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Public Health and Emergency Measures Working Group, Summary Discussion

Lessons from the First Wave of COVID-19

By Rosalie Wyonch with Sana Maqbool

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Introduction¹

This Communiqué provides a summary of discussions, insights and observations from the Public Health and Emergency Measures Working Group. The group met frequently during the first wave of COVID-19 to provide timely insights to policymakers and the public about the various challenges the healthcare system had to manage. As case numbers grow across Canada, insights from the first wave of COVID-19 can be applied to better manage infection risks while also minimizing social and economic disruption caused by public health and social distancing related restrictions on activity.

Health policy issues highlighted by the COVID-19 crisis are both short and long term in nature. In the short term, maintaining the capacity of the healthcare system to manage surges of COVID-19, while also ensuring minimal negative health and economic outcomes, is the main priority. The pandemic has resulted in drastic changes to how Canadians access healthcare services, which present an opportunity to incorporate positive change into the “new normal” of health system operations.

1 The Public Health and Emergency Measures Working Group would like to acknowledge the contributions of guest speakers who provided their subject-matter expertise on priority topics. In particular, we would like to acknowledge Prof. Vivek Goel, Mark Lievonen, Prof. Christopher Naugler, Isobel Mackenzie, Dr. Samir Sinha and additional speakers who have chosen to remain anonymous.



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Since COVID-19 transmission is already present within the community, it is unlikely that it will be fully eliminated prior to the availability of a vaccine without significant changes to the testing, tracing and isolation strategy. As a result, we are unlikely to avoid having to make difficult choices to protect public health while also maintaining “normal” as much as possible to minimize collateral health and economic damage. An unfortunate reality is that even once approved, a vaccine will need to be manufactured at scale and distributed, a process that will take significant time and resources. Public policies and messaging need to confront directly the somewhat depressing reality that COVID-19 is unlikely to be eliminated in the short term. As a result, some restrictions on economic and social activities will be required for quite a while, though they are likely to change over time. To enable the lifting of restrictions on economic and social activities, we must reduce and contain spread as much as possible.

As case numbers rise, governments should be proactive in setting public expectations about the imposition of further restrictions, how long they will be in place and the possibility of further government support in the form of subsidies, cash transfers, tax and loan payment deferrals, etc. Another priority is to ensure ongoing preparedness to manage COVID-19 in the following ways: by maintaining some excess capacity for affected patients; adapting care practices to maintain continuity; securing sufficient supplies of personal protective equipment (PPE), testing inputs and other medical resources and; actively improving health information and contact tracing comprehensiveness and availability. Over the longer term, once the immediate threat of COVID-19 has passed, priorities for government will shift to improving quality and efficiency in Canada’s healthcare system and ensuring we are better prepared for future novel infectious disease outbreaks. The total effects of the pandemic are not yet known and the “new normal” that will emerge is far from certain. There are, however, areas of healthcare and emergency preparedness in which Canada could and should improve as the healthcare system adapts to COVID-19 and transitions to the new normal.

Public Health and Emergency Measure Working Group

The Public Health and Emergency Measures Working Group is Co-Chaired by Janet Davidson, Chair of the Board of the Canadian Institute for Health Information, and a C.D. Howe Institute Senior Fellow, and Tom Closson, Chair of the C.D. Howe Institute Health Policy Council. Group membership and expert guest speakers include health academics, professionals and business leaders.

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Members and presenters contributing to the Working Group include:²

- R. Sacha Bhatia, Director of Institute for Health Systems Solutions and Virtual Care, Women's College Hospital.
- Åke Blomqvist, Health Fellow-in-Residence, C.D. Howe Institute; Adjunct Research Professor, Carleton University.
- Gavin Brown (observer), Director, Health Care System Division, Strategic Policy Branch, Health Canada.
- Tom Closson (Co-Chair), Co-Chair Health Policy Council C.D. Howe Institute.
- Janet Davidson (Co-Chair), Senior Fellow C.D. Howe Institute; Chair of the Board Canadian Institute for Health Information.
- Irfan Dhalla, Vice-President, Physician Quality and Director, Care Experience Institute, Unity Health.
- Brent Diverty, Vice-President, Programs, Canadian Institute for Health Information.
- Vivek Goel, former Vice-President, Research and Innovation, and Strategic Initiatives at the University of Toronto and a Professor in the Institute of Health Policy, Management and Evaluation at the Dalla Lana School of Public Health.
- Tai Huynh, Campaign Director, Choosing Wisely Canada.
- Perry Kendall, Co-Interim Executive Director at the BC Centre on Substance Use; BC Provincial Health Officer (former).
- Mark Lievonen, President, Sanofi Pasteur Limited (former).
- Isobel Mackenzie, Senior's Advocate, British Columbia.
- Kathleen Morris, Vice-President, Research and Analysis, Canadian Institute for Health Information.
- Christopher Naugler, Professor, Department of Pathology and Laboratory Medicine, University of Calgary; Associate Dean Undergraduate Medical Education, Cumming School of Medicine.
- David O'Toole, President and CEO, Canadian Institute for Health Information.
- Christian Ouellete, Head of Government Relations and Public Affairs, Novartis Canada.
- Samir Sinha, Director of Geriatrics, Sinai Health System and the University Health Network; Associate Professor of Medicine, Health Policy, Management and Evaluation, University of Toronto and Assistant Professor of Medicine Johns Hopkins University School of Medicine.

² The perspectives of participants were invaluable to forming a clear picture of the COVID-19 crisis and the information that forms the basis of this report, which does not represent the views of individual participants. The author retains responsibility for the summary and interpretation of discussions contained in this report.

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- Sana Maqbool, IMCO Policy Intern, C.D. Howe Institute.
- Duncan Sinclair, Emeritus Professor, Queens University.
- Colleen Flood, Professor and Director, uOttawa Centre for Health Law, Policy & Ethics University Research Chair in Health Law & Policy.
- Catharine Whiteside, Emerita Professor and Former Dean of Medicine, University of Toronto.
- Rosalie Wyonch, Policy Analyst and Research Lead, Health Policy Council, C.D. Howe Institute.

COVID-19 Exposes Cracks in the System

Unlike previous disease outbreaks, particularly the SARS outbreak in 2003, Covid-19 has had broader community transmission, resulting in the need for more extensive public health measures to combat its spread.³ The need to physically distance and reduce community contacts has resulted in significant disruptions to almost all sectors of the economy. The presence of COVID-19 in communities has meant efforts to manage its spread have involved a broad range of health professionals and institutions. The first wave of COVID-19 and the extensive policy and public health measures taken to contain its spread, and reduce the economic impact of restrictions, illuminated the gaps in health system preparedness and Canada's social safety net.

Due to the complexity of the current crisis and the time required to implement broad health system changes, the Working Group discussed challenges in addressing short-term needs and longer-term changes required to improve our capacity to respond to infectious disease outbreaks in future. Following the SARS outbreak, numerous reports related to disease outbreak preparedness and management were written (Naylor 2003, Walker 2004, Campbell 2006). Analysis of the recommendations in these reports as well as their implementation is needed to gauge whether we were adequately prepared for COVID-19.

In the early days of the pandemic, access to testing and personal protective equipment, timely access to comprehensive health information, and intergovernmental and health system collaboration to manage the challenges were top priorities for analysis.

³ The potential for asymptomatic or presymptomatic transmission with COVID-19 makes it much more difficult to manage infection spread.

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Although a Federal/ Provincial/ Territorial Public Health Response Plan for Biological Events exists to enable a consistent and collaborative approach to disease management across the country, there was variability in the manner in which each province responded to the outbreak of Covid-19. As a result, each province has the opportunity to learn from others facing slightly different challenges with variable policies. The natural experiment in the first wave provides opportunity for a more collaborative but also more successful approach to containing the spread of COVID-19 in the second and possible future waves. Variability was particularly evident in the different strategies adopted for testing and tracing, though testing rates have increased significantly since the initial surge of COVID-19 and shortages of testing reagents and other supplies have been relatively well-managed. The Working Group discussed the possible use of the *Emergency Act* to address gaps in testing and contact tracing across provinces or other cases where policies fall below an objective measure of what is required, from a public health perspective.

There is a need to direct the allocation of scarce resources towards applications with the highest impact on disease spread. Shortages of primary care providers, physicians, nurses, personal support workers, and other care providers that were manageable before the crisis became acute. Some health-care providers were exposed to Covid-19 and required isolation and restrictions on health workers reduced the flexibility of part-time workers. Concerns about consistent and adequate access to medicines, testing reagents and other inputs were compounded by border and airport closures that disrupted commercial shipping routes.

In the medium-term, policymakers and health administrators require accurate and up-to-date information about the epidemic to be able to respond effectively to it. Currently, there is a lack of standardized information for some key variables, such as exposure history or definition of an “outbreak,” that make tracing infection transmissions difficult. Further, electronic medical records do not allow for rapid aggregation and anonymization that would make data useful for comprehensive analysis of the ongoing epidemic, as well as measuring the effectiveness of policy interventions. In addition, it is important to evaluate social policies that are not directly related to the healthcare system but relevant to disease spread and the ability to practically implement physical distancing. Examples include homelessness, the availability of sick-leave pay, and gaps in access to employment or supplementary health insurance.

Overall, the issues that we are facing today in terms of the health system’s ability to manage a crisis are also important in improving the quality and condition of healthcare when the system is not in acute crisis.

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Emergency Preparedness: Medical Supplies and Health Information

Health crises in the past, such as the SARS crisis, revealed a number of gaps regarding Canada's preparation for coordinating and scaling a response during an epidemic. These gaps continue to exist today. During the Covid-19 crisis, Canada faced shortages in critical medical equipment and insufficient health information to implement policies. Once the immediate threat of the pandemic has passed, the government should address the preparedness gap.

To contain the spread of infectious diseases, the ability to quickly identify new cases and trace contacts, so that others who have been exposed to the disease can self-isolate, plays a critical role. Each province adopted a different testing strategy, which resulted in significant disparity between provinces in testing rates and the ability to trace contacts in the community. Testing rates have increased substantially since the beginning of the crisis and shortages of testing supplies are no longer acute, though recent increases in cases may again put pressure on limited supplies.

Supplies of critical medical equipment, such as ventilators, face masks, gloves, and other PPE were in global shortage at the outset of the pandemic, and guidance for healthcare workers varied by jurisdiction. Much research has since been done on the infection mechanisms and appropriate use of PPE and its importance would be hard to overstate.⁴ Shortages put health care workers at higher risk of exposure to Covid-19. At the same time, inventories ran low, or were completely depleted, as the public purchased PPE for themselves and their family members. Moreover, the Canadian healthcare system struggled to secure sufficient PPE as global shortages resulted in price gouging and competitive behaviour between countries. Each province introduced varying policies to encourage preventative behaviour, wearing masks, and increasing the level of PPE available to healthcare providers. The Working Group agrees that strategies are needed to increase the supply of PPE and direct the limited supplies to the applications with highest impact on restricting diseases from spreading. Members made the following observations:⁵

- i. Due to the shortage of PPE, public guidance should continue to discourage personal use of N95 face masks and maintain the focus on physical distancing, wearing non-medical masks, as well as on hand and respiratory hygiene measures as the best way for individuals to protect themselves from infection.

4 Appropriate use applies to avoiding both over- and under-use of PPE.

5 A third recommendation was for Health Canada to issue guidance on the appropriate practices for sanitizing and reusing various PPE supplies, masks in particular. Such guidance has been issued by health authorities.

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- ii. When shortages occur, higher level of PPE should be used for highest risk exposure situations and lower-grade PPE used for other applications. In acute shortage scenarios, public health authorities should discourage the use of PPE equipment by the public in an effort to reserve the necessary supply for healthcare workers and patients in areas of higher risk exposure.

Data Lessons Learned from COVID-19

As Working Group members noted, the Canadian Institute for Health Information responded to the immediate need for information to help inform decisions around COVID-19 by working with jurisdictions to create a daily dashboard report on the supply and utilization of hospital beds, ICUs and ventilators. This was complemented by an interactive Health System Capacity Planning Tool, which gives decision-makers insight on expected resource demands and potential supply shortfalls.

The pandemic has highlighted that critical data suffer from one or more of the following challenges: timeliness, completeness, or the ability to integrate with other data. These issues inhibit health system responses to the most pressing system and policy issues of the pandemic, including the recovery plan.

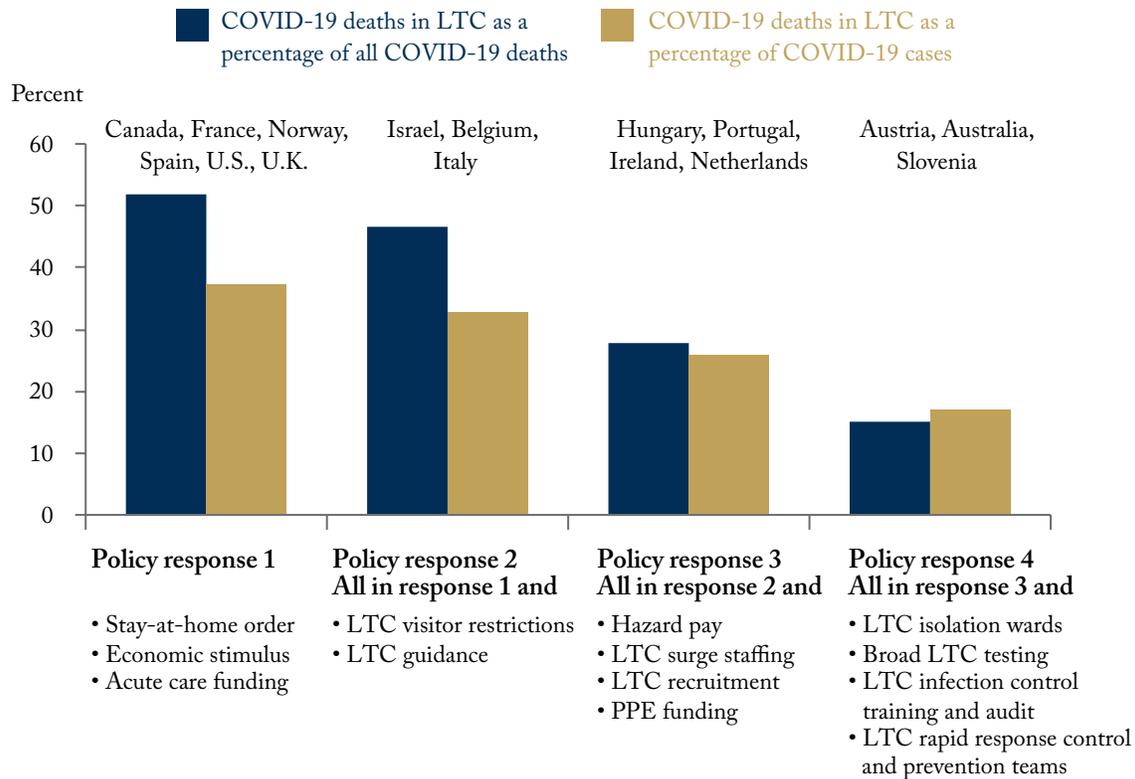
To confirm immediate needs in response to COVID-19, CIHI conducted rapid consultations across the health systems in the spring, which highlighted the need for more:

- complete and timely count of critical health system infrastructure;
- timely hospital patient data;
- complete and timely data on long-term care residents, workforce and facilities;
- timely, complete and integrated data system for understanding the capacity of and risks to the health system workforce;
- timely, complete and integrated data about services delivered virtually;
- timely, complete and integrated public health data;
- timely and complete data to understand financial implications;
- ability to look at the above through an equity lens.

With a few exceptions, the data issues align with previously expressed longer-term data needs. COVID is the reason for the opportunity, but filling the gaps will address a broader set of purposes, and create a stronger data foundation for the country.

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Figure 1: Impact of COVID-19 on LTC Residents, by Level of Policy Response at the Time of 1,000 COVID-19 Cases



Source: Canadian Institute for Health Information. [Pandemic Experience in the Long-Term Care Sector: How Does Canada Compare With Other Countries?](#) Ottawa, ON: CIHI; 2020.

In the view of group members, addressing the identified data gaps requires a multipronged approach. For example, COVID has shone a light on a number of issue in long-term care. As an initial step, CIHI used the data at its disposal to quickly release a comparison of Canada to other OECD countries in their COVID response in long-term care (LTC). Comparison demonstrates the positive impact of public health measures implemented in various countries, including mandatory prevention measures in LTC, testing and tracing, isolation wards, support for workers such as surge staffing, specialized teams and personal protective equipment.

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In addition, CIHI released characteristics of LTC and home care clients most vulnerable to the effects of COVID, and will soon report on healthcare worker COVID cases and deaths across Canada.

In parallel, CIHI, along with governments and partners organizations, have identified a number of medium- and longer-term initiatives to address the data gaps identified, should funding be available. For long-term care, for example, this includes capturing and reporting on infections in the health care workforce, and creating a business case for capturing new ongoing data, such as LTC facility characteristics (e.g., size, age, ownership, staffing ratios, bed configuration, etc.) and a resident and staff experience survey.

A number of federal, pan-Canadian, regional and provincial/territorial entities continue to work closely together on addressing identified issues and data gaps. This strong spirit of collaboration among all levels is essential for solving common challenges and creating a better data foundation for our health data and health care systems.

Seniors' Care: A Tale of Two Epidemics

Retirement residences and long-term care facilities were at the center of the first wave of the COVID-19 epidemic in Canada. As of August 29, 1,306 outbreaks had been reported at such facilities accounting for more than three-quarters of COVID-19 deaths (Table 1). Provinces have implemented different policies related to long-term care and retirement homes, which has resulted in some faring much better than others. In general, however, Canada has not done well at protecting the elderly population living in an institutional care setting from COVID-19 infection and mortality compared to many other countries.

Residential care facility outbreaks of COVID-19 have been centered in five provinces: Nova Scotia, where one home experienced a particularly severe outbreak, and the four most populous provinces (BC, AB, ON, QC). The outcomes are particularly bad in Quebec, where more than 60 percent of Canada's COVID-19 deaths have occurred. Ontario continues to struggle to manage institutional outbreaks as well; 36 percent of facilities are experiencing or have experienced an outbreak at time of writing (Table 1). Abroad, Hong Kong is an example of successful containment and prevention, noted some members. Hong Kong has achieved zero deaths in care homes by employing rapid and rigid isolation protocols. In addition, every care home has trained infection control staff that regularly conduct simulation drills of an infectious outbreak. This practice is common in Canadian hospitals, but not in residential care facilities.

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Table 1: Institutional Care COVID-19 Outbreaks and Mortality

	Homes Affected	Cases (percent)	Deaths
Alberta	27	8	70
British Columbia	14	8	57
Manitoba	5	2	31
New Brunswick	0.43	13	100
Nova Scotia	10	36	88
Ontario	36	21	73
Prince Edward Island	3	2	0
Quebec	28	25	80
Saskatchewan	1	0.44	8
Canada	23	20	77

Note: Newfoundland and Labrador has zero recorded deaths institutional care related cases of COVID-19, with 1 resident case. The territories have zero COVID-19 cases related to LTC or retirement facilities.

Source: <https://ltc-covid19-tracker.ca/> (September 29, 2020).

The elderly population receiving care in the community is at a much lower risk of infection than those in residential care facilities. However, they are also generally less medically complex cases than long-term care residents. That said, the severity of outbreaks at residential care facilities varies across provinces, as does the proportion of seniors living in residential care facilities. About 90 percent of funding for seniors' care in Canada is directed to institutional care with only 10 percent directed to home- and community-based long-term care. Canada falls well below the OECD average of 35 percent of long-term care expenditures being directed to home and community care. Generally, the countries that have a higher proportion of seniors receiving care at home are the ones that direct a

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higher proportion of long-term care expenditure to such care and also spend a larger proportion of all health expenditures on seniors' care. Canada invested in residential long-term care at similar levels to other countries. But, comparatively under-invests in elder care overall and particularly in home- and community-based care. To address the ongoing challenges in Canada's residential care sector and prevent such disastrous outcomes from infectious disease outbreaks in the future, significant investment will be needed.

The Working Group discussed the issue of funding and wages, noting that all provinces fund long-term care residences (nursing homes) at a lower rate per diem than they fund hospitals to provide care to a person with similar needs who is awaiting transfer to a long-term care residence.⁶ Members believe this makes staff recruitment and retention a challenge for long-term care residences.⁷ In addition, long-term care residences often use more part-time labour to reduce costs. Significant reliance on part-time workers, however, means that many work at multiple facilities and do not have sick leave or other health benefits. International examples provide an appropriate comparison of staffing levels and wages. Among OECD countries for which recent data are available, Canada has fewer nurses and personal support workers per senior citizen than most. In addition, the proportion of workers in the institutional setting, as opposed to the community or home-care settings, is much higher in Canada than most other countries. This suggests, members noted, that there is a relative shortage of personal support workers and nursing staff providing care to Canadian seniors, particularly in the community and home-care setting.

Early analysis has shown that the severity and mortality of COVID-19 outbreaks are higher at privately run, for-profit facilities than in non-profit or publicly operated facilities. In Ontario, for-profit nursing homes had four times as many deaths as municipally run homes. In British Columbia, about 2.7 percent of publicly managed homes experienced an outbreak, compared to about 12 percent of contracted (privately run) facilities and about six times as many patients were infected in privately run facilities. The situation is more complicated than simply concluding public administration equals better outcomes, however, and there is a need to understand the underlying reasons for worse outcomes at privately run facilities in relation to COVID-19. For example, recent research has shown that British Columbia had more coordination between LTC, hospitals and public health, greater funding

6 Differences in funding between hospitals and long-term care residences for serving post-acute patients are due to differences in hours of care provided per diem, staffing mix and wage and benefit levels for each staff type (RNs, RPNs and personal support workers and other staff.

7 For example, in a 2018 survey of Ontario's long-term care homes, 80 percent of respondents said they had difficulty filling shifts, and 90 percent experienced challenges recruiting staff.

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of LTC with more care hours for residents, fewer shared rooms within LTC homes, more non-profit facility ownership and more comprehensive inspections than Ontario, contributing substantially to the different outbreak and mortality results (Liu et al. 2020). The Working Group agreed there is a need to research the differences in privately run (for-profit and non-profit) and publicly funded, privately run and privately funded, and publicly run and publicly funded residential care facilities. Factors that could have significant effects on the severity of outbreaks include the following:

- Staffing levels, their disciplines and working conditions: patterns in ratios of professionals, the effects of particular employment arrangements, and appropriate staffing levels (staff: patients).
- Size and configuration of rooms and facility layout: the majority of rooms in BC are single occupancy, but publicly operated homes have a higher proportion of shared occupancy. Single occupancy is likely to reduce the spread of infection, but privately operated homes have had more frequent and severe outbreaks. The reasons for these differences and the effects of the physical layout of facilities need to be better understood.
- Patient complexity: residents of long-term care facilities, by definition, have pre-existing health conditions that require significant personal care. Facilities with particularly complex resident populations have more difficulty controlling an outbreak and are also more likely to have high mortality in the event of an outbreak, due to the vulnerability of their resident population. The relationship between outbreak severity and the case mix index of facilities is not well understood in the context of infectious disease.

While privately managed long-term care and retirement facilities have had more outbreaks and higher mortality when outbreaks occur, it is likely that a better understanding of some of the underlying patterns would explain a significant portion of the worse results. There are significant challenges in the effective management of residential care facilities regardless of the type of ownership. Better understanding of which factors play the most important role in reducing the spread of infection would inform policies to improve outcomes at all facilities. Addressing the issues that resulted in four out of five COVID-19 deaths occurring in residential care facilities is not as simple as shifting ownership or management. It will require significant change to the funding and management structures currently in place to determine appropriate funding levels; best practices for delivery of care to minimize the potential for infectious disease outbreaks; and ways of addressing perverse incentives to improve health outcomes for Canadian seniors in residential care.

Once the initial crisis has passed, all provincial governments should work to address the ongoing challenges in the residential care sector and seniors' care more generally. Consistent under-investment in home and community care has resulted in a higher proportion of Canadians living in an institutional care setting than in many other nations. Seniors living in the community are at much lower risk of

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exposure, infection and death from COVID-19 than those in institutional settings. Provinces should increase investment in home and community care and develop policies that increase the freedom of choice for senior Canadians with respect to where and how they receive care services. Incentives should be designed to encourage those who can receive appropriate care in a non-institutional setting to do so. France, Germany and Australia, for example, have implemented self-directed models of care delivery that support greater independence among the elderly while improving patient satisfaction (Blomqvist and Busby 2014).

The Working Group concluded there are many challenges to providing high quality and accessible elderly care services. From effective primary care and access to expertise in managing chronic conditions, to adult day programs and recreational physical activities to maintain health, caring for an elderly individual takes a team. While not directly related to the current crisis in residential care facilities, addressing underlying challenges and improving coordination of health and other care services would reduce the baseline risk to the senior population in the event of a COVID-19 second wave or a different infectious disease in the future.

Vaccination: R&D Investment and Securing Supply for Canadians

Although media outlets, governments, and academics hope that a vaccine for Covid-19 will be developed within months, the Public Health and Emergency Measures Working Group recommends preparing for a less optimistic timeline: novel vaccines usually take 10-15 years to develop. The fastest vaccine development was for Mumps, at four years, while the Ebola vaccine took five years.⁸ There are many vaccine candidates in Phase III clinical trials, so there is some reason for optimism. But their safety and potential effectiveness is not yet known and even once approved, a vaccine (or vaccines) must be manufactured and distributed on a large scale to enable broad public accessibility. Under normal circumstances, vaccine development process is slow because development is carried out in a sequentially, significant investment related to research and development, and the need to establish oversight on these investments to ensure a collaborative approach is taken.

8 In the case of the Ebola vaccine, five years refers to the time taken to conduct clinical testing and gain market approval. The chemical entity that eventually became the vaccine was identified in 2004 and initially licensed in 2010. Merck purchased the commercial rights to it in 2014, following the Ebola outbreak in West Africa and the appearance of a small number of cases in the US; the Public Health Agency of Canada maintains ownership of non-commercial rights.

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Normally, pharmaceutical companies carry out vaccine development in sequential stages: drug discovery, pre-clinical testing, three-phase clinical testing, regulatory approval, and follow-up monitoring of safety and efficacy. Most candidates fail to pass the drug discovery and pre-clinical phases and many more are eliminated in subsequent phases. Throughout the process, vaccine development requires significant academic, industry, and government collaboration. The factors that would normally slow the vaccine development process are less of a hindrance in developing the vaccine for Covid-19. First, the pandemic affected almost the entire world, which means that there is significant ongoing and recurrent demand for the vaccine, depending on the length of time that the approved vaccine confers immunity and whether Covid-19 is seasonal. Globally, governments have made significant investments to develop the vaccine for Covid-19 and there is a significant level of collaboration between academics, clinicians, industry and governments to achieve the goal. Nevertheless, there is a need to consider the possibility that a vaccine will not be sufficiently developed within the next 12-18 months. It is important that governments' investment strategies incorporate a longer development scenario.

When an approved vaccine is available, Canada needs a distribution strategy. When quantities are limited, targeting the most at-risk populations, such as seniors and healthcare workers, should be the priority. If supplies are not limited, everyone should be able to access the vaccine; access to the vaccine should be as convenient as possible and involve limiting physical contact. Additionally, public health should issue guidance that encourages people to get their annual influenza vaccine to decrease the severity and mortality of Covid-19.

Overall, next steps include:

- i. Establishing the process for evaluating successful trials by establishing a national decision-making process to review on-going research and international experience.
- ii. Selecting vaccines for clinical trials in Canada and prioritize based on evolving research.⁹
- iii. Strategic expansion of domestic manufacturing capacity and distribution strategies to ensure access for Canadians and contribute to the global supply.
- iv. Develop public health plans for different vaccine effectiveness and development timeline scenarios. In particular, the less optimistic scenarios of long development time and a vaccine that confers only partial or temporary immunity.

⁹ This is an ongoing process: The federal government has multiple supply agreements with different pharmaceutical companies at various stages of trialing a number of vaccine candidates.

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A Population Health Approach to COVID-19¹⁰

Much of the initial attention, particularly from the media and public, to COVID-19 has been on the disease and its consequences. It is clearly a disease with devastating potential as witnessed in the early months in jurisdictions such as Italy and New York State. As a result, in the absence of proven preventive and therapeutic agents, governments took a drastic series of public health measures in order to control spread of the virus globally. These measures have been successful in Canada, but they have come at a tremendous cost.

These costs are most often considered in terms of the economic burden, which is clearly substantial. Canadians adherence to the public health measures has been facilitated by generous interventions, such as the CERB. While this has eased impact on individuals, it has resulted in our governments incurring significant debt.

However, there is a much more significant set of costs that appear to be less often discussed and considered in public policy. These are the very significant social and health consequences of the public health measures. Some examples of these consequences include:

- Delayed medical visits and surgical procedures – for example, data is emerging that delays in diagnosis and treatment for cancer patients is leading to worse outcomes.
- Delayed immunization programs – as medical offices closed children missed scheduled appointments.
- Domestic violence and child abuse – as families were together at home for a prolonged period of time this created unsafe conditions for many individuals.
- Mental health effects of isolation – survey data shows increased levels of anxiety and depression in the population.
- Delayed early childhood development – the early years are one of the strongest predictors of lifelong health and social outcomes.
- Physical inactivity – lockdowns and closure of gyms has led to decreased levels of exercise, a strong predictor of health status.
- Increased drug and alcohol consumption – for example, opioid deaths are increasing.
- Food insecurity – visits to food banks have increased.

¹⁰ The author would like to thank Vivek Goel for his contribution of drafting this section of the report.

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And this list is by no means complete! As well, it is important to bear in mind that the economic consequences themselves will result in further health consequences. For example, unemployment has been shown consistently to result in poorer health outcomes and increased mortality.

While we cannot stop our focus on controlling COVID-19, we must do so in a manner that accounts for these adverse consequences. We know much more about the disease and how to control and treat it than we did in March. We need to have much greater capacity for testing and contact tracing as well as more resiliency in our health system. As we move forward, we can only maintain critical societal functions such as education if community transmission is controlled. We need to ensure the appropriate precautions are in place so in the case of resurgence of disease we can control the cases without having to resort to partial closures or complete lockdowns.

Most significantly, we need to deal with the fear that has developed in Canadians. In order to obtain compliance with the public health measures we allowed a level of fear to develop which is inhibiting the return to activities such as schooling. We have to be able to reassure Canadians that the disease is being controlled. Community transmission, has to be kept to a minimal level, through a test, trace and isolate strategy in order to avert the broad range of health and social consequences.

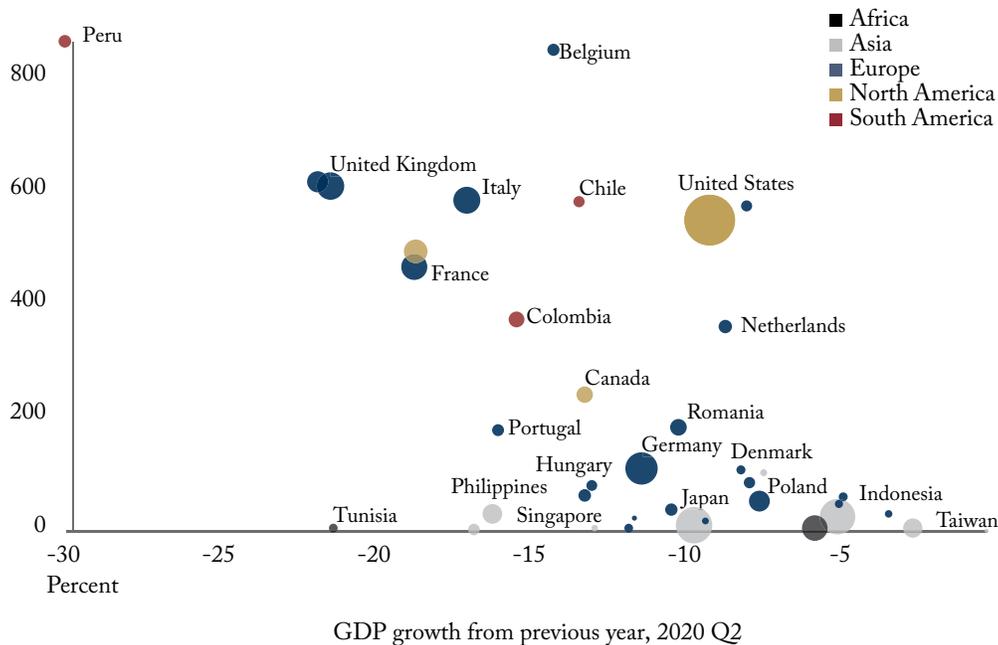
Second Wave Restrictions: Balancing COVID-19 and Collateral Damage

As COVID-19 case numbers rise, provinces have implemented new restrictions on various activities to reduce infection rates and spread. The restrictions for the second wave are thus more targeted than the first, owing in part to a better understanding of the virus, how it is transmitted and how to manage the risks of infections. The goal of restrictions is to manage infection spread to prevent the healthcare system from being overwhelmed and to minimize morbidity and mortality from Covid-19, while also minimizing excess morbidity and mortality from other illnesses.¹¹ Additional goals are to keep schools open and people working – have society function as close to normal as possible. The goals of minimizing mortality and morbidity while also maintaining normal economic and social activities as much as possible come into conflict with reality when community transmission is uncontrolled and increasing exponentially.

11 A participant noted that treating COVID-19 mortality and morbidity separately from other ailments risks prioritizing one over the other. Further, that the examples of COVID-19 are highly publicized whereas increases in other forms of morbidity and mortality related to restrictions are less visible.

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Figure 2: Economic Decline in the Second Quarter of 2020 vs. Rate of Confirmed Deaths due to COVID-19



Note: Limited testing and challenges in the attribution of the cause of death means that the number of confirmed deaths may not be an accurate count of the true number of deaths from COVID-19. Data for China is not shown given the earlier timing of its economic downturn. The country saw positive growth of 3.2% in Q2 preceded by a fall of 6.8% in Q1.

The vertical axis shows the number of COVID-19 deaths per million, as of August 30. The horizontal axis shows the percentage decline of GDP relative to the same quarter in 2019. It is adjusted for inflation.

Source: European CDC, Eurostat, OECD and individual national statistics agencies.

When community transmission is controlled, the goals of minimizing health and economic collateral damage and reducing COVID-19 mortality become more aligned. Across countries, there appears to be a relationship between lower COVID-19 mortality and relatively less economic cost as measured by GDP decline (Figure 2). The United States stands out as having high deaths per capita but significantly smaller GDP contraction compared to other countries with similar mortality results. Working Group members discussed New Zealand and Vietnam as examples of highly successful containment. One participant noted that the mean time between symptom onset and isolation in New Zealand is -2.7 days, meaning COVID-19 patients are typically isolated even before they have developed symptoms.

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This is only possible with a well-functioning “test, trace, isolate” strategy.¹² As a result, economic and social activities are more or less normal; for example, widespread use of masks isn’t necessary due to tight control of community spread. Participants were unaware of the time between symptom onset and isolation in Canada, and were not certain that current health information would even allow such calculations to be made reliably.

A critical factor in controlling community spread is a comprehensive contact tracing and testing strategy with the appropriate resources and infrastructure to implement. A recent study focussing on the US estimates the total cost of the pandemic by taking into account aggregate numbers for mortality, morbidity, mental health conditions, and direct economic losses, as well as the estimated the economic cost of premature deaths expected through the next year (\$4.4 trillion). All in, the cost is estimated at more than \$16 trillion, or approximately 90 percent of the annual gross domestic product of the US. Increased investment in testing and contact tracing, however, could have economic benefits that are at least 30 times greater than the estimated costs of the investment (Cutler and Summer 2020). A priority for minimizing total mortality and economic cost should be investments in a comprehensive and effective contact tracing and testing strategy. Without the ability to quickly identify and isolate new cases, the risk of uncontrolled community spread is higher.

In finding the appropriate balance for maintaining activities and controlling infection spread, a participant noted that treating COVID-19 mortality and morbidity separately from other ailments risks prioritizing one over the other. Further, examples of COVID-19 are highly publicized whereas increases in other forms of morbidity and mortality related to restrictions are less visible. The Working Group discussed the problematic nature of various psychological biases in skewing public opinion and likely public policy towards a possibly over-medicalized response.¹³ Cognitive biases and difficulty in communicating nuanced scientific uncertainty through public messaging has resulted in a number of false dichotomies taking root in public discourse (Figure 3). The Group discussed the need for nuance in public health messaging and guidance based on scientific evidence and a continued need to communicate uncertainties that incorporate social contexts and evolving scientific information.

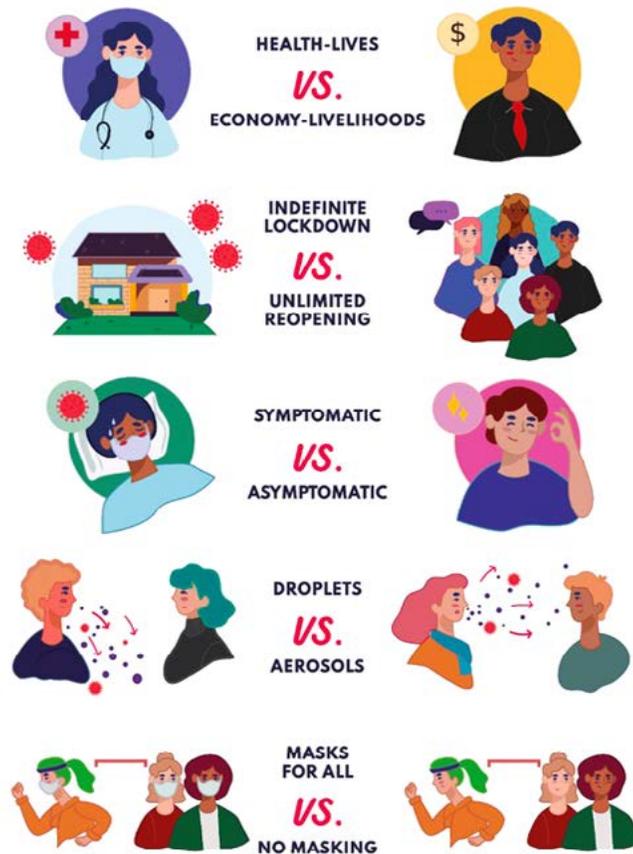
Communicating nuanced and changing scientific information and the links to public health policies and guidance is a challenging task. Thus far, the restrictions put in place to manage the spread of infection are not as comprehensive as they were in the first wave. The presence of false dichotomies

12 See Matukas, Dhalla and Laupacis (2020).

13 See Halpern, Truog and Miller (2020) for an extensive discussion.

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Figure 3: False Dichotomies around Coronavirus Disease 2019 (Covid-19)



Source: Escandon 2020.

(mask or no mask for eg.) in the public narrative complicates explaining these more nuanced and targeted measures with opinions easily swaying to either the restrictions not being stringent enough or thinking they are too much of an infringement.

To counter psychological biases and false dichotomies, public health messaging should aim to address some of the sources of uncertainty. In particular, establishing an expectation for public guidance to change as new information about the virus is discovered. When change does occur, explaining why and

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how new public health guidance is related to the new information and why the previous guidance is being changed or no longer applies could help to establish a concrete link between scientific evidence and public policy while also reducing uncertainty and confusion for the public. Where possible, government should communicate plans related to restrictions on social and economic activities well ahead of their imposition. By articulating what possible restrictions could be put in to place and the thresholds of case increases for speed of infection spread that would trigger them, people and businesses can plan for different possibilities with more certainty and will expect (and hopefully be more receptive to) restrictions when they become necessary.

Given that evidence from other countries suggests that minimizing COVID-19 mortality and morbidity also results in more favourable economic outcomes, the group discussed whether more stringent restrictions than the first wave would lead to more favourable outcomes similar to New Zealand or Vietnam. As a participant pointed out, there was not a true “lock down” in Canada: for the most part restrictions came in the form of guidance and voluntary cooperation. Mandatory isolation/quarantine, restrictions on movement within or between regions and other measures were either not implemented in Canada or did not have the strict enforcement or penalties associated with violating restrictions that were present in some other countries. There were a number of reasons that group members thought that more stringent restrictions of that form would be less successful in Canada during the second wave: the simple fact that healthcare is under provincial jurisdiction makes a coordinated, comprehensive national approach to implementing restrictions to manage COVID-19 unlikely. In addition, the public would not likely be favourable to stronger restrictions and would question the need for more extensive disruptions. Further, participants noted that not all countries that managed to eliminate or drastically reduce community transmission as a result of lockdowns were successful in maintaining those results. A critical factor in New Zealand’s success has been comprehensive contact tracing. Without the ability to identify and isolate cases before they become symptomatic it is unlikely that community transmission could be completely eliminated.

At the time of writing, COVID-19 transmission is currently overwhelming our capacity to test and trace in large parts of Ontario. In the short-term, difficult choices must be made, with short-term health considerations weighed against longer-term health and economic considerations. In the medium-term, building a robust strategy to ‘test, trace and isolate’ can ensure that short-term and long-term goals are more closely aligned than is possible right now.

As a result, some restrictions on economic and social activities will be required for quite some time and they are likely to change over time. Without comprehensive contact tracing and case isolation, some level of COVID-19 mortality and morbidity will be unavoidable. In minimizing COVID-19 mortality and morbidity, there are significant unintended health and economic consequences.

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There are various options for targeting restrictions that minimize the sectors, demographics or regions affected. These are preferable to general restrictions in that they maintain economic activities in the areas unaffected by the restrictions. They do have, however, distortionary effects on consumer behaviour and result in some sectors being more negatively impacted. Attending indoor restaurants or theatres, for example, could be done reasonably safely if physical distancing and hygiene recommendations are followed, both by staff and customers. But following those recommendations is more challenging in those settings than in some other business environments and restrictions on public gathering places can serve as a strong signal to the public to limit gatherings. When developing policies to reduce the spread of COVID-19 for different regions, economic sectors or age groups, a critical factor will be complementary policies to address their distortionary effects. To facilitate public cooperation with restrictions and assist businesses in planning for various scenarios, guidance and communications should be as clear as possible about the thresholds for when restrictions might be imposed, what they entail and how they will be implemented.

Improving Canada's Health Care System and Emergency Preparedness

The Public Health and Emergency Measures Working Group focussed discussions around issues that arose as priorities during the initial surge of COVID-19. The uncertainty about the disease and the scramble it caused around the globe to determine threat level, infection pathways and possible methods to contain its spread led to many different approaches to both health and economic adaptations. Many chronic pre-existing conditions in Canada's healthcare and social support system became suddenly acute: gaps in income support, inadequacies in long-term care, relatively low uptake of virtual care delivery methods and gaps in health data/information, to name a few. Some issues arose due to the COVID-19 crisis directly: shortages of personal protective equipment and a lack of contact tracing strategies to prioritize limited testing resources and effectively contain community spread, for example. Surgery wait times that were already problematic have been exacerbated by COVID-19 restrictions and the continuing risk provides a need to maintain spare hospital capacity.

Health policy issues highlighted by the COVID-19 crisis are both short and long term in nature. In the short term, maintaining the capacity of the healthcare system to manage surges of COVID-19, while also ensuring minimal negative health and economic outcomes, is the main priority. The pandemic has resulted in drastic changes to how Canadians access healthcare services and the opportunity to incorporate positive change into the "new normal" of health system operations as it continues to adapt.

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Bracing for the Second Wave: Health System Strategies for the Short Term

As case numbers rise across the country, the healthcare system is bracing for the second wave of COVID-19 and also preparing for the annual challenge of managing flu season. Information about the virus and its effects continues to evolve, as does policy to combat its spread. In the short term, there are a number of priorities for governments and the healthcare system to address to improve outcomes for the second wave of COVID-19:

- **Adapt economic and healthcare restrictions to reduce the extent of disruption while achieving similar or better outcomes from COVID-19.** Different provinces prioritized continuation different areas of care in the midst of the initial disruptions caused by the first wave, with Alberta maintaining surgeries throughout and Saskatchewan focussing on continuity of primary care services. Provinces that had more stringent restrictions on access to medical care during the first wave have the opportunity to learn from the provinces that successfully continue most healthcare services.
- **Develop public health and policy plans for multiple infection scenarios and communicate them with the public.** As case numbers rise, governments should be proactive in setting public expectations to align with the imposing of further restrictions, how long they will be in place and the possibility of further government support in the form of subsidies, cash transfers, tax and loan payment deferrals etc.
- **Ensure preparedness:**
 - o Maintain excess hospital bed capacity for COVID-19 patients and adapt healthcare and clinical practices to maintain continuity of access as much as possible.
 - o Secure sufficient supplies of personal protective equipment and other medical supplies such as ventilators and testing materials to minimize the risk of health care providers and workers being exposed or infected.
 - o Actively engage in ongoing clinical trials of promising potential therapies and vaccines to contribute to their development and provide early access to Canadians.
 - o Improve contact tracing and infection containment ability by investing in more comprehensive and rapid detection mechanisms.¹⁴

14 Group members discussed the possibility of improving contact tracing and outbreak identification by utilizing location and other forms of personal data. A participant suggested that even on a voluntary basis, such information would likely be useful to identifying hotspots and rapidly informing the public and encouraged the government to evaluate options beyond the current COVID Alert app, which functions via Bluetooth as an exposure notification system and is being used by a few million Canadians.

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Paradigm Shift: “New Normal” in Healthcare and Long Term Improvement

Over the longer term, once the immediate threat of COVID-19 has passed, priorities for government shift to improving quality and efficiency in Canada’s healthcare system and ensuring we are better prepared for future novel infectious disease outbreaks. The total effects of the pandemic are not yet known and the “new normal” that will emerge is far from certain. There are, however, areas of healthcare and emergency preparedness on which Canada could improve and should be actively improved upon as the healthcare system adapts to COVID-19 and transitions to the new normal.

Almost all topics discussed by the Public Health and Emergency Measures Working Group had both immediate and longer term priorities to address:

- Improving the healthcare systems ability to respond to a novel infectious disease should be a priority – though this is common expertise in Canadian hospitals due to our experience with SARS, there was little preparedness for such events in other settings, particularly residential care.
- To enable more rapid and informed response to emerging health crises, significant improvements in health data and information comprehensiveness, timeliness and standardization must be made.
- The combined pressures of COVID-19 mortality results, an aging population and the current fiscal scenario show that innovation in seniors’ care is required if quality and access are to be maintained. Infection preparedness and control procedures including for emergency situations should become a routine aspect of residential care for seniors. Relative to other countries, Canada invests significantly less on community and home care and proportionately more on residential care. Reduced COVID-19 morbidity and mortality for seniors in the community along with individuals’ preferences, quality of life and many other reasons encourage investment in home and community care for seniors.
- Develop a comprehensive strategy for coordinated leadership during a crisis. While there are benefits to different responses to the COVID-19 crisis across the country, some aspects would have benefited from a nationally coordinated approach: such as securing personal protective equipment, strategic investments in information technology/infrastructure, research and development of treatments and vaccines and policy strategies to manage the pandemic.

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