is not a suicide pact, but I'm afraid, ladies and gentlemen, that during a killer pandemic our usually accepted federal-provincial relations can turn into a suicide pact.

I believe that our most fundamental failing right now is that pandemic responses are handicapped by a mythological, schismatic view of federalism. Thus, when provinces withhold epidemiological data or do a poor job of testing, collectively we grumble, we shrug and we mutter that health is provincial, but this is wrong. Speaking as a constitutional lawyer, health is actually a shared federal/provincial jurisdiction. The Supreme Court is dead clear about that. It says, "Health is a jurisdiction shared by both the provinces and the federal government." That's our Supreme Court, and it's perfectly accurate.

I think it is good for the federal government to let provinces run their show, and that's normally how it should work, but I'll suggest that a pandemic is not normal. There comes a point when the federal government must step in, the point where provincial actions are killing Canadians. If our country cannot show that once-in-a-century flexibility, then, yes, we are turning the Canadian Constitution into a suicide pact.

I know that what I've just said will be outrageously controversial. I'm sorry, but as a person who loves this country, I cannot let obvious mistakes pass and kill my neighbours.

● (1625)

Let me close with three recommendations.

First, Parliament must pressure cabinet into taking legal steps to force provinces to share epidemiological data. These are the data that scientists like Dr. Fisman and Dr. Khan absolutely need to keep me, you and your loved ones alive as this lockdown lifts. Parliament gave cabinet the power to demand data in section 15 of the Public Health Agency of Canada Act, but the Prime Minister has not used that power. It's frankly pathetic.

Second, demand that the Public Health Agency of Canada set minimum standards for things like testing. We cannot remain stuck behind Africa. Come on. It was only last week that the Prime Minister proposed a national testing strategy. That is much too late. We need it now.

**The Chair:** Dr. Attaran, you're at 11 minutes. Could you wrap up, please?

**Prof. Amir Attaran:** Sure.

Third, sign an accord with the provinces on co-operating throughout this pandemic. In Australia, the prime minister and the premiers signed a COVID accord on March 13, and the Vikings have killed this thing. Those Australian Vikings have put it down.

It's unbelievable that two months later, Canadian governments still have no COVID accord.

I'll close there. I hope you take these suggestions in the spirit they are intended, not to gore anyone's sacred cow, but to save the lives of the Canadians we love.

Thank you for hearing me.

● (1630)

**The Chair:** Thank you, Dr. Attaran.

We go now to Dr. Fisman.

Dr. Fisman, please go ahead. You have 10 minutes.

**Dr. David Fisman (Professor of Epidemiology, University of Toronto, As an Individual):** Honourable committee members, thank you for the privilege of appearing before you.

The last several months have offered us as a country extraordinary challenges. As an epidemiologist, internist and parent, these challenges have subsumed every part of my work life and my personal life. I haven't hugged my kids since mid-March. I have watched patients admitted to hospital with mild breathing difficulties and have seen these same patients wheeled into the intensive care unit 72 hours later. My colleagues have cared for married couples, and have had to tell the surviving spouse of the death of their partner while on clinical rounds. I've had the gratifying experience of watching our modelling work influence policy. I've also experienced the annoyance of watching epidemiological data abused, misused and distorted in support of various political, economic and social agendas.

The challenges I have faced pale next to those faced by many Canadians, those who have lost their jobs or lost their loved ones, often without the chance to hold hands or say goodbye. They pale next to the challenges faced by those who have worked at essential jobs under pressure from employers but without access to adequate personal protective equipment. We've watched extraordinary leadership from senior public health officials across the country. Here I'd like to single out the clear, compassionate messaging from Drs. Henry, Hinshaw and Tam for special praise.

We have also struggled with more limited leadership in other provinces. Here I would note in particular the failure of provincial public health officials in Ontario to act swiftly and courageously to stop the spread of COVID-19 in long-term care facilities, the failure to clearly articulate that COVID-19 was spreading in our communities in early March, and the failure to keep up with the best epidemiological evidence on important issues like transmission of disease by individuals with few or no symptoms.

So yes, we have seen many challenges, some of which we have met and some of which we have not. My group prepares forecasts for several federal and provincial colleagues each morning. We have documented a reproduction number for the epidemic in Canada of below one since around May 9, 2020. That's a hopeful sign. The reproduction number of an epidemic, the number of new cases created by an old case, is an index of epidemic growth and decline. A sustained reproduction number of below one suggests that this first wave of the COVID-19 pandemic is approaching an end in Canada.

I have been concerned by how this encouraging turn of events has been interpreted by some to mean that this wave is ending in spite of, rather than because of, the patient and selfless actions of many Canadians who've experienced hardship, isolation and deprivation in order to distance themselves from workplaces, friends and family. In Canada we have seen health care systems stretched and challenged, but we have not witnessed the tragic overflow of intensive care units as has occurred in Wuhan, Lombardy, New York and Madrid.

Make no mistake, our failure to experience these tragedies does not mean that models were wrong. Cities around the world that failed to react to approaching epidemics as promptly as Canadian cities did have experienced astounding surges in mortality—a 300% increase in deaths in New York, 75% in Stockholm, 460% in Bergamo, and a 100% increase in mortality in London. We reacted to approaching disaster in time to avert the worst of this first wave, but in our two largest cities, Montreal and Toronto, we still have several hundred individuals in intensive care units.

Now we face what I'll refer to as the "paradox of prevention". By preventing widespread infection in the country, we've maintained susceptibility in the population, which leaves us vulnerable to future epidemic waves. This is the defining paradox of public health. Our fundamental deliverable is the non-occurrence of events. Those of us who work in the field are accustomed to having our outputs taken for granted. To note one familiar example, vaccination programs are criticized because their very success means we don't experience outbreaks. Perhaps a silver lining to this episode, moving forward, will be a greater appreciation of what public health provides us in normal times.

To go back to our successful avoidance of even greater tragedy in Canada in March and April, having achieved this important success, we need to move forward with economic revitalization. I think the presentation of our choice as economic revitalization versus prevention of disease transmission is a Hobson's choice or false dichotomy. We can't ignore our economy, but we won't have robust revitalization without strong surveillance systems and health protection measures. A frightened and grieving population will not drive a strong economy. In the United States, data assembled by JPMorgan Chase show clearly that declines in spending are strongly linked to levels of disease activity.

● (1635)

The bedrock on which revitalization rests will be public health surveillance and laboratory testing. We can't see this epidemic without testing, and we can't fight an epidemic that we cannot see.

The virus is a slippery foe, and it's a study in contradictions. I call it Schrödinger's coronavirus. It's dangerous and it's lethal, but it causes mild illness and even infection without symptoms. It kills over 7% of the Canadians with recognized infection, but it gives most children a free pass.

Asymptomatic and presymptomatic infections are a Trojan horse that gives entry to congregate settings like long-term care and retirement homes, health care facilities, prisons and food processing plants. Once it's spreading in these institutions, it can take a terrible toll, as we have seen in long-term care facilities.

We can look around the world for successful responses to this epidemic and emulate best practices, but we can also emulate best practices here in our own country. Colleagues in Newfoundland have controlled COVID-19 rapidly; they tell us to hunt the virus and be proactive. Colleagues in British Columbia teach us how important clear strategy and communication are in this fight. Alberta can show us how to scale up testing, and our northern territories can show us how to protect isolated remote communities. Saskatchewan has shown us how to deal swiftly with growing outbreaks to prevent geographic spread of infection.

But I do believe that our most potent weapon in the fight is testing. Work by my colleague, Dr. Ashleigh Tuite, shows that without aggressive testing, control measures like contact tracing are likely to be fruitless, as we will only perform contact tracing on tested cases. If we fail to test at scale, we will miss too many additional cases for contact tracing to change the dynamics of the epidemic. It will simply be a waste of resources. If we test at scale, we can keep the epidemic in our sight and move toward economic revitalization while keeping Canadians safe.

Testing will be our eyes and ears as we move forward to open our economy, but the laboratory is a tool that needs to be used differently in different settings. We need to establish regular testing regimens for those who work in congregate settings with vulnerable individuals, especially in long-term care and in hospitals. Testing in a stable and consistent way allows us to estimate the reproduction number of the epidemic and know when we're headed back into exponential growth. We want to find all the cases we can. That's how we prevent sparks from turning into forest fires.

Hospitalizations and deaths are easy to see, but they're lagging indicators. Instituting control policies once those are surging means that we've already missed the boat. We can use non-traditional surveillance tools, too, like web-based syndromic surveillance, and even surveillance of sewage for coronavirus levels, as is already being done in other countries. Situational awareness will keep us safe as our economy comes back to life.

We can also demand more of our country. This epidemic shows us that having laboratories with 21st century diagnostic technology, but public health information systems that depend on fax machines from 1995, will hold us back. We can demand more transparency from our leaders. As action by the public is central to disease control, it's important that the public be kept in the loop and made to feel like they're on the team. Indeed, they are the team.

We need clear, transparent benchmarks across the country on testing, on turnaround times for case reporting and contact tracing and for the reproduction numbers that will be used to determine when we need to strengthen distancing and when we can loosen it. We will have more setbacks; the countries with the strongest response programs in the world have all suffered them. We will too. I'd ask you not to throw your hands up and let the virus win.

Don't let uncertainty distract you from the mission. Uncertainty is to be expected for a disease that's been in humans for 24 weeks. Don't let smug professors bully you about the absence of randomized controlled trial evidence for control of a disease that has only existed for half a year. We can acknowledge uncertainty and be humble about this disease, but always put the lives and livelihoods of Canadians at the forefront when we make our decisions.

Thank you for the opportunity to answer your questions today.

● (1640)

**The Chair:** Thank you, Dr. Fisman.

We go now to Dr. Schabas.

Please go ahead. You have 10 minutes.

**Dr. Richard Schabas (Former Chief Medical Officer of Health for Ontario, As an Individual):** Mr. Chair and members of the committee, it's a privilege to speak with you today.

I'm a retired physician. I practised medicine for 40 years in two specialties: public health and internal medicine. I worked in local public health for 15 years. I was Ontario's chief medical officer of health for 10 years. I was directly involved in the 2003 SARS outbreak as the chief of staff of York Central Hospital. I have published academic and popular articles on relevant subjects, such as SARS, quarantine and bird flu.

Canadians on the whole enjoy a wonderful standard of health, resting on the foundation of the social determinants of health: education, employment and our social fabric. Anything that threatens these foundations threatens our public health.

Canada is now faced with both a tragedy and a crisis. The tragedy is caused by COVID, a respiratory virus. It has the potential to cause the deaths of tens of thousands of Canadians, overwhelmingly old and infirm.

The crisis is caused by our attempts to control that virus. The crisis has the potential to cause severe and lasting damage to the fabric of our country's economy, education, social and cultural institutions, and mental health that will have repercussions for our public health for decades.

The tragedy is a natural disaster that saddens me and saddens us all. The crisis is a self-inflicted wound that frankly terrifies me. It offends social justice, because the burden of the crisis falls disproportionately on children, young families and blue-collar workers. The more we focus exclusively on COVID, the greater the danger to our public health.

The best analogy to the COVID outbreak is the H2N2 Asian flu pandemic that swept around the world in the fall of 1957. Asian flu caused more disease and a much higher death rate, especially in younger people, than COVID. Asian flu killed between one million and two million people in a matter of a few months in a world population one-third the size of today's. That's the equivalent of three million to six million deaths today, many more than from COVID. Asian flu was a tragedy, but it wasn't a crisis, because 60 years ago people responded differently. Some modest control measures were taken, but they were very temporary. The world moved on.

Perspective isn't very popular with COVID, but I think it's important. We get spooked by COVID deaths because every day we see the numbers for COVID, but not for anything else. Death is a common phenomenon in our world. Almost 300,000 Canadians will die this year, like every year, from cancer, heart disease, stroke, motor vehicle crashes, suicide and a myriad of other causes. Since mid-March, for every Canadian outside long-term care who has died of COVID, 50 Canadians have died of something else.

We have frightened people. Predictably, the media has led the way. But public health has also frightened people, I think, to promote better compliance with social distancing. This was wrong for two reasons: first, it's cynical; and second, it now will make it that much harder to step down.

My wife and I live in Toronto. When we walk our dog, we see two kinds of people— those like us who have done the math and aren't really frightened by COVID, and those who think walking the streets is dangerous. But there's a third group, the people in our building whom we haven't seen for two months who are too terrified to even go outside. Getting them to re-enter the world will be a tremendous challenge.

The only reliable defence against a respiratory virus is immunity. You can get immunity from being infected or you can get it from a vaccine. A safe and effective vaccine would be wonderful, but it would be foolish to build public policy around expectations of a vaccine any time soon. Any strategy that doesn't take us towards immunity ultimately leads us nowhere. So long as the disease is circulating elsewhere, it's coming back here too. Provincial or national elimination is a false promise.

● (1645)

Population immunity leading to herd immunity is a natural phenomenon not an intervention, not an experiment. Herd immunity is what has controlled every other respiratory virus. We will get there sooner or later with COVID. The policy challenge is to mitigate the worst effects of the disease while protecting the real determinants of our health: education, employment and our social fabric.

We have better information about COVID than we did two months ago. We know that COVID is very serious, certainly much more serious than I, for one, expected. However, it's also not the apocalypse that some of the models had predicted, not even remotely close. The comparison should be with 1957, not 1918.

We know that our health care system can cope. A combination of expanded capacity, better treatment strategies, and triage mean that the apparent capacity crisis in Italy has not been repeated here or really anywhere else. We know that the great majority of people in Canada are at very little personal risk of death from COVID. For virtually everyone under the age of 60 and for people without serious comorbidities to a much older age, the risk of death from COVID infection is not materially different from the risk of dying from influenza. We are two populations: the frail elderly for whom COVID is a deadly disease and the great majority for whom it is not.

Canada's experience in the last two months has been problematic. We seem to have been reasonably effective at reducing infection in the community, but we have not been effective in protecting the institutionalized, frail elderly because of a massive failure of infection control in some facilities. As a consequence, we have had many deaths, but we have relatively little population immunity.

The COVID outbreak in the northern hemisphere has been on the wane since late March—for almost two months. The policy tide worldwide is now towards reopening. Canada will be swept along.

My real concern is that the virus will return, probably in September, and that our attempts to control it with widespread testing and contact tracing will probably fail. I've worked long enough in public health to understand the limitations of contact tracing as a disease control strategy, particularly for a disease like COVID.

However, when this strategy fails, will we panic and lockdown again, this time indefinitely, or will we respond in a more measured and rational way? We have some time to prepare. If plan A is based on testing and contact tracing, we need a plan B. What should we do now?

First, we need to identify those things that are fundamentally non-negotiable. Education, which requires the reopening of schools, and employment, which requires that many people return physically to work, should be top of the list, along with access to medical and dental care.

Second, we need to be clear that we are pursuing the policy of mitigation not elimination. With mitigation, we can tolerate an increase in cases when we open up now, and again when the disease resurges in the fall. We will regard community spread as inevitable and as a step towards population immunity.

Third, we need to do serious policy work to identify those aspects of social distancing that are effective, acceptable and sustainable. Canada's latest fad is for non-medical masks, based on the thinnest of evidence. Let's think carefully before we change ourselves into a society that hides its face in public.

Fourth, we must develop better strategies to protect the vulnerable, particularly better infection control in long-term care institutions. This alone will go a long way towards reducing mortality.

Fifth, we need to change our messaging to the public to better reflect their real risk of serious illness and death so that people will be willing to come out of isolation and resume normal life.

Sixth, we need to look for ways to develop public health policy nationally. We need a national, not a federal, public health agency that engages the provinces with the federal government as equal partners.

Thank you.

● (1650)

**The Chair:** Thank you, Dr. Schabas.

We'll go now to Dr. Khan from BlueDot. You have 10 minutes.

**Dr. Kamran Khan (Professor of Medicine and Public Health, University of Toronto, Chief Executive Officer and Founder, BlueDot):** Good afternoon, ladies and gentlemen, and thank you for inviting me to be a part of this important discussion today.

First let me introduce myself and tell you a bit about my background and its relevance to today's meeting. My name is Kamran Khan, and I'm a physician trained in internal medicine, infectious diseases, and preventive medicine and public health. I practise medicine and am an epidemiologist who has been studying outbreaks and emerging infectious diseases at St. Michael's Hospital in Toronto for the past 17 years. I'm a professor of medicine and public health at the University of Toronto and am the founder and CEO of a digital health company called BlueDot.

What has motivated me to dedicate my professional life as a clinician, an academic and an entrepreneur to the field of emerging infectious diseases? Twenty years ago, I began my training in infectious diseases and public health in New York when West Nile virus arrived in the city and began its westward march across the continent. Two years later, shortly after the terrorist attacks of September 11, 2001, anthrax was weaponized and dispersed through the U.S. postal system, reminding us that deadly outbreaks can arise from deliberate acts. After returning to my home in Toronto two years later, a coronavirus known as SARS spread from mainland China to dozens of cities and countries around the world, including Toronto, where it triggered a deadly outbreak that lasted four very long months. While the world had never seen an outbreak quite like SARS before, it was clear that this wouldn't be the last time.

The world is changing in ways that are driving the emergence and spread of dangerous diseases, but it's also changing in other ways that can play to our advantage. The rise of big data, the advent of artificial intelligence and emerging digital technologies offer us the raw materials needed to literally spread knowledge around the world faster than any outbreak. This was the inspiration for BlueDot's founding six and a half years ago, to build a digital global early warning system for infectious diseases that can transform how the world prepares for and responds to tomorrow's inevitable infectious disease threats, whether they arise from Mother Nature, accidents or deliberate acts.

The early warning system we have developed at BlueDot serves three key objectives: first, to detect infectious disease threats as early as possible to buy ourselves valuable time; second, to assess their potential for global spread and impact so that we can channel our finite resources to the right place at the right moment; third, to empower a wider array of decision-makers, from government to health care to the private sector, with timely insights so that together we can mobilize highly effective, efficient and coordinated responses.

To detect threats at their earliest stages, our early warning system processes vast amounts of online data in 65 languages, searching for early signals of outbreaks involving over 150 different diseases and syndromes, 24 hours a day, 365 days a year. The surveillance engine does not rely solely on official news of outbreaks reported by government agencies, but also analyzes unofficial information generated through digital media, health blogs and other online sources.

This engine picked up an article in Chinese on the morning of December 31, 2019, reporting on an outbreak of pneumonia of an unknown cause in Wuhan, China. This event certainly captured my attention, given the number of parallels to the emergence of SARS in 2003. Within a few seconds of detecting the outbreak in Wuhan, our system analyzed the flight schedules and anonymous itineraries of hundreds of thousands of travellers departing Wuhan on commercial flights for destinations around the world. Given our early concerns about this outbreak, my team submitted results of this analysis for publication in an open access, peer-reviewed scientific journal on January 8, 2020, in order to make this data freely available for anyone to access. This analysis accurately identified many of the cities outside of mainland China that were among the first to confirm cases of COVID-19.

As cases of COVID-19 arrived in North America, our team began generating insights to support public health efforts to mitigate domestic transmission of this virus within our communities. These analyses made use of anonymous location data generated from mobile apps to understand the movements of populations—critical insights for public health officials to optimize and strategically make use of their finite human resources across the country and over time.

It's worth noting that BlueDot only makes use of third party data that is anonymized, adheres to all legal and regulatory requirements, and is aggregated up to the level of populations. These location data have been used for years in sectors from urban planning to transportation to retail, among others. Here, we're making use of them for the sole purpose of safeguarding communities and protecting lives during the midst of a pandemic.

● (1655)

At BlueDot, our diverse team, comprising physicians, veterinarians, epidemiologists, geographers, ecologists, data scientists and engineers, has been diligently working for the past six and a half years leveraging data, advanced analytics and emerging digital technologies to develop innovative solutions that are capable of generating insights to mitigate risks from infectious disease threats in our rapidly changing world. But insights are only meaningful if they are translated into action, and that translation can only happen through partnerships.

In this regard, BlueDot has a long-standing partnership with Global Affairs Canada, going back to 2014, in which we have been building and implementing digital systems to manage infectious disease risks across the Association of Southeast Asian Nations. In 2019 we began a partnership with the Public Health Agency of Canada, channelling our efforts to mitigate domestic risks from global infectious diseases. Now, as the COVID-19 pandemic evolves into new phases, we continue to work together to mitigate its impacts across the country.

I'd like to conclude by saying that Mother Nature is sending us a message. A confluence of forces in our rapidly changing world—population growth, urbanization, the industrialization of agriculture, the disruption of wildlife ecosystems, climate change and increases in global population mobility—is accelerating the emergence and global spread of infectious diseases with unprecedented consequences. As global citizens, this is a reality we have to confront, or we risk finding ourselves in the same precarious position we are in today a few years down the road.

We have also learned that outbreaks move incredibly fast in our hyper-connected world. If we want to remain a step ahead, we are going to have to move even faster. Thankfully, we have what is needed to generate powerful insights: access to diverse and novel data, and human intelligence coupled with artificial intelligence to derive meaning from these complex data.

We need to translate insights into actions that reach across the whole of society. Governments empowered with timely insights will be better able to protect their citizens and economies from dangerous global infectious diseases. Hospitals and health care providers will be better able to protect themselves and the rest of us from these very same diseases. Businesses will be better able to protect the lives and livelihoods of their employees and customers. Creating an ecosystem to manage these risks together is not only possible, but, in my opinion, necessary.

A final thought to leave with you is that our most valuable resource is time, and it is a non-renewable resource. When we get through COVID-19—and we will—the question for all of us will be whether we will use every day of peacetime to prepare for the next inevitable threat with the same sense of urgency with which we are responding to COVID-19 today.

Thank you for the opportunity to share my thoughts with this committee.

**The Chair:** Thank you, Dr. Khan.

We go now to Mr. Ciciretto, president and chief executive officer of Dynacare.

Go ahead, please. You have 10 minutes.

**Mr. Vito Ciciretto (President and Chief Executive Officer, Dynacare):** Good afternoon. Thank you, Mr. Chair and members of the House of Commons Standing Committee on Health, for your invitation to this very important meeting. I hope that each of you and your families are healthy and well. It is a privilege to be with you today on behalf of Dynacare to discuss the Canadian response to the COVID-19 pandemic.

At Dynacare, we believe that life is precious. Our mission is to support the health of Canadians with commitment and care. That is why we do what we do. Our 2,900 Dynacare employees deliver the highest level of clinical and scientific testing to provide the necessary information that supports the diagnosis, treatment and well-being of Canadians. Each and every day we provide testing and medical laboratory services to over 32,000 Canadians across the country, amounting to over 11 million tests annually. We operate 200 convenient and accessible specimen collection centres in Ontario, Manitoba and Quebec. We operate seven state-of-the-art laboratories in four Canadian provinces. We report over 500 critical results requiring immediate action by physicians.

Our goal is to inspire confidence in Canadians when it comes to managing their health and well-being. To achieve this, we have elevated the patient experience at our specimen collection centres. We continuously innovate by introducing new and improved test methodologies such as genetic testing; liquid-based cytology; non-invasive prenatal testing; and the piloting of Pixel, a self-collection test methodology utilized in remote rural communities. We have introduced patient-friendly diagnostic testing reports and digital apps that help Canadians better manage their health journeys.

This unprecedented pandemic has highlighted that the work we do at Dynacare matters now more than ever. We are very proud to play a critically important role in supporting the provincial public health authorities of Ontario, Manitoba and Quebec in their efforts to control this pandemic. Since March 25, our talented scientific and laboratory professionals at Dynacare have conducted over 40,000 COVID-19 molecular tests across these provinces, including COVID-19 testing for members of vulnerable and priority populations, such as those in emergency shelter systems, residents of long-term care facilities, EMS first responders and health care workers.

Even throughout this pandemic, Dynacare has continued to operate its laboratories and accept patients at our collection sites for urgent non-COVID-19 testing. In addition to the provision of COVID-19 testing, our community laboratory infrastructure has helped to alleviate pressure on provincial public health systems and hospitals. In particular, our medical couriers have quickly and safely transported COVID-19 test specimens from screening and assessment centres to Dynacare, public health and hospital laboratories. On behalf of the provincial public health labs, we have delivered negative COVID-19 test results to over 25,000 patients. We have supported vulnerable populations by establishing designated Dynacare specimen collection sites for immunocompromised patients and for COVID-19 positive patients. We have engaged in non-COVID-19 sample collection at long-term care facilities.

Our employees have rallied behind Dynacare's response to this pandemic and, as such, we celebrate the many acts of compassion through our Dynacare health care heroes social media campaigns. Our people are the ones who have truly stepped up.

The COVID-19 testing system has generally been working well with strong collaboration among public health agencies, community laboratories and hospitals. But, as with any unprecedented and rapidly evolving environment, there are challenges and opportunities for improvement.

The technical nature of the nasopharyngeal collection process, along with the required swabs that are employed in the collection of a COVID-19 sample, have been rate-limiters in terms of testing and have increased the demand for PPE. At over 200 collections centres, Dynacare has over 850 phlebotomists who are not authorized to collect samples using the current collection devices.

● (1700)

By employing alternative specimen collection procedures used in other countries, our team can support provincial screening. To this end, Dynacare is embarking on a study with Sunnybrook Occupational Health to validate alternative sample collection methods using saliva and front-of-nose collected specimens. The results of this study are expected within a few weeks.

Second, shortages of testing reagents and collection kits were common early in this pandemic. Due to increased vendor production and the proactive response of our supply chain team, we appear to have sufficient supply for our current volume of testing. However, in order to support expanded testing needs, our intention is to increase testing capacity, both through new collection techniques and through supply chain preparedness. Global demand has made it very difficult to secure additional testing capacity and reagent supply on a timely basis. Vendor allocation practices drive more test capacity and reagent to jurisdictions that have been more severely impacted by the COVID-19 virus than Canada has.

It's important to everyone at Dynacare that at the end of every laboratory test we perform there is a person—a mom, a dad, a daughter, a friend. It is not uncommon for our dedicated teams of employees to go above and beyond the call of duty by helping to secure a replacement test requisition for a patient, by leading a drive-by convoy to acknowledge the efforts of front-line health care workers at hospitals, or by making extended efforts to contact a patient with a critical result.

We treasure the value that our dedicated employees bring to the health care system, and we go to great lengths to take care of them. Notwithstanding the significant drop in non-COVID-19 test volumes during this pandemic, we have not thus far implemented furloughs, layoffs or reductions in base pay, due to our long-term philosophy and government wage programs. We are very proud of this and believe that it positions us well for the future. As doctors' offices and clinics reopen, as elective surgeries start again, as insurers and employers resume regular activities, Dynacare will be in a position to meet the laboratory testing needs of our patients and clients and support our health systems across Canada.

Unquestionably, our workplace will be defined by a new normal, with new social distancing and PPE protocols that will protect our patients and our people. As the number of patients requiring service continues to increase, these new protocols will demand the need to adapt, and we will.

Across Canada, some provinces are slowly beginning to open back up in ways that we would not characterize as business as usual. In the absence of a vaccine and lack of scientific consensus on the potential for immunity to the COVID-19 virus, some employers are expressing concern that their workplaces could be prone to COVID-19 outbreaks. Employers across a number of sectors, including food and beverage production, natural resources, manufacturing and many more have expressed an interest in the provision of COVID-19 testing at their own cost. Dynacare's priority will always be supporting health systems in responding to the emergency presented by COVID-19. As the economy opens up, we see a need to work with industry to avoid workplace outbreaks as a means to limiting the community spread of COVID-19.

Key to restarting the Canadian economy is high-quality antibody testing, which can determine whether an individual has been exposed to the COVID-19 virus. Public health authorities, in conjunction with medical and scientific experts, are working to determine how COVID-19 antibody testing could be applied.

This past week, two COVID-19 antibody tests were approved by Health Canada. Dynacare is currently working with two additional vendors who will be seeking Health Canada approval for an antibody test. A community laboratory like Dynacare is very well positioned to support large-scale provincial COVID-19 antibody testing surveillance programs through its extensive specimen collection network of 200 centres, our well-equipped laboratory facilities and our extensive logistics network. We do this every day—efficiently, effectively and with compassion.

In public health emergencies, those in poor health or with underlying chronic conditions are often the most vulnerable.

● (1705)

For many, the COVID-19 pandemic has emphasized the importance of keeping Canadians healthy and decreasing the prevalence of chronic conditions such as cardiovascular disease, lung disease, metabolic syndrome and diabetes.

At Dynacare, we believe that life is precious, and we look forward to continuing to improve the health of Canadians by providing ongoing support to provincial health care systems and through health and well-being programs at Canadian workplaces both through the COVID-19 pandemic and beyond.

Thank you again for the opportunity to address this committee.

Take care and be well.

**The Chair:** Thank you, Mr. Ciciretto.

We'll start our rounds of questioning now. We will do three rounds. We will start the first round with Ms. Jansen.

Ms. Jansen, please go ahead. You have six minutes.

**Mrs. Tamara Jansen (Cloverdale—Langley City, CPC):** Thank you to everybody for all your presentations. That was very wholesome. It was great.

I'd like to start with Professor Attaran. I found your written submission very interesting, and I had to chuckle when you pointed out the fact that some hospitals are still faxing in their data. My first foray into state-of-the-art technology on the farm was when we bought a fax machine back in 1992, 28 years ago.

However, in order to stay in business, we obviously had to invest in better and better data collecting technology. I have to say that I was completely shocked to find out from previous witness testimony at this committee that our health care system doesn't have a real-time data collection system in place, especially considering the different recommendations that have been made following previous pandemics.

We have had several witnesses come to this committee and beg us to find a way to move forward with a pan-Canadian data collection system that works in real time. A system like this could help us on so many different levels, not just during a pandemic, but it seems there is this fear that sharing information in this way will compromise the autonomy of provincial and local health authorities.

In your opinion, is there not a way to ensure that each provincial and regional jurisdiction can continue to make decisions that make sense for them while still sharing their data and helping the country with a more informed pandemic response?

● (1710)

**Prof. Amir Attaran:** What a great question, thank you.

On the question of sharing epidemiological data, it's like this: If you had a number of people who had pieces of a map of a minefield, would you tolerate them not sharing that data? I think you'd probably want to have a map of the entire minefield, not just your little patch of it, if you were setting out on a journey.

The current situation is as foolish as that. Each province has a certain amount of data about the outbreak within its borders, and it can either contribute that piece to modelling exercises or not, and depending on whether it does so or not, we have a better or worse view of the epidemic.

The answer to your question lies in a legal part as well as an administrative part. Legally it's very simple. Cabinet just needs to use section 15 of the Public Health Agency of Canada Act and issue an order in council that data must be provided, period.

Parliament gave it that power. It simply leaves me speechless that the current cabinet hasn't used it. That is something I hope you follow up.

**Mrs. Tamara Jansen:** Okay, I have a really short amount of time, sorry.

**Prof. Amir Attaran:** I'm sorry.

**Mrs. Tamara Jansen:** Okay, I appreciate that.

You mentioned in your submission the dysfunction that we have in sharing data, and, again, being from a business background.... I worked in the retail sector for many years, and our spring season was always very short. We had an eight-week period across multiple provinces, so that meant timely data was absolutely critical to make these decisions on where to send what product and when. We were able to take into consideration those regional differences to ensure the right assets were sent to the right place at just the right time, and we know the technology is available for a pan-Canadian data system.

Yesterday Dr. Tam mentioned that PHAC has no choice, and now you are mentioning they actually do under section 15, so it strikes me that, if Statistics Canada is able to aggregate information about Canadians without violating privacy rights, surely the health care system can do the same.

**Prof. Amir Attaran:** Statistics Canada can do the same, too. They could build the system inside of about a couple of weeks, I'm told, but they need the mandate from cabinet. That is what's missing. There you go.

**Mrs. Tamara Jansen:** Okay.

**Prof. Amir Attaran:** I will just add one last thing to this. There was a time in this country when the federal government did provide a contract to somebody to develop such an epidemic data reporting system. It was given to IBM Canada. The system did not function, and they are the same ones who are behind Phoenix, so there is not a good history here.

**Mrs. Tamara Jansen:** Okay. Thank you.

I've asked numerous witnesses if they would give PHAC a grade on their pandemic response. So far no one has been willing to give me a straight answer. I've been hearing of some backlash by PHAC to those who are vocally critical in their response to the pandemic.

Are you willing to give me a grade, or could that disadvantage you in your work in some way?

**Prof. Amir Attaran:** My grade is a C-minus or a D. And there is retaliation, yes. Since the last time I appeared in front of this committee, and was negative about some of those efforts, I was asked to join a grant application with people from PHAC. I understand they said they wouldn't participate unless I stood off it, which I did willingly because I didn't want to cause trouble for my colleagues. But I don't feel there should be retaliation against witnesses simply for providing our democratic government what we think is the truth.

**Mrs. Tamara Jansen:** Okay. Thank you for that direct answer. I appreciate that.

Yesterday, Dr. Nemer talked about the task forces she set up to tackle the Canadian pandemic response. She mentioned that, although she could share the agendas, she couldn't share the deliberations or findings because they are secret. I believe other countries around the world that have set up similar task forces are sharing their research papers publicly, which helps us all.

Do you think the findings of these task forces should also be public so we can have that timely data sharing for a better pandemic response?

● (1715)

**Prof. Amir Attaran:** I can't even believe that's a question. Of course, it has to be public. Science is always conducted in public. If you look at a country like Switzerland, they too have a task force on COVID, a scientific task force. If you go to the website over two dozen public reports by that task force are published. If Switzerland, little Switzerland, can get two dozen reports out of their task force by now, why does Canada have zero? It's shameful.

**The Chair:** Thank you.

Mr. Fisher, please, go ahead. You have six minutes.

**Mr. Darren Fisher (Dartmouth—Cole Harbour, Lib.):** Thank you, Mr. Chair.

Dr. Fisman, you have a wealth of experience in the battle against infectious diseases, yet you've publicly explained that predictions you made earlier this year on the virus were wrong. I think we can both agree that hindsight is 20/20. There's been a lot of discussion at this committee about why certain decisions were made in the early days of this virus.

I wonder if you could explain to this committee, and to Canadians, about the difficulties of making predictions around a novel virus, and why what's considered the best advice one day can change and evolve so quickly the next?

**Dr. David Fisman:** I think part of the difficulty relates to the fact that viruses are the troublemakers, and Dr. Khan alluded to this. The troublemakers tend to be RNA viruses, that's their genetic material that comes from animals. RNA viruses are very good at mutating. What we see with this virus, which is a cousin of SARS 1, and bears a lot of similarity to SARS 1, is that it behaves differently in important ways. Being 80% similar can still translate into some very important differences, but some very important similarities.

What we tend to see, what we almost always see with infectious diseases as they emerge, is we find out about hot spots first. Typically we have this sense of the virus being more virulent than it ultimately turns out to be. That's certainly been the case with some outbreaks. What we saw with this virus, also initially, was it looked a lot like SARS based on the information we knew from China. I've acknowledged publicly I think my biggest mistake was thinking it really was looking like SARS in China. We did some forecasting on how the Chinese seemed to be doing in controlling it, and we accurately forecasted that it would be done in Wuhan by early March. That was right, but the difficulty was we didn't see Iran coming. Once you saw this in Iran, you knew the game was over, and this was going to disseminate around the world.

They're all the same, but they're all different. When you look at some of the key parameters, as we talk about, with these diseases, which let you sort of predict how things are going to play out, some important numbers include the reproduction number of the disease, the number of new cases per old case. This virus turns out to be a real trickster, in that it's got what's called an overdistributed reproduction number, where many cases are dead ends but some individual cases make 40 secondary cases. You see that play out again and again, whether it's in nursing homes, on cruise ships or in restaurants. As you know, there's the single individual in Korea who infected 40 secondary cases and sparked a massive outbreak in the city of Daegu.

That makes it difficult. It also provides a potential vulnerability for the virus in terms of control, because once you get rid of those large gatherings that make super-spreading events difficult, the virus becomes much less transmissible. The initial case fatality that we saw coming out of China—that's deaths per case—was listed as 2.4%. Of course, deaths go up slowly with this thing, because people die in the ICU. The China case fatality I think at this point is 5% or 6%. We're at 7% in Canada.

As for what we know now, we've been helped a lot in this regard by data from Spain from last week, from a national seroprevalence study, where they were able to find both the recognized and the unrecognized infections. About 5% of the country of Spain has had this, with 27,000 deaths. Now we're able to go from a case fatality in Spain, which is deaths per recognized case, down to an infection fatality rate, which in Spain we now are pretty sure is about 1.2%, based on seroprevalence data.

The fact that Spain is at 5% prevalence 30,000 deaths in, with an infection fatality rate of 1%, makes me very concerned about some of Dr. Schabas's remarks in terms of moving towards herd immunity. We think that we'd hit herd immunity at 60% to 70% of Canadians infected. Seventy per cent of Canadians infected is 28 million people, and 1% of that is 280,000 Canadians dead. I would note that the failure to have mass mortality in Canada to date relates to the public health response.

I would also note that we can do this because we've shown around the country that we can control this disease without just letting it rip and pushing for herd immunity, as they're doing in Sweden. We've seen competence in British Columbia. We've seen tremendous competence in Atlantic Canada and on the Prairies. We can do this. We just need to get the job done.

Throwing your hands up and saying that we're going to follow Stockholm, Sweden, which is currently leading Europe in per capita mortality, is not the way to go, in my opinion.

● (1720)

**Mr. Darren Fisher:** Thank you. I had other questions for you, and I think we've run out the clock—

**Dr. David Fisman:** I'm sorry.

**Mr. Darren Fisher:** —but I do want to say that this is excellent and very thoughtful testimony, and I want to thank you for that, Doctor.

**Dr. David Fisman:** Thank you.

**Mr. Don Davies (Vancouver Kingsway, NDP):** Mr. Chair, I have a point of order.

I'm still somewhat shocked at the evidence I heard from Dr. Attaran about him potentially being discriminated against or having retribution threatened against him as a result of this testimony before the health committee. All of us, as members of this committee, have an interest in upholding the integrity of this committee and ensuring that all witnesses who come before us can give us the sincere, unvarnished benefit of their opinion, particularly when we're talking about science.

I would like to ask that this committee formally request that Dr. Attaran indicate to us full details of what has occurred by PHAC or Stats Canada, or whoever it was, to ensure that the integrity of this committee is upheld at all times.

**The Chair:** Thank you, Mr. Davies.

Under our current operating mandate, we don't have the authority to do that. We can certainly invite him to submit all of the evidence, all of the allegations he has, to us or to the Speaker of the House. We would be unable to deal with a matter of this kind in our current operating situation.

**Mr. Don Davies:** Mr. Chair, if I might—

**Mr. Robert Kitchen (Souris—Moose Mountain, CPC):** Mr. Chair—

**Mr. Don Davies:** —I would vehemently dispute that. This committee is mandated to receive evidence. It's clearly in the consent order of the House of Commons. If we have evidence before us that witnesses are being pressured or intimidated against not giving evidence, that is a direct interference with the precise mandate of this committee.

On the record, I'm happy to ask Dr. Attaran to provide those details, but for the record, I want to state in the strongest terms possible that it is absolutely the prerogative and mandate of this committee to ensure that we uphold the integrity of our process. Any time we hear that a witness may have been intimidated, or harmed in any way, for simply accepting the invitation from us to come and give us the benefit of their testimony, it's absolutely part of the pith and substance of this committee, and I will pursue this matter fully once we get that information from Dr. Attaran.

**The Chair:** Thank you, Mr. Davies. Your point is well taken. I will take the matter under advisement and—

**Mr. Robert Kitchen:** Mr. Chair, I have a point of order.

**The Chair:** Dr. Kitchen, go ahead.

**Mr. Robert Kitchen:** Mr. Chair, I'm 100% behind what Mr. Davies said, but my point of order extends further than that. We as committee members are here to present and ask questions, to protect our witnesses as well as ourselves, and to make certain that we have that protection. If we do not have that as a committee, the questions and points that we may bring up can be held against us, and that's just not acceptable. How can we function as a committee if that's not the place?

● (1725)

**Mr. Matt Jeneroux (Edmonton Riverbend, CPC):** Mr. Chair, just to add on to that, if you could point us in some direction as to why you don't think we have these powers to be able to do that in this committee....

I disagree with you. I agree with Mr. Davies that it's within the mandate of this committee to ask for that testimony.

If you can point us in that direction, please do. If you can't, then I suggest we allow Mr. Davies to proceed with his point of order.

**The Chair:** Your points are well taken. It should be pointed out that all testimony before this committee, when it's operating in official capacity, is privileged. We have parliamentary privilege. Any repercussions that follow from that would be a serious matter, but our mandate is solely to receive evidence.

We are explicitly allowed to move motions relating to the invitation and scheduling of witnesses. We do not have the authority at this time to undertake a motion to demand information about matters such as this, but I certainly would welcome Dr. Attaran's information if he should provide it.

I wonder if our clerk would like to give an opinion on this.

[*Translation*]

**Mr. Luc Thériault (Montcalm, BQ):** Mr. Chair, I would like to raise a point of order.

Professor Attaran seems to want to add a comment. Perhaps he could clarify what it is, which could help you deliberate further. I would be prepared to let him speak quickly, since I thought I saw him raise his hand. So I would like us to hear what he has to say. Then you could deliberate on that.

[*English*]

**The Chair:** Witnesses aren't able to participate in the committee on points of order, but as I said, I will welcome his information. I invite him to bring it to the committee, to send it to the committee.

The clerk will be looking into this matter and will come back to us at a later time with an opinion. In the interim, I will reserve judgment and suggest that we carry on with the testimony.

Mr. Thériault, please go ahead. You have six minutes.

[*Translation*]

**Mr. Luc Thériault:** Thank you, Mr. Chair.

I am going to address Professor Attaran first. These days, we can say that science is being tossed around a lot. All decisions are supposedly made in the name of science. One might even think that it is being used more to justify some political dithering.

Mr. Attaran, on page 3 of your brief, you say the following:

> ...the Prime Minister hesitated, perhaps because of the scientifically inaccurate advice from his Minister of Health, that closing the borders to slow the disease down is "very ineffective."

Some people argue that border closures have no significant effect in stopping the spread of the disease. I understand you disagree. Should the borders—especially the U.S. border—have been closed much sooner?

Did we have all the information we needed to make that decision? If not, what would have been required to make that decision as quickly as possible? What is the reason for the conflicting scientific advice?

**Prof. Amir Attaran:** You are right that scientific issues are often politicized, and that was the case with the border closure.

In my view, the purpose of closing the border is to protect us, especially in the case of the U.S. border. However, as you already know, the WHO says that it is almost useless, and the minister said that it is useless, but I disagree.

I know that, after the disaster we are now experiencing, we will rethink these issues. In Africa, for example, the borders between countries were quickly closed. They learned that lesson from the Ebola crisis. Now we see that nations are more protected. The infection rate in Kenya and Rwanda, for example, is lower than it would normally be. So it works.

● (1730)

**Mr. Luc Thériault:** Some witnesses have told us that we cannot fall behind in the case of this virus. The fact that the incubation period is often 14 days means that, since the beginning of the pandemic, we have constantly been feeling that we are playing catch-up. So I imagine that things should have been done differently and that decisions should have been made much more quickly.

You were talking about structural and systemic difficulties related to the Confederation and the inability of the scientific community and public health authorities to work in a coordinated manner and in real time with respect to sharing data.

What is the point of not working together? What justifies it? You gave the example of Ontario during the SARS episode. What is the point of those provinces or Quebec not working together? I have trouble understanding that.

**Prof. Amir Attaran:** I don't understand it either. It's almost dangerous to think of our Confederation as 10 provinces that are not connected through their biomedical resources, especially considering the virus that's connecting us right now. You are right.

**Mr. Luc Thériault:** How could legislating or establishing regulations be more effective? I'm trying to understand the motivation behind this inefficiency.

**Prof. Amir Attaran:** To answer more effectively, I have to speak in English. May I?

**Mr. Luc Thériault:** Yes, of course.

[*English*]

**Prof. Amir Attaran:** I'm sorry, but some of the legal words I don't know in French. I try.

The order in council that would be necessary to make data exchange mandatory between the federal government and the provinces is not a controversial thing. It is something that Parliament put into the law in, I believe, 2004 or 2005. Simply put, it should be used. We should not let our preconceptions about the appropriateness of what the province may do, or what the federal government may do, stand in the way of the clear reading of the law. You, as parliamentarians, created that law on sharing, and I'm grateful to you for doing so. It's a very useful tool, but it does need to be used.

I think Dr. Fisman would probably be able to add something to this.

**Dr. David Fisman:** I'm not sure, though I could add my perspective as a researcher based in Toronto since 2006.

What I've always found astounding is the failure to make accessible data that are paid for, assembled and cleaned on the public dime available to Canadians in a manner that doesn't threaten anyone's privacy or well-being. I've found that astounding for a long time.

A lot of my work, since I've come to Toronto, uses the national hospital discharge survey from the United States, which is pretty similar to the stuff you get from CIHI, except that if you ask for the data online from the CDC, they will FedEx it to you and pay for the FedEx, whereas if you ask for the same stuff from CIHI, you pay them. I don't understand it.

There's a much deeper issue here than COVID, and I thank my colleague for flagging it. We have a culture of what I call data hugging in Canada, and it does need to change. It harms us all.

● (1735)

**The Chair:** Thank you, Mr. Thériault.

We will now go to Mr. Davies.

Mr. Davies, please go ahead for six minutes.

**Mr. Don Davies:** Thank you.

Dr. Fisman, last week you were interviewed on TVO and you said, “I think there are a lot of folks who are itching to declare victory and open things up again, which is a bit of a problem because the reason that infections are subsiding is because we have distancing in place.” Are you concerned that some provinces and territories may be moving too rapidly to open?

**Dr. David Fisman:** I think my own province is, and I appreciate tremendously the pressure our premier is under. I think he's done a marvellous job given the cards he's been dealt, but I'm also aware there are a lot of folks who want to get back to business.

I'm not sure whether doing a screen share on Zoom is part of parliamentary committees, but we are looking at reproduction numbers here in Ontario. That is the number of new cases per old case. What we see is that the disease has clearly surged over the last week in Toronto, particularly in Peel. Part of that is from the liberalized use of testing, which drives the numbers up. Part of that is probably from the anticipation of greater economic opening. I think we may get a couple of rude bumps along the way, but ultimately distancing will be our parachute. If things start to look too grim, they'll be able to close things back down again, but, yes, I'm concerned that there's tremendous momentum to get folks back to business.

There's a lot of economic activity that could resume safely in the province of Ontario. Ontario is a big place. It's bigger than France, and we have regions.... Dr. Attaran referred to the city of Kingston. It has had one or two cases over the last 10 days but is subject to the same blanket lockdown as Toronto and Peel, which have had a couple of hundred cases a day. I think more—

**Mr. Don Davies:** I'd like to direct you to some of the things we should be doing.

You also said in the interview, “Predictably, as we reopen, we’ll see a resurgence of disease.”

**Dr. David Fisman:** Right.

**Mr. Don Davies:** That's exactly what we've seen in Korea and in Germany this week, two places that controlled their initial epidemic faster than we did and are moving toward revitalization. They've seen resurgences, just as Singapore did before them and just as Wuhan did last week.

What do you recommend we do, given that you see resurgences? What steps should we be taking to get in front of that, if there are any?

**Dr. David Fisman:** The resurgences will happen. It's just how this works. It's simple math. The reproduction of a disease is number of contacts times the probability of transmission per contact times how long a person is infectious for. We can forget about immunity right now, because immunity is low. Even if it's 5%, it's too low to bring the reproduction number down. Therefore, as contacts go up, the reproduction number predictably goes up.

**The Chair:** Doctor, could you please hold the mike?

**Dr. David Fisman:** My apologies.

We're going to go too far. We're going to try to open things up and go too far. That's why we need strong surveillance systems, to see that as it happens.

**Mr. Don Davies:** I want to move to testing. Maybe you and Dr. Attaran can comment on this.

We hear repeatedly at this committee, from every expert, that we have to test, test, test, and that it's key to getting control of this disease and reopening. However, we've barely done a million tests since January. Wuhan is gearing up to do a million tests per day. We're behind Germany. We're behind South Korea. In fact, we're at barely half of Dr. Tam's target of 60,000 tests a day.

Why are we unable to test at the rate that all experts are telling us we need to? Where is the problem here?

**Dr. David Fisman:** I don't know. Mr. Ciciretto is an expert on how labs work and could probably give you a more meaningful answer than I could.

We do work with local public health units. My concern at the moment is that it's not just the testing. If people are saying we're going to do contact tracing once we open up and we're going to track the contacts of cases as they did in Korea—I think they had a couple of hundred secondary cases associated with a nightclub outbreak—I don't think we could do that.

We have lags all the way along and it gets back to the 1990s technology where it takes time to test, the tests get faxed, it takes a while for them to percolate through the public health system and—

● (1740)

**Mr. Don Davies:** I'm sorry to interrupt, but I want to give Dr. Attaran a chance to weigh in on this too.

Other countries are testing at much higher rates. Why can't Canada do it?

**Prof. Amir Attaran:** Again, I am not a testing expert. What I can say is that it's obviously a systemic and administrative problem, because for Ethiopia or Rwanda to be surpassing us in testing.... They're getting the reagents and supplies from somewhere. They are pulling it off.

I did mention the city of Addis Ababa, the capital of Ethiopia. They have actually sent health workers around to every door in the city already to interview people about their travel or exposure history and test them if necessary. If Ethiopia can do that, I refuse to believe Canada can't. We just need to understand better—and I'm not the person to give you the answer—what the administrative holdup is in the testing, but it's clearly administrative not scientific.

**Mr. Don Davies:** Thank you, Dr. Attaran.

I have one quick question for you.

Your chart spoke for itself. The question I have is why is Canada performing below comparative countries like Australia and other countries you mentioned. Your chart clearly shows we are. What are the reasons for that?

**Prof. Amir Attaran:** In terms of bending the curve, or the testing, specifically?

**Mr. Don Davies:** Bending the curve.

**Prof. Amir Attaran:** In terms of bending the curve, Dr. Fisman can be more detailed on this, but it's clear that we have not adopted as rigorous a lockdown as some other countries have. We've also had a slow-burning problem in the care homes and this has taken what could have been a sharp peak and broadened it into something of a plateau.

I am very uncomfortable with the fact that we are opening up without the testing at the necessary level, or the tracing. I'm not saying I don't want to open up. I hate being locked up as much as anyone else—you should see my children. There has to be groundwork done, and it is the fact that the governments of this country—some of them, especially the federal government—just haven't done the groundwork.

**Mr. Don Davies:** Thank you.

**The Chair:** That ends round one.

We will start round two.

Mr. Jeneroux, please go ahead. You have five minutes.

**Mr. Matt Jeneroux:** Thank you, Mr. Chair.

Thank you to the witnesses for joining us here again today.

I want to address Dr. Khan and some of the comments you made. In particular, I am hoping to get a grasp on when BlueDot—obviously ahead of the curve, early on—provided the first data regarding the coronavirus to the Public Health Agency of Canada.

**Dr. Kamran Khan:** As I mentioned in my opening remarks, our surveillance system had picked this up on December 31. You may also be aware that the Public Health Agency of Canada has a platform called the Global Public Health Intelligence Network, GPHIN. There are some parallels with the platform we're using. I think we may be using a bit more machine learning and artificial intelligence in our system.

I believe, with respect to awareness of the event in Wuhan, this was at a similar time; I believe it was around the end of December or beginning of January. We have had, as I mentioned, a relationship with the Public Health Agency, going past detection of threats and then looking at dispersion, how they might spread and where they might go next. All of the systems that we use internally—software systems, all of the internal data on commercial flights, passenger movements around the planet—are accessible by the Public Health Agency. This is part of our partnership.

I also did share the results of some of our analysis directly with Dr. Tam back in early January—I believe it may have been January 4 or 5, a few days after the new year. I communicated some of our initial findings and then had a follow-up meeting, I think, around the January 9 or 10 to discuss some of this in person.

● (1745)

**Mr. Matt Jeneroux:** What information did you provide exactly? Did you provide that information from December 31 that you had attributed to the beginning of this?

**Dr. Kamran Khan:** Because the Public Health Agency already has a surveillance system and GPHIN had picked up news of the outbreak in Wuhan around the same time as BlueDot, we didn't send them that information because it was something they already had access to. But we have been working with the Public Health Agency around contextualizing this.

Understanding that something is appearing in the world is very different from understanding what risk it presents to Canada and where those risks are greatest at the particular moment. Is it in British Columbia, in Halifax, or somewhere else?

We shared some of our findings on the movements of travellers across the world with Dr. Tam and her office and then met in person to discuss some of the results and, more broadly, really, the need for systems. We had some earlier comments about data internally within Canada. We're clearly not a closed population; we are a microcosm of the world, one of the most connected populations on earth.

It was critical for us to have better systems not only to detect threats but also to quickly assess what risks they present, so that we could be a step ahead and mobilize our resources, heighten our surveillance in the right places at the right time, and to share with you the specifics of the risks associated with the events in Wuhan. That was really just a few days after New Year's in early January.

**Mr. Matt Jeneroux:** Did you make any recommendations at that time about shutting down borders and what that would mean to Dr. Tam, and perhaps her team?

**Dr. Kamran Khan:** We discussed obviously what the risks were, but, of course, as you remember, in early January we didn't even know this was the coronavirus. Clearly it caused enough concern from our end just because there were some parallels with the SARS event that had emerged in late 2002 in Guangdong. We had some concerns given the parallels with SARS.

However, as more information became available, as soon as we knew this was a novel coronavirus, we did follow up directly with Dr. Tam and her office. Obviously, they were aware, but our concerns at that point were that we knew the last two novel coronaviruses, MERS and SARS, had killed a third and 10% of their patients, respectively. They have no known vaccines, no known effective antivirals.

A novel coronavirus means that the whole world is susceptible, and that's a lot of fuel for an outbreak, and it's in the middle of wintertime, which is when you have respiratory illnesses. Given the signal-to-noise ratio and the detection of this behind a whole background of febrile illnesses, that certainly caused us quite a bit of concern.

The last point I will make is that I believe it was on January 13 when the first case was reported in Bangkok. By the way, coincidentally, it was the top city that we had identified as being at risk. At that moment we knew this was not a few dozen cases. In order for there for cases to be showing up in a city of 11 million, we had to be dealing with hundreds, maybe even thousands of cases. That was really the moment we became quite concerned, but of course with emerging diseases, unfortunately, you learn as you go. You don't have all the answers and you have to make decisions as new information becomes available.

**The Chair:** Thank you, Mr. Jeneroux.

**Mr. Matt Jeneroux:** Mr. Chair, do you mind if I request that Dr. Khan share that early information he provided to the Public Health Agency with the committee?

**The Chair:** Sure.

**Mr. Matt Jeneroux:** Thanks.

**Dr. Kamran Khan:** I'd be happy to do that.

**The Chair:** Thank you, Mr. Jeneroux.

We go now to Dr. Jaczek.

Dr. Jaczek, please go ahead for five minutes.

**Ms. Helena Jaczek (Markham—Stouffville, Lib.):** Thank you very much, Chair.

Thank you to all the witnesses. This session has certainly been fascinating. There has been a real divergence of views, especially from the first three witnesses.

Thank you, all three, for your very considered opinions. We go from one extreme, with Dr. Attaran saying that we haven't gone nearly far enough, to Dr. Schabas saying that perhaps we have gone too far.

Speaking as a member of this committee, of course we're very interested in all of your opinions, but part of what we need to do is to find some commonality, to find where there is agreement. The area where there seems to be agreement, and that we have heard a great deal about from many witnesses, is that there needs to be more of a national data surveillance system as it relates to public health. It's been exemplified by many of you that in fact provinces are collecting data differently. Even in the use of the case definition, there has been a difference from province to province.

Dr. Schabas, given all of your experience, and having known you for so very many years in the trenches, in both urban and rural settings, I will address this question to you. At the end of your remarks, you made a comment in relation to a national surveillance system. I'd like to hear from you on what kind of data you would like to see and where the important areas are that need to be collected. I'm sure you've had to make decisions based on inadequate data, or not as much data as you would like to have had, on many occasions. Could you flesh out for us how you see that national surveillance system?

● (1750)

**Dr. Richard Schabas:** Thank you, Helena, and thank you again for arranging my invitation to this meeting. It's been great. It's been fascinating listening to David and Amir. Maybe at some point I'll have a chance to rebut some of the other things that have been said.

On the notion of having a national agency, we were always very envious of the Americans. They had the Centers for Disease Control, a highly respected agency that led and that took the high ground. It was where everyone turned to for advice and direction and guidelines. We had the old Laboratory Centre for Disease Control at Health Canada. There were some very good people there, but it didn't have the same clout—

**The Chair:** Dr. Schabas, could you speak a little bit closer to the mike and maybe a little bit slower for the interpreters?

**Dr. Richard Schabas:** I'm sorry.

The idea emerged almost 20 years ago—I actually wrote an editorial in the Canadian Medical Association Journal on this—of really proposing a national agency that would fulfill some of those roles. I think we had an opportunity 15 years ago after SARS, when there was this surge in interest in public health and improving our national public health capacity, which led to the—

**The Chair:** Pardon me, Dr. Schabas.

The interpretation has stopped. We'll suspend for a minute until that resumes.

● (1750)

____________________(Pause)____________________

● (1755)

**The Chair:** The meeting has now resumed.

Dr. Schabas, please carry on.

**Dr. Richard Schabas:** As I was saying, 15 years ago, the vision I had hoped we would adopt was not so much one of a federal agency, but a national agency. We had some resources with the federal government, but it was also a time when Ontario was developing Public Health Ontario and British Columbia was augmenting the BCCDC.

There was a real advantage in developing a sense of co-operation between the federal government and the provinces, because the reality is that the provinces collect the data and the provinces make most of the public health decisions. You don't have the federal authority to tell them what to do. They're going to do what they want to do. The only way to get consistency in a truly national approach to a problem like this is to get people to buy in, to get people to be willing to do it because they think it's the right thing to do and because the prestige of the direction they're getting from the national agency is sufficient for them to.... I'm not going to say fall in line, but be consistent with their approach.

We don't ever expect everything to be the same. Here's a great example: Why should British Columbia be doing with COVID what Quebec is doing? They are very different sorts of situations. I think we would all be much happier if we knew there was a common purpose, common objectives and a common directive.

I'm hoping, maybe a little naively, that there will be another surge in interest in public health—I'm sure there will be—after the COVID crisis comes and goes. I hope we rethink how we set things up. That's not a criticism of the Public Health Agency of Canada. I just think it would function better if it was better integrated with the provincial agencies and if the provinces and the federal government were truly partners in this.

**The Chair:** Dr. Jaczek, your time is pretty much up but because of the problem in the middle, I'll give you one more question.

**Ms. Helena Jaczek:** Thank you, Chair.

Dr. Khan, perhaps I can ask you. Obviously you and BlueDot have been very helpful to the Public Health Agency of Canada. What kinds of interactions have you and BlueDot had with the provincial agencies, such as Public Health Ontario?

● (1800)

**Dr. Kamran Khan:** We have had interactions with the ministry of health in Ontario and have been actively working with the province there. At BlueDot, we're a team of about 50 people. We're also working via Global Affairs Canada—

**The Chair:** I'm sorry, Dr. Khan. Please adjust your microphone.

**Dr. Kamran Khan:** I'm so sorry about that.

We are also working with Global Affairs Canada to support capacity building—as I mentioned in my opening remarks—in 10 countries in Southeast Asia. We're working with the State of California.

In many regards I think we would be very eager to support public health responses across the country and work closely with the provinces and territories. We've had, in some ways, an issue with respect to capacity to do this in the midst of the COVID-19 pandemic. However, we have had engagement at the federal level, and are producing analytics across the entire country on a week-over-week basis, and also with the Province of Ontario.

I'm not sure if that answers your question, but a lot of the analytics are focused on understanding issues related to social distancing and how that is related to epidemic activity. Also, keep in mind that while today we're in a bit of a lockdown, as the economy reopens and we have a highly susceptible population, we're going to have to start.... We may find ourselves in the same place as New Zealand in the future, where we have to start looking outward again and start to think about introductions that could trigger the next wave.

We've been involved in supporting both an internal look and tackling this in our own backyards, as well as monitoring the global situation and potential introductions.

**The Chair:** Thank you, Dr. Jaczek.

Dr. Kitchen, it's over to you for five minutes, please.

**Mr. Robert Kitchen:** Thank you, Mr. Chair,

Thank you, everybody, for your presentations today. They've been greatly appreciated.

Dr. Attaran, yesterday I spoke to Dr. Tam and asked her a question about data sharing between the provinces and organizations with the federal government. You've answered a lot of those questions I had for you, but further to that, I was asking her about demographic data, in particular how New York City has come up with a lot more demographic information, etc. She indicated to me that it's on the Public Health Agency of Canada's website, so I took the opportunity this morning to go onto that site. With some help from my staff, I finally managed to find some information on that.

They talk about updating the data as of today and about 4,201 cases of clinical presentations, and of those, 561 cases or 13% were clinically or radiologically diagnosed with pneumonia. My point about that is it provides a lot of information and then, all of a sudden, I find a little bit further down a little statement: “The epidemiology update is based upon information received for 38,746 cases. Not all data fields are complete, only cases with data available are included.” The bottom line is they're providing inappropriate information on the data that we have.

How is it that we ask you or other epidemiologists to come up with data and provide modelling when we put this out with inappropriate information?

**Prof. Amir Attaran:** Dr. Kitchen, thank you for a very intelligent question. You're exactly right. You mentioned there were roughly 38,000 cases in the data that you looked at. I'm going by memory here, but I think we've had about 80,000 cases reported in Canada so far, so that's under 50%. What that means is that at the high-water mark, anyone like Dr. Fisman or Dr. Khan doing modelling, or me when I do it in my amateurish way, are working with less than half a deck.

**Mr. Robert Kitchen:** Right, and—

**Prof. Amir Attaran:** There are obvious problems with that.

**Mr. Robert Kitchen:** When the Public Health Agency is making these decisions based on World Health Organization data, which is maybe coming in from China or wherever, which is inappropriate, again how do you come up with that proper information?

Dr. Fisman, do you have any comments?

● (1805)

**Dr. David Fisman:** I'll tell you, my group at University of Toronto call ourselves “data raccoons”, because we've sort of managed to thrive for about 15 years on data that most people regard as garbage, so it's sort of a bit of the normal state of affairs for us with public health data analysis. The stuff we have is pretty good by our standards.

Working with folks here in Ontario, there's been a modelling table convened over the last few weeks. We've been given access to case files. There's a lot you can learn, but there are also a lot of fields that are missing. We could potentially do better, but I think it's also important to remember that those fields are being filled in by very harried front-line public health epidemiologists.

I suspect that what you're seeing from the Public Health Agency of Canada is that they're putting out the data where they have complete fields, and that it's their way of dealing with missing data. Missing data is just part of epidemiologic data analysis. It happens no matter how good the data are that you have. I'd sort of want to know more about how they've made those decisions, but sometimes it's good enough.

**Mr. Robert Kitchen:** That's a challenge, though, when you don't have proper data and you don't understand that.

I'm going to go on a little bit further.

Mr. Ciciretto, you talked about high-quality antibody testing. We've heard a lot from you today and all of the witnesses about testing. Last week Health Canada approved the first serological test for detecting antibodies in those who contracted or may have contracted COVID-19. The approved serological test comes from an Italian biotechnology company.

Do we have the capacity to produce these tests domestically? Do you know that?

**Mr. Vito Ciciretto:** The answer to the question is, we do have capacity. The particular test that was approved was from a company called DiaSorin. We don't have that testing platform, in particular, so that's critical. Could we acquire it? Yes, we could acquire it.

There are other companies that we're working with right now, large diagnostics organizations that are looking to get Health Canada approval as well for a serological test. Once that happens, I have 200 collection centres and 850 phlebotomists who can collect those samples and bring them into a laboratory and onto existing test platforms that we have today that could do that testing quickly, efficiently and accurately.

**The Chair:** Thank you, Dr. Kitchen.

We'll go now to Mr. Kelloway.

Go ahead. You have five minutes, please.

**Mr. Mike Kelloway (Cape Breton—Canso, Lib.):** Thanks, Mr. Chair.

Hello, colleagues.

I want to say a really special thank you to the witnesses today. I'll echo Dr. Jaczek's that it's interesting to see such a rich series of viewpoints, insights, opinions and also backgrounds in a variety of areas. I really appreciate it. It's very illuminating.

Dr. Khan, I find your work very fascinating in terms of the technology you use. I don't necessarily want to look to the past but to potentially a second or third wave.

Can you talk about how your technology may be able to be used to track and identify, in many ways, a second or third wave? Could you illuminate a little bit what the biggest risk factor is that could trigger the next wave?

**Dr. Kamran Khan:** Maybe the way I could sort of frame what we have been building with the metaphor of a smoke detector and fire extinguisher. For six and a half years, we've been building systems to be able to detect threats early, because we know, as I mentioned, that time is our most valuable resource.

To be able to quickly go from detection to what kind of risks we are facing—not just from the dispersion of the disease, but what kind of disruption might occur—is very important because diseases spread around the world all the time. They don't all cause outbreaks or pandemics. That is a complex requirement because every disease behaves differently. Zika virus is different from Ebola, which is different from COVID-19 or measles for that matter.

We've been spending a number of years building up that capacity to have a bird's-eye view of what's happening around the planet, to be able to relate it to geographies across the planet, and to do this in, really, a matter of seconds.

With respect to once an outbreak starts to spread and is now occurring locally, this is where we have been using—again, I want to underscore, anonymously—just the pings, the digital locations from hundreds of millions of mobile apps and mobile devices.

That kind of information can help us understand. Ultimately, this is a virus that spreads, as Dr. Fisman mentioned, through the movements and interactions of people. These are really rich datasets—over three billion data points a day—that can really allow us to understand how those movements are occurring so that we can then start to anticipate how the epidemic might evolve. It also allows us to generate insights about some of the non-pharmaceutical interventions like physical distancing or recommendations for quarantine. Are those being adhered to at a population level?

I do want to highlight that we're not tracking anyone who is infected or their contacts. We're looking at population movement.

With respect to going forward to the next wave, I think the simple reality is that no one really quite knows what this is going to look like or exactly how it's going to unfold. We are dealing with a completely novel disease. Certainly, we have concerns that as we get into the latter months in the fall.... We know that coronaviruses tend to be in cooler, drier climates where they may be more efficiently transmitted. As that occurs, currently we are relating a lot of this mobility data to understanding how the epidemic curve is evolving. Perhaps there are lessons that we can learn about which geographies and which locations seem to be opening up society in such a way that they can, you know, generate some sense of normalcy and some kind of economic activity without having an exponential increase in the epidemic. I think that's really the $6,400 question. How do we do this gracefully? How do we thread the needle?

These are things that I, candidly speaking, don't know anyone has the answers for just yet. I think it goes back to the point that surveillance, testing and monitoring are critically important, because as we start to reopen society, it is going to be incredibly important for us to be watching very closely what the response is in terms of epidemic activity and transmission.

I hope that I perhaps have given you a little bit of a sense of what we're thinking going forward.

● (1810)

**Mr. Mike Kelloway:** You have.

I think you mentioned measuring disruption in society. Maybe I'm miscategorizing that.

Can you unpack that a bit?

**Dr. Kamran Khan:** Yes, thank you. It's a really big and very important issue.

The four Ds that we work on are detection, dispersion, disruption and dissemination. Detection speaks for itself, early detection. Dispersion mean, how do these things leap across continents in hours? How do we anticipate the next move? Without getting into a lot of detailed epidemiology, what sometimes is called the infectious disease triangle is a disruption or an outbreak that really lies at the crossroads of the characteristics of the microbe or the germ itself, the characteristics of the population, and the environmental conditions.

The Zika virus is not going to spread here locally in Toronto, because there's no mosquito and it's too cold; it might spread in Miami in July, but maybe not in January. That is a very complex set of data and we're bringing in hundreds of data sources, from real-time satellite data to insect observations, demographics, etc. We can do this for over 100 different diseases so we can try to get a sense of whether the necessary ingredients are there for this to actually cause a disruption, an outbreak.

As you can imagine, this is not a data problem. It requires deep subject matter expertise integrated with deep data analytical expertise and data science. This is the area we're actively involved in. We're well on our path and well on our way, but this is a formidable challenge that really is going to take years.

**The Chair:** Thank you, Mr. Kelloway.

**Mr. Mike Kelloway:** Thank you very much.

**The Chair:** We go now to Mr. Thériault.

Mr. Thériault, please go ahead for two and a half minutes.

[*Translation*]

**Mr. Luc Thériault:** Thank you, Mr. Chair.

My question is for Professor Fisman. Perhaps Mr. Schabas can express his opinion as well.

We do not yet have a vaccine or antivirals. Serological tests are just beginning. Faced with the desire for reopening, we have suddenly and a little hastily seen the notion of herd immunity appear. But there is no real certainty about the exact data, about the connection between COVID-19 and herd immunity.

Can you tell us where we are at in terms of knowledge or studies on herd immunity with COVID-19? Can you describe the situation?

If reopening were at an ideal rate, would we achieve herd immunity? At what rate would we need to achieve it to make everything safe?

● (1815)

[*English*]

**Dr. David Fisman:** Thank you very much.

There are a lot of moving parts here. Herd immunity can be approximated as a function of the reproduction number of the disease. The higher the reproduction number, the more people need to be immune if the disease is not to take off. That's why we see measles outbreaks when vaccine levels fall off just a little bit, because the reproduction number for measles in a susceptible population is about 20. You can get about 20 new cases from an old case.

This is a much less infectious disease. The reproduction number is somewhere between two and three. That means you need somewhere between half and two-thirds of the population to be immune to have herd immunity, so that if you bring an infectious case into the population you won't don't have an epidemic.

Where are we right now? We don't know. I've been doing a running meta-analysis on seroprevalence studies as they've come out. I'm up to about 50 of them. You can compare antibody prevalence in populations to what those communities think they have going on in the number of cases they have. It's called a cumulative meta-analysis, just adding study to study to study. The long and short of it is that I think we probably detect about 7% of cases. We have an inflation factor of somewhere between tenfold and twentyfold.

If we look at Canada with 80,000 recognized cases, that would be somewhere between 800,000 and 1.6 million cases in reality. That puts us—I'm going to get hung up in trying to do the math on the fly—at 4%.

If we're there now, New York is well ahead of us. New York has good seroprevalence data. They're at about 15%, but they had to go through hell to get there. They did experience a wholesale collapse of hospital systems in much of the city, including the Bronx and Queens, to get to 15%. That means they might be able to get to 50%, 60%, or 70% herd immunity by going through that a few more times. I don't think they will allow that to happen. They've lost approximately 20,000 New Yorkers of all ages, I would add, to get to that point.

What we have to do right now—a lot of countries around the world, indeed a lot of provinces in Canada, show us that we can knock this disease down to low levels and then we can use good public health practice. I agree with Dr. Schabas that you can't do contact tracing if you're having 200 cases a day, as we are in Toronto. It's just too much. If you're having five cases a day, you sure can. If you're testing a lot, you sure can. You need to use the distancing to knock the reproduction number down. We're still at around one in Quebec and Ontario. I would add that the Canadian epidemic, at this point, is a Quebec and Ontario epidemic. The other provinces have got the job done at this point. If you can do that, then we can start to use other public health measures, like contact tracing, to keep a lid on this and get through the summer and allow the economy to reopen.

We haven't touched on masks at all. There's pretty good ecological evidence at this point that the countries that are doing much better than us are mostly mask-adopting countries. You can argue the science, and we can have a symposium in five years about who was right, or we can use the precautionary principle and move towards masks now, which I think Dr. Tam has started to do.

We can do a lot to keep that reproduction number low and reopen our economy to a degree, and muddle through.

Exciting stuff is happening with vaccines. There are RNA vaccines that weren't on the table 10 years ago. There's a really exciting live virus vaccine from the U.K., where AstraZeneca, the pharmaceutical company, is manufacturing the vaccine at scale while the trials go on. If the trials are a success, they're going to have millions of doses ready to put into people's arms.

We need to avoid mass death situations until we can get through to a point where we can effectively deal with this pandemic. We will, but it's a matter of tenacity, patience and competence, and that's very patchy across the country. Some places have shown it; other places haven't. I'm sad to tell you that I feel that my province, at a provincial level, is one of the places that hasn't shown that, although individual local public health units have really shone and distinguished themselves.

• (1820)

**The Chair:** Thank you, Mr. Thériault.

We go now to Mr. Davies for two and a half minutes, please.

**Mr. Don Davies:** Thank you.

Dr. Fisman, last week, you stated, "I continue to be concerned that there hasn't been enough attention given to epidemiology in kids. I know folks are starting to study that in Germany and Switzerland, but we haven't really studied it in North America." Then you said, "For those of us who have been really concerned about the possibility that children may be important vectors of this disease..".

Given that we haven't done much research in North America and your concern that children may be important vectors, how do we square that with sending our kids back to school?

**Dr. David Fisman:** Honestly, it's a dilemma.

I think I mentioned earlier that the signature of this disease is that it takes off with big gatherings, so there's a lot you can probably reopen economically, safely, if you stay away from large gatherings of people. The one big gathering that's really, really tough to cancel—and which has huge economic implications—is at schools. That's the hardest thing.

The reason to be concerned about aggregating kids is that we see evidence from other respiratory infectious diseases that kids don't die of them, but they are tremendously good at transmitting these diseases.

**Mr. Don Davies:** That being the case, why would we be sending kids, who are vectors of this disease, to gather in large gatherings and to come back to homes where they may be in contact with seniors?

I don't see what the dilemma is there. What is the dilemma?

**Dr. David Fisman:** I think the idea is that economically it holds a country back. Even if we have 40% of our workforce able to work from home, for the parents, it's often difficult to get their jobs done if they're minding children in parallel.

However, yes, it's an issue. Countries like Korea have kept their schools closed. Hong Kong continues to have its schools closed. I think they're just starting to reopen, because they have approximately zero cases at this point.

I think places with good public health leadership have done it very cautiously. Kids are the transmitters of infectious disease for many respiratory diseases, even if they themselves tend not to be sick from them.

**Mr. Don Davies:** Thank you.

Dr. Khan, I will go quickly to you.

I know you did a commendable job. An article in U of T News said that BlueDot was among the first to warn the world of a potentially dangerous new illness, COVID-19. You rang the alarm on December 31, 2019, before both the U.S. Centers for Disease Control and Prevention or the World Health Organization. You also predicted the next 11 cities that the novel coronavirus would hit.

You're quoted as saying, "We didn't necessarily know it would be of this size.... But what we did know is that it had the ingredients."

Approximately when were you aware that COVID-19, or the novel coronavirus, had the potential for serious, significant, widespread transmission?

**Dr. Kamran Khan:** I think the point—and this is sort of a gradient—was literally December 31. First seeing that information certainly caused some alarm. Around the middle of January—and I'd have to double-check the exact date—was when the first case showed up in Bangkok.

I'll give you a bit of a sense of the increasing concern.

When we learned that this was a novel coronavirus, I believe somewhere around January 8 or so, there was concern for all the reasons I mentioned earlier, MERS and SARS, and comparing those: no vaccine, no effective antivirals, no underlying immunity and we were in the middle of flu season.

What we had been learning up until that point is that the number of cases being reported in China were in the dozens. When the case showed up in Bangkok, which was the top place we had concerns about because of the movement of travellers from Wuhan out into the region, in a city of 11 million.... The math doesn't work if you have a case show up in another city and knowing the volume of travellers who were leaving. That was the moment for me and our team, when we were really quite concerned.

Again, we didn't have all the answers, but we were quite concerned that this was a novel coronavirus. The outbreak was much larger than it appeared to be. This inevitably told us this was not just a spillover event. This was not just the people who were at the market who became infected. If there were hundreds or thousands of cases, this had to be something that was more efficiently being spread from person to person.

It was roughly around the middle of January that we had serious concerns about how this might unfold.

• (1825)

**The Chair:** Thank you.

That brings round two to a close. We start round three with Mr. Webber.

Mr. Webber, go ahead, please, for five minutes.

**Mr. Len Webber (Calgary Confederation, CPC):** Thank you, Mr. Chair, and thank you to all our presenters, whose opening remarks were very interesting indeed.

My first question is for you, Dr. Attaran. Thank you for sharing with the committee your paper on the pandemic data sharing. In this paper, you mentioned the SARS issue back in 2003 and how the World Health Organization demanded epidemiological data from Canada about the scope of the epidemic back then, particularly in Toronto. The problem was that Canada had no way to fulfill the World Health Organization's demand because of the jurisdictional fight that you described today with regard to data sharing.

Because of that, Health Canada was in no position to answer the World Health Organization's questions, so they grew afraid of Canada. They thought that Canada was concealing this epidemiological data, which then resulted in the World Health Organization recommending against travel to Canada, making Canada one of only two countries—that and China—that they sanctioned back then.

Sadly, I see this occurring again. Dr. Attaran, do you see this occurring? What will the implications be of being sanctioned once again?

**Prof. Amir Attaran:** Mr. Webber, you summarized that exactly right. Back in SARS, there were two countries in the world that got slammed with a WHO travel advisory, and we were one. China, not exactly having been honest, shall we say, was the other. Now, we weren't trying to deceive, the way China was. We were just unable to be honest. We were unable to get the data from Ontario to Ottawa and then onward to Geneva, where the WHO is.

Nothing has changed. That is a risk that could repeat itself. Yesterday, I believe it was Dr. Kitchen who asked about the multilateral information sharing agreement, which is an accord between the provinces and the federal government to share data. It is so secretive and ineffectual that to this day we don't know which provinces have signed that agreement and which have not. Can you believe it?

As for the Public Health Agency, I've asked them that question directly. Which provinces have signed the information sharing agreement and which haven't? They won't answer the question. Parts of that agreement actually stand in the way of data analysis, the sort that Dr. Fisman does. Under that agreement, provinces have to give their permission before analyses using their data can be published, which means that they have the ability to suppress analyses that can save lives. It's terrible.

**Mr. Len Webber:** It's unbelievable, Dr. Attaran, it really is. Thank you for sharing your testimony today.

Dr. Fisman, again, thank you as well, and thank you for your work, your commitment and your sacrifices, too, along with those of all health care workers in Canada. Thanks to all of them.

You've talked about some of the best practices around the country. It's in Nova Scotia, I think, that you indicated they hunt the virus, and you also talked about how in Saskatchewan they deal swiftly with and contain areas of outbreak.

Then you talked about Alberta and how they've scaled up their testing and are the most potent and aggressive testing province in the country. I'm just at odds here. I don't understand. How come Alberta can do it but the rest of Canada cannot? Where are they getting their testing material? What's their secret in Alberta?

● (1830)

**Dr. David Fisman:** Do you know what? I'm not sure to what extent I can talk about private conversations in this public forum but, as I speak to colleagues across the country, what is clear to me is that the places that got the job done were aware of their deficiencies as laboratory systems and worked with commercial partners to automate processes in their labs. It's one thing to be testing 100 specimens a day. It's another to be testing 10,000 a day.

I think that the laboratories that are able to have high throughput here, and—Mr. Ciciretto is probably the better one to answer this question—we do have folks in the country who know this stuff. From the time the specimen arrives until the report goes out to the public health unit, not by fax but electronically, operations can be tremendously streamlined so you don't get the bottlenecks that we've had in Ontario.

I think a lot of the problems got blamed on the supply chain but clearly, as the supply chain has cleared up, it's still a rocky ride. In Ontario there have been a lot of politics as well. I think you see that. You've had access to some testing data via the modelling process. You see that there's still this hugging going on where, even as testing is supposed to get dispersed out to hospital labs and private labs, it's still getting hugged by the public health laboratory system.

I think, in a time of national crisis, it's time to check your ego and work with whoever you can work with. Essentially, the folks in Newfoundland.... It was a remarkable experience to interact with them. Perhaps this is a size thing, but it seemed a lot to me like an ego thing. They have a provincial working group that has some former politicians, some leaders from health, leaders from business and a couple of academics, and they're all at the table and they're all exchanging ideas. It reminds me of the children's story, *Stone Soup*, where everyone brings something and puts something in. At the end of that, they all have a good soup to enjoy together.

That's how they do it in Newfoundland. It was a revelation to me, as someone coming from Ontario who's used to being asked for information that then goes off into a dark place and you're never really sure who's seen it, used it or responded to it. It's just a very different way of doing business, and I think it's served them well. They got the idea of hunting the virus from Iceland. They looked over to the east and thought, “Well, you know we've got Canada over to the west and we've got this other country over to the east, and the country to the east is doing a bang-up job. Let's talk to them.”

I think being humble and looking for folks who are doing this better than you, and learning from them, is part of the magic.

**Mr. Len Webber:** Absolutely, it is.

**The Chair:** Thank you.

Mr. Van Bynen, go ahead, please. You have five minutes.

**Mr. Tony Van Bynen:** Thank you, Mr. Chair. Thank you, Dr. Fisman, for joining our committee today. It's so refreshing to hear such a wide variety of perspectives, and that certainly helps us to develop a good understanding of the situation that we're trying to find some solutions for.

It's my understanding that you co-authored a study that examined the impact of enhanced contact tracing and restrictive physical distancing measures in comparison to a combination of enhanced contact tracing and less restrictive distancing measures.

Could you please share with the committee the findings of your study and what the implications may be?

**Dr. David Fisman:** I think what you're referring to was our paper in the Canadian Medical Association Journal, CMAJ, in March. Our model looks a lot like most other models by competent modelling groups. It looks like the publication by a guy named Steve Kissler, in Science, that happened about a month after.

What we projected was that reducing transmission through a variety of means can knock down the reproduction number of the disease and prevent intensive care units from overflowing. Something we learned.... We didn't really anticipate that a lot of deaths in Ontario would come in the long-term care facilities. We knew that long-term care facilities were vulnerable, but we assumed, as we were doing our modelling, that people would try to protect them, which turned out not to be the case.

What we've found is that various combinations of case identification with contact tracing or straight physical distancing are sufficient to knock the reproduction number down enough that ICUs don't overflow. This has been the case in Canada, which is wonderful.

Moving forward, we now have a second iteration of that model in press, in a journal called Annals of Internal Medicine. Thanks to the provincial modelling table, we've been able to calibrate the model. That means we've fit the model to real data. We couldn't do that beforehand because we didn't have an epidemic to fit it to. We can fit it to ICU occupancy in Ontario and can fit it to hospital deaths. The long-term care stuff is very challenging to try to fit into any sort of model. What we see is that, basically, the lower disease activity goes and the slower we reopen, the longer it will be before we have a resurgence.

In our paper in March, in the Canadian Medical Association Journal, my colleague, Dr. Ashleigh Tuite, who I've referenced previously and is a brilliant modeller, came up with the idea of dynamic social distancing, which depends on really good public health surveillance, so that you know when your hospital is starting to fill up again and when you have to strengthen distancing measures. I really think the group at Harvard, who we're friends with, may have copied that from us. That came out in the Science paper as well a couple of weeks later. It's this idea—and journalists refer to it as surfing the wave—that we're likely to go up and down and up and down with this disease for a while until we have a vaccine, which may come sooner than I ever would have imagined.

● (1835)

**Mr. Tony Van Bynen:** Thank you.

Yesterday I asked Dr. Tam about the provinces and territories and their plans to reopen their economies, as well as people starting to leave their homes as the weather gets nicer. As a follow-up, with the information obtained from your study in mind, what are your thoughts on how this can be implemented safely?

**Dr. David Fisman:** This is not our work. There's a marvellous mathematician at Waterloo by the name of Chris Bauch who has a paper looking at regional reopening in Ontario as opposed to blanket policies, with the outcome of interest being how we can minimize the amount of time in lockdown.

I think some organic reopening is happening anyway as the weather gets better, and that's all right. This doesn't seem to be an infectious disease that spreads particularly well in parks or as people are out enjoying themselves, as long as they're maintaining a bit of distance. This disease really continues to show that it likes big crowds and indoor places. I think our most recent superspreader event here in Ontario was among greenhouse workers in Chatham, which fits the description to a T: 50 people were infected working in a greenhouse. When folks are in small groups and there's a low upper bound on the number of people they're working with—we call that “work bubbles”—or when folks are enjoying themselves outside to stay fit, going to parks or enjoying the outside with their kids, that generates minimal risk for us.

What we do need is good, strong surveillance systems—and this circles back to our initial conversation about testing—that let us know when we're getting into danger again, as we were in March. I do think we're going to struggle in the fall. Again, there's a lot of hindsight at this point. This thing emerged in January, but we didn't really get serious about it until March, and I think we're going through that again. Anyone who looks at disease dynamics for a living can tell you that we're in a lull now but the disease is probably going to be coming back in September or October. We have some golden time now to get prepared for a likely resurgence in the fall. I think we need to build those surveillance systems and get much better at this by the time we get to the fall, because we're going to have to be more nimble then. There's much we can do, and there's much we can do safely if we avoid large gatherings.

The bubble idea—and a lot of corporations have already instituted this— is simply that if you divide people up into relatively small teams, they don't work simultaneously in the office and there's a deep clean between when teams are in the office, you have an upper bound on how many people are going to get infected if someone comes into the bubble with infection.

I think there's a lot of ingenuity and a lot of wiggle room in reopening the economy safely, as long as we have the surveillance systems that allow us to see when we're getting back into trouble.

**The Chair:** Thank you.

Ms. Jansen, please go ahead. You have five minutes.

**Mrs. Tamara Jansen:** Dr. Khan, I'm curious about your thoughts, as a infectious disease specialist, on the current deal that Health Canada has made with China on developing a COVID-19 vaccine.

The announcement mentioned that the National Research Council is working with CanSino Biologics to advance a vaccine, which is being developed jointly with the People's Liberation Army. Apparently Health Canada has even approved the first human clinical trial that will be run at Dalhousie University in spite of the fact that CanSino has not published any data from its first trial phase for any sort of public scrutiny.

This really shocked me. Vaccine development cycles are normally 10 to 15 years, and the shortest ever was four years. Our Five Eyes intelligence alliance has raised concerns regarding China's transparency regarding this particular pandemic. They even denied, initially, human-to-human contact. And some whistle-blowers have disappeared.

If we want Canadians to buy into a COVID-19 vaccine, wouldn't it make more sense to be working with a more trustworthy partner on this sort of thing? Does it strike you as being dangerous?

● (1840)

**Dr. Kamran Khan:** Thank you for the question. I'm going to try to see if I can tackle it.

With respect to vaccine development and partnerships, I would say that I'm not fully aware of all the details of how Canada is looking at vaccine development, perhaps, with the Government of China or with scientific groups in China.

I think all of the points that you've raised are very important. Clearly, there is a race to get to a vaccine as quickly as possible, not only from a preventative standpoint but also to develop therapeutics.

I think I'm probably not well equipped to speak to the broader ethical issues here. I'm just less informed about the specifics of this particular circumstance.

But clearly, the points that you're raising around transparency are critical in any scientific endeavour. I think that is a critical issue.

I'm not sure if, perhaps, Vito or others want to chime in on that.

**Mrs. Tamara Jansen:** My time is limited. I have another question, but not specifically for you.

Going back to Professor Attaran, you mentioned that we could ask you questions about yesterday's meeting.

I asked Dr. Tam about her flip-flop on the use of masks. Up until early April, Dr. Tam stated that an asymptomatic person shouldn't wear a mask. It didn't work. It might even be harmful. Then on April 6, she changed her mind and said that a mask was good for additional protection.

Her response to my question on why her message changed was that, apparently, new evidence had come to light.

As this was a respiratory pathogen, I imagine that out of the abundance of caution, masks would have been helpful right from the beginning.

In your opinion, what sort of new evidence has come to light over the course of this pandemic that would substantively change the way we consider the effectiveness of masks as prophylactics?

**Prof. Amir Attaran:** There's no easy way for me to say this, but Dr. Tam was not being truthful.

In the week or 10 days.... Pardon me, I don't know the exact time span between her statement that masks were not to be recommended to the public and then changing her view to give permissive guidance that masks of a non-medical sort could be used. In that short period of, as I say, about a week or 10 days, there was no new evidence that emerged to justify that change.

There have been additional studies of masks, of course, some of it biophysics, what particle size will penetrate a mask in what conditions. But there was definitely not in that crucial window a game-changing study.

**Mrs. Tamara Jansen:** I have a really quick question. My time is almost out.

You provided a chart in your submission that showed that Australia and, I believe, South Korea had much better pandemic trajectories than Canada did. As with all catastrophic emergencies, there's never just one thing that goes wrong that causes the tragedy, and I assume that's the same when things go right.

What, in your estimation, are the critical things that ensured better outcomes in those countries compared to Canada?

**Prof. Amir Attaran:** Australia, for instance, was very quick at cutting off travel with China. It did so at the same time as President Trump did, but for sounder reasons than Mr. Trump.

It was also incredibly quick at organizing coordination between the states—the provinces, if you will—and the federal government. As I mentioned, they signed an accord on co-operation on March 13. Such an accord doesn't exist in this country yet.

The Australians have, generally speaking, a very strong sense of biosecurity because they are an island continent and they have honed that over years. They're much more attuned to risks coming in from abroad than we have been. The error of not being tougher on travel sooner is one that we will, of course, regret for many years to come.

The Australians also, I feel, were extraordinarily good at their social distancing. Now, precise measures of how aggressive social distancing is are hard to come by. Dr. Fisman would be able to speak to that far better than I could, but even from my inexpert point of view on this, it's clear the Australians did take the social distancing more seriously early on than did Canadians, and that has had an effect.

● (1845)

**The Chair:** Thank you.

Ms. Sidhu, go ahead, five minutes.

**Ms. Sonia Sidhu (Brampton South, Lib.):** Thank you, Chair.

Thank you everyone for coming today.

As you know, I really like all the witnesses. Yesterday Dr. Tam and her team were here.

This committee has really been focusing on supporting Canadians and how we can better help all Canadians.

Today I really want to say thank you to all the witnesses and my first question is to Dr. Khan.

You talked about the rigorous factor and triggering the next wave. Can you explain to the committee how your technology can be used to track second or third waves of COVID-19? What do you see as the biggest risk that's coming?

**Dr. Kamran Khan:** In the technology that we've developed, and I'm going back to that metaphor of smoke detector and fire extinguisher, we've really been focusing much more on developing the early warning systems that could give us a signal that there is a threat coming.

COVID-19 is here now and we're all very well aware of it and we're now sort of more in firefighting mode, grabbing the fire extinguisher to put fires out.

From the standpoint of our technology, the area where we are supporting public health decisions is around an understanding of population movements and how that relates to the transmission of COVID-19 across the country.

With respect to the next set of waves, I have two thoughts. One is clearly the vast majority of the population in Canada remains susceptible, as we've heard. We either could see an uptick in cases later in the fall because of a variety of factors including climate conditions and dynamics of how people are interacting, or we could find ourselves in a similar position to some countries like Australia and New Zealand, where imported cases become the catalyst for another wave.

So we're going to have to be thinking both internally and externally. These are a couple of examples of how our technology is looking internally within the country domestically as well as globally.

**Ms. Sonia Sidhu:** Thank you.

My next question is for Mr. Ciciretto. Your company is based in Brampton. Your company recently moved to providing COVID-19 test results online instead of over the phone. How has that increased the efficiency of your testing process?

In Canada today, 1.3 million people have been tested. What do you think? How has online reporting instead of over the phone reporting increased the efficiency of your testing process?

**Mr. Vito Ciciretto:** The ability to transmit results directly from an analyzer onto your laboratory information system and into provincial health repositories is critical from at least two perspectives. One is from a timeliness perspective. As soon as that test result is available you want to make sure that you're able to release it.

The second and perhaps even more important perspective has to do with accuracy. The minute that there's any type of human interaction, of taking a manual result from a machine and then transmitting it onto a computer, there's always that risk of error, and that's not something you want, obviously.

● (1850)

**Ms. Sonia Sidhu:** Dr. Fisman, as you know the Public Health Agency has its opinion on non-medical masks.

You also mentioned the mask adoption strategy; how is this beneficial to Canadians?

**Dr. David Fisman:** We don't know but we can be highly suspicious that it would help us a lot. Especially if we can get the reproduction number of the disease down to around one. That's a tipping point. At that tipping point, very small changes in infection transmissibility can really make the epidemic fall through the floor and go away.

What you have to remember about masks and disease like this is that masks work in both directions. They reduce the likelihood that you get infectious particles into your nose, mouth and eyes potentially, if you keep your hands off your face. They also prevent you from infecting other people. Probably the more important part with this disease is the reduction of transmission, which happens very efficiently even with cloth masks. The reason that's so important with this particular disease is that what we know of the work of Gabriel Leung and his colleagues in Hong Kong, which was published in Nature about a month ago, is they estimate about 44% of transmissions in Hong Kong occur in presymptomatic individuals. Those are people who are going to feel sick tomorrow, but they feel just fine today. They haven't changed their behaviour.

Masks can be extremely impactful because if I'm wearing a mask and I become infectious but I don't know it yet, I don't infect you. Everybody wants to wear a mask to protect themselves from other people. I'm fine to have folks leverage that to get the masks on. It's pretty clear. There's a reason why surgeons wear masks in the operating room because they block extrusion of respiratory droplets that infect with bacteria the patients they're operating on. This would be the same idea except out in public you're wearing a mask not to protect yourself necessarily—although it might—but to protect other people from you if you're infectious but don't have symptoms.

As I say, we've had reproduction numbers in Ontario and Quebec, which is basically where our epidemic lives now, rumbling along around a reproduction number of one. In Ontario it's been there since early April, we just can't seem to get it down. If anything knocks that reproduction number down to 0.7 or 0.6, we're going to get back to a lot more rapid economic opening up. We're going to be able to open up more. The lower we keep that reproduction number, the more we'll be able to open up the economy while still staying safe.

To me it's a no-brainer. We can argue about class 1A evidence or what have you. We can have a symposium about this in five years and decide what exactly the science shows. But now is the time for action.

As Professor Attaran said, we're burning through $12 billion a week. Getting masks on Canadians and teaching them how to use them is change from between the couch cushions relative to what we're burning through by keeping our society closed. To me it's worth the gamble.

● (1855)

**The Chair:** Thank you.

We go now to Mr. Desilets for two minutes and a half, please.

[*Translation*]

**Mr. Luc Desilets (Rivière-des-Mille-Îles, BQ):** Thank you, Mr. Chair.

My thanks to all the witnesses for joining us. The content they have shared with us is very interesting.

My first question is for—

[*English*]

**The Chair:** Pardon me, Mr. Desilets, your sound is bad as well.

Could you try and unplug your headset and plug it back in?

I will suspend for a minute.

● (1855)

_____________________(Pause)_____________________

● (1900)

**The Chair:** I declare this meeting resumed.

Please go ahead, Mr. Thériault, on behalf of Mr. Desilets.

[*Translation*]

**Mr. Luc Thériault:** Okay.

Earlier, when I asked Dr. Fisman a question, I noticed that Dr. Schabas was reacting. I think he wants to answer the question.

It had to do with the rate of safe reopening that Canada should adopt in order to have herd immunity, given that we don't have a vaccine yet, we don't have antivirals, and we are just beginning serological testing.

My question is for Dr. Schabas.

[*English*]

**Dr. Richard Schabas:** One really profoundly unfortunate thing about what's happened in Canada, where we in fact did the lockdown in advance of our outbreak, unlike many places in western Europe or in the United States, is that in a sense we've had the worst of both worlds. We have achieved very little herd immunity, certainly no more than 5%, at least in the whole country, yet we've had a lot of deaths. We've had a lot of deaths because of the outbreaks in the long-term care homes. The population death rate in the city of Montreal is twice as high as it is in Stockholm, Sweden and is starting to close in on the city of New York. It's not been a very happy experience.

There were two kinds of outbreaks. There was the long-term care outbreak, which drives mortality, and then there's the community outbreak, where there has been very little mortality.

The fundamental question is: Is it safe to reopen in the presence of active disease? No, not in the sense that we're not going to see more COVID disease. We will. When we start to open up, we are going to see more COVID disease.

The whole thrust of my presentation is to look at it the other way. Is it safe not to open up? We talked, and one of the earlier questions was: When are we going to open the schools? Why are we opening the schools? There's going to be more COVID spread. Well, the reason you open schools is that children have to go to school. It's a fundamental right of children to have an education. If we deprive a whole generation of children of six months or a year of education, we're going to be paying the public health price for that for years to come.

There is no nice solution. Dr. Fisman and Dr. Attaran talk about doing more testing and contact tracing, something which, by the way, has never been done to control a respiratory virus. It may work well on a spreadsheet; the real world is more complicated. I hope they're right. I hope they're right and that works, but the real world is a rather more complicated place.

I was just going to say what I'm really worried about is that when they try the strategy and the disease resurges in the fall and the strategy fails, as I believe it almost certainly will, we can't go back into this kind of lockdown because we will do more long-term damage to our public health than COVID-19 could ever do.

● (1905)

**The Chair:** Thank you, Mr. Thériault.

We go now to Mr. Davies.

**Mr. Don Davies:** Thank you.

Dr. Schabas, you wanted a chance to explain, so I'm going to put a few things to you. After SARS, you wrote, “In the unlikely event of another SARS outbreak in Canada, public health officials should quarantine no one.” Now, our current pandemic is a SARS outbreak. The virus is SARS-CoV-2. We fought it mainly with lockdown and quarantine. My first question is, are you standing by your extraordinary statement that we should quarantine no one?

Before I get to that, I want to contrast that. In 1990, when you were Ontario's chief medical officer, you classified HIV as a virulent disease, which is the worst category of characterization, and you recommended that we forcibly confine people with HIV who may have had sex with someone else, even if they used a condom and even if they disclosed that to their partner.

My final piece, before I let you answer, is that you said that we should treat this more like the 1957 flu, but the fatality rate in the 1957 flu was about 0.1%, which is about one-twelfth that of COVID-19.

Throwing all those together, can you help me understand your point of view?

**Dr. Richard Schabas:** I'll try to remember all of them.

First of all, let me start with the SARS 1 and the quarantine. I was talking about SARS 1. SARS 1 was a disease that was not transmissible asymptomatically and was not even transmissible in its early symptomatic stage, so quarantine made zero sense with SARS 1, and my hope was that it wouldn't happen again.

Yes, we've used it widely in SARS 2. Whether it's really been very effective, or whether it's a useful tactic, because as I've said before, you can maybe flatten the curve.... In fact, I'm quite impressed by our ability to implement quarantine, and I think it probably has to some degree flattened the curve, but the question is ultimately to what end? The virus isn't going anywhere, and unless the measures you're using to flatten the curve are somehow sustainable in the long term, I'm not sure they really get us anywhere.

On the third question, as related to HIV, yes, I had recommended it. I didn't do it. It wasn't up to me. I had recommended to the minister that it be classified in the same category as diseases like tuberculosis, syphilis, gonorrhea and hepatitis B. It was a classification that would give a judge the authority to incarcerate someone who was deliberately spreading the disease. That was the context of it. It actually never happened, and that's not quarantine. Please understand that quarantine is when you lock someone up who you think is incubating the disease.

Case isolation, which is a totally different thing, is that when you know somebody has the disease, you take steps to isolate them. I'm not recommending that we do this for HIV. That's a different context. That's what we do, in fact, when people have COVID or we have good reason to believe they have COVID. We isolate them. That's not quarantine. Quarantine is when you lock them up when you think you're incubating them.... The term “quarantine” itself derives from the 40 days of Lent. That's a medieval strategy and, by and large, I think it belongs back in the Middle Ages.

● (1910)

**The Chair:** Thank you.

**Mr. Don Davies:** I have a point of privilege to raise before we adjourn, Mr. Chair.

I would like to move a motion that this committee inquire into reports that a witness appearing before the health committee, Dr. Amir Attaran, may have been threatened, punished, intimidated or otherwise harmed by the Public Health Agency of Canada, Statistics Canada or the federal government in some other form, because of testimony he has given at the health committee, and to determine if a prima facie issue of privilege has been raised and, if so, report such findings to the Speaker of the House.

Mr. Chair, I'm quoting from Bosc and Gagnon, which says this:

> ...the intimidation of a committee witness has also been found to be a prima facie breach of privilege. In 1992, a witness who had testified before a subcommittee was advised by a Crown corporation employee that the issue of her testimony was being referred to the corporation's legal department. The witness informed a Member, who raised a question of privilege in the House. The matter was found by Speaker Fraser to be prima facie contempt and was referred by the House to the Standing Committee on House Management for consideration.

In its report, the committee said this:

> The protection of witnesses is a fundamental aspect of the privilege that extends to parliamentary proceedings and those persons who participate in them. It is well-established in the Parliament of Canada, as in the British Parliament, that witnesses before committees share the same privileges of freedom of speech as do Members. Witnesses before parliamentary committees are therefore automatically extended the same immunities from civil or criminal proceedings as Members for anything that they say before a committee. The protection of witnesses extends to threats made against them or intimidation with respect to their presentations before any parliamentary committee.

Mr. Chair, I could go on. There are many more. I move that there has been a violation of my privileges as a member of this committee, and I would ask that you act on the motion that I have moved.

**The Chair:** Mr. Davies, you're in a point of order. You can't make a motion on a point of order.

As far as the question of privilege goes, as I mentioned earlier, I believe that's out of scope for our authority to conduct these video conference meetings. We are restricted to solely receiving evidence relating to the government's response to COVID-19, and we are also allowed to make motions regarding the invitation of witnesses.

Certainly, as I've mentioned before, I will take the matter under advisement. I will look for a legal opinion from the clerk and from the legal clerk as well, and we can take this up at another time. I'll take that under advisement and—

**Ms. Sonia Sidhu:** Mr. Chair, I would like to raise a point of order.

There were comments made in testimony today that I believe break parliamentary language. It was deeply disrespectful to call Canada's public servant untruthful. That comment should be removed from the committee record.

**The Chair:** Thank you for that point of order.

Certainly, we are bound by the rules of Parliament in our conduct here. I would certainly urge all participants, going forward, to be prudent in their language.

Thank you, everybody. I'd like to—

**Mr. Matt Jeneroux:** Mr. Chair, this is to Mr. Davies' point of order.

**The Chair:** Go ahead.

**Mr. Matt Jeneroux:** I'm reading the motion adopted by the House of Commons in the sitting on Tuesday, March 24, 2020. Section (i) states the following:

> ...if committee is not satisfied with how the government is exercising its powers under the Act, it may adopt a motion during a meeting by videoconference or teleconference to report this to the House by depositing a report with the Clerk of the House which shall be deemed to have been duly presented to the House on that day;

I would point to you, Mr. Chair, and also the clerk, to reference that point when coming back and addressing Mr. Davies' question of privilege.

**Mr. Don Davies:** If I might, Mr. Chair—

**The Chair:** I'm sorry, I—

**Mr. Don Davies:** —I want to be very clear that I am not raising a point of order. I am raising an issue of privilege.

I can further quote that it says in the—

**The Chair:** Just hold on, Mr. Davies.

Thank you, Mr. Jeneroux, for your contribution.

I believe you did start your remarks, Mr. Davies, on a point of order. You then went into a question of privilege. It's kind of beside the point. I will take under advisement your motion. We will get back to you once I have a ruling from the law clerk.

● (1915)

**Mr. Don Davies:** Mr. Chair, with respect, it's very important that you....

You're misunderstanding my point. Earlier I raised a point of order. I am now raising a question of privilege. That's what I did in my second intervention. You clearly have the power, in fact you have the duty, to receive my question of privilege as it's raised in committee, because this is where I have to raise that.

I'm happy for you to go back and reflect on it, but I want to be very clear that I am raising a question of privilege and I am asking for your consideration of the motion that I have moved.

**The Chair:** Thank you, Mr. Davies. As I said, I will take the matter under advisement. We will get back to the committee in due course.

**Mr. Don Davies:** Thank you.

**The Chair:** Thank you, everybody.

Thank you to our witnesses. It's been a lively and robust discussion. Thank you for sharing so much of your time with us and for putting up with our technical issues.

Thank you to the House staff and the technical people for being with us to work through those issues and thank you to the members for all the great questions.

Have a good day, all, and thank you.

The meeting is adjourned.

# EXHIBIT C

This is Exhibit "C" referred to in the Affidavit of

Dr. Richard Schabas

Sworn before me this 29th day

of May A.D., 2021

J Bildy

A Commissioner for Oaths in and for Ontario

LISA D.S. BILDY
BARRISTER & SOLICITOR

Government of Canada / Gouvernement du Canada



# Canadian Pandemic Influenza Preparedness: Planning Guidance for the Health Sector

August 2018

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# Preface

**Canadian Pandemic Influenza Preparedness: Planning Guidance for the Health Sector** (CPIP) is a federal, provincial, and territorial (FPT) guidance document that outlines how jurisdictions will work together to ensure a coordinated and consistent health-sector approach to pandemic preparedness and response. CPIP consists of a main body, which outlines overarching principles, concepts, and shared objectives, as well as a series of technical annexes that provide operational advice and technical guidance, along with tools and checklists on specific elements of pandemic planning. The CPIP main body and its annexes are intended to be used together.

CPIP was first published in 2004. In 2006, the Pan-Canadian Public Health Network (PHN) Council approved an updated version of CPIP as an evergreen document to be updated as required. In 2009, Canada’s pandemic preparedness planning efforts were tested for the first time, with the emergence of the H1N1 influenza pandemic. In 2012, a CPIP renewal process was initiated by the PHN Council. This latest version of CPIP, was approved by FPT Deputy Ministers of Health 2014, with further update in 2018. It incorporates evidence from H1N1 lessons learned reviews conducted at the FPT and international levels and by various stakeholder groups, and scientific advances. As an evergreen document, the CPIP main body and each annex will be reviewed every 5 years, with updates made between review cycles, if necessary.

Since 2012, The CPIP Task Group (CPIP TG) has overseen the CPIP renewal process.The CPIP TG consists of members with expertise in the areas of pandemic and seasonal influenza, pandemic preparedness planning and response, emergency management, epidemiology, public health, virology, bioethics, immunization, surveillance, and laboratory diagnosis.

The updated CPIP allows for a more flexible and adaptable response to future pandemics, providing scope for provinces and territories (PT) to adapt their own plans and responses to local and regional circumstances. The title of the document also has changed, from Canadian Pandemic Influenza Plan for the Health Sector to Canadian Pandemic Influenza Preparedness: Planning Guidance for the Health Sector, to more accurately reflect its role and intended use as a guidance document.

CPIP now supports a risk-management approach and includes new concepts such as pandemic impact assessment, descriptions of pandemic scenarios of varying impact, and identification of triggers for a Canadian response. It also better reflects Canada's geographic, demographic, cultural, and socio-economic diversity and the imperative for planners to take this diversity into account. CPIP has been subject to extensive FPT government review and targeted stakeholder consultations. Stakeholders included national-level organizations representing health professionals, emergency preparedness and first responders, community services, the private sector, and Indigenous peoples.

# 1.0 Introduction

## 1.1 Background

Canadian Pandemic Influenza Preparedness: Planning Guidance for the Health Sector (CPIP) provides planning guidance to prepare for and respond to an influenza pandemic. Influenza pandemics (subsequently referred to as pandemics) are unpredictable but recurring events that occur when a novel influenza virus strain emerges, spreads widely and causes a worldwide epidemic. Unfortunately, it is not possible to predict the anticipated impact of the next pandemic or when it will occur.

Planning for a prolonged and widespread health emergency of unpredictable impact is challenging but essential. It requires a "whole of society" response and the coordinated efforts of all levels of government in collaboration with their stakeholders.

Pandemic planning activities within the health sector in Canada began in 1983. The first Canadian pandemic plan was completed in 1988 and was followed by several updates. In 2004, the Canadian Pandemic Influenza Plan for the Health Sector was published as the result of extensive collaboration among FPT and other stakeholders. Before this version, the last major update to the CPIP and its annexes occurred in 2006.

The 2009 influenza A (H1N1) pandemic (subsequently referred to as the 2009 pandemic) provided the first real test of Canada's pandemic preparedness planning efforts. Collaboration among all levels of government and stakeholders was unprecedented compared with previous events like the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003. The public health and health care systems were stressed but in most instances were able to cope. Antiviral stockpiles were deployed and pandemic vaccine was administered to millions of Canadians. There were, however, many challenges identified in this experience.

Canada's pandemic planning continues to evolve on the basis of research, emerging evidence and the lessons learned from the 2009 pandemic. The value of building on seasonal influenza surveillance systems and control measures is well recognized. Making these systems and measures as robust as possible in the interpandemic period will help prepare for a strong pandemic response.

### 1.2 Purpose

CPIP's overall purpose is to provide planning guidance for the health sector for pan-Canadian preparedness and response, in order to achieve Canada's pandemic goals:

> First, to minimize serious illness and overall deaths, and second to minimize societal disruption among Canadians as a result of an influenza pandemic.

The main body of CPIP provides strategic guidance and a framework for pandemic preparedness and response, whereas the CPIP annexes provide operational advice and technical guidance, along with tools and checklists. As an evergreen document, CPIP will be updated as required to reflect new evidence and best practices.

It is important to note that CPIP is not an actual response plan. Rather, it is a guidance document for pandemic influenza that can be used to support an FPT all-hazards health emergency response approach. While CPIP is specific to pandemic influenza, much of its guidance is also applicable to other public health emergencies.

### 1.3 Audience and Scope

CPIP is pan-Canadian pandemic planning guidance for the health sector developed under the guidance of a group of Canadian experts. The primary audiences are the FPT ministries of health together with other ministries that have health responsibilities. While it is anticipated that CPIP's strategic direction and guidance will inform FPT planning in order to support a consistent and coordinated response across jurisdictions, PTs have ultimate responsibility for planning and decision-making within their respective jurisdictions. CPIP also serves as a reference document for other government departments, non-governmental organizations (NGOs) engaged in health issues, and other stakeholders.

While CPIP provides pandemic planning guidance, it does not address business continuity preparedness or overall management of a health emergency. These activities are critical for an effective pandemic response; however they are more appropriately addressed in the emergency plans of individual jurisdictions and organizations. Neither does CPIP address pandemic preparedness and response in the non-health sectors (e.g., community and social services, public safety), although some of its content may be a useful reference.

### 1.4 Changes in This Version

There have been considerable changes to CPIP since the 2006 version in both format and content.The strategic nature of the information in the main body of the planning guidance has been strengthened and lessons learned from the 2009 pandemic have been incorporated. While the overall pandemic goals remain the same, new objectives have been added along with a set of principles to support the response. These are accompanied by a discussion of ethical considerations pertaining to pandemic preparedness and response, and consideration of the implications of Canada's diversity and the needs of vulnerable persons. Roles and responsibilities for each level of government have been described more explicitly.

The new CPIP outlines a risk management approach to support a flexible and proportionate response. Risk management involves setting the best course of action in an uncertain environment by identifying, assessing, acting on and communicating risks. Information has been added about what is known and what is uncertain about pandemic influenza. The planning assumptions have been updated, and four hypothetical planning scenarios have been developed to illustrate the importance of developing plans and response strategies that are flexible and can be adapted as circumstances require. CPIP also provides triggers for action that are based on novel virus emergence and pandemic activity in Canada rather than the global World Health Organization (WHO) phases. Finally, content has been updated in each of the specific response areas.

The CPIP technical annexes are being renamed according to their subject (e.g., Surveillance, Vaccine) instead of being named alphabetically. As part of the CPIP renewal process, it is intended that each of the technical annexes will be revised.

# 2.0 Context for Planning

## 2.1 Understanding Pandemic Influenza

### 2.1.1 Influenza and the Origin of Pandemics

While there are four types of influenza virus (A, B, C and D), only influenza A and B viruses cause seasonal outbreaks in humans, and only influenza A viruses have been known to cause pandemics. Aquatic birds are the natural hosts for influenza A viruses, although a wide range of species can be infected and significant disease outbreaks can occur in poultry, pigs and other species. Most of these animal influenza virus strains do not cause disease in humans although occasional human (zoonotic) infections occur, usually through close contact with infected poultry or animals.

Influenza pandemics or worldwide epidemics occur when an influenza A virus to which most humans have little or no immunity acquires the ability to cause sustained human-to-human transmission leading to community-wide outbreaks. Such a virus has the potential to spread rapidly worldwide, causing a pandemic. [1]

These novel viruses may arise through genetic reassortment (a process in which animal and human influenza genes mix together) or genetic mutation (when genes in an animal virus change, allowing the virus to easily infect humans). Pigs can become infected with influenza viruses from different species and act as a “mixing vessel” to facilitate the reassortment of genes from different viruses.

Not all novel influenza viruses evolve into pandemic viruses. Some novel subtypes, like the avian A (H5N1) virus, have caused sporadic human cases on an ongoing basis since 1997 but have not gained the ability to spread easily in humans. As the overall human case fatality rate for A (H5N1) infections has been over 50%, [2] there are concerns about the potential of a high impact human pandemic if this virus gains the capacity to spread easily between people.

### 2.1.2 Typical Pandemic Characteristics

Historical evidence suggests that influenza pandemics occur three to four times per century. In the last 100 years there were four pandemics separated by intervals of 11 to 41 years. They varied greatly in their impact, as measured by illness and deaths. The 1918-1919 pandemic had a high impact, killing an estimated 30,000 to 50,000 people in Canada and 20 to 50 million people worldwide. The impact of the 1957 and 1968 pandemics was considered moderate, whereas the 2009 pandemic had a lower impact.

**Pandemics of the Last 100 Years, subtypes and common names:**

| | |
|---|---|
| **1918-1919:** | H1N1 “Spanish flu” |
| **1957-1958:** | H2N2 “Asian flu” |
| **1968-1969:** | H3N2 “Hong Kong flu” |

| | |
|---|---|
| **2009:** | H1N1 "Influenza A(H1N1) 2009" |

While every pandemic is different, some common characteristics can be recognized:

- The pattern of disease is different in pandemics than in seasonal influenza.
- Pandemics may arrive outside of the usual influenza season and typically have more than one wave of illness.
- The total duration of a pandemic is likely to be 12 to 18 months.
- During a pandemic, the new pandemic virus replaces other circulating influenza strains. Afterwards, the pandemic strain becomes part of (and may dominate) the mix of seasonal influenza A viruses.
- During seasonal influenza, most hospitalizations and deaths occur in the elderly and persons with underlying health conditions, whereas, in a pandemic, disproportionately more severe disease and death is seen in young people and in persons without underlying health conditions. [3]
- There is a gradual reversion back to the typical seasonal morbidity and mortality pattern over the decade following the pandemic.

During the 1918-1919 pandemic, 99% of influenza-associated deaths in the United States (US) were in persons under 65 years of age and nearly half of these among previously healthy adults 20-40 years of age. In subsequent pandemics, the proportion of influenza-associated deaths in the US in persons under 65 years of age was 36% (1957-58), and 48% (1968-69). [4] In the 2009 pandemic 70% of reported deaths in Canada were in persons under 65 years of age. [5]

### 2.1.3 Pandemic Impact

The term “severity” is often used to describe both severity of disease in individuals (clinical severity) and the overall “severity” of a pandemic in a population. In CPIP, the term **severity** is used to describe clinical severity of disease in individuals and **impact** is used to describe the effects of a pandemic on the population.For planning and response purposes, describing the “impact” of a pandemic on the population is a more meaningful approach than talking about its “severity”. It is acknowledged that this usage may vary from the approach of some other authorities. For example, the WHO uses the term “pandemic severity” for what CPIP terms “impact” but the concepts are the same. [6]

**Severity** refers to clinical severity of disease in an individual (e.g., mild, moderate or severe disease).

**Impact** refers to the effects of a pandemic on a population (e.g., low, moderate, or high impact).

Pandemics vary in their impact, as do seasonal influenza outbreaks, although usually on a higher scale of magnitude. A low impact pandemic might resemble moderate to severe seasonal influenza outbreaks, although its epidemiological profile would be different in important ways as previously described. In contrast, pandemics of moderate to high impact could result in high rates of illness and death across the country and would severely challenge the health care sector. They could also disrupt the normal functioning of society and put people with limited resources and support systems into a more vulnerable state.

Numerous factors can affect pandemic impact. These are outlined below and described in more detail in Appendix A:

- Viral factors are perhaps the most important. These characteristics of the virus itself are usually described as transmissibility (ability to spread) and virulence or clinical severity (the ability to cause severe disease). Transmissibility can be defined in terms of both the extent and the speed of spread and it can vary by season and setting.

- Factors affecting population vulnerability include pre-existing population immunity, the presence of underlying health conditions, or unexpected new risk factors for severe disease. Impact may be increased in vulnerable populations, including among Indigenous peoples, or settings such as remote communities, homeless shelters and overcrowded housing.
- Response factors include the effectiveness of interventions (e.g., public health measures, vaccine, and antiviral medications), the health care system response (e.g., access, surge capacity), and risk communications, along with the extent of public adoption of desired behaviours and social mobilization.

The impacts of a pandemic in psychosocial terms may be acute in the short term but can also undermine the long-term psychological well-being of the population. Psychosocial issues are not only experienced by those who become ill; distress permeates through the family and the community (e.g. financial stress due to economic downturns, caregiver burnout, occupational stresses, stigma/social exclusion).

The range of issues associated with psychosocial planning is broad involving all levels of government and multiple planning partners, including humanitarian actors such as community-based organizations, government authorities and NGOs and are closely aligned with the practice of risk communication [7].

## 2.2 Uncertainties and Unpredictability

Influenza is unpredictable - every influenza season and every pandemic is different. These uncertainties make pandemic planning challenging and highlight the need for flexibility and adaptability. Some of the major unknown areas about the next pandemic are the following:

- When the next pandemic will occur - although historically pandemics have occurred three to four times per century, there is no predictable interval. It should not be assumed that the 2009 pandemic has provided a respite during which preparedness efforts can be relaxed.
- Where it will emerge - while most seasonal influenza strains emerge in East/Southeast Asia, [8] the same is not true for pandemic influenza; the 2009 pandemic emerged in Mexico. An influenza pandemic could emerge anywhere in the world, and there may be very little lead time before Canada is extensively involved.
- What the nature of spread will be - pandemics often first arrive outside the usual influenza season (e.g., in late spring or summer) and typically have more than one wave of infection. However, this is not true in all circumstances or in all areas. A small first wave is often followed by a larger second wave, but the relative size of pandemic waves may vary. The speed of spread may also vary - pandemic waves can be intense or more spread-out over time. An intense wave would put more stress on the health care system.
- What its characteristics will be - the basic characteristics of the next pandemic virus are unknown, including its antigenic type (e.g., H2, H5, H7), its transmissibility and virulence, and the age groups and clinical groups most affected.
- What its impact will be - the last four pandemics demonstrated that population impact can vary from low to high and is not the same in all populations or settings. It is important to consider all possibilities and make plans adaptable for different circumstances. This will help ensure that the response is proportional to the evolution of the pandemic in any specific community.
- What effect interventions will have - typical seasonal influenza interventions are expected to be effective during the pandemic. However, the novel virus could be resistant to antiviral medications and/or pandemic vaccine production could be delayed or unsuccessful. The extent of vaccine uptake and adoption of public health measures is also unknown. Furthermore, interventions could have unintended consequences.

## 2.3 Lessons Learned from the 2009 Pandemic

There were many important epidemiological observations from the 2009 pandemic to take into account in future planning and response. These include the speed with which cases and sporadic outbreaks appeared in Canada after the novel virus was first detected and the early involvement of some remote and isolated communities, with severe disease in some First Nations communities. There was considerable variation in the timing and intensity of pandemic waves, especially the first wave, across the country. Although the symptoms were similar, age groups affected and risk conditions varied from seasonal influenza. Greater impact was seen in pregnant women and Indigenous peoples, and persons with morbid obesity were newly recognized as being at high risk for complications. For the duration of the pandemic, seasonal influenza strains were replaced by the pandemic strain and as with previous pandemics, it was not certain whether this single A strain dominance would continue in the 2010/2011 influenza season, A (H3N2) and B strains began to re-circulate and the pandemic virus became the seasonal A (H1N1) strain.

A number of challenges were identified in the national response. Surveillance demands were very heavy from the start, and were accentuated by the lack of linked information systems in some jurisdictions, unclear protocols for sharing information, and limited capacity for epidemiological analysis. The process for release of the National Antiviral Stockpile (NAS) was uncertain. There was high demand for critical care and ventilators for affected children and adults. Preparation and timely approval of concise national guidelines was difficult. The pandemic immunization program faced challenges with uncertain timelines for vaccine delivery, prioritization of vaccine supply, logistics of local campaigns and communication of changing recommendations.

On the positive side, previous planning processes and relationship-building led to unprecedented FPT collaboration and many successful stakeholder engagement efforts. Existing surveillance systems, like FluWatch, and ready-to-use hand hygiene and respiratory etiquette campaigns were valuable. Mathematical modeling was successfully used to support decision-making in some areas (e.g., recommendations for vaccine prioritization) and it was recognized that a number of other areas would benefit from modeling (e.g. predicting pandemic impact).

Following the pandemic, the Government of Canada (GC) [9] and most PT governments conducted lessons learned reviews. In addition, the Standing Senate Committee on Social Affairs, Science and Technology held extensive hearings on the response. [10] Some common themes emerging from these reports and recommendations were identified to improve preparedness, such as:

- streamlined FPT governance structure and clarification of roles and responsibilities;
- improved scalability and adaptability of response, with triggers to activate and deactivate specific responses while taking into account the variable impact and timing of the pandemic in different geographic regions;
- development of integrated electronic information management systems;
- strengthened surveillance systems and epidemiological capacity;
- collaborative processes to develop and strengthen guidance documents for health care workers (HCW) and other stakeholders to establish timely availability, accessibility, consistency and cultural sensitivity of messages;
- strategies to communicate risk, uncertainty and changing information;
- active participation of all stakeholders in pandemic preparedness and response;
- strengthened linkages with primary care and other front-line service providers;
- development of mechanisms for rapid funding and research priority-setting, multi-jurisdictional studies and centralized ethics approval for multi-centre studies;
- mechanisms to integrate new research findings into evidence-informed practice; and
- regular and rigorous testing of plans at all levels.

## 2.4 Understanding Canada's Diversity

Canada's geographic features and population diversity can create challenges in mounting an effective response to a public health emergency. Canada is a huge country geographically with communities that range in size from large cities to small rural and remote settlements. The proportion of people living in rural areas in Canada (18.9%) is low in comparison to other developed countries and is steadily declining. The proportion of the rural population, however, varies greatly (from 14% to 53%) from one province or territory to another. It is lowest in British Columbia and Ontario and is highest in the Atlantic provinces and the territories. [11]

Canada is diverse in terms of language, religious beliefs, ethnicity, culture and lifestyle. Canada's Indigenous peoples make up almost 4% of the population, the second highest percentage in the world after New Zealand. [12] While many Indigenous peoples live in remote and isolated communities in the North, about half live in urban areas. The median age of Canada's Indigenous peoples is considerably younger than that of non-Indigenous peoples (27 years compared with 40 years respectively). [13]

The proportion of foreign-born people in Canada is one of the highest in the world at 20%, [14] most of whom settle in large cities. Toronto and Vancouver now have over 40% visible minority populations and Montreal has 16%. [15] In addition there are many temporary residents, such as foreign workers and foreign students.

The needs of remote and isolated communities may be greater than other communities because of geographic isolation and health, social, environmental, economic and cultural considerations. These may affect the baseline health status and thus increase the vulnerability of their residents. In addition, some remote and isolated communities lack basic amenities, such as household access to running water, that are assumed to be present when public guidance like hand hygiene is issued. It is important to consider these factors, along with limited access to health care and transportation challenges, when planning for all aspects of the pandemic response in remote and isolated communities. Similar concerns may affect urban marginalized or vulnerable populations.

There are individuals within all jurisdictions whose needs are not fully addressed by traditional services or who cannot comfortably or safely access and use standard resources. Examples of these vulnerable persons include, but are not limited to, individuals who are:

- physically or mentally disabled (e.g., visually or hearing impaired, mobility limitations, cognitive disorders);
- limited or non-English or French speaking;
- low literacy;
- geographically, culturally or socially isolated;
- low income;
- medically or chemically dependent;
- homeless or street-involved;
- housebound or frail seniors; and
- new immigrants and refugees. [16]

It may not be a single one of these conditions that determines the degree of vulnerability, but rather a combination of them under certain circumstances [17].

Studies indicate that there is a social gradient of risk during influenza pandemics, based on social vulnerabilities that are likely to lead to increased exposure to infection, risk of basic human needs not being met, insufficient support and/or inadequate treatment. [18] Vulnerable populations might become more marginalized if pandemic health services are streamlined into standard approaches to reach the general population.

Within the nationally coordinated pandemic response it is important to allow sufficient local flexibility to address the unique needs of vulnerable populations. Detailed influenza-specific planning guidance has been developed for vulnerable populations in Canada. [19, 20] These referenced documents should be useful for FPT and regional/local planners.

Responsibility for planning for vulnerable populations is often unclear and although public health is typically involved, inclusion of all relevant stakeholders is important for comprehensive planning and buy-in. It is important for planners to address the unique needs of their jurisdiction. This begins with identifying populations and settings associated with increased risk of illness or severe outcomes from pandemic influenza along with persons who might need tailored prevention and care services during a pandemic. Specific planning considerations include information needs (e.g., language, cultural style and methods of dissemination); access to assessment, treatment (including antiviral medications) and convalescence support; access to vaccine; and need for support for activities of daily living.

## 2.5 Ethical Considerations

This section summarizes the more important ethical considerations in pandemic planning but is not intended to be an actual ethical framework. Ethical considerations are also addressed more specifically in various CPIP annexes with supporting tools and frameworks where available.

In Canada, ethical considerations are increasingly taken into account in the development of health policy. Ethical analysis helps to identify the ethical issues and determine how to do the right thing in a fair, just and transparent way. Many of the issues encountered in pandemic preparedness and response involve balancing rights, interests and values. Examples include decisions over resource allocation; prioritization guidelines for pandemic vaccine and antiviral medications; adoption of public health measures that may restrict personal freedom; roles and obligations of HCWs and persons providing medical first response, as well as their employers; the potential need for triage in the provision of critical care; and responsibilities to the global community. [21]

The application of ethical reasoning to pandemic preparedness and response begins with identifying and prioritizing the ethical questions in the issue under consideration. Analysis should include reflection on the ethical considerations associated with the options, taking into account the societal versus individual interests and values that are at stake. Ethical tensions are inevitable. When weighing the options, it is important to be guided by the Canadian pandemic goals.

As pandemic planning initiatives fall within the domain of public health, they are guided by a code of ethics that is distinct from traditional clinical ethics. [22] Whereas clinical ethics focuses on the health and interests of individuals, public health ethics focuses on the health and interests of a population. When a health risk like a pandemic affects a population, public health ethics predominates, and a higher value is placed on collective interests.

In practical terms, this means there should be an emphasis placed on trust and solidarity. Successful public health activities require relationship-building and can contribute to creating and maintaining trust between individuals, populations and health authorities. Solidarity is the notion that we are all part of a greater whole, whether an organization, a community, nation or the globe. Another important consideration is reciprocity, meaning that those who face disproportionate burdens in their duty to protect the public (e.g., HCWs and other workers who are functioning in a health care capacity, for example police or fire personnel who are providing medical first response) are supported by society, and that to the extent possible those burdens are minimized.

The concept of stewardship is also closely related to trust. Stewardship refers to the responsible planning and management of something entrusted to one's care, along with making decisions responsibly and acting with integrity and accountability. Trust, stewardship and the proper building of relationships also mean that the power conferred to government and health authorities will not be abused. For example, if restrictions are deemed essential for proper risk management, they must be effective and proportional to the threat, meaning that they should be imposed only to the extent necessary to prevent foreseeable harm. These restrictions should also be counterbalanced with supports to minimize the burden on those individuals affected.

The concepts of equity and fairness are very important to Canadians. In a pandemic context, they lead to a number of considerations. As much as possible, benefits and risks should be fairly distributed through the population. This may be difficult, however, in some circumstances, such as a pandemic that differentially affects certain populations or a very severe pandemic if resources are in short supply. Decisions should take health inequities into account and try to minimize them, rather than make them worse. Access to necessary health care may be restricted in a health crisis; however, available resources (e.g., vaccine and antiviral medications) should be distributed in a fair and equitable way. What will constitute fair and equitable distribution will be context dependent. Therefore the transparency and reasonableness of decision-making processes are important.

Good decision-making processes are also essential for ethical decision-making. They involve the following: [23, 24]

- openness and transparency - the process is open for scrutiny, and information about the basis for decisions and when and by whom they were made is publicly accessible;
- accountability - being answerable for decisions;
- inclusiveness - stakeholders are consulted, views are taken into account, and any disproportionate impact on particular groups is considered; and
- reasonableness - decisions should not be arbitrary but rather be rational, proportional to the threat, evidence-informed and practical.

## 2.6 Legal Considerations

The legal considerations that arise in the context of pandemic preparedness and response are varied and complex. International laws as well as FPT legislation will be relied upon during both the preparedness and responses phases of a pandemic.

### 2.6.1 International Requirements

**International Health Regulations (2005)**

The current International Health Regulations (2005) [IHR (2005)] came into force in 2007. They provide a framework for monitoring and enhancing global public health capacity and international communication regarding potential public health emergencies of international concern (PHEIC). The aim of the IHR (2005) is to prevent the international spread of disease while limiting interference with international traffic and trade. The IHR (2005) also establish a more effective and transparent process for WHO and its Member States (including Canada) who are States Parties to the Regulations, to follow when determining and responding to a PHEIC. Most importantly, they broaden the scope of international collaboration to include any existing, re-emerging or new disease that could represent an international threat.

The IHR (2005) include obligations for States Parties to:

- develop core capacity for surveillance and response;
- establish a national focal point (NFP) as the contact point for WHO on all IHR matters; and

- notify WHO of all potential PHEIC within specified time frames.

In order for Canada to meet the IHR (2005) requirements, all levels of government must collaborate. In Canada, PTs use established protocols to report influenza infections of international concern to the Public Health Agency of Canada (PHAC), which is Canada's NFP. After an initial assessment if notification is required, PHAC communicates with the WHO. Reportable influenza-related events include cases of human influenza caused by a new subtype as well as cases having potential international public health implications that meet the notification criteria established under Annex 2 of the IHR (2005). WHO then re-assesses the event to determine whether the event constitutes an actual PHEIC. The first PHEIC declared by the WHO under the IHR (2005) was the influenza A (H1N1) pandemic in 2009.

**Pandemic Influenza Preparedness Framework**
The Pandemic Influenza Preparedness Framework (PIP Framework) for the sharing of influenza viruses and access to vaccines and other benefits was adopted by the World Health Assembly in 2011. The PIP Framework aims to improve the sharing of influenza viruses with pandemic potential and to achieve more predictable, efficient and equitable access for countries in need of life-saving vaccines and medicines during future pandemics.

Under the Framework, Member States, including Canada, are responsible for:

- ensuring the timely sharing of influenza viruses with human pandemic potential with the Global Influenza Surveillance and Response System (GISRS);
- contributing to the pandemic influenza benefit-sharing system; and
- continuing to support the GISRS.

### 2.6.2 Federal Legislation

The Emergency Management Act (2007), section 6(1), makes each minister accountable to Parliament for a government institution responsible to identify the risks that are within or related to his or her area of responsibility and prepare emergency management and response plans with respect to those risks; to maintain, test and implement those plans; and to conduct exercises and training in relation to them.

In accordance with responsibilities under the Act, the federal Minister of Health is primarily responsible for developing, testing and maintaining mandate-specific emergency plans for the federal Health Portfolio, which includes Health Canada (HC) and PHAC. These emergency plans outline the federal response to national public health threats or events such as major disease outbreaks (including an influenza pandemic), and to the health effects of natural disasters or major chemical, biological, radiological, nuclear and explosive (CBRNE) events.

Furthermore, the Quarantine Act (2005) strives to prevent the introduction and spread of communicable diseases into and out of Canada by providing the Minister of Health with the authority, including enforcement mechanisms, to take public health measures as required. Pandemic Influenza Type A is listed in the Act's Schedule of Diseases.

### 2.6.3 Provincial/Territorial Legislation

Health emergency management in the PTs in Canada is governed by legislation specific to each jurisdiction. This legislation requires the PT governments to have comprehensive emergency plans respecting preparation for, response to and recovery from emergencies and disasters, including those with potential impact on critical infrastructure. Important health emergency management powers are also found in public health legislation.

The 2009 pandemic provided an opportunity to identify problems or gaps in existing legislation (including public health legislation) that should be addressed in order to respond more effectively to a future pandemic. An effective response requires an authority to establish appropriate leadership for a coordinated response, along with authority for PT and local public health officials to implement appropriate control measures. Planners should ensure that they will have authority to mount an effective response whether or not an emergency is officially declared.

# 3.0 Canada's Approach to Pandemic Influenza

## 3.1 Goals and Objectives

Goals serve an important purpose in guiding preparedness and response, and in prioritizing the use of resources if necessary. Canada's goals for pandemic preparedness and response are:

> First, to minimize serious illness and overall deaths, and second to minimize societal disruption among Canadians as a result of an influenza pandemic.

These national goals were originally presented in the Canadian Pandemic Influenza Plan for the Health Sector, which was endorsed by FPT Ministers of Health in 2004. The goals, and their sequence, had undergone extensive deliberation by FPT pandemic planners and other stakeholders. A survey carried out as part of the Canadian Program of Research on Ethics in a Pandemic (CanPREP) found that over 90% of participants agreed that the most important goal of pandemic influenza preparations was saving lives. [25] During the 2009 pandemic, the pandemic goals were invaluable in guiding aspects of the response.

The supporting objectives for the health sector are as follows:

1. **Minimize serious illness and overall deaths by**
   - reducing the spread of infection through promotion of individual and community actions;
   - protecting the population through provision of pandemic vaccine and implementation of other public health measures; and
   - providing treatment and support for large numbers of persons while maintaining other essential health care.
2. **Minimize societal disruption by**
   - supporting the continuity of health care and other essential services;
   - supporting the continuation of day-to-day activities as much as possible and promoting a return to normal community functioning as soon as possible;
   - maintaining trust and confidence through
     - support of evidence-informed decision-making by collection, analysis and sharing of surveillance and other scientific information; and
     - communication of appropriate and timely advice to decision-makers, health professionals and the public; and
   - supporting a coordinated response by working collaboratively with all levels of government and stakeholders.

## 3.2 Guiding Principles and Approaches

The following principles underpin Canadian pandemic preparedness and response activities and decision-making:

- Collaboration - all levels of government and health care stakeholders need to work in partnership to produce an effective and coordinated response. This implies adopting consistent and collaborative approaches to planning, response and recovery, and having an effective FPT decision-making process. It also implies involvement of stakeholders in these steps.

- Evidence-informed decision-making - decisions should be based on the best available evidence to the extent possible. It is recognized that other factors also enter into decision-making, such as legal and institutional constraints, values, costs and availability of resources. [26]
- Proportionality - the response to a pandemic should be appropriate to the level of the threat.
- Flexibility - actions taken should be tailored to the situation and subject to change as new information becomes available. The pan-Canadian approach should be consistent, although patterns of spread may mean that regional and local jurisdictions will require flexibility in terms of the scale and timing of their response.

In addition to these main guiding principles, Canadian pandemic planning and response activities are also guided by:

- A precautionary/protective approach - this approach is particularly applicable in the early stages of a pandemic when evidence-informed decision-making is not possible due to lack of data and the uncertainty of an evolving event. This means taking timely and reasonable preventive action, proportional to the threat and evidence-informed to the extent possible. This does not mean that in the absence of evidence, all actions must be taken; rather, it means that as emerging evidence reduces uncertainty, evidence-informed actions may supersede those precautionary measures taken at the outset.
- Use of established practices and systems to the extent possible - it is extremely difficult to implement new ways to do things during an emergency. Effective seasonal influenza responses support a strong pandemic response, as well-practised strategies and processes can be rapidly ramped up to manage the pandemic.
- Ethical decision-making - ethical principles and societal values should be explicit and embedded in all decision-making, including the processes used to reach decisions. It is especially important to ensure that all actions respect ethical guidelines tailored to the concerns of public health, while respecting the rights of individuals as much as possible.

## 3.3 Coordination of National Preparedness and Response

The global nature of a pandemic requires a response that differs from many other types of emergency. Traditionally, the responsibility to deal with an emergency is placed first on the individual/household to manage the effects of the emergency as it affects them, and then on successive levels of government as the resources and expertise of each are needed. Public Safety Canada is responsible for coordinating the whole of government response when the federal government is involved in the response to an emergency. Within the PTs a similar function is performed by the appropriate ministry or emergency measures organization.

In a pandemic situation, a pan-Canadian whole-of-government response is required so that all potential resources can be applied to minimizing the pandemic's negative health, social and economic impacts. Pandemic plans should be aligned across jurisdictions to facilitate successful FPT collaboration during a pandemic.

The following sections provide a high-level overview of FPT health emergency planning and response relevant to pandemics.

### 3.3.1 Emergency Management Frameworks and Plans

The GC has in place a coordinated system of federal emergency management frameworks, systems and emergency response plans, many of which can be accessed at Public Safety Canada's web site. These plans are based on the four components of the emergency management continuum (prevention and mitigation, preparedness, response and recovery) and they use an all-hazards approach. Emergency response plans for the federal Health Portfolio are part of this GC system.

The FPT health sector also has a system of frameworks and emergency response plans parallel to those of the federal health sector, that are comprehensive and flexible enough to address any type of national health emergency. The development and maintenance of some of these documents, including CPIP, is overseen by the PHN.

The federal and FPT emergency management plans are supported by various operational annexes and guidance documents. These are nested under the generic all-hazards emergency response plans and deal with more specific threats.

### 3.3.2 Pan-Canadian Coordination of the Pandemic Health Sector Response

Because a pandemic is a significant health event, the FPT ministries of health have the primary mandate for the health sector response in their respective jurisdiction and act as advisor for other sectors on health issues.

At the federal level, the Centre for Emergency Preparedness and Response (CEPR) at PHAC is the Health Portfolio's focal point for coordinating and providing a wide range of emergency management services with other federal departments, PT governments, NGOs and the private sector. CEPR is responsible for the Health Portfolio Operations Centre (HPOC) in Ottawa and its linkages to other operational centres at the FPT level.

Coordination of the FPT ***health sector response*** to a pandemic will follow the governance structure outlined in the FPT Public Health Response Plan for Biological Events (FPT-PHRPBE). The FPT-PHRPBE is complementary to and used in conjunction with existing jurisdictional planning and response systems.

The FPT-PHRPBE is intended to bridge the gap between PT public health response plans and federal health response plans by providing a single, common overarching governance framework for the FPT health sector that can be applied, in full or in part, during a significant public health event requiring a coordinated FPT response, such as an influenza pandemic.

The FPT-PHRPBE defines a flexible FPT governance mechanism that identifies escalation considerations and response levels for a scalable response, and to improve effective engagement amongst public health, health care delivery and health emergency management authorities during a coordinated FPT response. This will ensure that at the time of a response, notification processes and inter-jurisdictional information-sharing will be enhanced; public and professional communication will be addressed; and advance planning and decision-making between and amongst multiple jurisdictions will be facilitated.

Finally, as the effects of a pandemic are not exclusive to the health system, it is critical for FPT governments and emergency management partners to use a common approach in responding to a pandemic. Emergency social services (e.g. non-medical services considered essential for the immediate physical and social well-being of people affected by disasters) should be coordinated within the broader PT response and aligned with health system activities.

### 3.3.3 North American Plan for Animal and Pandemic Influenza

The North American Plan for Animal and Pandemic Influenza (NAPAPI) outlines how Canada, Mexico and the US intend to work together to combat an outbreak of animal influenza or an influenza pandemic in North America. The NAPAPI addresses both animal and public health issues, including early notification and surveillance, joint outbreak investigation, epidemiology, laboratory practices, medical countermeasures (e.g., vaccine and antiviral medications), personnel sharing and public health measures. It also addresses border and transportation issues. While the NAPAPI is not legally binding, it reflects strong commitments by the countries involved to work collaboratively.

## 3.4 Pandemic Roles and Responsibilities

Collaboration in pandemic planning and response is strengthened by having clearly defined and well-understood roles and responsibilities. While this section focuses on government responsibilities, it is acknowledged that other partners also have important roles and responsibilities in a pandemic. These partners include the non-health sector, private sector, NGOs, municipalities and local/regional health authorities, and international organizations. Similarly, members of the general public bear responsibility for keeping themselves informed and for cooperating with measures to reduce the spread of illness.

### 3.4.1 World Health Organization

WHO's pandemic roles and responsibilities are outlined in the WHO pandemic influenza risk management guidance document and include: [27]

- coordination of the international response under the IHR (2005), including conducting global risk assessments;
- communication of the global situation using the global pandemic phases;
- declaration of a PHEIC and pandemic as required under the IHR;
- provision of information and support to affected States Parties;
- selection of the pandemic vaccine strain and determination of when to move from seasonal to pandemic vaccine production; and
- provision of oversight and support for implementation of the PIP Framework.

### 3.4.2 Canada - FPT Governments

Responsibility for health services in Canada is shared across all levels of government. High-level roles and responsibilities for FPT governments are outlined below; more detailed information about roles and responsibilities for specific response components can be found in the CPIP annexes. It is recognized that responsibilities for federal populations, which are summarized at the end of this section, are complex and evolving.

**A. International aspects**

International aspects of influenza management and liaison are a federal responsibility.

The federal government is responsible for:

- acting as the national focal point for the WHO on all IHR (2005) matters and managing all international aspects of pandemic preparedness and response;
- providing travel health notices and other health related information relevant to international travel; and
- exercising powers under the Quarantine Act to protect public health by taking comprehensive measures to help prevent the introduction and spread of communicable diseases in Canada. Such measures may include, but are not limited to, the screening, examining and detaining of arriving and departing international travellers, conveyances (e.g., airplanes and cruise ships) and their goods and cargo.

**B. Collaboration, communication, information sharing and policy recommendations**

While PT governments are responsible for communications plans and messaging within their jurisdictions, a coordinated pan-Canadian pandemic response requires collective infrastructures, response capacities and coordinated activities.

The federal government is responsible for:

- ensuring that risk assessments for novel and pandemic viruses are prepared and communicated as required; and
- facilitating the coordination of the overall pan-Canadian response to a pandemic.

FPT governments will work collaboratively to:

- coordinate and support the process required for development and periodic updating of CPIP and its annexes, for which PHAC acts as the custodian;
- assess capacity gaps for a pan-Canadian response and address gaps as necessary;
- align federal pandemic plans for federal populations, (see Section F for federal populations), with PT plans, where relevant;
- assess surveillance capacity, standards and protocols and modify as necessary;
- assess laboratory capacity, standards and protocols and modify as necessary;
- establish and support pan-Canadian policies and recommendations on the use of antiviral medications and vaccine during a pandemic;
- develop and implement public health guidance;
- ensure development and dissemination of clinical care guidance;
- develop a pan-Canadian communication strategy that reflects Canadian linguistic, literacy and cultural characteristics and allows for the alignment of messaging by FPT jurisdictions where appropriate;
- establish protocols for the sharing of relevant information, including but not limited to FPT plans and drafts; surveillance information; jurisdictional communications, strategies and messaging; and pandemic response interventions and impacts; and
- identify and address rapid research response priorities and leverage their respective research undertakings.

**C. Antiviral medications and influenza vaccine**

The federal government is responsible for:

- providing regulatory authorization to market antiviral medications and influenza vaccines;
- acting as the focal point for vaccine manufacturers and international regulatory collaboration;
- providing regulatory authorization to conduct clinical trials;
- negotiating with manufacturers and establishing contracts for the FPT purchase of antiviral medications and vaccine for pandemic purposes;
- national monitoring of adverse reactions to antiviral medications and vaccines; and
- providing antiviral medications and vaccine to those federal populations not covered by arrangements for PT provision.

PT governments are responsible for maintenance, monitoring, distribution and administration of antiviral medications and vaccine in their respective jurisdictions. They will work collaboratively to:

- provide antiviral medications and, when available, vaccine to recommended populations;
- share information regarding the distribution and use of antiviral medications and vaccines in their respective jurisdictions; and
- monitor and report adverse vaccine reactions.

The PT governments are also responsible for the distribution of vaccines and antiviral medications to most federal populations, but this varies by federal population and jurisdiction (see section F on federal populations).

FPT governments will work collaboratively to develop strategies to mitigate the effects of insufficient or delayed antiviral drug and/or vaccine supply, should such a situation arise.

**D. Health sector preparedness and response**

Health sector preparedness and response remains the responsibility of each jurisdiction. In some jurisdictions responsibility for emergency social services also falls to the health sector.

PT governments are responsible for:

- ensuring that PT pandemic plans (or all-hazards plans depending on the jurisdiction) are developed, tested and periodically updated;
- considering the content and intent of CPIP in the development of their PT jurisdictional plans;
- communicating and engaging with the general public, media and stakeholder groups about their respective plans; and
- activating PT pandemic or all-hazards plans.

The federal government has similar responsibilities for federal departments within the health sector and for federal populations in collaboration with the PTs (see section F on federal populations).

**E. Health care provision**

The provision of health care is an essential component of pandemic response and is primarily a PT responsibility.

PT governments are responsible for:

- developing plans to increase surge capacity in order to care for affected persons in their jurisdiction;
- providing health care services for persons within their jurisdiction, including for federal populations while leveraging agreements that are in place (federal populations and federal responsibility are covered in the next section);
- developing and maintaining memoranda of understanding and protocols as needed, preferably before the pandemic, to facilitate interprovincial/territorial movement of patients and licensed health care professionals during a pandemic and other aspects of mutual aid;
- developing, as necessary, a strategy for collecting and monitoring data on health care service use;
- ensuring the provision of medications, supplies and equipment required for provision of pandemic health care services; and
- working collaboratively to establish protocols and guidelines for prioritizing health care services during times of high service demand and staff or supply shortages in the respective jurisdiction.

The federal government is responsible for:

- ensuring the provision of health services, medications, supplies and equipment for specified federal populations/employees who normally access federally operated health care services;
- facilitating access to surge capacity, including from federal programs, employees and resources, to support PT responses if required;
- mobilizing medical supplies in the National Emergency Strategic Stockpile (NESS) as surge capacity to support PT responses; and
- facilitating the acquisition of extra medical supplies through Public Services and Procurement Canada and other federal agencies as appropriate.

**F. Federal populations**

Federal populations are those populations for which the federal government either provides health care and benefits, goods and/or services or reimburses the cost of providing health care and benefits. With the exception of the Canadian Forces which has its own distinct health care system for active members, the needs of federal populations must be integrated into PT pandemic planning activities in order to establish a comprehensive and coordinated pandemic response.

Federal populations include the following:

- First Nations on-reserve, inclusive of First Nations who have assumed responsibility for health services under a transfer agreement;
- active members of Canadian Forces;
- federal offenders or inmates of federal penitentiaries;
- refugee claimants, protected persons, detainees under the Immigration and Refugee Protection Act, rejected refugee claimants, and other specified populations; and
- Canada-based staff at missions abroad.

The federal government is responsible for:

- supporting the provision and distribution of medications, supplies and equipment to federal populations, as noted in the list above, through existing FPT distribution and administration systems.

The federal government will work collaboratively with PT governments to:

- ensure that access to pandemic health services for all federal populations is available on the same basis as is provided to other residents of Canada, while leveraging agreements that are in place. This involves but is not limited to access to antiviral medications, influenza vaccines and supplies needed for provision of pandemic health care services; and
- facilitate the coordination of federal planning for federal populations with PT pandemic plans.

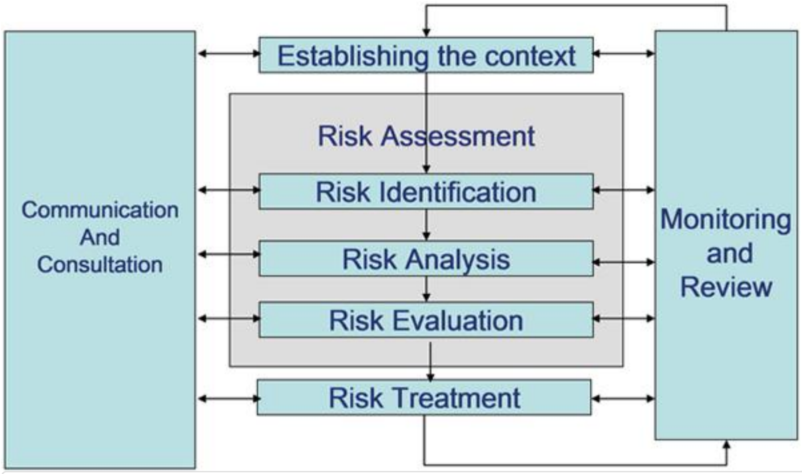
## 3.5 Risk Management Approach

### 3.5.1 Overview

Risk management is a systematic approach to setting the best course of action in an uncertain environment by identifying, assessing, acting on and communicating risks. A risk management approach provides a useful framework for addressing the uncertainties inherent in pandemic planning and response. Risk management supports the CPIP planning principles of evidence-informed decision-making, proportionality, and flexibility; and a precautionary/protective approach when there is uncertainty early in an event.

Figure 1 provides a graphic overview of the risk management process as outlined in ISO 31000, the international standard for risk management. The individual steps involved in risk management are then briefly described.

**Figure 1 - ISO 31000 Risk Management Process** [28]




▶ Figure 1 - ISO 31000 Risk Management Process - Text Equivalent

Risk assessment is a central component of risk management. Its purpose is to provide evidence-informed information and analyses for making informed decisions on how to treat particular risks and select between options. There are three parts to risk assessment:

- Risk identification involves identifying what might happen, or what situations might exist that could affect achievement of the objectives of the organization or system.
- Risk analysis involves analysing the risks in terms of their probability and potential impact (who is affected and to what extent). This analysis helps identify the planning considerations and options for each component of the response. The analysis should also assess the public's perception of risk and how it could influence the risk management response, so that communications strategies and messaging can be tailored appropriately.
- Risk evaluation involves determining the significance of the level and type of risk in order to make decisions about future actions. Ethical, legal, financial and other considerations are also inputs to the decisions. Decisions may include the need and priorities for treatment, whether an activity should be undertaken or which of a number of paths should be followed.

Risk treatment follows risk assessment and involves identifying and recommending risk treatment options, i.e. options for management or control. Risk treatment options should include steps that need to be taken in advance, as well as potential actions at the time of the pandemic.

Communication and consultation are also integral parts of the risk management process. Effective communication with stakeholders should facilitate adequate understanding of the risk management decision-making process, ensure that the process is transparent and help people to make informed decisions. A risk communications plan should be developed at an early stage.

Monitoring and review are important for assessing factors that could change over time and for documenting effectiveness of interventions. Such reviews should lead to periodic updates of the risk assessment.

### 3.5.2 Risk Management Considerations in Pandemic Planning and Response

Given the large number of variables that are involved in influenza pandemic planning, comprehensive risk management is challenging. The four pandemic planning scenarios described in section 3.7 can assist with risk identification by providing a starting point to think through the risks that would be associated with pandemics of varying impact and their implications.

It is also worthwhile to anticipate key decisions that will need to be taken during the pandemic to help guide the development and analysis of options. It is also worthwhile to clarify ahead of time and to the extent possible what level(s) of government should be involved with which types of decision when the time comes. Examples of these key decisions are as follows:

- what is the scale of the response;
- whether (and when) to escalate or de-escalate the response;
- when, what and how to communicate with the public;
- what amount of vaccine and the formulation(s) to order;
- how vaccine use should be prioritized;
- what public health interventions should be used, when and within which populations, and whether they need to be adjusted over time;
- what influenza testing and treatment strategies to recommend and whether they need to be adjusted over time; and
- what supplementary assessment and treatment services might be needed and, if necessary, when they should be started and stopped.

Anticipating key decisions should be accompanied by identification of the types and sources of information required for decision-making. Establishing robust surveillance for seasonal influenza establishes baselines, develops capacity and provides a platform for escalation during the pandemic.

Anticipating key decisions should also lead to development of relevant options for risk treatment. From a pandemic preparedness perspective, examples of risk treatment include continuity of operations planning; establishment of stockpiles for antiviral medications and other key supplies; development of advance contracts for pandemic vaccine; strengthening influenza surveillance systems, diagnostic and analytical capacity; establishment of protocols for pandemic research; and establishment of communications networks to plan effective and coordinated risk communications strategies.

When a pandemic occurs, planning scenarios are replaced by a real event and response activities will be guided by the available evidence. During the initial stages, little may be known about the likely pandemic impact or the populations most at risk. Many decisions will have to be made before solid information is available and then adjusted, if necessary, as more becomes known, keeping in mind that it is often difficult to scale back a response. As the evidence emerges over time, understanding of the situation will continue to change as new information becomes available and will always be incomplete. A risk management approach will be used throughout the response by all responders. Risk assessments will provide key input into FPT decision-making by identifying what is known at that point in time, what might occur and when, and the major areas of uncertainty.

PHAC will facilitate development of timely and credible risk assessments to support FPT decision-making. These formal risk assessments will be conducted at the start of the pandemic to inform the initial response and then periodically as new information emerges (e.g., at the end of a pandemic wave). Risk assessments will address key information needs, including viral characteristics, the anticipated or experienced impact on the health care system and community, age and risk groups most affected, occurrence of antiviral resistance and estimated effectiveness of control measures. As the pandemic progresses, there will be questions about likely occurrence of more pandemic waves, whether new risk factors are emerging and whether the response should be escalated or de-escalated. Appendix B identifies relevant considerations for initial and ongoing pandemic risk assessments and identifies potential sources for the supporting information.

## 3.6 Planning Assumptions

This section on planning assumptions and section 3.7 on pandemic planning scenarios describe two important tools for pandemic planning. These tools provide distinct but complementary approaches.

Identifying planning assumptions is a way to deal with uncertainty. Assumptions provide a useful framework for planning but should not be regarded as predictions. While planning assumptions are rooted in evidence to the extent possible, [29, 30] they are basically educated guesses. As the pandemic unfolds, emerging evidence is used to guide the response. Informing the planning assumptions identified below is the WHO's Pandemic influenza risk management interim guidance (2013), the UK's Scientific summary of pandemic influenza & its mitigation (2011) and discussions from the Canadian Pandemic Influenza Preparedness Planning Assumptions Workshop held in 2011.

### 3.6.1 Origin and Timing

- The next pandemic could emerge anywhere in the world and at any time of year.
- There may be no lead time before the novel virus reaches Canada.
- The first peak of illness in a geographic area within Canada could occur within weeks of first detection of the novel virus in that area. The first peak in mortality is expected to be several weeks after the peak in illness.

### 3.6.2 Transmission

- The pandemic virus will behave like seasonal influenza viruses in significant ways:
  - incubation period - is expected to last from one to three days;
  - period of communicability - adults are infectious from 24 hours before and up to five days from the onset of symptoms, and children may be infectious for up to seven days. Longer periods have been found, especially in persons with immune compromising conditions;
  - methods of transmission - mainly by large droplet and contact (direct and indirect) routes; the role of airborne transmission is unclear.
- Transmission is expected to be relatively lower in spring and summer than in fall and winter (the general pattern of transmission in temperate countries).
- Transmission is possible from asymptomatic persons but is greater when symptoms, such as coughing, are present and viral shedding is high (i.e., early in the symptomatic period).

### 3.6.3 Pandemic Epidemiology

- Most communities will experience two or more pandemic waves of different magnitudes. In any locality, the length of each wave will be from several weeks to a few months but may vary by community.
- There will be geographic variability with regard to the timing and intensity of waves, although multiple jurisdictions will be affected simultaneously.
- The pandemic is expected to last 12 to 18 months.
- The novel virus is expected to displace other circulating seasonal strains during the pandemic. After the pandemic, the pandemic virus will continue to circulate as a seasonal strain. It may completely replace previously circulating seasonal influenza A subtypes or continue as one of several circulating seasonal A subtypes.
- Relatively more severe disease and mortality is expected to occur in the young and in persons without underlying health conditions compared to seasonal influenza.

### 3.6.4 Clinical Features

- Population clinical attack rates (averaged across all age groups) are expected to be 25% to 45% over the course of the pandemic.
- Clinical symptoms are expected to develop in about two-thirds of people who are infected with the pandemic influenza virus.
- The general, uncomplicated clinical picture is expected to be the same as for seasonal influenza: respiratory symptoms, fever and abrupt onset of muscle ache, fatigue and headache or backache.
- Persons at high risk for complications from seasonal influenza [31] are expected to also be at increased risk of severe disease and complications from pandemic influenza infection, although additional risk groups may emerge.

### 3.6.5 Impact and Interventions

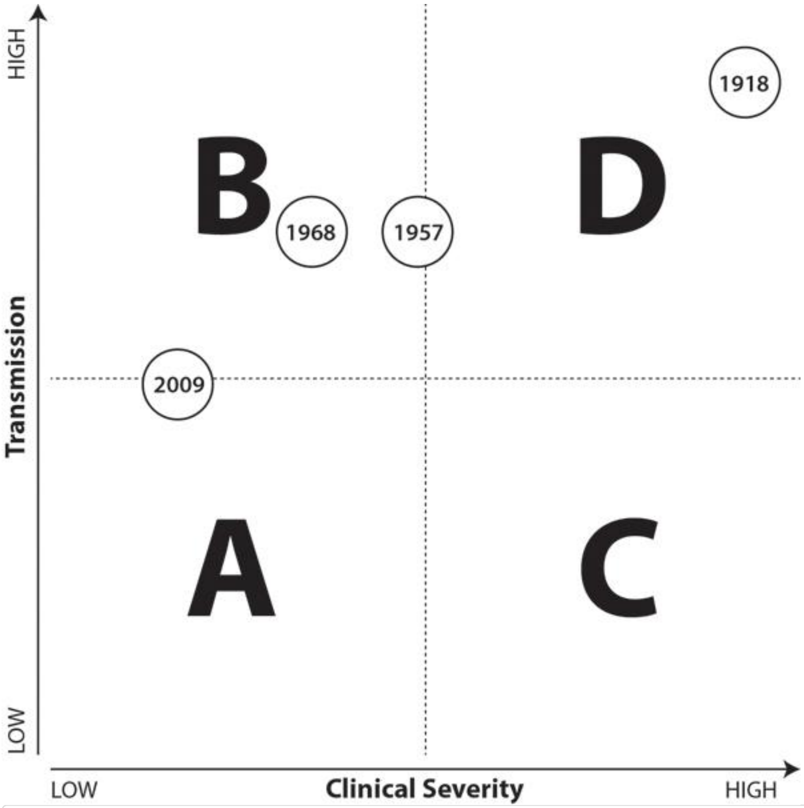
- Impact will vary across communities, and vulnerable populations are expected to be affected more severely.
- Workplace absenteeism may be higher than the estimated clinical attack rate because of caregiving or concern about personal safety in the workplace in addition to worker illness.
- Vaccine is expected to be available in time to have an impact on the overall pandemic but will not be available for the first wave.
- Personal hygiene measures are expected to help to reduce transmission between individuals and within households and other settings.

## 3.7 Pandemic Planning Scenarios

This section discusses another important tool for pandemic planning. The use of multiple planning scenarios is specifically intended to support the planning principles of evidence-informed decision-making, proportionality, and flexibility; and a precautionary/protective approach.

Planning scenarios provide a starting point to think through the implications and risks that would be associated with pandemics of varying population impact. Scenarios can also be used for exercises and training in support of pandemic plans. To help with risk identification, four pandemic planning scenarios have been developed that describe potential pandemic impacts varying from low to high. Figure 2 displays the four scenarios in a two-by-two table and estimates where the past four pandemics might be placed, according to an analysis conducted by the US Centers for Disease Control and Prevention (CDC). [32]

**Figure 2 - Framework for the planning scenarios, with previous pandemics placed as per CDC analysis [33]**




▶ Figure 2 - Framework for the planning scenarios, with previous pandemics placed as per CDC analysis - Text Equivalent

**Scenario A (low impact)** - this scenario involves an influenza virus with low transmissibility (ability to spread) and low virulence (clinical severity). Its impact is comparable to that of moderate to severe seasonal influenza outbreaks or the 2009 pandemic. It might be expected to stress health care services.

**Scenario B (moderate impact)** - this scenario involves an influenza virus with high transmissibility and low virulence. Its impact is worse than seasonal influenza in terms of numbers ill, which would be expected to stress health care services through sheer volume. High absenteeism would put all sectors and services under pressure.

**Scenario C (moderate impact)** - this scenario involves an influenza virus with low transmissibility and high virulence. Its impact is worse than seasonal influenza outbreaks in terms of severe clinical illness, which would be expected to stress critical care health services. The high virulence could cause significant public concern and may lead to people staying home from school and work.

**Scenario D (high impact)** - this scenario involves an influenza virus with high transmissibility and high virulence, and its anticipated impact is much worse than that of seasonal influenza outbreaks. It would cause severe stress on health care services, and high absenteeism would put all sectors and services under extreme pressure.

There are several important points to note about the scenarios:

- Whatever the pandemic impact, the epidemiological picture is expected to be significantly different from that of seasonal influenza, in that relatively more severe disease and mortality will occur in the young and in persons without underlying health conditions compared to seasonal influenza. [34]
- The four basic scenarios do not incorporate all of the potential factors (or “what-ifs”) that can affect the impact of a pandemic and should be considered in risk assessment. Some of these factors are population-wide and could affect all scenarios (such as seasonality, pre-existing immunity or antiviral resistance), whereas others might be setting-specific (such as planning for a remote community). See Appendix A for more details about

these additional factors and their potential impact. Additional risks may also be identified as planners consider all stages of the pandemic and components of the proposed response.

Table 1 provides some added description to the scenarios for planning purposes, along with potential impact considerations associated with each scenario.

**Table 1 - Description and potential impact of the four pandemic planning scenarios**

| | **Pandemic scenario** | | | |
|---|---|---|---|---|
| **Nature of impact** | **A (low impact)** | **B (moderate impact)** | **C (moderate impact)** | **D (high impact)** |
| Basic virus characteristics | Low transmissibility/ low virulence | High transmissibility/ low virulence | Low transmissibility/ high virulence/ | High transmissibility/ high virulence |
| Nature and scale of illness | • Similar numbers as in moderate or severe seasonal influenza outbreaks<br>• Mild to moderate clinical features (in most cases) | • Higher number of cases than large seasonal outbreak but similar clinical severity<br>• Overall increased numbers needing medical care and with severe disease | • Similar number of cases as with large seasonal outbreak but illness is more severe<br>• Overall increased numbers needing medical care and with severe disease | • Large numbers of people ill<br>• High proportion with severe disease |
| Impact on health care services | • Ambulatory and acute-care services stressed but able to cope<br>• ICUs at capacity<br>• Public health and laboratory services stressed<br>• Long-term care may or may not be affected (depending on pre-existing immunity) | • Ambulatory and acute-care services very stressed<br>• Health care services no longer able to continue all activities<br>• ICUs under severe pressure<br>• Long-term care may or may not be affected<br>• Settings with limited surge capacity (e.g., nursing stations) may be even more stressed | • Ambulatory and acute-care services very stressed<br>• Health care services no longer able to continue all activities<br>• ICUs under severe pressure<br>• Long-term care may or may not be affected<br>• Settings with limited surge capacity e.g., nursing stations) may be even more stressed | • Health care services may be overwhelmed<br>• Ambulatory services fully stretched<br>• Hospitals able to provide only emergency services<br>• Triaging necessary for critical care services<br>• Collapse of services could lead to higher mortality than expected<br>• Settings with limited surge capacity (e.g., nursing stations) may be highly stressed |

| Nature of impact | Pandemic scenario<br>A<br>(low impact) | B<br>(moderate impact) | C<br>(moderate impact) | D<br>(high impact) |
|---|---|---|---|---|
| Broader societal impact | • Limited workplace disruption<br>• Some school disruption<br>• Elevated public concern | • High workplace absenteeism<br>• Some services experience pressures<br>• Schools likely disrupted<br>• Some supply chain problems<br>• Elevated public concern<br>• Surges in need for health care services. | • Potential workplace absenteeism and school disruption from fear of exposure<br>• Considerable public concern over occurrence of very severe disease | • High absenteeism<br>• Services and businesses under extreme pressure<br>• Potentially severe supply chain problems<br>• Could disrupt provision of basic services<br>• Extreme public concern and psychosocial distress<br>• Mass fatalities may overwhelm death care services (e.g. funeral homes,mortuaries) |
| Economic impact | Minimal if any | Productivity may be affected | Productivity may be affected | Very high |

**Initial period when impact is unknown -** A formal scenario has not been proposed for the initial period when the pandemic has not yet been characterized in terms of its potential impact. However, some of the possible observations for this preliminary period are as follows:

- sporadic cases and limited outbreaks may be occurring;
- there will likely be elevated demand on telephone information lines, ambulatory care and laboratory services;
- public health services may be stressed;
- elevated media and public concern can be anticipated;
- international travel and trade could be disrupted; and
- there could be increased demand and shortages of publicly available supplies, e.g., infection control and basic emergency supplies, antivirals.

## 3.8 Pandemic Phases and Triggers for Action

### 3.8.1 WHO Pandemic Phases

Pandemic phases were introduced into pandemic plans to assist planning and serve as triggers for action, thus supporting the principles of flexibility and proportionate response. Previous Canadian pandemic plans incorporated the WHO pandemic phases, with additional designations proposed to identify activity levels within Canada.

After the 2009 pandemic, the IHR Review Committee [35] recognized that the WHO pandemic phases had presented challenges in interpretation and were used in different ways - as a planning tool, as a method to describe the global situation and/or as an operational tool to trigger action. The Committee recommended simplifying the WHO phase structure and separating operational considerations at country level from the WHO global preparedness plan and its phases.

WHO's 2013 pandemic guidance [36] describes the four phases that WHO will use to communicate a high-level global view of the evolving picture. The phases reflect WHO's risk assessment of the global situation regarding each influenza virus with pandemic potential that is infecting humans. The four global phases are:

- Interpandemic phase - the period between influenza pandemics;
- Alert phase - when influenza caused by a new subtype has been identified in humans. This phase is characterized by extra vigilance and careful risk assessment;
- Pandemic phase - the period of global spread of human influenza caused by a new subtype. Movement between the interpandemic, alert and pandemic phases may occur quickly or gradually;
- Transition phase - reduction of the assessed risk resulting in de-escalation of global actions.

The global phases and their application in risk management are distinct from (1) the determination of a PHEIC under the IHR (2005) and (2) the declaration of a pandemic. These are based upon specific assessments and can be used for communication of the need for collective global action, or by regulatory bodies and/or for legal or contractual agreements, should they be based on a determination of a PHEIC or on a pandemic declaration. [37]

As pandemic viruses emerge, countries face different risks at different times and should therefore rely on their own risk assessments, informed by the global phases, to guide their actions. The uncoupling of national actions from global phases is necessary since the global risk assessment, by definition, will not represent the situation in each country.

### 3.8.2 Canada's Approach to Pandemic Phases and Triggers for Action

Canada's response to the novel/pandemic virus will relate to its presence and activity levels in this country, which may not coincide with the global picture. Therefore, the WHO global phases will not be used to describe the situation in Canada or be used as triggers for action in Canadian jurisdictions. While the triggers for action described below may parallel some of the global WHO phases, it is not expected that they will line up exactly. For example, Canada might be well into the first pandemic wave before WHO announces the global pandemic phase (as happened in the 2009 pandemic) or conversely Canada might be still anticipating the first domestic outbreaks when the pandemic phase announcement is made.

In the 2009 pandemic, there was considerable variation in pandemic wave activity across Canada and even within PTs, in terms of both timing and intensity. This was particularly apparent in the first wave making blanket descriptions, triggers or responses inappropriate.

#### Describing pandemic activity

Descriptive terms such as the start, peak and end of a pandemic wave, will be used instead of phase terminology to describe pandemic activity in the country or in a jurisdiction within Canada. Pandemic wave activity can be further characterized for jurisdictions of any size using FluWatch definitions for no activity, sporadic activity, localized activity and widespread activity. [38]

#### Triggers for action

Triggers for action provide guidance for initiation of FPT activities and for their modification and cessation. Pandemic response should be appropriate to the local situation, so it is important that triggers and related actions be applied at PT or regional/local level as appropriate to the situation. Potential triggers for action in Canadian jurisdictions during the initial alert stages and the pandemic itself are identified in Table 2. The typical actions listed are at a high level; more detailed triggers for individual response components can be found in the annexes. Note that the triggers are not necessarily linear; for example, not all jurisdictions may find their capacity exceeded and therefore some may not need to invoke that particular trigger.

**Table 2 - Pandemic Triggers and Typical Accompanying Actions**

| Trigger | Typical actions for consideration | Comments |
|---|---|---|
| Novel virus causing human cases detected somewhere in the world (no or limited transmission) | • Preparations to enhance surveillance within Canada<br>• Intelligence gathering from affected areas<br>• Relevant public and health sector communications | Tailored communications to health sector and general public continue throughout the response |
| Novel virus with sustained human transmission detected somewhere in the world | • Enhanced surveillance by PTs within Canada<br>• Intelligence gathering from affected areas; preliminary risk assessment<br>• Development of specific laboratory diagnostics<br>• Enhancement of illness prevention messages and other public health measures (e.g., hand hygiene, respiratory etiquette) as appropriate<br>• Confirmation of pandemic vaccine arrangements with manufacturer | Pandemic may be imminent or have already started |
| Novel/pandemic virus (with sustained human transmission) first detected in Canada | • Continuation of above activities<br>• Activation of health emergency response protocols<br>• Detailed investigations of early cases to determine epidemiological and clinical characteristics and inform risk assessment<br>• Arrangements for antiviral access/strategic deployment of NAS<br>• Provision of clinical guidelines and public health advice | Depending on circumstances, activation of health emergency protocols might already have occurred |

| Trigger | Typical actions for consideration | Comments |
|---|---|---|
| Novel/pandemic virus detected in PT or local jurisdiction | • Treatment of cases<br>• Ramping up health sector capacity to deal with increasing number of cases<br>• Additional public health measures (e.g., school closures) as appropriate<br>• Preparation for vaccine distribution, administration and monitoring<br>• Ongoing surveillance to monitor influenza activity and epidemiological analysis to characterize pandemic<br>• Relevant public and health sector communications<br>• Assess need for supportive emergency and social services (e.g. reception centres, volunteers, faith-based organizations) | Escalation of activities as pandemic activity moves from sporadic cases into full pandemic wave, followed by de-escalation as it wanes |
| Demands for service start to exceed available capacity | • Further escalation of surge capacity<br>• Prioritization or triage of services as needed<br>• Implementation of broader public health measures (e.g., banning of large gatherings) | May not reach this level in any or all jurisdictions |
| The pandemic wave wanes and demand for service falls to more normal levels | • Preparation for a resurgence of influenza<br>• Replenishing of supplies as needed in anticipation of another wave<br>• Evaluation of response and revision of plans as required<br>• Preparation for immunization program<br>• Ongoing surveillance to detect resurgence<br>• Assessment of the psychosocial impact on the population (e.g. workforce resiliency, mental health, social cohesion) of the first wave | |
| Pandemic vaccine is available for administration | • Administration of vaccine as quickly as possible<br>• Monitoring of vaccine uptake, safety and effectiveness | |

| Trigger | Typical actions for consideration | Comments |
|---|---|---|
| Second or subsequent pandemic wave arrives | • Treatment of cases<br>• Continuation of immunization if already started<br>• Ongoing surveillance to monitor influenza activity, antiviral resistance and strain changes | |
| Pandemic is over and normal activities resume | • Completion of pandemic studies and reports<br>• Evaluation of response and revision of plans as required<br>• Return to more normal operations<br>• Preparation for post-pandemic seasonal influenza | • Identification of lessons learned and their incorporation into pandemic planning are critical activities in the recovery from a pandemic |

# 4.0 Key Components of Pandemic Influenza Preparedness and Response

This chapter provides a high-level overview of the major components of influenza preparedness and response. Each section of the chapter describes the purpose and strategic approach of one of the response components and demonstrates how it supports the overall pandemic goals. Detailed operational guidance and tools for each component can be found in the respective CPIP annex.

All parts of the health sector, including public health, will be under stress during a pandemic. Advance planning, training and exercises will greatly assist in handling this increased demand on health services, staffing, resources and supplies and in providing the best possible clinical outcomes for persons ill with influenza. Continuity of operations and surge capacity planning are key components of health sector preparation, together with strong infection prevention and control and occupational health programs within each organization that provides health services.

Public health authorities play a leadership role in their jurisdiction in pandemic preparedness, response and recovery. They are responsible for communication to the public, the health sector and other stakeholders. The public health response to a pandemic also includes surveillance (both epidemiological and laboratory), the provision of pandemic vaccine and antiviral medications, and the application of public health measures such as promotion of personal and social distancing measures to reduce spread in households and the community.

In planning for the delivery of health services, it is important to encompass the entire continuum of care from medical first response to critical care, and to include community health partners. Planning for the provision of health care needs to be linked with public health and community-wide partners so that interdependencies can be identified and addressed.

The health care system includes workers of many disciplines, who will be at varying levels of risk during an influenza pandemic. HCWs are defined broadly as individuals who provide health care or support services in the health care setting, such as nurses, physicians, dentists, nurse practitioners, paramedics, medical laboratory workers, other health professionals, temporary workers from agencies, unregulated health care providers, students, volunteers and workers who provide support services (e.g., food, laundry, housekeeping). The concepts and advice that are provided for HCWs also apply to other workers who are functioning in a health care capacity, for example police or fire personnel who are providing medical first response.

## 4.1 Surveillance

The purpose of pandemic surveillance is to provide decision-makers with the timely information they need for an effective response. Pandemic surveillance uses data obtained through routine and enhanced surveillance activities (e.g., data from sources such as laboratories, PT partners, hospital networks and sentinel practitioners) together with information from special studies to obtain a comprehensive and timely epidemiological picture of the pandemic.

These pandemic surveillance programs will monitor parameters such as:

- the geographic spread of the novel/pandemic virus across Canada;
- the trend of disease occurrence as it rises and falls within each PT and across the country;
- the intensity and impact of the pandemic (e.g., clinical cases, hospitalizations and deaths; severe clinical syndromes and associated risk groups; and demands on the health system); and
- changes in the antigenicity and antiviral sensitivity of the virus.

**Strategic approach**

A risk management approach to an influenza pandemic requires access to timely information, analysed and presented in a way that is useful to decision-makers. Epidemiological and laboratory surveillance data are key components of the formal risk assessments that will be produced to inform the response. One of the most critical needs is an early assessment of the potential impact of the pandemic so as to prepare the health care system and to plan interventions that are proportional to the situation. Systems or studies to produce the early impact assessment and other required information need to be in place before the pandemic.

Pandemic surveillance should be built on existing surveillance systems for seasonal influenza, which involve an extensive network of surveillance partners and are practised every year.

During a pandemic, collection of additional surveillance elements may be required to identify risk factors for severe disease and populations at increased risk. Targeted surveillance activities may be required for remote and isolated communities, including many Indigenous communities, to describe outbreaks appropriately in these regions. Other special studies (e.g., seroprevalence surveys) will be needed to inform decision-making.

Surveillance activities will need to be adapted in response to rapidly evolving situations; they may be streamlined, expanded or scaled down depending on information needs at particular times within the evolving pandemic. The scope of the pandemic and the urgency of information needs will require expedited and secure electronic data transfer and enhanced capacity for data analysis and interpretation.

More details about pandemic surveillance strategies and activities can be found in the Surveillance Annex.

## 4.2 Laboratory Services

Laboratory-based surveillance is an integral part of monitoring influenza activity. Because the signs and symptoms of influenza are similar to those caused by other respiratory pathogens, laboratory testing must be conducted to diagnose influenza definitively. Rapid identification of a novel influenza virus and timely tracking of virus activity throughout the duration of the pandemic are critical to the success of a pandemic response. In the early stages of a pandemic, laboratory services also contribute to appropriate clinical treatment.

The purpose of laboratory services during a pandemic is to:

- identify the first cases of a novel influenza strain occurring in Canada;
- support public health surveillance by monitoring the geographic spread of disease and the impact of interventions;
- facilitate clinical management by distinguishing patients infected with the pandemic influenza virus from those with other respiratory diseases;
- monitor circulating influenza viruses for antiviral resistance and strain characteristics; and
- assess influenza vaccine match and support vaccine effectiveness studies.

**Strategic approach**

The pandemic laboratory response is built on the principles of collaboration, flexibility and use of established practices and systems. As part of annual influenza surveillance, all public health laboratories and other laboratories that routinely test for influenza submit aggregate data weekly during the influenza season to the National Microbiology Laboratory (NML). These data are collated and disseminated by PHAC through the Respiratory Virus Detection Surveillance System and FluWatch. In addition, public health laboratories and other designated laboratories across the country submit isolates to the NML to monitor for antigenic changes within the circulating viruses. This information is shared with international partners through GISRS. Sustaining these relationships and strengthening capacity within the laboratory system during the interpandemic period will support a timely and effective pandemic response.

During a pandemic, influenza testing laboratories will support epidemiological efforts to track the spread and trends of the pandemic, monitor antiviral resistance and support clinical management. The Canadian Public Health Laboratory Network (CPHLN) will support public health and diagnostic laboratories by providing recommendations and best practices for specimen collection and testing for the novel influenza virus. The NML will share protocols, reagents and proficiency panels to ensure that test methods are capable of detecting the new virus. Molecular testing is the primary method used for the diagnosis of influenza.

Antiviral resistance will be monitored and outcomes will inform clinical management of patients. Antiviral resistance testing is conducted primarily at the NML, as well as some provincial laboratories.

The laboratory response will be adjusted as the pandemic progresses. Initially the NML will be heavily engaged in characterization of the novel virus and development of diagnostic reagents. All laboratories should anticipate high test volumes initially as the novel virus spreads across the country. During peak periods, laboratories will need to prioritize specimen collection to prevent overload. At this point, diagnosis of influenza in the community will be made primarily by clinical assessment; however, testing to support the management of certain patients (e.g., those requiring admission to hospital) will be expected to continue together with identification of outbreaks and surveillance. If ongoing monitoring shows increasing levels of antiviral resistance, more testing may be necessary to support clinical management of severely ill patients, especially those not responding to treatment.

Throughout the pandemic, public health, diagnostic and research laboratories, including those involved in the Canadian Immunization Research Network (CIRN), will also play an important role in supporting studies to better understand the novel pandemic virus and its impact.

More details about pandemic laboratory strategies and activities can be found in the Laboratory Annex.

## 4.3 Public Health Measures

Public health measures are non-pharmaceutical interventions that can be taken by individuals and communities to help prevent, control or mitigate pandemic influenza. Public health measures range from actions taken by individuals (e.g., hand hygiene, self-isolation) to actions taken in community settings and workplaces (e.g., increased cleaning of common surfaces) to those that require extensive community preparation (e.g., pro-active school closures). The purpose of public health measures is to:

- reduce transmission of the novel/pandemic virus, thereby helping to reduce the overall size of the outbreak and the number of severely ill cases and deaths; and
- slow the rate of transmission in order to reduce the peak burden on the health care system and buy time in anticipation of vaccine.

**Strategic approach**

Public health measures are typically implemented at the community level. The responsibility and legislative authority for implementing public health measures belong to the relevant PT and local public health authorities, with the exception of international border and travel related issues for which the federal government is responsible. In addition, the Canadian Forces Health Services is responsible for implementing public health measures on all Canadian Forces establishments/bases/wings/stations across Canada and for Canadian Forces personnel deployed abroad.

There are important concepts to consider when planning and implementing public health measures. The measures should be used in combination to provide “multi-layered protection”, as the effectiveness of each measure on its own may be limited. Actions should be tailored to the anticipated pandemic impact and the local situation, supporting the principles of flexibility and proportionality. Some measures, like hand hygiene and respiratory etiquette, are applicable in all pandemics. Other measures (e.g., proactive school closures and travel restrictions) might be used only in moderate- to high-impact situations, as they can be associated with significant societal and economic costs.

A risk management approach will help weigh the potential advantages of particular interventions against their disadvantages and unintended consequences. Decisions about which measures to deploy also raise fundamental ethical challenges. For example, when considering restrictive measures, it is important to balance respect for autonomy against protection of overall population health. In such situations, the principles of proportionality, reciprocity and flexibility are involved, with a view to safeguarding individual freedom to the extent possible while promoting protection against the health and societal consequences of influenza infection.

There are several types of public health measures for jurisdictions to consider during an influenza pandemic:

- **Individual measures** - Public health advice will be provided to protect well individuals against influenza and prevent ill individuals from spreading infection, e.g., through hand hygiene, cough etiquette, staying home while sick. These measures should already be familiar through annual public health campaigns.
- **Community-based measures** - Guidance will be produced and disseminated to minimize illness and transmission of infection within settings such as workplaces, schools, post-secondary institutions, childcare centres, communal living facilities, remote and isolated communities, camps and cruise ships. Social distancing measures or strategies may be used to minimize close contact among persons in public places, e.g., pro-active school closures; cancellation or modification of public gatherings; and alternative workplace approaches, such as teleconferences and working from home. Because of their potential societal impact, social distancing measures are most applicable in pandemics of moderate to high impact.
- **Border and travel measures** - These interventions include provision of travel health advice, screening of travellers and travel restrictions. Evidence for their effectiveness is limited and their implementation would

depend on the risk assessment and resultant risk/benefit analysis of the actions being considered.

- **Case and contact measures** - Some circumstances involving novel/pandemic viruses may warrant case and contact management by public health authorities. These might include an individual human case or cluster involving a novel virus, suspected human infections associated with an animal influenza outbreak, or initial cases of the pandemic virus in the country or area. The extent of the investigation and recommended measures should be feasible and relevant to the situation.

While aggressive measures (e.g., widespread antiviral use and restriction of movement) to attempt to contain or slow an emerging pandemic in its earliest stages were previously considered possible on the basis of modeling, experience from the 2009 pandemic has resulted in general agreement that such attempts are impractical, if not impossible.

Additional details about public health measures can be found in the Public Health Measures Annex.

## 4.4 Vaccine

Immunization of susceptible individuals is the most effective way to prevent disease and death from influenza. The purpose of Canada's pandemic vaccine strategy is to:

- provide a safe and effective vaccine for all Canadians as quickly as possible;
- allocate, distribute and administer vaccine as efficiently as possible; and
- monitor the safety and effectiveness of pandemic vaccine.

The phrase "vaccine for all Canadians" is intended to be interpreted broadly. It refers to all persons in Canada (whether or not they are citizens) as well as Canada-Based Staff (CBS), their dependents and Locally Engaged Staff (LES) at Canadian missions abroad and Canadian active duty personnel (Canadian Forces) abroad.

An effective pandemic vaccine strategy is built on strong seasonal influenza immunization programs. The overall impact of the pandemic vaccine strategy will depend on vaccine efficacy and uptake, as well as the timing of vaccine availability in relation to pandemic activity. Using current egg-based vaccine production technology, pandemic vaccine production is expected to take from four to six months, so it is not likely to be available by the time the first pandemic wave reaches Canada. Furthermore, it will become available in stages, which may require prioritization of initial vaccine doses.

**Strategic approach**

In 2011, Canada entered into a new ten-year contract for pandemic influenza vaccine supply to ensure that there is rapid and priority access to a supply of adjuvanted pandemic influenza vaccine produced in Canada. Canada's pandemic vaccine strategy also includes contracting for a secondary supply of a pandemic vaccine.

Health Canada has developed a regulatory strategy to review and authorize a safe and efficacious pandemic vaccine for use in Canada within the shortest time frame possible. A pan-Canadian approach to pandemic immunization, including prioritization of populations during initial roll-out of the vaccine, will help optimize equitable access and desirable outcomes. Pan-Canadian guidance will include an allocation plan for equitable vaccine distribution, recommendations for pandemic vaccine use and recommendations for prioritization of initial supplies.

Other key elements of the national vaccine strategy include the monitoring of vaccine uptake, adverse events and vaccine effectiveness, building on existing systems such as the Canadian Adverse Events Following Immunization Surveillance System (CAEFISS). Rapid studies will be carried out to confirm or refute vaccine safety concerns.

PTs, Canadian Forces Health Services, and federal departments with the responsibility for immunization should have plans for efficient and timely vaccine administration, including the ability to target key population groups and collect information on vaccine uptake and adverse events. Lessons learned from the 2009 pandemic indicate that vaccine registries and electronic information systems to capture and transmit data are essential tools to support the vaccine program.

More details about the pandemic vaccine program can be found in the Vaccine Annex, including a prioritization framework to guide decision-making if vaccine is expected to be in short supply.

## 4.5 Antiviral Medications

Antiviral medications can be used to treat influenza cases or to prevent influenza in exposed persons (prophylaxis). Antiviral medications are the only specific anti-influenza intervention available that can be used from the start of the pandemic, when vaccine is not yet available.

Canada's antiviral strategy supports FPT stockpiles of antiviral medications for use in the event of an influenza pandemic, primarily for early treatment and for outbreak control in closed facilities. Early treatment of influenza cases, as early as possible within 48 hours of symptom onset, is recommended in order to reduce the severity and duration of illness, particularly the occurrence of influenza-related complications, hospitalization and death. Early treatment may also help mitigate societal disruption by reducing the duration and severity of illness experienced by workers in the health care and other critical infrastructure sectors.

**Strategic approach**

There are two national stockpiles in Canada:

- The NAS is a stockpile that is held and managed by the PTs. The NAS is composed of the antiviral medications oseltamivir and zanamivir, with oseltamivir dosage formulations that are appropriate for both adults and children.
- The NESS is a federally owned stockpile of emergency supplies. The NESS is held and managed by PHAC and includes a stockpile of oseltamivir and zanamivir. NESS antivirals are intended to provide surge capacity in support of the PT response during a pandemic.

Federal government departments, such as the Canadian Forces (for active duty personnel) and Global Affairs Canada (for mission staff overseas), hold stockpiles of antiviral medications to meet the anticipated needs of their staff.

Jurisdictions need strategies to facilitate timely access to antiviral medications, particularly for high-risk persons including pregnant women, children (who need special formulations), vulnerable populations, and residents of remote and isolated communities. Pre-positioning of antiviral medications should be considered for some communities to facilitate rapid access (e.g., remote northern communities).

Clinical guidelines have been developed for antiviral use for seasonal influenza. [39] Virus-specific clinical guidance and treatment protocols will need to be developed at the onset of the pandemic, based on pandemic epidemiology and available scientific evidence. Pandemic use will focus primarily on early treatment of influenza cases, particularly persons with severe disease or with risk factors for complications or severe disease. There are limited indications for the use of antiviral medications for prophylaxis during a pandemic, primarily for control of laboratory-confirmed influenza outbreaks in closed health care facilities and other closed facilities or settings where persons at high-risk of complications reside.

Distribution and uptake of antiviral medications should be monitored in real time to optimize appropriate use, identify the need for additional purchases during the pandemic, and support post-pandemic utilization and effectiveness studies. Monitoring adverse reactions and antiviral resistance helps inform decision-makers as to whether changes in the recommendations regarding antiviral use are required. Adverse reaction reports are collected and assessed through the Canada Vigilance Program of the Marketed Health Products Directorate (MHPD) of Health Canada. Ongoing monitoring of antiviral resistance is conducted by the public health laboratory system and reported as part of FluWatch.

More details about antiviral medications and their use in a pandemic can be found in the Antiviral Annex, including a prioritization framework to guide decision-making if antiviral medications are expected to be in short supply.

## 4.6 Infection Prevention and Control and Occupational Health

A major influenza outbreak may have a substantial impact on the ability of health care organizations to keep those providing or receiving health care services safe. Infection prevention and control (IPC) and occupational health (OH) programs should work together to prevent exposure to and transmission of pandemic influenza during the provision of health care. Working jointly with occupational health and safety committees is essential in meeting these goals. The application of appropriate IPC and OH processes by HCWs and organizations is important in all health care settings along the continuum of care, including but not limited to medical first response, practitioners' offices and other ambulatory care settings, acute care, long-term care and home care settings.

**Strategic approach**

A timely pandemic response is only possible when an organization and its personnel are experienced in IPC and OH protocols and practices, supported by strong programs. Well-functioning IPC programs should prevent, limit or control the acquisition of health care associated infections for everyone in the health care setting, including patients, HCWs, visitors and contractors. Well-functioning OH programs should identify workplace hazards and support appropriate processes and training to ensure that employees can perform their duties in an environment that minimizes exposure to environmental hazards.

Important elements of IPC and OH programs for pandemic preparedness and response in the health care setting include the following:

- adequate staffing of IPC and OH professionals in the health care organization to conduct education and training for front line staff;
- organizational risk assessments, best carried out in the interpandemic period, to identify engineering, administrative and personal protective equipment (PPE) controls that will best protect patients, HCWs and visitors in the health care setting;
- comprehensive education and training for HCWs in the organization on influenza IPC and OH issues;
- point-of-care risk assessments that are carried out by individual HCWs before they enter a patient's environment or initiate patient care to determine the appropriate PPE, isolation and cohorting strategies for a given patient, during a given intervention, in a specific room, area or facility;
- provision of influenza vaccine to persons working for or being cared for by the organization;
- ongoing surveillance for health care associated infections, including respiratory infections;
- respiratory protection programs to ensure that HCWs who may need to wear a respirator (including N95 respirators) are trained, fit-tested and prepared;
- a wide range of "source control" policies, including a 2-metre spatial separation between infected sources (e.g., patients) and uninfected hosts (e.g., other patients); admission screening; screening of visitors; and

expanded respiratory and hand hygiene programs for HCWs, patients and visitors; and
- systematic administrative practices to enable rapid identification and segregation of patients, HCWs and visitors with symptoms of influenza-like illness (ILI).

For detailed guidance about IPC and OH activities during a pandemic, see the annex on Prevention and Control of Influenza during a Pandemic for all Healthcare Settings.

## 4.7 Health Care Services

The effective provision of health care provides patients with the right level of care in the right place, at the right time. In a pandemic this means managing an influx of patients with influenza, while maintaining care required for patients with urgent non-influenza conditions. It is necessary for any organization that provides health care to plan for a range of scenarios, including those with very high patient load and potential high staff absenteeism, as demand for health care services may exceed the capacity of the existing system. At the start of a pandemic, early assessment of its anticipated impact will help the health care sector to implement plans to manage the anticipated workload.

**Strategic approach**

Planning for the delivery of health care in a pandemic is a particular challenge as there is little excess capacity in the Canadian health care system, particularly in remote and isolated communities. Nonetheless surge capacity planning is an essential component of pandemic preparedness for all levels of care, including telephone information lines, primary and ambulatory care practitioners, emergency medical services, hospital and critical care, long-term and palliative care, home care and other community care including death care services (funeral homes, medical examiners, coroners). Surge capacity planning involves development of strategies for enhancing levels of staff and volunteers, equipment and supplies and, potentially, space to accommodate more patients. It also includes consideration of novel approaches to enhancing assessment and care. Surge capacity plans should include regional or even province-wide components.

The 2009 pandemic highlighted the importance of improving integration and coordination so that the health care response functions as a system during an emergency. This involves integration across the continuum of care within a health region and across and among PTs. Integration is facilitated by involving stakeholders from all levels of care in planning and exercises, including emergency medical services, community service providers, volunteer organizations and public health. Electronic information management systems are essential tools for monitoring service delivery and resource utilization across the health care system and transferring information among organizations.

The collection of health care delivery data is an important aspect of seasonal and pandemic influenza surveillance. Monitoring hospital and ICU admissions and ventilator use were added surveillance components in the 2009 pandemic, contributing valuable information on the epidemiology of severe disease and its risk factors. Surveillance of emergency department utilization can indicate when community health services are at or reaching capacity so that other measures can be considered.

Best practices and lessons learned advise that health care organizations and practitioners carry out business continuity planning and maintain strategic reserves of critical equipment and supplies. Detailed plans to store, distribute and track use of stockpiled items should be developed and exercised.

Pandemic-specific issues for health care provision include the following:

- **Self-care instructions** - self-care instructions can empower individuals and families, improve care and optimize the use of the health system; they are useful for dealing with seasonal as well as pandemic influenza. During the 2009 pandemic, many jurisdictions used the media, public announcements and credible websites to promote tools to assist the public on conducting an influenza self-assessment, self-care and when to seek medical attention or go to the hospital.
- **Telephone advice lines** - these were extensively used in the 2009 pandemic to provide information and advice, and to triage people with suspected influenza from those with other respiratory infections. Trained operators directed people to appropriate clinical assessment and care if needed, and helped avoid unnecessary visits to physicians and emergency departments by providing advice on self-care at home. Heavy, and sometimes overwhelming, demand reinforced the necessity for business continuity planning and for operation on a 24/7 basis during a pandemic.
- **Primary care** - the primary care sector will be responsible for the assessment and treatment of ambulatory influenza patients. PTs often face challenges in engaging primary care practitioners, who may not be well linked to the rest of the system. PTs should work with professional associations to develop communications strategies, protocols and guidelines, e.g., for office business continuity planning and IPC. At the time of the pandemic, PTs should anticipate providing primary care practitioners with situation updates, guidance on laboratory testing and clinical management of influenza patients, information on pandemic vaccine (with clear direction on their role in its provision) and access to additional or pre-positioned PPE and supplies. Primary care surge capacity can be enhanced by PT strategies such as new fee codes for telephone advice and prescribing, temporarily allowing practice expansion to patients who are not registered with the practice (when this is not normally permitted), and expanding the role of other health professionals and non-traditional workers (e.g., allowing prescribing of antiviral medications by pharmacists). Influenza assessment centres and alternate care sites may be needed in some communities, particularly in high-impact situations. Responsibility for their establishment is best determined in advance so that appropriate planning can take place.
- **Hospital-based care -** the impact on the acute care sector and the demand for critical care will be influenced by the epidemiology of the pandemic, i.e., the overall numbers with severe disease, the age and risk groups most at risk of severe disease and the dynamics of the pandemic wave (compacted or prolonged), as well as the extent of early antiviral treatment in the community. Critical care planning and preparation for high demand for ventilators or other specialized equipment (e.g., extracorporeal membrane oxygenation) needs special attention. Critical care surge capacity plans should include triage tools that contain both ethical guidance and processes to address bed flow and ventilator utilization. Service needs for paediatric patients (including critical care) and pregnant women should be specifically addressed.
- **Health care in remote and isolated communities** - There may be limited capacity to provide acute care and/or a lack of appropriate medical equipment and services (e.g., ventilators, oxygen therapy) for treating critically ill patients in remote and isolated communities. Under normal circumstances, these needs are met through medical evacuations to acute care facilities in larger centres. However, an increase in medical evacuations could overwhelm the receiving jurisdictions, making it essential to coordinate with receiving jurisdictions and to do everything possible to detect ILI as early as possible and to treat and keep affected persons in the community.
- **Other health care services** - services such as mental health, home care, palliative and hospice care, long-term care and other community health and social services may not be well linked to regional and local pandemic planning processes. Though often overlooked in pandemic planning, their functioning is critical to achieving the pandemic objectives by providing early and appropriate treatment outside of hospitals to those who do

not need acute hospital care. These organizations must be involved in pandemic planning and encouraged to have business continuity plans in place so that they can continue to provide their services to some of the most vulnerable patients in the community with minimal interruption during a pandemic.

During a severe pandemic, death care services may be overwhelmed and local planners may need to consider alternate systems and resources than those that normally manage deaths, such as setting up temporary morgues and delaying funerals/burials. This may cause increased stress or complications in the grieving process for families, particularly when certain religious and/or cultural practices have specific directives about how bodies are managed after death. Planning guidance is available from the WHO, Pan American Health Organization and the International Red Cross on the effective management of mass fatalities during a disaster [40].

## 4.8 Clinical Care Guidelines

Clinical care involves the assessment and treatment of persons with suspected or confirmed pandemic influenza. The spectrum of illness seen with influenza is broad and ranges from asymptomatic infection to severe illness causing death, which is frequently due to exacerbation of an underlying chronic condition or secondary bacterial pneumonia. Certain aspects of pandemic influenza management may be unfamiliar to some practitioners, and new risk factors and presentations may emerge. Critically ill patients may require extraordinary support measures, some of which may not be universally available in a high-impact pandemic.

**Strategic approach**

During a pandemic, health care practitioners will need clinical guidelines for assessment, laboratory testing, treatment (including antiviral medications), and management of secondary infections and critically ill patients. Service needs for specific populations (e.g., paediatrics, pregnant women) should be specifically addressed. Guidelines specific to the clinical management of patients in remote and isolated communities should also be available, as there are unique considerations in these settings.

Clinical care guidelines must be timely and user-friendly, and be produced by sources that practitioners consider reliable. Establishing and testing agreed upon approaches for the development of clinical guidelines during the interpandemic period will help to ensure that the necessary processes are in place to support the pandemic response.

## 4.9 Communications

Communication of information and advice is often the first and most important public health intervention during an emergency. This is especially true for an emerging pandemic, where behaviour change is a central part of risk management. Providing clear and consistent information about the disease, who it affects, how it spreads and ways to reduce risk is an effective way to help reduce the spread of infection before other interventions like vaccine are available. Open and honest public communication also reinforces trust in public health authorities and helps to minimize societal and economic disruption.

Communications planning for an influenza pandemic uses a risk communications approach. [41] It integrates a broad range of communication capacity and expertise, including social marketing, stakeholder consultation and use of social media. It involves collaboration of all partners involved in the pandemic response to deliver consistent, complementary, and effective communications that meet the needs of the public and stakeholders.

For details on the pandemic risk communication approach, see the Communications and Stakeholder Liaison Annex.

**Strategic Approach**

Pandemic risk communications incorporate the principles of collaboration, proportionality, flexibility and use of established practices and systems. Research conducted during and after the 2009 pandemic reinforced the importance of core risk communication principles such as transparency and stakeholder collaboration in achieving pandemic response objectives. [42]

It is essential to be proactive about communication throughout the pandemic, with information and updates for the media, the public, and other stakeholders. Information may be limited initially and will change as the science evolves and more is learned. The post-2009 pandemic reviews identified difficulties in communicating uncertainty and dealing with changing information, particularly for pandemic vaccine. Therefore, strategies to communicate risk, uncertainty and changing information are critical.

Communicating in ways that demonstrate transparency, cultural sensitivity and use of plain language is essential in building and maintaining public trust. Consistent messaging and "speaking with one voice" will also foster trust and understanding and help avoid confusion.

While communication and messaging within jurisdictions is ultimately a PT responsibility, pandemic communications planning should involve all health partners. The FPT communication response will be coordinated through the PHN Communications Network. Collaboration with nongovernmental, private sector and international organizations is also important. The media should be seen as a key partner and engaged in the interpandemic period as well as during the pandemic.

**Communication with the public** - Research has demonstrated that risk perception is the strongest indicator of willingness to change behaviour during a public health event, and that it is largely shaped by the public's emotional response to the event. [43] Monitoring of public perception, information needs and concerns is an important role in the pandemic response and should be planned for. Effective stakeholder identification and engagement will also play a large part in this work. Building relationships with stakeholders in the interpandemic period will help facilitate productive interactions during the pandemic. Federal and PT pandemic communications plans should pay particular attention to reaching vulnerable populations and persons who may have limited access to mainstream media. These groups may require a tailored communications approach, using a variety of formats and delivery mechanisms (e.g., using ethnic media outlets as a conduit to ethno-cultural communities). [44]

**Communication with the health care sector** - Communications with HCWs and organizations deserves special attention in the planning process. These stakeholders should be engaged in two-way dialogue to help ensure that products and messages meet their needs for timely, clear, concise and relevant communications. Resources should be developed in the interpandemic period so they can be quickly adapted when a pandemic occurs.

For details on the pandemic risk communication approach, see the Communications and Stakeholder Liaison Annex.

## 4.10 Research

Research plays a key role in addressing knowledge gaps about the influenza virus and effective influenza prevention, treatment and control for both seasonal and pandemic influenza. Much of this research can be carried out in the interpandemic period, but some can only be conducted during a pandemic. Given the potentially long interval between pandemics, it is important not to miss these infrequent but invaluable opportunities and to plan for a rapid research response.

**Strategic Approach**

Key components of a successful pandemic influenza research strategy include identification of research needs, development and ongoing support of partnerships and research networks, identification of sustained funding sources, and advance establishment of protocols and rapid ethics review processes for pandemic research. Knowledge translation strategies to bring significant findings to decision-makers in a useful and timely way are other key components.

**Identification of research needs -** It is important that influenza research needs are periodically reviewed and prioritized. This information is helpful to funding agencies like the Canadian Institutes of Health Research (CIHR) and PHAC, and feeds into similar international initiatives by WHO and others. The annexes to this document identify existing research needs in specific areas of the response, such as vaccines and antiviral medications.

**Research network** - Networks that are created to conduct research in the interpandemic period are well placed to facilitate pandemic research. Provincial public health agencies and PHAC are increasingly collaborating on epidemiological and other public health studies. The Canadian Immunization Research Network (CIRN), a national network of key vaccine researchers is active in ongoing influenza vaccine research projects. The mathematical modeling community has developed several networks and is collaborating more closely with public health. Canadian intensive care researchers have developed international clinical networks, such as the International Forum for Acute Care Trialists (InFACT), that will establish open access protocols, data-sharing processes and ethical frameworks to streamline the response to a new emerging disease or pandemic. These existing networks need ongoing support. As they may not be sufficient to address all of the pandemic research needs, ongoing focus on this aspect is required to ensure readiness for the research response. eds, ongoing focus on this aspect is required to ensure readiness for the research response.

**Rapid research response -** Special research studies, such as seroprevalence studies and the role of bacterial pathogens in serious outcomes, will be needed to inform pandemic decision-making. As these studies must be mounted quickly, advance planning is critical for their success and timeliness. Leveraging existing partnerships among PHAC, Health Canada, provincial public health agencies, clinical and academic institutions and networks together with populations of research interest such as CIRN and CIHR and engaging them in planning for a rapid research response is essential. Advance plans should include preliminary agreements with potential researchers and development of research protocols and strategies for rapid ethics approval and funding arrangements.

**Knowledge translation** - Many important decisions must be made quickly during a pandemic. Evidence-informed decision-making requires strong knowledge translation strategies to ensure that existing and new research findings are taken into account. Enabling strategies include compiling research findings from the 2009 pandemic and maintaining up-to-date literature reviews in key areas, such as the effectiveness of public health measures, relevant vaccine studies, and antiviral treatment and resistance. Processes for critical appraisal and dissemination of new research findings should be established in the interpandemic period. Strategies should also be developed to help decision-makers understand and make optimal use of evidence and research.

# 5.0 Assessment and Evaluation of Pandemic Preparedness and Response

Preparing for and responding to a pandemic is a complex process that requires the coordinated efforts of all orders of government in collaboration with their stakeholders. To ensure that pandemic plans (or all-hazards plans according to the jurisdiction) are comprehensive and effective, jurisdictions should assess their level of preparedness, test their plans regularly and evaluate their pandemic response.

### 5.1 Assessing Preparedness

Preparedness is a responsibility of individuals, organizations and jurisdictions at all levels. PTs are responsible for preparedness activities that will take place at the PT level and they may also provide advice and/or support to regional and local areas. Assessing the level of pandemic preparedness enables jurisdictions to monitor the progress of their pandemic planning, identify gaps and prioritize future planning efforts. Use of checklists, perhaps coupled with site visits, are potential tools for monitoring progress and levels of preparedness.

It is also important to determine whether responses can be implemented effectively so as to achieve the intended results. Training and exercises should be conducted on a regular basis to maintain preparedness levels as part of a cycle of continuous improvement. Training should also be made a priority for new workers. Exercises can take many forms, ranging from discussion-based activities such as seminars and workshops to larger more complex activities such as activating plans and simulating response activities. It is best for organizations to work their way up to larger exercises. This progression allows organizations to understand their plans better and identify interdependencies, and to make changes and adjustments before attempting a larger, more complicated activity. Following an exercise a formal After Action Report should be prepared, along with an implementation plan to address the gaps identified. Problem areas or weaknesses should be corrected through additional training and/or changes or additions to plans.

In addition to specially designed exercises, seasonal influenza provides annual opportunities for all jurisdictions to test specific components of a plan. For example, seasonal influenza immunization campaigns allow PTs to test rapid distribution of vaccine and supplies while local jurisdictions can practise mass clinic strategies and use of their health emergency management mechanisms to organize the clinic rollout. Other emergencies also provide opportunities to practise and refine components of an effective pandemic response, like command and control and communications.

### 5.2 Evaluating the Pandemic Response

For future reference, it is important to document completely the processes and activities used and decisions made during the response to the pandemic, along with the outcomes achieved. The response should be evaluated to see if it was carried out as intended and that it led to the desired outcomes. This evaluation helps ensure that lessons learned from the real life event are captured and remain available to inform pandemic plan revisions. The evaluation involves assessment through an After Incident or Lessons Learned report following the pandemic, accompanied by an implementation plan to address the identified gaps. A critical opportunity to evaluate and adjust the response also comes at the end of the first pandemic wave.

In addition to gleaning lessons learned from the pandemic response, it is important to ascertain how well the pandemic response met the goals and objectives of pandemic preparedness and response in Canada. Lessons learned would focus on the assessment of the strategic approach for the key components outlined in this document as a measurement of how well the response met the identified purposes of each of the key components. This higher level and formal evaluation of the pandemic response would involve FPT partners and consider various aspects of the pandemic response. A comprehensive, harmonized approach to pandemic evaluation across jurisdictions should be developed in the interpandemic period so that the main findings and best practices can be identified.

# Appendices

### Appendix A - Factors Affecting Pandemic Impact

The table lists a series of factors that could affect the impact of a pandemic and describes their potential impact. Consideration of these factors and their potential mitigation will supplement use of the basic planning scenarios and help planners prepare a more adaptable response.

**Table - Factors that affect pandemic impact and their potential impact**

| Category | Factor | Potential impact |
|---|---|---|
| **Virus characteristics** | | |
| Transmissibility | Degree of transmission | High infectivity means that a large number of people will become ill. This would affect absenteeism in schools and workplaces, including health care settings. Health care services would face increased demand. Disruptions in basic services could occur if absenteeism affects critical infrastructure. |
| | Speed of spread | A concentrated wave with many people ill over a short period would have higher impact on absenteeism and demand for health care than the same number of cases spread over a longer period. |
| | Season of arrival | Transmission is lower in spring and summer so pandemic waves in that period might be smaller. Higher impact would also be expected with late fall/winter waves due to juxtaposition of usual winter pressures from other viruses and co-circulating bacteria. |
| Virulence | Clinical severity | High virulence means a high proportion of severe cases among the ill, placing strain on acute and critical care services. The typical pandemic mortality age shift to younger age groups could also increase public concern. Unexpected clinical features could affect provision of acute and critical care. |
| **Population vulnerability** | | |
| Population vulnerability | Pre-existing population immunity | Pre-existing population immunity might be present in persons above a certain age due to previous circulation of related strains. This could reduce their risk of infection (although their age might increase their risk of severe disease if they did become ill). Sparing of older persons would significantly reduce overall impact on hospitals and long term care facilities. Higher impact would be anticipated if all age groups are involved. |
| | Unexpected risk factors | New risk factors for severe disease could mean that more people need health care services. They could also affect vaccine prioritization. |
| | Special groups and settings | Impact may be increased in high-risk populations or settings (e.g. remote communities, homeless shelters and overcrowded housing). Risk could be elevated because of age, underlying health conditions, poor access to health care, poor socioeconomic conditions, etc. |
| **Response factors** | | |
| Public health interventions | Vaccine availability, timing, effectiveness | Timing of vaccine availability in relation to pandemic activity could influence vaccine prioritization and affect uptake. Vaccine impact would be reduced if most people experience illness before vaccine is available. |
| | Antiviral availability and resistance | Antiviral supply might be insufficient in a very large pandemic. Antiviral drug resistance would reduce supply of effective antiviral medications, thus resulting in need to prioritize use. Supply issues could lead to increased numbers of hospitalizations, severe illness and death. |

| Category | Factor | Potential impact |
|---|---|---|
| | Public health measures | In some circumstances (e.g. virus with lower transmissibility), wide adoption of public health measures could lead to significant reduction in transmission. |
| Health care system response | Access to care | Good access to primary care and early antiviral treatment would reduce rates of complications and hospitalizations. Lack of access to critical care could increase mortality in seriously ill patients. |
| | Surge capacity | Lack of surge capacity could affect outcomes if demand for services outstrips supply. Triaging of critical care services would be needed as surge capacity is exceeded. As services become overwhelmed, mortality might increase in both influenza and non-influenza emergency patients. |
| | Availability of antibiotics and other drugs, supplies | Drug supply problems or antibiotic resistance could affect clinical outcomes. Shortages of infection control supplies could affect viral transmission and increase staff concern. |
| Risk communications | Behavioural response | Levels of public awareness and understanding and risk perception, along with level of trust in health authorities, could affect degree of adoption (and therefore potential effectiveness) of preventive behaviours such as infection prevention behaviours, social distancing, and uptake of vaccine and antiviral medications. |

## Appendix B - Pandemic Risk Assessments

The table identifies relevant considerations for initial and ongoing pandemic risk assessments and identifies potential sources of data to generate the information needed. In a pandemic, the Public Health Agency of Canada will prepare or arrange for the risk assessments to be prepared and disseminated.

**Table - Pandemic Risk Assessments**

| Category | What information is needed? | | How will this be learned? |
|---|---|---|---|
| | **Initial risk assessment** | **Ongoing risk assessments** | |
| **Overall response** | | | |
| Nature of response | • What will be the overall impact? | • Is the impact changing?<br>• How are we coping? | • Estimates/predictions of impact (see sections below) |
| **Characteristics of the virus** | | | |
| **Transmissibility** | • How fast will it spread? | • Will there be more than one pandemic wave?<br>• Is transmissibility changing? | • Molecular and genetic studies<br>• Incubation period and generation time<br>• Reproductive number (R0)<br>• Real-time modeling |

| Category | What information is needed? Initial risk assessment | What information is needed? Ongoing risk assessments | How will this be learned? |
|---|---|---|---|
| | • How many will be affected?<br>• See also population vulnerability | • Will follow-up waves be larger or smaller?<br>• When will the next wave begin, peak, end? | • As above<br>• Serological attack rate<br>• Clinical attack rates in various settings |
| Virulence (clinical severity) | • How severe is the disease?<br>• What proportion of ill people will have complications, need hospitalization, die?<br>• Are there unusual clinical presentations? | • Is disease severity changing? | • Molecular and genetic studies<br>• Rates of hospitalization, intensive care unit (ICU) admission, ventilator use<br>• Case fatality rate/ratio<br>• Clinical case series of persons with severe disease<br>• Outbreak reports |
| **Population vulnerability** | | | |
| Population vulnerability | • Will all age groups be affected and to what extent? | • How is population immunity changing as the outbreak progresses? | • Levels of pre-existing population immunity<br>• Periodic seroprevalence surveys |
| | • What are the risk factors for severe disease? | • Are new risk factors/groups emerging? | • Epidemiological studies<br>• Clinical case series<br>• Outbreak reports |
| | • Are there settings and populations at increased risk? | • Are there additional settings and populations at increased risk?<br>• Are we effectively targeting our interventions?<br>• Any unintended consequences from our interventions? | • Epidemiological studies<br>• PT/NGO feedback<br>• Socioeconomic data |
| **Public health interventions** | | | |

| Category | What information is needed? Initial risk assessment | Ongoing risk assessments | How will this be learned? |
|---|---|---|---|
| Antiviral medications | • Is there antiviral resistance?<br>• Will antivirals be safe?<br>• Will antivirals be effective?<br>• Are we able to effectively mobilize the NAS? | • Are antiviral resistance patterns changing?<br>• Are the antivirals safe?<br>• Are the antivirals effective?<br>• Are the right patients receiving them in a timely way? | • Antiviral susceptibility and resistance testing<br>• Antiviral distribution and uptake<br>• Adverse reaction reports<br>• Effectiveness studies<br>• Distribution reports and special studies |
| Vaccine | • Will vaccine be safe?<br>• Will vaccine be effective?<br>• When will it be available? | • When will vaccine be available?<br>• Are there changes to the usual high-risk groups?<br>• Is there adequate capacity for rapid immunization?<br>• How can vulnerable groups be reached?<br>• Is pandemic vaccine safe?<br>• Is it effective? | • Early epidemiological studies (re: high-risk groups)<br>• PT monitoring and feedback<br>• Vaccine uptake and effectiveness<br>• AEFI reports |
| Public health measures | • What is the anticipated impact, including on transmission? | • Are the interventions acceptable?<br>• Are they effective? | • Measures of transmissibility and virulence<br>• Mathematical modeling<br>• Public opinion research<br>• Community surveys |
| Infection prevention and control (IPC) | • Will the usual IPC measures be effective?<br>• If not or unsure, what additional precautions should be taken? | • Are the usual IPC measures effective?<br>• If not or unsure, what additional precautions should be taken?<br>• Are there unintended consequences? | • Information on incubation period, infectivity, routes of transmission, etc. |
| **System response** | | | |

| Category | What information is needed? Initial risk assessment | Ongoing risk assessments | How will this be learned? |
|---|---|---|---|
| Public health | • What will be the potential impact? | • What is the impact on public health services and health human resources (HHR)?<br>• Are they able to cope? | • Measures of transmissibility and virulence<br>• Surveillance and clinical studies<br>• PT feedback |
| Community health care | • What will be the potential impact? | • What is the impact on community health care services and HHR?<br>• Are they able to cope? | • Measures of transmissibility and virulence<br>• Surveillance and clinical studies<br>• Information on antiviral resistance<br>• PT feedback<br>• Media monitoring |
| Acute care services | • What will be the potential impact? | • What is the impact on acute care services and HHR?<br>• Are they able to cope?<br>• What bacterial complications are occurring?<br>• Are the treatment strategies effective? | • Measures of transmissibility and virulence<br>• Surveillance and clinical studies<br>• Information on antiviral and antibiotic resistance<br>• Clinical studies<br>• PT monitoring and feedback<br>• Media monitoring |
| Long-term care and other community residential care | • Will long-term care or other residential facilities for the elderly or disadvantaged be at significant risk of outbreaks? | • What is the impact on these facilities, their services and HHR? | • Information on pre-existing immunity<br>• Surveillance and outbreak investigations<br>• PT feedback<br>• Media monitoring |

| Category | What information is needed? Initial risk assessment | What information is needed? Ongoing risk assessments | How will this be learned? |
|---|---|---|---|
| Societal impact | • Will there be significant workplace or school absenteeism?<br>• Will community services be affected? | • What is the impact on schools, businesses, critical infrastructure and other community services?<br>• What is the impact on vulnerable populations?<br>• What is the psychosocial impact on the population?<br>• What is the economic impact? | • Measures of transmissibility and virulence<br>• School and workplace absenteeism surveillance<br>• PT feedback<br>• Media monitoring and public surveys<br>• Clinician surveys<br>• Qualitative studies |
| Risk communications | • What will be the level of public concern?<br>• What issues will be of most concern? | • What are the levels of public concern?<br>• What issues are of most concern and are we addressing them effectively?<br>• What is the level of public awareness and understanding of the situation? | • Traditional and social media monitoring<br>• Tracking of public inquiries<br>• Public opinion research<br>• Stakeholder feedback (PTs and NGOs) |

## Footnotes

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**Date modified:**
2016-02-12

# EXHIBIT D

This is Exhibit "D" referred to
in the Affidavit of
Dr. Richard Schabas

Sworn before me this 29th day

of May A.D., 2021

A Commissioner for Oaths in and for Ontario

LISA D.S. BILDY
BARRISTER & SOLICITOR

# Ontario Health Plan for an Influenza Pandemic

## Chapter 4: Public Health Measures

March, 2013

Ontario

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# Ontario Health Plan for an Influenza Pandemic

Chapter 4: Public Health Measures

## Audience

- individuals responsible for developing, communicating and implementing public health measures within the provincial government, public health units (PHUs) and non-health organizations (e.g., boards of education, schools, summer camps and social service organizations)

## Chapter objectives

- to define roles and responsibilities for developing and implementing public health measures during an influenza pandemic
- to describe the framework underlying the public health measures strategy
- to enable the public health sector and non-health organizations to develop and implement public health measures during an influenza pandemic

# Public health measures response summary

Response objective: to slow the spread of influenza in Ontario using non-pharmaceutical methods

**BEFORE SEVERITY IS KNOWN**

Ministry of Health and Long-Term Care (MOHLTC) consults with local, provincial and federal partners to develop and rollout the public health measures strategy

PHUs develop and rollout local public health measures

Voluntary public health measures implemented; of the mandatory public health measures, only case & contact management is implemented

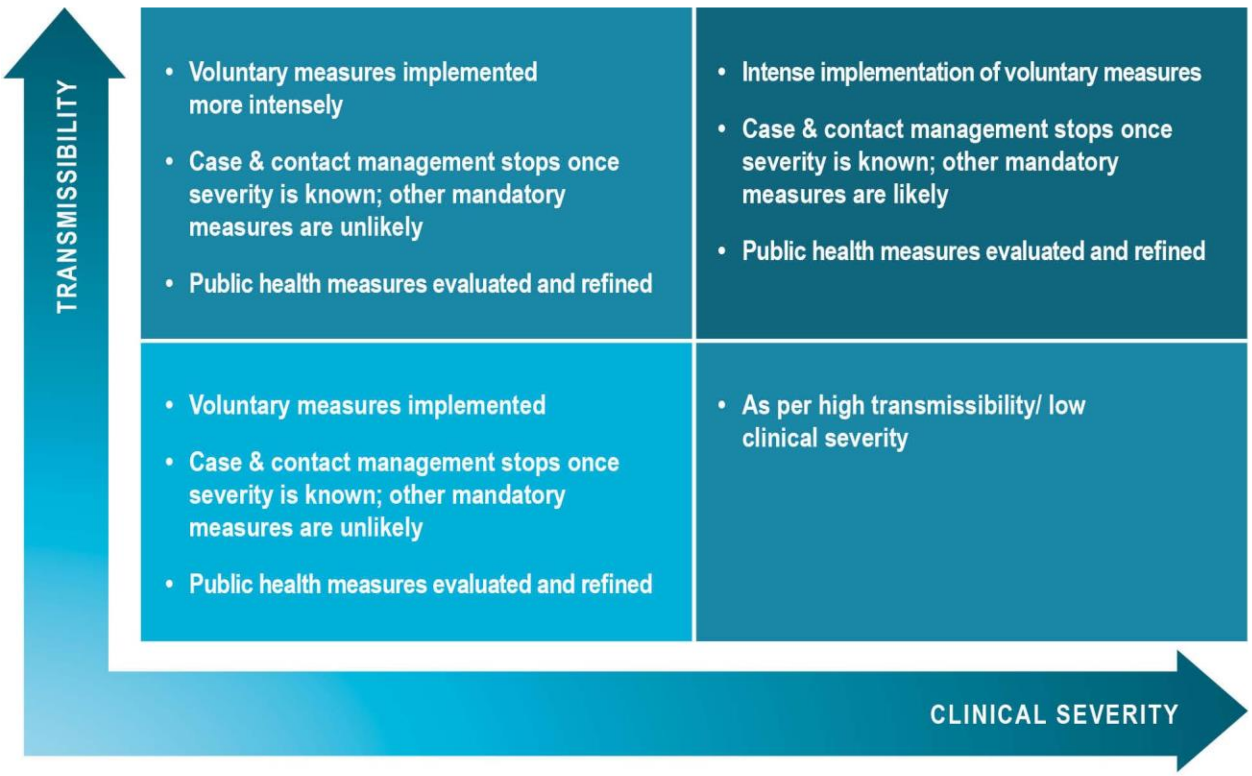


FIGURE 1. PUBLIC HEALTH MEASURES ACTIVITIES STRATIFIED BY SEVERITY

# Introduction

Public health measures are non-pharmaceutical interventions that slow the spread of a communicable disease in a community. A key characteristic of public health measures is that they are implemented in non-health settings,[1] such as workplaces, homes, civic spaces (sports arenas, religious institutions), educational settings and community-based social services organizations. Public health measures are individual and group behaviours and the environmental supports that enable and encourage these behaviours. During an influenza pandemic, many people want to play an active role in making their community healthier; by implementing public health measures, everyone can contribute meaningfully to the influenza pandemic response.

Public health measures are commonly used across Ontario during the annual influenza season and other communicable disease outbreaks. Many public health measures used during an influenza pandemic are modifications of existing practices and therefore should be familiar to PHUs, non-health organizations and members of the public.

# Roles and responsibilities

Table 1 outlines roles and responsibilities related to public health measures during an influenza pandemic. For a broad overview of roles and responsibilities during an influenza pandemic, see Chapter 1: Introduction.

### TABLE 1. PUBLIC HEALTH MEASURES ROLES AND RESPONSIBILITIES

| Party | Roles and responsibilities |
|---|---|
| Public Health Agency of Canada (PHAC) | Provide recommendations on public health measures to provinces and territories<br><br>Develop and implement public health measures for populations under its jurisdiction (e.g., First Nation communities, members of the Canadian military, federal corrections facilities)<br><br>Implement travel and border-related public health measures (travel advisories and restrictions, quarantine measures and border closures at international entry points) |

[1] When these measures are used in health settings they are termed “infection prevention & control measures”; these measures are discussed in Chapter 5: Occupational Health & Safety and Infection Prevention & Control.

| Party | Roles and responsibilities |
| --- | --- |
| MOHLTC[2] (through the Ministry Emergency Operations Centre (MEOC)) | Develop the provincial public health measures strategy based on PHAC's recommendations and in consultation with provincial and local partners<br>Develop and issue directives,[3] orders and requests as per the HPPA and other relevant provincial legislation<br>Communicate the provincial public health measures strategy to PHUs, other health system partners and provincial ministries<br>Communicate information on public health measures with the public<br>Support PHUs and provincial ministries to implement public health measures in a wide range of settings<br>Collaborate with Public Health Ontario (PHO) to evaluate and refine the provincial public health measures strategy |
| PHO (through the MEOC) | Provide scientific and technical advice to the MOHLTC<br>Provide scientific and technical advice to PHUs to support the implementation of public health measures, such as developing tools and advising on best practices |
| Ministry of Labour (MOL) | Provide OHS advice to the MOHLTC (through the MEOC)<br>Enforce the OHSA and its regulations |
| PHUs[4] | Provide advice to the MOHLTC to support the development, evaluation and refinement of the provincial public health measures strategy<br>Develop, implement and evaluate public health measures based on the provincial strategy<br>Develop and issue orders[5] as per the HPPA |

[2] Throughout the OHPIP, the MOHLTC includes the Minister, the Chief Medical Officer of Health (CMOH) and the rest of the MOHLTC. For information on how decisions are made in the MOHLTC during an emergency, see the Ministry Emergency Response Plan.

[3] Directives are sent from the CMOH to health care providers or other health entities as per the Health Protection and Promotion Act (HPPA).

[4] Throughout the OHPIP, PHU includes boards of health, medical officers of health (MOHs) and other PHU health workers (e.g., public health inspectors, epidemiologists, public health nurses, etc.). See the HPPA and Ontario Public Health Standards for more information on the roles and responsibilities of various PHU parties.

| Party | Roles and responsibilities |
|---|---|
| Employers in non-health organizations | Implement public health measures<br>Role model public health measures<br>Follow MOHLTC orders and requests<br>Follow PHU orders |
| Public | Learn about and follow public health measures<br>Follow MOHLTC and PHU orders |

# Voluntary and mandatory measures

Some public health measures are required under the HPPA and other provincial and federal legislation. Other measures are considered a best practice, but do not have the weight of legislation backing them. Because of this, public health measures can be categorized into two groups: voluntary public health measures (i.e., without the force of legislation) and mandatory public health measures (i.e., with the force of legislation). Appendix A provides an overview of voluntary and mandatory public health measures that may be implemented during an influenza pandemic.

Regardless of whether they are categorized as voluntary or mandatory, non-health organizations and the public should implement all recommended public health measures during an influenza pandemic.

> **Preparedness tip**
>
> Appendix B includes an overview of planning considerations for PHUs and non-health organizations to support the implementation of public health measures during an influenza pandemic.

# Public health measures strategy

The provincial public health measures strategy cannot be finalized until the time of a pandemic as the type and relative significance of each measure depends upon the following factors:

- Evidence – The MOHLTC considers information on the severity of the pandemic, effectiveness of public health measures and the impact of other pandemic response activities (e.g., vaccine availability, effectiveness and uptake rates).
- Legislation – The strategy is based on legislative requirements and responsibilities.

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[5] *This refers to orders made by MOHs and public health inspectors as per the HPPA.*

- Ontario Public Service (OPS) values and ethical principles[6] – The MOHLTC considers the OPS values and other ethical principles during the development of the strategy, including:
  - Proportionality: Restrictions on individual liberty and measures to protect the public from harm should not exceed the minimum required to address the actual level of risk or need in the community. The MOHLTC uses a risk-based approach to consider the proportionality of potential measures to the understood risks and impacts of the pandemic, especially for measures with significant social and economic consequences (e.g., school closures, mass gathering restrictions/ bans). Although some public health measures are easy for an individual to implement, others may involve behaviours that are not routine or that have limited direct benefit to an individual but are of benefit to society.
  - Reciprocity: Society has an ethical obligation to support those who face a disproportionate burden in protecting the public good.
- Health Equity – The MOHLTC considers the needs of vulnerable populations[7] when the public health measures strategy. The strategy strives to reduce or eliminate socially structured differentials in health outcomes, building on broader ideas about fairness, social justice and civil society. For example, the implementation of system-wide school closures has different impacts on groups in society such as single parents/ caregivers, children who participate in school-based nutrition programs, families with low or fixed incomes who cannot afford increased child care costs, and parents who do not have flexible work arrangements, paid vacation or short term leave policies.
- Communication principles – The MOHLTC considers its communication principles when developing the provincial strategy.[8] More restrictive measures require explanation from public health officials as to the reasons for these measures.

While the specifics of the strategy are not known, the public health measures strategy will include the following components:

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[6] Work is underway federally to develop an ethical framework for the Canadian Pandemic Influenza Plan for the Healthcare Sector (CPIP). Future iterations of the Ontario Influenza Response Plan (OIRP) will include an ethical framework that aligns with the CPIP.

[7] The OHPIP defines vulnerable populations as a group of people who, because of the determinants of health, are more likely to be exposed to influenza, more likely to experience a serious impact because of exposure, less likely to benefit from response and recovery measures and/ or who may be negatively affected by response and recovery measures.

[8] The MOHLTC's communication principles include timeliness, transparency, accessibility and credibility.

- Guidance on adapting routine measures – The strategy will include guidance on how PHUs, non-health organizations and members of the public can adapt public health measures they routinely implement during seasonal influenza (see Table 2 for examples of how measures could be adapted).

### TABLE 2. EXAMPLES OF ADAPTED PUBLIC HEALTH MEASURES

| Activity | Example |
|---|---|
| Communication | PHUs identify additional public messaging opportunities<br>Employers identify new locations for signage that reinforces specific measures (e.g., hand washing)<br>PHUs make additional media buys to promote public health messages |
| Role modelling and reinforcement of measures | Boards of education and principals remind parents of the importance of keeping children home when ill<br>Boards of education and principals review and update policies and procedures used when students are ill at school |
| Modifying and strengthening organization practices | Employers modify sick leave policies to ensure that employees are able to take time off work to care for ill family members<br>Employers ensure there is more frequent cleaning of commonly touched surfaces |
| Social distancing | Employers extend work from home policies<br>Shelters and daycares modify the placement of sleeping cots to ensure appropriate separation |

- Focus on voluntary measures – As possible, the strategy will emphasize voluntary measures; however, mandatory measures may be recommended depending upon the risk posed by the influenza pandemic and the impact of other response activities.
- Environmental supports – The strategy will highlight the importance of ensuring environmental supports are in place to support non-health organizations and the public implement measures.
- Progression of the pandemic – As demonstrated in Table 3, some measures are more likely to be recommended at the beginning stages of an influenza pandemic (before the severity is known), while others are more likely to continue throughout the course of the event.

#### TABLE 3. ANTICIPATED TIMING OF PUBLIC HEALTH MEASURES

| Measure | Beginning stages of the pandemic (before severity is known) | During the pandemic (understanding of severity evolves) |
|---|---|---|
| Voluntary public health measures | X | X |
| Case & contact management | X | |
| Orders | | X |

- Recognition of travel restrictions – The strategy will recognize travel restrictions recommended by PHAC, while noting the impact of orders under the HPPA on such restrictions.
- Local variation – The strategy will recognize opportunities for variation in local public health measures because of differences in disease activity, social context (e.g., role of public transit in the local community) and engagement practices (e.g., effective methods of communication for different communities, populations and environments).

# Next steps

In the development of the OIRP, the MOHLTC will work with its partners to:

- develop guidance for PHUs on public communications
- engage non-health organizations on implementation of public health measures for influenza
- align the OIRP with the CPIP's ethical framework for decision-making

# Appendix A – Sample public health measures

Influenza pandemic public health measures are a modification and intensification of existing good public health practices. Most measures are routinely implemented by PHUs, non-health organizations and the public during seasonal influenza outbreaks and are supported by the guidance provided in the Ontario Public Health Standards.

Public health measures can be organized into two categories: voluntary measures (i.e., measures without the force of legislation) and mandatory measures (i.e., measures with the force of legislation). All recommended public health measures should be fully implemented during an influenza pandemic.

## Voluntary public health measures

### Behaviours

Voluntary public health measures include the following individual and group behaviours:

- hand hygiene
- respiratory etiquette
- environmental cleaning, especially of frequently touched surfaces such as door handles
- illness isolation, which includes having individuals stay home when sick and implementing social distancing measures within the home when a household member is ill
- social distancing, which involves separation of people to minimize the likelihood of transmitting influenza
- closure of organizations or programs[9]

### Environmental supports

During an influenza pandemic, it is critical to equip non-health organizations and the public with the supports they need to implement voluntary public health measures. Information, supportive workplace policies and role modelling are all important to the successful uptake voluntary measures.

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[9] An organization may choose to suspend a program during an influenza pandemic because disease transmission cannot be adequately controlled and the program is not deemed to be critical.

### Information

The information provided to non-health organizations and the public will help them implement voluntary behaviours and understand why these measures are important in helping to stop the spread of the influenza pandemic. Core elements include:

- information about the influenza pandemic, such as modes of transmission, risk and impacts
- information about public health measures, including why they are important and how to implement measures at home, in the workplace and elsewhere in the community

### Support

In workplaces, supports may include adjustments to policies and procedures in order to help workers enact public health measures. Flexibility in sick leave policies as well as flexible work arrangements are examples of policies that support social distancing. Communication efforts should also be escalated so that changes to policies and procedures are widely understood and effectively implemented.

### Role Modelling

Role modelling involves demonstrating behaviours so that the public can emulate them. Role modelling of public health measures by formal and informal leaders in society supports their adoption by normalizing the desired behaviours. Leaders such as school principals, teachers, employers and coaches should be encouraged to personally and publicly adopt these behaviours.

# Mandatory public health measures

Mandatory public health measures are extraordinary actions designed to address and counter specific public health threats. Mandatory measures include case & contact management, orders and travel restrictions.

## Case & contact management

Case management describes the method, and often formal protocol, where PHU staff follow-up with individuals ill with influenza (i.e., cases) to provide information and strategies to reduce transmission to others. The syndrome that defines a case is communicated through Important Health Notices. This definition may evolve during the influenza pandemic (e.g., during initial stages of the pandemic, the case definition may include travel history).

Contact management involves PHU staff identifying those who may have had close contact with infectious cases (i.e., contacts), notifying them and providing counselling and information to recognize emerging illness.

PHUs perform case & contact management during an influenza pandemic based on the provincial pandemic health measures strategy.

## Orders

Authority exists under provincial and federal legislation to order the closure an organization for a period of time and/ or modify activities within an organization. The federal government may issue the closure of spaces under federal jurisdiction, as well as the exclusion of sick individuals from these spaces. The CMOH and MOHs may do the same for spaces under their jurisdiction as described by the HPPA. Organizations and individuals have the legal responsibility to comply with all orders issued by public health officials and to assist in their implementation.

There is other legislation that confers the responsibility for implementing public health measures to leaders outside of the public health sector. For example, the Education Act empowers principals to refuse school admission to those infected or exposed to communicable diseases. The Day Nurseries Act requires daycare operators to note the health status of children in their care, separate sick children from others, and require that parents/ guardians take sick children home.

# Appendix B – Selected planning considerations

PHUs should consider in advance of a pandemic how public health measures could be implemented across their jurisdiction. Implementation of public health measures should be based on the PHU's extensive knowledge of their local context and community's needs, existing relationships with local partners, documentation of best practices for implementing public health measures during the annual influenza season and lessons learned from other health promotion activities.

Non-health care settings should similarly consider actions they can take to promote the uptake of public health measures during an influenza pandemic.

## Environmental support of voluntary measures

To ensure maximum success, planning for the environmental support of voluntary public health measures should be undertaken by PHUs. This involves:

- audience segmentation and an analysis of appropriate modes of communication (including multilingual and accessible communication tools) for each audience, including vulnerable populations
- identifying the factors that influence and encourage the uptake of public health measures (which can be emphasized in communications)
- applying lessons learned from past experience with public health communications and health promotion programs

Leveraging existing relationships and routine interactions to teach, promote and reinforce the use of public health measures is important. An example is including hand washing lessons as part of a public health nurse's involvement in an Early Years program or as part of an after school program run by a community-based organization.

## Closures

Non-health organizations should prepare for the implementation of closures during an influenza pandemic (e.g., school closures, closure of programs in social service organizations). An organization may need to close because of a mandatory public health measure issued by a public health official (e.g., order from the MOH to close the space or program due to the risk posed by the pandemic). However, an organization may also need to close as a result of other events during an influenza pandemic (e.g., the employer decides to close the space or program due to high rates of illness among employees or significant interruptions to public transportation systems).

Regardless of the reason, closures can affect continuity of operations (especially of critical services), employees, the population groups that the organization serves (e.g., students, customers) and secondary populations (e.g., parents of students).

As part of their planning, organizations should work closely with their PHU to better understand the HPPA and how orders under this act would be made and communicated during an influenza pandemic.

Organizations should consider times in the past when they have had to close because of events such as labour disruptions or inclement weather and identify lessons learned that could be applied to an influenza pandemic.

# Appendix C – Selected practices from the 2009 influenza pandemic

Public health measures were effectively implemented in a wide range of non-health organizations during the 2009 H1N1 influenza pandemic. Some examples of best practices include the following:

- implementation of hand hygiene stations in arenas and recreation centres
- development of innovative activities to reinforce respiratory etiquette at summer camps and to modify existing policies and procedures to notify parents when campers were ill
- use of internal TV channels by correctional facilitates to share and reinforce educational messaging about the importance of implementing public health measures
- development of culturally appropriate education materials by PHUs for different population groups in their community
    - a PHU redeveloped their educational materials for a specific community that does not support the use of photographs of people – in the redeveloped materials, drawings of stick figures demonstrated how to implement public health measures
- development of strategic community-based communication programs by PHUs
    - a PHU intentionally engaged with leaders and ‘information gatekeepers’ to promote information about public health measures within their community more effectively
- development of targeted messaging based on community needs
    - a PHU reframed their educational messaging after engaging members from a migrant farm worker community
- development of strategies to implement public health measures in different business and industry settings, such as washing the steering wheels of delivery and service vans
- temporary suspension of some activities by schools and extracurricular programs, such as encouraging players not to shake hands after sports games - in many settings, the traditional handshake was replaced with a team cheer
- reorganization of programming and activities within social services organizations
    - a shelter for people who are homeless and underhoused encouraged guests and residents to sleep ‘head to toe’ (if in one bed the resident sleeps with their head pointing north, in the next bed, the resident would sleep with their head pointing south) to maintain social distancing measures

Ontario

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FORM 53

Kitchener Court File No.: CV-21-00000095-0000
St. Thomas Court File No.: CV-21-08

***ONTARIO***
**SUPERIOR COURT OF JUSTICE**

B E T W E E N:

**THE ATTORNEY GENERAL OF ONTARIO**

Applicant (Responding Party)

-and-

**TRINITY BIBLE CHAPEL, JACOB REAUME, WILL SCHUURMAN, DEAN WANDERS, RANDY FREY, HARVEY FREY and DANIEL GORDON**

Respondents (Moving Parties)

A N D B E T W E E N:

**HER MAJESTY THE QUEEN IN ONTARIO**

Applicant (Responding Party)

-and-

**THE CHURCH OF GOD (RESTORATION) AYLMER, HENRY HILDEBRANDT, ABRAM BERGEN, JACOB HIEBERT, PETER HILDEBRANDT, SUSAN MUTCH, ELVIRA TOVSTIGA, and TRUDY WIEBE**

Respondents (Moving Parties)

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## ACKNOWLEDGMENT OF EXPERT'S DUTY

---

1. My name is Dr. Richard Schabas. I live in Toronto, Ontario.

2. I have been engaged on behalf of the Moving Parties, Trinity Bible Chapel et al. and The Church of God, et al., to provide evidence in relation to the above-noted court proceeding.

3. I acknowledge that it is my duty to provide evidence in relation to this proceeding as follows:

   (a) to provide opinion evidence that is fair, objective and non-partisan;

   (b) to provide opinion evidence that is related only to matters that are within my area of expertise; and

(c) to provide such additional assistance as the court may reasonably require, to determine a matter in issue.

4. I acknowledge that the duty referred to above prevails over any obligation which I may owe to any party by whom or on whose behalf I am engaged.

Date: May 29, 2021

*Signature*

**NOTE:** This form must be attached to any expert report under subrules 53.03(1) or (2) and any opinion evidence provided by an expert witness on a motion or application.

Kitchener Court File No.: CV-21-00000095-0000
St. Thomas Court File No.: CV-21-08

| | | |
|---|---|---|
| **HER MAJESTY THE QUEEN IN RIGHT OF ONTARIO** | ***and*** | **CHURCH OF GOD (RESTORATION) AYLMER et al.** |
| **THE ATTORNEY GENERAL OF ONTARIO** | ***and*** | **TRINITY BIBLE CHAPEL et al.** |
| *Applicants* | | *Respondents* |

**ONTARIO**
**SUPERIOR COURT OF JUSTICE**

Proceeding commenced at St. Thomas

**AFFIDAVIT OF DR. RICHARD SCHABAS**


**JUSTICE CENTRE FOR CONSTITUTIONAL FREEDOMS**

[redacted]

**Lisa D.S. Bildy** (LSO #36583A)

[redacted]

Lawyer for the Respondents