FEDERAL/PROVINCIAL/TERRITORIAL PUBLIC HEALTH RESPONSE PLAN
FOR ONGOING MANAGEMENT OF COVID-19

2nd Edition
April 19, 2021
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Executive Summary

This document is the second edition of the Federal/Provincial/Territorial (F/P/T) plan which was developed in collaboration with federal, provincial and territorial public health officials (via the F/P/T Special Advisory Committee on COVID-19, see Appendix 1), First Nations, Inuit and Metis partners, and health system partners, for these and other stakeholders. It is an evergreen document that is intended to provide a common forward planning approach for ongoing management of COVID-19 in Canada. The plan acknowledges jurisdictional roles and responsibilities, identifies when pan-Canadian approaches are anticipated and when provincial/territorial flexibility and customization are expected. First Nations, Inuit and Metis communities may choose to adapt approaches to the specific needs and contexts of their communities.

Key elements of the plan include:

- a goal statement,
- public health response objectives,
- planning assumptions,
- a reasonable worst-case scenario, and
- summaries of current and planned response activities for each main component of the public health response (i.e., Surveillance, Laboratory Response Activities, Public Health Measures, Infection Prevention and Control and Clinical Care Guidance, Vaccination, International Border and Travel Health Measures, Health Care System Infrastructure, Risk Communications and Outreach, and Research).

There is also content specifically addressing planning with Indigenous Communities, planning for high-risk settings and populations, and the role of modelling in the response. Much like other technical guidance, this document may require updating as our scientific knowledge of the SARS-CoV-2 pathogen increases, the epidemiological picture evolves in Canada and globally, pandemic control measures change, and new medical countermeasures become available (e.g., additional vaccines, effective treatment).

The pandemic response goal, to minimize serious illness and overall deaths while minimizing societal disruption as a result of the COVID-19 pandemic, is unchanged in this edition. While the COVID-19 response has been unprecedented with the swift implementation and public adoption of public health measures (PHM), appropriate ongoing use of these measures in the context of variants of concern (VOCs), increasing vaccination coverage, and public fatigue with the pandemic and in particular with restrictive community-based PHM will be challenging. PHM have disproportionally impacted some groups within Canada, including seniors, essential workers, racialized populations, people living with disabilities, and women. “Pandemic fatigue” is now ubiquitous and while everyone in Canada has borne the burden of these measures to protect those most at risk of severe COVID-19 disease, now more than ever there is a need to tailor the response to minimize burden and negative impacts while maximizing the benefit of protective measures like COVID-19 vaccines.
PHM have been successful in reducing the number of cases of COVID-19 and associated serious illness and deaths in Canada, however, the restrictive nature of many of these measures have had some negative health, well-being and societal consequences. Many of these consequences have disproportionately affected specific segments of the Canadian population. The goal statement and objectives continue to reflect the need to respond in a way that achieves a better balance between minimizing the impact on morbidity and mortality with the impact on societal disruption in order to support a long-term, sustainable response.

To facilitate a common approach and appropriate level of preparedness across Canada, the plan includes a list of planning assumptions, a “reasonable worst-case scenario”, and a list of capabilities and requirements needed to mitigate this scenario. The scenario is not the most likely scenario, rather, it provides a realistic common scenario to guide consideration of key capabilities, capacity issues, and identification of resource needs that will help focus planning activities in light of new challenges like VOCs and pandemic fatigue. It is provided as a “stress-test”, not a prediction, and is intended to stimulate thinking concerning our current response efforts and resources, capacity thresholds and resiliency. The reasonable worst-case scenario includes an epidemic curve with a large, prolonged third peak in near term driven by a combination of factors including the spread and dominance of highly transmissible VOCs, pre-mature easing of restrictive community-based PHM, and lower levels of public adherence to recommended PHM. This is followed by ongoing surges or resurgences for the rest of 2021, with surges in incidence creating a demand for resources that exceeds system capacity. It also assumes that vaccine conferred immunity is not long lasting and therefore there will be some level of ongoing transmission for the foreseeable future.

What needs to be done to mitigate this scenario, and for the ongoing management of COVID-19 in general, include the ability to:

- detect signals indicating a significant surge in cases may occur;
- prevent a large prolonged peak and surges, especially those that exceed capacity to respond;
- reduce surges in cases, hospitalizations, and deaths;
- increase health care and public health capacity;
- monitor demand for health care resources; and,
- foster ongoing public vigilance and adherence to measures and recommendations.

When and how to mitigate this scenario is described in terms of the timing and adjusted use of restrictive community-based PHM. Adjustments to restrictive PHM must be considered in the context of threat associated with VOCs and the effect of increasing vaccine coverage, while taking into account the social, economic, and situational factors that may impede the ability to comply with public health measures, particularly for marginalized population groups.

This plan, in conjunction with other foundational federal/provincial/territorial response plans, provides public health leaders with a coordinated approach to: address common issues, and to support the provincial/territorial responses to COVID-19 in the Canadian population. It includes information regarding the current focus of the public health response and anticipated needs for the short, mid and long term ongoing management of COVID-19, which will facilitate awareness and coordination both within and beyond the public health sector.
1. Purpose

The purpose of the Federal/Provincial/Territorial Public Health Response Plan for Ongoing Management of COVID-19, is to provide federal, provincial and territorial public health officials, First Nations, Inuit and Metis partners, health system partners and other stakeholders with a common forward planning approach for ongoing management of COVID-19 in Canada. This plan promotes a long-term approach. The first edition covered immediate planning imperatives for the fall/winter 2020 period. Plans must continue to be re-visited and updated until implemented measures and population immunity, is sufficient to decrease COVID-19 activity in Canada to a low, manageable, and tolerable level. As an evergreen document this second edition has been updated as our scientific knowledge of the SARS-CoV-2 pathogen has increased, the epidemiological picture has further evolved in Canada and globally, understanding of the disproportionate impact the pandemic has had on marginalized population groups has grown, control strategies have shifted, and new medical countermeasures have become available (i.e., vaccines and therapeutics).

Building on the ongoing public health response, this document identifies federal/provincial/territorial (F/P/T) public health preparations that are needed and already underway for the short, mid and long-term management of COVID-19 in Canada. It provides overarching guidance that is informed by existing intergovernmental pandemic preparedness, public health emergency planning and data, information and resource sharing agreements, arrangements and protocols (see Appendix 1) and draws extensively on the Canadian Pandemic Influenza Preparedness guidance (CPIP). The CPIP stipulates that while it is a guidance document for pandemic influenza, much of its guidance is also applicable to other public health emergencies, which has been the case for the COVID-19 response. It is assumed that an ongoing (but appropriately scaled) F/P/T coordinated response structure and activities as outlined in the F/P/T Public Health Response Plan for Biological Events (F/P/T PHRPBE), will be needed for the foreseeable future.

To facilitate a common approach and appropriate level of preparedness across Canada, this edition of the plan includes an updated “reasonable worst-case scenario.” While this scenario is not necessarily the most likely scenario, it provides a baseline to guide consideration of key capabilities, capacity issues, and identification of resource needs that will help focus planning, response and recovery activities. As with other F/P/T plans, this document outlines overarching goals and objectives, acknowledges jurisdictional roles and responsibilities, identifies when national approaches are anticipated and when provincial/territorial (P/T) flexibility and customization are expected. This document has been developed to facilitate planning for an ongoing COVID-19 response that is not only flexible and adaptive but also sustainable.

2. Context

COVID-19 continues to represent an unprecedented threat to the health, social and economic well-being of Canadians, Canadian society and the global community. On January 30, 2020 the Director General of the World Health Organization (WHO) determined that COVID-19 constituted a Public Health Emergency of International Concern (PHEIC) and declared it a pandemic on March 11, 2020, due to extensive international spread. More than a year into responding to this unprecedented event, the Canadian response has been strengthened by the availability of vaccines but further challenged by the emergence...
of VOCs and pandemic fatigue. There is a need for ongoing adjustments and tailoring of the response as knowledge regarding both the impact of vaccines and VOCs increases. Furthermore, there is an ongoing need to take into consideration the changing attitudes and behaviours of a fatigued, and often frustrated or confused population, and the impact this has on the success of the response. Mitigating the impact of COVID-19 in Canada requires a comprehensive, integrated and cross-sectoral “whole-of-society”, “whole-of-government” strategy that focuses on what is within the span of control of our country while trying to reduce the risk and impact of what is not. The context of our planning, therefore, is primarily Canadian-centric but recognizes that the global situation has a significant effect on our response activities.

Mobilizing Canada’s health sector response to COVID-19 remains a critical part of that overall effort. This plan and its more detailed components that are described herein, draws heavily on the experience acquired and the work completed during the response to the introduction and subsequent waves of COVID-19 in Canada, in addition to past experience and lessons learned from the implementation of previous mass immunization campaigns. While Canada’s F/P/T public health officials have conducted pandemic planning for years, plans must be customized and supplemented as the pandemic unfolds, as each pandemic is different. On the vaccine front alone, the simultaneous use of multiple vaccines using different and novel vaccine technologies while significant ongoing community transmission is occurring and threats of new VOCs with immune escape characteristics start to manifest, is unprecedented. Further unique challenges include: vaccine supply issues, prioritization of vaccine recipients by product, potential for product specific hesitancy, and the need to ensure vaccination occurs in a manner that is consistent with recommended public health measures. Through the Variants of Concern Strategy, integrated teams from a variety of backgrounds including public health laboratories, academia, and research hospitals are leveraging their shared knowledge in areas such as diagnostic testing, epidemiological analysis, and clinical expertise to proactively search for and rapidly characterize VOCs. This will ensure that public health management and control measures can be efficiently and effectively put in place to reduce transmission for VOCs. Despite the incredible effort and pace of COVID-19 response in Canada to date, we are still operating from a place of significant uncertainty and need to continue learning and adapting as we move ahead with planning activities.

While the pandemic has affected Canadians in diverse ways, Canadians have not experienced these impacts equally. Evidence indicates that social determinants of health, including low-income status, adverse physical environments, precarious housing, and race/ethnicity, among others, correlate with increased risk of COVID-19 infection and unequal access to health care and other services. These social determinants put people at risk for a range of chronic conditions, such as obesity, heart disease, diabetes, and lung disease, which may contribute to increased morbidity and mortality from COVID-19. Similar to other countries, in Canada the rate of deaths due to COVID-19 is higher in males than in females but overall numbers of deaths are highest in females likely due to the higher proportion of females in the oldest, high-risk age groups.

These same determinants of health also contribute to other disproportionate impacts of COVID-19 restrictions on health and well-being, including impacts on mental health, family violence and problematic substance use and related overdoses. Job losses have been higher for women, with recent recoveries in the workforce disproportionately benefitting men. Partly as a result of the economic downturn triggered by the pandemic, visible minorities have been particularly affected, with a larger share reporting having difficulties meeting their financial obligations or essential needs compared to White workers. Visible minorities and new comers to Canada are also more likely to work in multiple
jobs, in positions (e.g., personal support workers, grocery store clerks) in the food and accommodation sector and public-facing positions where there may be a higher likelihood of exposure to COVID. They also may live in multi-generation homes, which can lead to circular disease transmission patterns from work settings to the home and back to work, thus perpetuating the disproportionate impact on people in these groups. Similarly, Indigenous Peoples, persons living with disabilities, and LGBTQ2IA+ communities, among others, have been disproportionately affected by the pandemic.7

Furthermore, some populations have been particularly impacted by the measures implemented to control the pandemic; for example, the unprecedented extent and duration of school closures which may have long-term effects on child development, health and education8 9. As efforts shift towards the next phase of the response, it is imperative that the needs of diverse groups within Canada continue to be considered in order to mitigate adverse consequences and reduce both known and reasonably anticipated inequities.

3. COVID-19 Response Goal, Objectives and Response to Date

3.1 Goal

Canada’s goal for responding to COVID-19 is based on that established for pandemic influenza in the Canadian Pandemic Influenza Preparedness: Planning Guidance for the Health Sector document (last updated August 2018). The goal is:

- To minimize serious illness and overall deaths while minimizing societal disruption as a result of the COVID-19 pandemic.

This goal has guided F/P/T public health response actions. Measures and strategies implemented with this goal in mind have helped reduce the incidence of COVID-19 in Canada and associated serious illness and deaths. Reducing the health impact of COVID-19 while minimizing societal disruption has been extremely challenging especially as “pandemic fatigue” has increased and led to related challenges with respect to public adherence to recommended measures, which have placed an unequal burden across populations in Canada. Recognizing that some groups of Canadians face disproportionate barriers in adhering to these measures is an important first step towards establishing strategies to address them.

With the availability of vaccines and rollout of population-based vaccine programs that prioritize reducing the health impact in the most vulnerable groups first, significant progress is being made on the first part of the goal statement with respect to COVID-19 associated serious illness and overall deaths. However, a high level of adherence to the recommended public health measures (PHMs) remains essential, especially given the emergence of VOCs, which by definition10 may be associated with increased transmission, increased virulence or change in clinical disease presentation and/or decreased effectiveness of some public health and social measures or available diagnostics, vaccines or therapeutics, depending on the variant.

The pandemic circumstances, not only in Canada but globally, led to the extraordinary implementation of broad, restrictive community-based PHM (e.g., school closure, restrictions on gatherings, workplace/business restrictions), and the need to offer an unparalleled level of societal support measures (e.g., income support, housing support, and expansion of social services such as mental health and food
assistance). Restrictive community-based PHM do reduce the risk of transmission, even transmission of VOCs, however they come at a cost with respect to societal disruption and subsequently the level of benefit is influenced by public adherence and risk tolerance. Going forward these measures will be continually adapted to fit the local context and COVID-19 activity in alignment with the response goal and objectives, taking into consideration the diverse needs of population groups based on situations of vulnerability, ethnicity/culture, ability status, and other socioeconomic and demographic factors. This requires adapting these measures to reduce barriers faced by populations in situations of vulnerability, while also taking into account local conditions.

When the original CPIP pandemic goal was developed it was thought that the main cause of societal disruption would be the absence of essential workers (including health care providers) from the workplace due to illness, need to care for ill family members, workplace outbreak control measures and/or refusals to work. The closure of international borders, businesses, schools and restrictions on social gatherings was always understood as a source of societal disruption in a severe pandemic. The COVID-19 response has been unprecedented with the swift implementation and public adoption of PHM. The restrictive measures that have averted widespread essential service disruption due to illness have, however, had significant broader direct and indirect impacts on health and wellbeing, particularly for seniors, essential workers, racialized populations, people living with disabilities, and women. At a population level physical, mental health and well-being have, in many situations, been negatively impacted by recommendations that affect non-essential services and organizations, for example, those involving sports, recreation and performance arts. These impacts together with the need for ongoing or repetitive use of restrictive measures have subsequently affected adherence levels which are critical to the collective effectiveness of PHM.

3.2 Objectives

As the focus of planning has shifted to a long-term sustainable response, striking an optimal balance between minimizing both health impacts and societal disruption remains a significant challenge. The following public health objectives aim to achieve this balance.

Objectives
To mitigate both health and societal impacts of the pandemic by:
- Taking public health action to reduce the incidence, morbidity and mortality of COVID-19 to a locally manageable level (including operationalizing the vaccine strategy);
- Ensuring access to health care services (both COVID-19 and non-COVID-19 related services), supplies and treatment options;
- Protecting high-risk populations and communities, including Indigenous communities on and off reserve;
- Reducing negative physical and mental health consequences of COVID-19 response actions;
- Taking a risk and evidence based approach to the use of restrictive public health measures;
- Facilitating and supporting high levels of adherence to all recommended measures;
- Countering misinformation and disinformation;
- Leveraging Canada’s research, surveillance, national collaborating centres, public health agencies, health care and laboratory systems;
- Working with other sectors to strengthen the social and economic services and policies that protect health and prevent disease (e.g., adequate housing, employment and income supports); and
- Working collaboratively with the international community.
3.3 Response to date

F/P/T response actions to date have been comprehensive and have contributed significantly toward achieving these national public health objectives. These actions include but are not limited to:

- supporting evidence-informed decision-making by rapidly and continually collecting, analyzing and sharing surveillance and other scientific information to inform and target interventions;
- case identification, confirmation, and isolation for the period of communicability;
- contact tracing, identification, communication and quarantine of contacts for the duration of the incubation period;
- development of a comprehensive strategy for the prioritized use and monitoring of vaccines, vaccine effectiveness, and vaccine safety;
- allocating, distributing, and administering available vaccines as safely, efficiently, and equitably as possible;
- rapid outbreak identification and containment activities;
- mobilizing multi-sectorial emergency response teams;
- preventing the importation of COVID-19 through border and travel restrictions and requirements;
- providing guidance to multiple stakeholders and sectors including: public health partners, health care delivery stakeholders, and non-health sectors/settings, that facilitates an evidence-informed, risk-based approach;
- reducing the spread of infection through frequent communication to the public to promote the importance of individual, family, community and organizational mitigation strategies and PHM;
- promoting modifications to day-to-day activities to reduce transmission of COVID-19 in community settings as much as possible;
- use of COVID-19 response frameworks based on level of COVID-19 activity locally and associated levels of PHM and restrictions;
- supporting adherence to recommended measures through effective communication of: rationales, expected duration of measures, and feedback on impact/progress/success;
- protecting those most at risk of serious illness through the provision of resources, guidance and public messaging;
- promoting access to health services through alternative mediums, e.g., telehealth, virtual care visits;
- protecting those most at risk of serious illness in congregate settings and health-care facilities through targeted communications, guidance and response actions;
- establishing a protective stance through community-level screening, guidance and quarantine measures for Northern/remote/isolated communities, and Indigenous populations;
- supporting community-level health and social interventions aimed at supporting and protecting populations at high risk and mitigating negative impacts of public health interventions;
- promoting community resiliency;
- facilitating rapid access to health care supplies, personal protective equipment, healthcare equipment and resources, including medical evacuation from remote, isolated and underserviced communities;
- supporting the continuity of health care and other essential services;
- providing additional mental health resources and social services; and
- adjusting PHM to facilitate a gradual, cautious return to community functioning in the context of ongoing COVID-19 activity.
Maintaining the trust and confidence of Canadians through timely and transparent communication of evidence-informed public health decisions; communicating appropriate and timely advice (including changes to this advice) to decision-makers, health professionals and the public; taking into consideration the diverse needs of population groups based on vulnerability, ethnicity/culture, ability status, and other socioeconomic and demographic factors; and supporting a coordinated response by working collaboratively with all orders of government, Indigenous partners and stakeholders, continue to be essential in this ongoing response. We need to prepare the public for the reality of living with COVID for the foreseeable future and the changes that will come in terms of the role of vaccination and PHM in sustaining an appropriate level of population protection against COVID-19.

In order to achieve the response goal and objectives it is essential that the effectiveness of COVID-19 control measures be assessed against any negative effects of implementation of these measures (including the re-allocation of other public health program resources); with the objective of reducing COVID-19 incidence and associated serious illness to a locally manageable level. Any reliance on State of Emergency status to achieve the necessary support for ongoing response should be considered and accounted for prior to discontinuing this declared State in order to ensure response goals and objectives will be met. This is key to a sustainable long-term response.

Public health officials are prepared to respond to the variety of challenges that the management of COVID-19 will involve as the pandemic continues to unfold. Advice, recommended measures and interventions have been made based on these shared pandemic goals and objectives. As our collective knowledge increases, these objectives will be revisited and updated as needed.

4. Forward Planning: Assumptions and Epidemiological Drivers

4.1 Planning Assumptions and Areas of Uncertainty

This plan aims to support consistent but flexible public health planning at all levels of government in order to prepare for short, mid and long-term COVID-19 response activities. Plans should reflect a combination of nationally agreed upon approaches with regionally and locally adaptable actions and be aligned with the pandemic response goals and objectives, taking into account the needs of diverse groups within Canada on the basis of health status, age, gender, ethnicity/culture, ability status, and other socio-economic and demographic factors.

Table 1 identifies general planning assumptions that aim to provide a common basis for planning in the Canadian context for the next several months to years. The areas of uncertainty, listed in the table, help identify current unknowns. Given these areas of evolving evidence and knowledge, plans need to include flexible elements or placeholders that can be updated as the pandemic progresses and knowledge and experience increase. Both planning assumptions and areas of uncertainty require validation and/or updating and may be triggers for re-visiting and modifying plans.
Table 1: Summary of planning assumptions and areas of uncertainty

<table>
<thead>
<tr>
<th>General planning assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• SARS-CoV-2 spreads from an infected person to others through respiratory droplets and aerosols when an infected person coughs, sneezes, sings, shouts, or talks.</td>
</tr>
<tr>
<td>• The droplets vary in size, from large droplets that fall to the ground rapidly (within seconds or minutes) near the infected person, to smaller droplets, sometimes called aerosols, which linger in the air under some circumstances.</td>
</tr>
<tr>
<td>• Infectious droplets or aerosols may come into direct contact with the mucous membranes of another person's nose, mouth or eyes, or they may be inhaled into their nose, mouth, airways and lungs. Direct contact with mucous membranes, or inhalation of, infectious droplets and aerosols is accounting for the majority of transmissions.</td>
</tr>
<tr>
<td>• The virus may also spread when a person touches another person (i.e., a handshake) or a surface or an object (fomite) that has the virus on it, and then touches their mouth, nose or eyes with unwashed hands.</td>
</tr>
<tr>
<td>• Compared to influenza, COVID-19 has higher transmissibility (i.e., it has a higher basic reproductive number or $R_0$) is more transmissible prior to symptom onset, and has a higher infection fatality rate.</td>
</tr>
<tr>
<td>• Transmission by asymptomatic and pre-symptomatic cases is occurring.</td>
</tr>
<tr>
<td>• Public health measures and personal protective measures reduce the risk of exposure to SARS-CoV-2, however, optimal effectiveness is dependent on comprehensive application of, and public adherence to these measures.</td>
</tr>
<tr>
<td>• Variants of concern have the potential to impact transmissibility, severity, laboratory tests, and/or effectiveness of vaccines and therapeutics, depending on the mutations present in the genome of the variant.</td>
</tr>
<tr>
<td>• A significant level of population immunity, together with PHM and other measures will be required to reduce COVID-19 to a low, manageable and tolerable level.</td>
</tr>
<tr>
<td>• Vaccine conferred immunity duration may not be long-lasting or not be able to prevent all transmission. It may reduce transmission to relatively low levels but not result in elimination of COVID-19.</td>
</tr>
<tr>
<td>• The immune response to natural infection may not be long-lasting or sufficient to prevent re-infection with all variants.</td>
</tr>
<tr>
<td>• Safe and efficacious vaccines will continue to be rolled out in a targeted manner until the whole population has access to vaccine.</td>
</tr>
</tbody>
</table>
The vaccination strategy will evolve based on new evidence, availability of new vaccines and related supply, and the epidemiological situation in Canada.

There will be a national approach to prioritization/targeting of any limited resource which will be based on an ethics framework. Policy development around prioritizing limited resources will also be informed by other logistical, epidemiological and societal considerations, for example the Declaration of the Rights of Indigenous Peoples.

The national epidemic curve will be a compilation of the epidemic activity in each province and territory, which will be influenced by the locally implemented public health response measures and public adherence with these measures.

The risk of imported cases sparking localized outbreaks is ongoing.

International borders will be open over time with corresponding increases in non-essential travel (during the period covered by this plan).

Response measures implemented in one jurisdiction could have an impact on neighbouring jurisdictions, even if they themselves do not implement that measure.

The level of response across Canada will vary based on local epidemiology (e.g., could be surging in multiple jurisdictions at same time, different times or lulls could coincide) and available health system resources.

Our health care system and public health system capacity has limits that could be breached during peaks of COVID-19 activity. Public health workforce fatigue and burnout may also affect response capacity and timeliness.

The impact of concurrent circulation of influenza and other respiratory viruses on health care (including long-term and other community care) and public health system capacity will be lower than usual seasonal increases while there is a high level of adherence to COVID-19 public health and infection prevention and control measures and recommendations.

The occurrence of multisystem inflammatory syndrome in children (MIS-C) correlates with COVID-19 rates in children and youth (under 18 years of age), and could increase hospitalization rates in these age groups.

Public health programs (e.g., seasonal influenza vaccination programs) that mitigate surges in the demand for hospital resources are part of the overall long-term strategy for the ongoing management for COVID-19.

Public health capacity to respond to other priorities (e.g., the overdose crisis and higher rates of problematic substance use) needs to be maintained. Capacity to catch-up on interrupted program delivery may also be required.

Areas of uncertainty
• The degree to which new variants will require adjustments to the pandemic response in order to achieve current goals and objectives.
• How best to prevent takeover of VOCs and/or reduce their impact until coverage with an effective vaccine is higher.
• To what degree different vaccines and different vaccine series will prevent transmission.
• How potential global vaccine supply disruption may affect progress with vaccine roll-out.
• How easily the virus spreads through contact with surfaces or objects.
• Duration of immunity, what constitutes immunity, and whether infection with other coronaviruses provides cross-protection.
• Duration of vaccine conferred immunity and whether there will be a need for booster doses and/or seasonal vaccine programs akin to influenza.
• The number of people who need to be immune to COVID-19 to achieve sufficient population immunity (i.e., sufficient to reduce and maintain low, manageable and tolerable levels of COVID-19 in Canada).
• How effective different vaccines will be in response to new VOCs.
• How adverse events following immunizations (AEFI) will affect vaccine confidence.
• How much impact vaccine hesitancy/confidence and vaccine preference will have on vaccine coverage and timelines to achieving sufficient population immunity.
• Whether COVID-19 will eventually have a seasonal pattern similar to other respiratory infections.
• Whether lack of adherence to restrictive community based PHM will impact effectiveness of these measures to the point where their utility is compromised.
• How potential variations in risk tolerance over time and in different geographic areas will impact response actions.
• How variations in public adherence to PHMs will evolve over time.
• Sequelae and long-term health impacts of COVID-19 infection.
• Whether in the long-term significant rates of co-infection with SARS-CoV-2 and a seasonal influenza virus or other respiratory pathogen will occur and whether co-infection will significantly impact morbidity or mortality cases and subsequently demand on the health care system and resources.
• Robustness of international COVID-19 data and testing.

4.2 Modelling and Epidemiological Drivers

Modelling and capacity assessments may facilitate planning by exploring how possible ranges of parameters relevant to these issues affect the extent and impact of the pandemic in Canada. All modelling outputs are influenced by the underlying assumptions. Forecasting models are best suited to inform what may occur in the coming 2-3 months; therefore the role of modelling in long-term planning is focused on providing additional information to decision makers regarding the potential impact of control measures as opposed to providing possible incidence rates.

Mathematical modelling supports planning our response to epidemics and outbreaks, and the COVID-19 pandemic has demonstrated the important role and need for the full range of modelling tools required to support decision-making during a complex public health crisis. This role and the types of models currently in use are described in Appendix 2: Modelling Support for Forward Planning.
It is important to recognize that the national epidemic curve will be a combination of the epidemic curve patterns from each province and territory, which in turn will be dependent on the effect of the escalation and suppression drivers in each jurisdiction. Where daily incidence is very low it is important to look at incidence over time (e.g., 2-4 weeks at a time) in order to assess the overall response and recent trends. Figure 1 identifies epidemiological drivers that will influence the number and timing of new cases and therefore illustrates how these drivers of incidence impact the shape of the epidemic curve we experience in Canada.

**Figure 1: Epidemiological Drivers: Incidence**

Epidemiological drivers: Incidence

<table>
<thead>
<tr>
<th>Incidence (rt new cases/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height of a peak dependent on:</td>
</tr>
<tr>
<td>- Effectiveness of case detection and contact tracing</td>
</tr>
<tr>
<td>- Effectiveness of case isolation and contact quarantine</td>
</tr>
<tr>
<td>- Extent and spread of variants of concern</td>
</tr>
<tr>
<td>- Level of population adherence to PHM</td>
</tr>
<tr>
<td>- Level of restrictive community-based PHM</td>
</tr>
<tr>
<td>- Number of social gatherings in short time frame in a population (e.g., holiday celebrations)</td>
</tr>
<tr>
<td>- Number of new introductions due to opening international borders / increased travel</td>
</tr>
<tr>
<td>Potential subsequent peak possible if:</td>
</tr>
<tr>
<td>- PHM eased prematurely; adherence not maintained</td>
</tr>
<tr>
<td>- Variants of concern emerge as dominant strain without adequate control measures</td>
</tr>
<tr>
<td>- Failure of response to meet increased demand/need/pace</td>
</tr>
<tr>
<td>Duration of peak dependent on:</td>
</tr>
<tr>
<td>- Length and stringency of restrictive community-based PHM</td>
</tr>
<tr>
<td>- Adherence to all PHM</td>
</tr>
<tr>
<td>- Ability of response to meet increased demand/need/pace (e.g., laboratory testing and screening, contact tracing)</td>
</tr>
<tr>
<td>- Success in preventing wider spread of variants of concern</td>
</tr>
<tr>
<td>Steepness of decline dependent on:</td>
</tr>
<tr>
<td>- Speed at which restrictive PHM are eased or tightened (easing, reduced rate of decline, tightening or imposing increased rate of decline)</td>
</tr>
<tr>
<td>- Speed and scale of vaccine* rollout + uptake of vaccination amongst broader population</td>
</tr>
<tr>
<td>- Ongoing improvements in response to meet increased demand/need/pace as vaccines rolled out</td>
</tr>
</tbody>
</table>

*Vaccines that reduce transmission by preventing infection will have the largest impact on the suppression of incidence. Those that reduce symptomatic illness and/or viral load will also have a suppressive effect assuming asymptomatic cases are adequately isolated during their infectious period. Longer term suppression will be influenced by duration of vaccine-induced immunity.

Figure 1 –Text Description: This figure is an illustrative graph and therefore does not include data or numbers on the axes. The vertical axis represents increasing new cases per day and the horizontal axis reflects the passage of time. There is an orange line on the graph representing an epidemic curve with a two peaks or waves followed by a gradual decline over time. There are 4 teal coloured arrows and text boxes which link the orange line to a concept described in a text box. The first double-ended arrow located under the first large and wide peak in the orange line, depicts the duration of a peak in incidence. The corresponding text box below it identifies factors that impact duration of a peak in four bullet points. There is a vertical double-ended arrow located above the first peak that corresponds to a text box that identifies, in seven bullets, factors that affect the height of a peak in incidence. An arrow pointing to the second peak in the orange line links to a text box indicating three conditions that may lead to a subsequent peak in incidence. Finally the fourth double-ended arrow runs parallel to the orange line which is sloping down and to the right indicating decreasing incidence over time. The corresponding text box includes three bullets indicating factors that affect the steepness or rapidity of the decline in incidence over time. There is a footnote at the bottom of the graphic that indicates how vaccines may affect incidence.

An epidemic curve pattern is one part of a planning scenario as it reflects the potential changes in the number of new cases occurring over a period of time. To ensure optimal planning it is important to
consider not only the number of cases but variables that may shift the health and societal impacts of those new cases and subsequently possible surges that exceed current health care and public health capacity thresholds. Figure 2 describes epidemiological drivers of health impact in terms of variables that may increase or decrease the occurrence of severe illness and deaths due to COVID-19. These variables include but are not limited to: changes in severity of illness experienced by the majority of cases due to increased virulence, changes in high-risk groups (i.e., both the demographic characteristics of who is getting severely ill and identification of new risk factors for severe illness), the impact of variants of concern, availability of effective therapeutics and hospital care, and vaccine coverage. The manifestation of these variables will also influence public risk perception and therefore, in a somewhat circular manner, epidemiological drivers like adherence to recommended PHM.

**Figure 2: Epidemiologic Drivers: COVID-19 Related Health Impact**

**Escalation drivers:**
- Increased virulence
- Variants with immune escape characteristics
- Outbreaks in high-risk groups/settings
- New/changes in high-risk groups—increasing number in this category
- Limited hospital/care capacity
- All drivers that increase COVID-19 transmission

**Suppression drivers:**
- Decreased virulence
- Dominance of strains without immune escape characteristics
- Increase in effective therapeutic options
- High vaccine coverage with efficacious vaccine—especially in high-risk groups
- Adequate hospital/care capacity
- All drivers that decrease transmission

Figure 2- Text Description: This graphic visually conveys how epidemiological drivers influence the health impact of COVID-19 in the population. The escalation drivers (that would lead to more severe health impacts as depicted by an upward red arrow that includes the text "Increasing severe illness and deaths" on the left side of a blue text box) are listed in the left column inside the text box as: increased virulence, variants with immune escape characteristics, outbreaks in high-risk groups/settings, new/changes in high-risk groups—increasing number in this category, limited hospital/care capacity and all drivers that increase COVID-19 transmission.

The suppression drivers (that would lead to less severe health impacts as depicted by a downward green arrow that includes the text "Decreasing severe illness and deaths" on the right side of the blue text box) are listed in the right column inside the text box as: decreased virulence, dominance of strains without immune escape...
characteristics, increase in effective therapeutic options, high vaccine coverage with efficacious vaccine – especially in high-risk groups, adequate hospital/care capacity, and all drivers that decrease transmission.

5. Planning and the Reasonable Worst-Case Scenario

Response activities currently assume a significant level of immunity in the population, conferred by vaccination and recovery from natural infection, being achieved by the fall of 2021. This is dependent on achieving a high level of vaccination in the population with vaccines that are effective against the dominant strains and that confer immunity for a prolonged period of time. This level of population immunity will be considered significant when it is sufficient to decrease and sustain COVID-19 activity in Canada at a low, manageable, and tolerable level.

Given current uncertainties, it is also prudent to plan for delayed achievement of significant population immunity (into 2022) and the potential need for booster doses or seasonal vaccination in sustaining vaccine conferred immunity and/or protecting the those at high-risk of severe disease. In light of uncertainty regarding the duration of immunity (both from vaccination and natural infection), the propensity for respiratory viruses to spread during winter seasons, the impact of variants and travel related importations, it is possible that going forward COVID-19 will settle into a seasonal pattern similar to influenza. Regardless, living with COVID-19 will likely involve some level of PHM not only during the period of pandemic activity but on an ongoing basis.

Relaxation or lifting of restrictive community-based public health measures in the absence of a comprehensive and timely case detection, contact tracing and isolation/quarantine capability can lead to a resurgence in cases; especially if highly transmissible variants become the dominant strain in the period prior to achieving sufficient population immunity. This is what we are now seeing in some parts of the country. The size and duration of resurgence (depicted as peaks in the epidemic curve) and steepness of decline following a peak in incidence are impacted by multiple epidemiological drivers (previously described). Resurgences may be considered more tolerable as vaccine coverage increases amongst those most at risk for severe illness and death given the positive impact of lifting restrictions on minimizing societal disruption. This presumes, however, that the vaccine is effective against the circulating strain, there is no shift in virulence or high-risk groups and no significant long-term sequelae of infection. Ongoing planning needs to achieve a balance so that the pandemic response goal of minimizing all serious illness and deaths while also minimizing societal disruption is reached as soon as possible.

To facilitate ongoing planning in the context of a high degree of uncertainty, particularly around VOCs and vaccination impact, the “reasonable worst-case scenario” has been updated from the first edition of this plan. This scenario is not a prediction, but rather a common set of characteristics that will support robust forward planning (see text box).
**Figure 3: Epidemic curve for reasonable worst-case scenario**

Figure 3 – Text Description: This figure is a graph that has an X-axis (horizontal) with 3 points in time: January 2020, January 2021, and January 2022, and a Y-axis (vertical) that does not have a scale but represents the number of new cases of COVID-19; together these frame a general epidemic curve. The epidemic curve pattern for the reasonable worst case scenario is depicted with a line that starts out green and switches to dark blue at the point on the timeline when this Plan is being published (i.e., April 2021) – it undulates horizontally across the graph.

The green portion of the line depicts the first two waves of COVID-19 cases in Canada and the start of a third resurgence. Specifically, starting with zero cases at the start of January 2020 followed by a relatively steady increase in new cases over time, peaking in April 2020, then followed by a more gradual decrease to July 2020, the line stays relatively flat then heads upwards to form a second peak in January 2021 that is 4 to 5 times higher that the initial wave. This peak is followed by a relatively sharp decline followed by a sharp upturn in March – April 2021 depicting a resurgence and start of a possible third wave.

The line then continues into the future as a dark blue line depicting the reasonable worst case scenario which includes a third wave with a prolonged peak that is 2-3 times higher that the second wave in the early spring of 2021. This is followed by ongoing resurgences/peaks of decreasing amplitude but several exceeding health care delivery, laboratory and public health capacity thresholds and a relatively high level of ongoing transmission into 2022. A relatively high seasonal peak in winter 2021-22 occurs concurrently with severe influenza/other respiratory pathogens season.

Also included in this graphic is the concept of "Capacity Threshold" which conveys the idea of an upper response capacity limit that could be breached by a high number of cases occurring over a short period of time. This is depicted with a horizontal red line.
Nationally the incidence was approximately 31/100,000 population or 11,849 new cases reported during the peak week in the initial wave and 149/100,000 population or 56,638 new cases reported in the peak week of the second wave. A third wave driven by the dominance of highly transmissible variants could be substantially larger than the last given that control would require enhanced, timely public health test, trace and isolate capacity at a time when much of those same resources are needed for vaccination programs. There continues to be a high degree of variation in epidemiology and response between PTs with the most populous PTs having the greatest impact on the national epidemic curve. The previous reasonable worst-case scenario included planning for a fall or winter peak, which has now occurred, however it did not specifically factor in the role of vaccine and VOCs.

The updated reasonable worst-case scenario can be used to identify any new or outstanding preparedness and response needs or issues that would require, or benefit from, a coordinated F/P/T effort should Canada be faced with this scenario. It is provided as a “stress-test” not a prediction and is intended to stimulate thinking concerning our current response efforts, capacity thresholds and resiliency.

More specifically, the scenario presents a set of potential risks, each requiring mitigation strategies based on an assessment of capacity requirements and our collective capability to manage the risks.
Figure 4 identifies high-level capabilities that need to be in place for this scenario and Table 2 identifies associated requirements that should be considered at all levels of government.

**Figure 4: Capabilities for management of the reasonable worst-case scenario**

Figure 4 – Text Description: This figure is the same as Figure 3 but includes text boxes that identify capabilities needed for the management of the reasonable worst case scenario. Several of the text boxes have arrows that point to locations on the curve pattern where it is particularly important that the capacity be in place, however the intention is that these capacities are needed on an ongoing basis throughout the response. Also included in this graphic is the concept of "Capacity Threshold" which conveys the idea of an upper response capacity limit that could be breached by a high number of cases occurring over a short period of time. This is depicted with a horizontal red line.

In this epidemic curve for the reasonable worst case scenario, the peak of the third wave and other peaks/resurgences that follow all cross over the capacity threshold line - depicting the situation where the surge in cases results in increased response capacity demands that exceed the capacity threshold. There are two red shaded text boxes that highlight the need to increase response capacity and to monitor demand. There are five text boxes that point to the epidemic curve. The first includes the text "Detect signals" and points to the epidemic curve, right before a surge in the number of new cases (depicted by an upswing and peak in curve) corresponding with a large early Spring 2021 third wave and resurgences that follow it through to the fall of 2021. The next text box includes the text "Prevent large prolonged peak" and points to the epidemic curve right where the large third wave peak is depicted. Where a subsequent peak (smaller in amplitude to the early Spring 2021 wave) occurs there are arrow from a text box that reads “Prevent surges/resurgences” and where these peaks cross the capacity threshold line, a text box indicates the need for capacities aimed at reducing demands caused by the peak in cases with the text "Reduce below threshold" included in the box. Finally in the "valleys" following peaks in the epidemic curve portion of the reasonable worst case scenario epidemic curve, there is a text box indicating the ongoing need to "Foster ongoing vigilance/adherence" particularly when new case numbers seem to be low or decreasing.
**Table 2: Reasonable worst-case scenario risk management requirements**

<table>
<thead>
<tr>
<th>Capability</th>
<th>Risk Management Requirements</th>
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</table>
| **DETECT – signals indicating a significant surge in cases may occur** | - timely surveillance data (local, P/T, national and international)  
- analysis of international data for the same or similar strain  
- laboratory resources to rapidly distinguish between COVID-19 strains (including VOCs) and other respiratory viruses and to identify mutations associated with immune escape and/or increased transmissibility  
- rapid analysis/investigation to assess risk of large peak based on international, national, P/T and precise/granular local level data (to assess risk of change in dominant strain, risk of importation into and within Canada, and risk of exceeding local health care and public health response capacity)  
- screening activities including targeted use of point of care screening tests  
- health system-wide early warning for increased demand on resources and response activities  
- communication/education/sensitization regarding what constitutes a signal and how to ensure appropriate timely notification of potential signal  
- ongoing vigilance/commitment to COVID-19 response |
| **PREVENT – large prolonged peak and surges, especially those that exceed capacity to respond** | - continued use of restrictive community-based measures until key locally-adapted indicators for relaxation of measures have been achieved  
- public health resources to ensure ongoing response measures are adequate to control spread by highly transmissible variants and prevent new cases (e.g., use of highly conservative assumptions for defining exposure, household quarantine approach)  
- capacity for rapid detection (through screening and testing) and isolation of cases, and rapid identification and quarantine of high exposure risk contacts  
- public cooperation with surveillance and case and contact management activities and tools (i.e., to facilitate timely identification and isolation/quarantine, optimize use of alerting apps)  
- use of suitable isolation and quarantine sites and high adherence to recommended measures in place in these locations  
- gradual, controlled "re-opening" of settings and gradual resumption of activities (with modifications) that are known to be associated with increased transmission risk  
- high adherence to ongoing modifications/controls put in place especially as restrictive PHM are lifted  
- modified restrictions for essential workers  
- screening strategies that aim to prevent and/or rapidly detect introduction of the virus into a susceptible high-risk population or setting  
- consistent, clear localized indicators for implementation or re-implementation of restrictive PHM  
- rapid deployment of targeted outbreak control/containment resources (including implementation of local “lockdowns”, deployment of outbreak response teams)  
- high compliance with personal protective measures  
- proactive international border control measures (i.e., including quarantine, testing requirements, travel restrictions) |
## F/P/T Public Health Response Plan for Ongoing Management of COVID-19

### REDUCE—Surges in Incidence and Hospitalizations

- Increased messaging and public education regarding personal protective measures, effectiveness of vaccines and requirement for PHM following vaccination
- Evidence-based results from vaccine hesitancy efforts and work with diverse populations to support vaccine trust, interest in getting informed, and in being vaccinated
- Increased health care system capacity (especially in high-risk settings such as long-term care) and consideration of how to deliver needed health care (e.g., at alternate sites, using retired workers or students or alternate care providers)

### INCREASE—Health Care and Public Health Capacity

- Laboratory surge capacity to: ensure rapid diagnosis and case notification, identify new VOCs, and lab-epi linkage to characterize and learn from current variants
- Sufficient resources to facilitate optimal delivery of the vaccine program (including clinic staff; immunizers; security; schedulers; local, accessible and appropriate facilities; clear communication on who, when and how; tracking programs/registries etc.)
- Availability of public health resources for surges in case and contact management requirements in the community (including isolation of cases and quarantine of contacts at home/alternative designated sites), development of new guidance products and provision of expert advice based on evolving scientific literature
- Resources (i.e., human and equipment/supplies), planning and training for outbreak control activities in high-risk settings, including clear emergency back-up contact points
- Surge capacity to ensure availability/access to health care resources including equipment (e.g., ventilators, PPE) during peaks
- Availability of sufficient health care providers to meet surge in demand
- Ability to access and distribute effective therapeutics
- Ongoing monitoring of scientific literature, networks and expert advice to inform best practices for treatment and identification of effective therapeutics that reduce hospitalization requirements and/or duration of hospitalization
### MONITOR—demand for health care resources

- Recovery policies and measures (e.g., discharge for recovery at home or alternate site) to avert potential backlogs in the hospital system
- Surveillance for early indicators that other illnesses that may cause a surge in demand for health care resources (e.g., seasonal influenza, other respiratory pathogens)
- Strategic clearing of “backlog” — i.e., re-scheduling of delayed treatments, procedures and surgeries, in a way that demand is met without exceeding capacity thresholds
- Linkages between health care delivery and public health to ensure timely establishment of alternative/overflow care sites
- Enhanced monitoring of global supply chains that could trigger drug shortages and identified alternatives and strategies to prioritize and conserve supply (e.g., critical supply reserve etc.)

### FOSTER —ongoing public vigilance and adherence to measures and recommendations

- Ongoing public trust in public health authorities
- Clear, effective, culturally safe and appropriately tailored communication and education products to support continued public adherence to personal protective measures, community-based public health measures and to support vaccine confidence and uptake
- Transparency and clarity regarding rationales for recommendations
- Ability to provide feedback on impact, progress and success of measures
- Public knowledge, attitudes and behavior research to inform sustainable effective behavioral changes and to combat pandemic fatigue and vaccine hesitancy
- Monitoring of risk tolerance and public opinion in order to maximize adherence while adjusting measures to locally tolerable/sustainable levels
- Support for enabling policy changes (e.g., paid sick leave) that facilitate adherence to public health measures and compensate affected sectors
- Addressing of equity issues — especially those that affect access to needed resources (e.g., availability of suitable isolation and quarantine settings), ensuring public messaging is providing in multiple languages and formats etc., and ensuring these resources are shared with various partners such as Indigenous partners.
- Consideration of incentives for adherence or adoption of new practices
- Empowerment focused initiatives
- Involvement of community to ensure community needs and potential barriers to adherence are considered in public health measures
- Transparent, clear, and equitable application of reasonable enforcement activities (if necessary)

Table 2 outlines the capabilities needed to mitigate the risk of the reasonable worst-case scenario – the “what” is needed. Typically guidance and other products address the “when and how” to optimally use these capabilities. At this time, while vaccine coverage is increasing, one of the keys to preventing a large prolonged wave and ongoing surges/resurgences is the timing and adjusted use of restrictive PHM.
Adjustments to restrictive PHM must be considered in the context of risk associated with VOCs, the effect of increasing vaccine coverage, and other factors. Specifically,

- The spread of VOCs is facilitated by less restrictive public health measures and/or insufficient application and adherence to PHM.
- More transmissible strains are more difficult to control – VOCs can be controlled by public health measures but they must be optimized. In the U.K. where VOC B1.1.7 is now the dominant strain, an increase in the stringency of public health measures resulted in declining incidence\(^1\)\(^2\).
- As restrictive PHM are eased, VOCs will spread much faster in the community than earlier strains, necessitating stronger test, trace and isolate/quarantine capacity.
- If isolation, quarantine and other PHMs cannot control spread, closures may need to be maintained until vaccine rollout is more complete.
- High priority groups for vaccine delivery were selected to minimize serious illness and death from COVID-19.
- Current high priority groups for vaccine receipt are not the populations that are driving community transmission (i.e., younger age groups).
- When enough people in the population are immune to infection so that the virus cannot continue to spread and the disease begins to die out on its own.
- It is not yet known if the vaccines against COVID-19 can prevent disease transmission and contribute to developing sufficient population immunity, or if they simply protect against illness.
- Efforts are underway by vaccine manufacturers, governments and others to better understand the effectiveness of COVID-19 vaccines on variants.

Due to the critical role PHM play during this time period prior to achieving sufficient population immunity, *Figure 5* provides a summary of considerations for the “when and how” to ease restrictive PHM.

*Figure 5 Easing of restrictive PHM*

- **Indicators of readiness for easing restrictive PHM**
  - COVID-19 transmission is controlled to manageable level
  - Sufficient public health capacity is in place to test, trace, isolate and quarantine a high proportion of cases and contacts
  - Sufficient health care capacity exists including substantial clinical care capacity to respond to surges
  - Risk reduction measures are in place for high-risk populations and settings

- **Timing of use of restrictive PHM**
  - NO EASING – if transmission is uncontrolled, VOCs becoming increasingly prevalent, insufficient health care capacity to respond to surges, limited public health capacity to test, trace and isolate
  - CONSIDER – if transmission controlled, sufficient testing and contact tracing capacity, low incidence permits for testing and tracing to cope with outbreaks/surges, high vaccine coverage in higher risk populations and settings
  - INSTATE/RE-INSTATE – modelling suggests resurgence, case incidence overall is increasing (and R\(_\text{t}\) rising), adherence to PHM is declining, evidence of community spread of VOCs

- **How to proceed with easing**
  - Cautious, gradual phased approach, easing up on restrictions in the least risky venues first, with at least 3 weeks between phases to allow detection of resurgence
  - With clear communication of rational, objectives and possibility of re-instatement
  - Targeted to address societal disruption concerns at local level
  - In an equitable manner that supports adherence
Figure 5 – Text Description: This figure shows the sequencing of considerations for easing of restrictive public health measures. The content is divided into three sets of text boxes. Subtitles are in an orange text box and the corresponding text is next to it in a teal coloured box. The three subtitled sections are connected by arrows that point to the next section of text which is located below the previous section and offset to the right to suggest a progressive sequence of considerations.

The first section is subtitled “Indicators of readiness for easing restrictive public health measures (PHM)”. There are four bulleted points in this section that read: COVID-19 transmission is controlled to manageable level; Sufficient public health capacity is in place to test, trace, isolate and quarantine a high proportion of cases and contacts; Sufficient health care capacity exists including substantial clinical care capacity to respond to surges; and Risk reduction measures are in place for high-risk populations and settings.

The second section is subtitled “Timing of use of restrictive PHM”. There are three bulleted points in this section that read: NO EASING – if transmission is uncontrolled, VOCs becoming increasingly prevalent, insufficient health care capacity to respond to surges, limited public health capacity to test, trace and isolate; CONSIDER – if transmission controlled, sufficient testing and contact tracing capacity, low incidence permits for testing and tracing to cope with outbreaks/surges, high vaccine coverage in higher risk populations and settings; and INSTATE/RE-INSTATE – modelling suggests resurgence, case incidence overall is increasing (and Rt rising), adherence to PHM is declining, evidence of community spread of VOCs.

The third section is subtitled “How to proceed with easing”. There are four bulleted points in this section that read: Cautious, gradual phased approach, easing up on restrictions in the least risky venues first, with at least 3 weeks between phases to allow detection of resurgence; With clear communication of rational, objectives and possibility of re-instatement; Targeted to address societal disruption concerns at local level; and In an equitable manner that supports adherence.

6. COVID-19 F/P/T Response Components

Forward planning will also be informed by ongoing reflection regarding what has worked well, what we have learned and what can be adjusted based on evidence and experience. Using the response components identified in the CPIP, with a focus on those requiring F/P/T public health leadership and consultation, this section provides details on F/P/T activities planned or already underway that will assist and expedite complementary planning in each federal government department, province and territory.

The components covered in this section are:

6.1 Surveillance
6.2 Laboratory Response Activities
6.3 Public Health Measures
6.4 Infection Prevention and Control and Clinical Care Guidance
6.5 Vaccination
6.6 International Border and Travel Health Measures
6.7 Health Care System Infrastructure
6.8 Risk Communications and Outreach
6.9 Research

6.1 Surveillance

The purpose of surveillance and risk assessment activities is to provide decision makers with the timely epidemiological and risk information they need to inform action. Similar to national influenza surveillance (FluWatch), COVID-19 surveillance is a pan-Canadian initiative that integrates numerous data streams including existing surveillance systems with novel, non-traditional data sources.
**Current Status/Focus**

Currently, the following data sources are facilitating monitoring across the spectrum of disease (i.e., from mild cases in the community based on sentinel surveillance to severe illness based on hospitalization data).

- **Case-level data reported by PTs**: Revised national dataset including more information on cases, risk factor data, improved occupational data, and the addition of race/ethnicity data is a key priority.
- **Aggregate laboratory result data**: Provincial public health laboratories and PHAC’s National Microbiology Lab report numbers of people tested for SARS-CoV-2, as well as confirmed VOC cases.
- **Aggregate sampling**: Wastewater surveillance is underway and showing some promise as a surveillance and alert component.
- **Data on travellers and border testing**: Used to identify positive cases at the border and prevent travel associated transmission in Canada.
- **Apps**: User data from Canada COVID-19 and other symptom tracking applications.
- **Mobility data**: Partnership with BlueDot Inc., and other sources that may become available, to monitor indicators of population movement as a proxy measure for compliance with PHM, and the levels of inter-P/T movement.
- **Special surveys**: Impact of COVID-19 on specific populations (e.g., health care worker).
- **Sentinel Surveillance Networks**:
  - Hospital networks - Several hospital-based data streams measure the impact of COVID-19 in Canadian hospitals and collect detailed case information on most severe cases.
  - Canadian Pediatric Surveillance Program - occurrence of Multi Inflammatory System in Children (MIS-C).
  - Community-based systems/networks - Assess the level of transmission in the community and the epidemiologic characteristics of outpatient cases.
- **Syndromic surveillance data**: PHAC monitors individuals in Canada reporting influenza-like illness via its participating sentinel practitioners in FluWatch.
- **Publicly available data**: Supplementary data source to add situational awareness on COVID-19 transmission in jurisdictions.
- **The federal, provincial and territorial public health partners** are leveraging existing mechanisms and operating procedures to collaborate on multijurisdictional and complex COVID-19 outbreak investigations. This allows sharing of capacity and resources toward the common goal of better understanding COVID-19 in our communities.
- **The process to conduct joint epidemiological and laboratory investigations for variants of interest (VOIs)** in Canada is currently being developed, and will be based on the current process for investigating foodborne disease.

**Preparations/Forward Planning**

Forward planning will support continued improvement of national surveillance and monitoring to support decision making as the pandemic evolves. The focus will be on: monitoring vaccine performance and changes in the epidemiology of COVID-19, including the impact on priority populations and reductions in severe outcome; flexible surveillance and monitoring that can adapt to new evidence, including the evolution of the virus over time and the emergence of VOCs; interpretation of surveillance data in the context of local epidemiologic trends and, the information required to inform the
appropriate easing of PHM driven by epidemiological trends. Multiple data streams are being configured in order to pick up signals and changes in epidemiology. These preparations and ongoing activities based on the anticipated short, mid or long-term timeframe are identified below.

Short term:

- Updating data dictionary, case report form and surveillance guidance as necessary.
- Monitor vaccine performance, including coverage, safety and effectiveness, waning immunity and vaccine escape.
- Implement the national Variants of Concern Strategy and Network.
- Support ramp-up of genomic capacity and screening for positive cases and linkage to associated epidemiologic data to monitor on-going viral evolution including VOCs.
- Identify signals that may require public health response.
- Further examination and use of wastewater testing as an early detection mechanism.
- Support rapid epidemiologic investigations to characterise the transmission and impacts of new variants and impact of vaccination in the context of outbreaks.
- Provide federal surge capacity support.
- Conduct surveillance to identify broader consequences of COVID-19 and associated control measures on health of Canadians.
- Enhance data and analytics by improved modelling and data access capacity.
- Share timely information effectively with partners and publicly with Canadians.

Medium to Long term:

- Support rapid epidemiologic investigations to identify areas of on-going transmission.
- Monitor vaccine performance, including coverage, safety and effectiveness, including issues such as waning immunity and vaccine escape.
- Conduct targeted surveillance on broader consequences to inform public health action.
- Enhance data integration to evaluate evolving epidemiology in the context of increased vaccination and immunity to support recovery.
- Continue to build and maintain data and analytics capacity and knowledge transfer networks to support on-going development and sharing of intelligence.

Planning Variables or Signals

It is possible that a new syndrome or rare event would require the development of a new, or adjustments to, the surveillance strategy as has occurred for Multisystem Inflammatory Syndrome in Children (MIS-C).

New settings or populations affected by outbreaks could emerge in outbreak surveillance (or via outbreak intelligence gathering) which could precipitate new data needs, additional surveillance activities or new variables to be collected to inform actions. For example, outbreaks among temporary foreign workers have highlighted the need to be prepared to rapidly implement specific surveillance and coordination mechanisms, as well as drawn attention to how social determinants of health (e.g., crowded housing, precarious work, access to medical services) can impact transmission and control of COVID-19.
6.2 Laboratory Response Activities

Laboratory-based surveillance is an integral part of monitoring respiratory virus activity. Since the start of the COVID-19 outbreak, Canada’s National Microbiology Laboratory (NML) has been providing leadership in regard to testing for COVID-19 and surge capacity for provincial and territorial public health laboratories. The NML has also contributed to domestic and international efforts to better understand COVID-19 virus characteristics that can inform the development of medical countermeasures.

Canada’s public health laboratories, working through the long-standing Canadian Public Health Laboratory Network (CPHLN), have been successful in optimizing molecular testing to reduce reagent consumption by reducing the number of PCR target genes (when appropriate), pooling of samples, multiplexing, evaluating the optimal types of samples, swabs and transport media. Through this effort, testing capacity has been increased to 227,000 tests/day as of February 2021. CPHLN has worked closely and successfully with northern, remote, and Indigenous communities to enable those communities to have greater access to laboratory diagnostic tools (e.g., diagnostic platforms, reagents, training, and supply chain management). Through close work with the NML, the territories have been able to set up COVID-19 testing within each territory.

Current Status/Focus

The evolution of several different virus variants with altered characteristics, such as increased transmissibility and potential immune escape, poses a new challenge to Canadians. Canada’s public health laboratories, working through the CPHLN, are meeting this new challenge while continuing to address other key COVID-19 and non-COVID-19 pressures through the following activities:

- development and validation of diagnostic VOC screening assays;
- continued support for implementation of whole genome sequencing of priority samples;
- undertaking work to standardize naming and confirming VOCs, defining what may constitute a SARS-CoV-2 variant of concern as well as acquiring variants quickly to support Canadian diagnostic initiatives and research, including vaccine efficacy in the face of evolving variants;
- continued work to evaluate serological testing kits as well as developing in-house serological tools such as ELISA, neutralization assays and point of care tests (serological work is in support of the broader Canadian Immunology Task Force), incorporating the ability to distinguish natural infection from vaccine-derived antibodies;
- continued work geared toward the augmentation of Transport of Dangerous Goods (TDG) sample shipping requirements) to meet pandemic and non-pandemic sample transport challenges in those and all Canadian communities;
- collaboration with other partners, such as CIHR and academic, to undertake studies that help us understand pathogen characteristics, including the differences brought on by virus variants; and,
- continued readiness to tackle multiple respiratory virus outbreaks as needed, recognizing that the PHM in place have largely suppressed influenza and RSV activity but a resurgence might be observed with the relaxation of PHM.

Preparations/Forward Planning

At this time, federal and provincial public health laboratories and facilities in the territories perform on average 97,000 tests per day and have the capacity to perform as many as 227,000 test per day if required.
The NML together with the CPHLN, is undertaking the following activities in order to continue to prepare for potential surges/resurgences based on the reasonable worst-case scenario but also as part of the laboratory preparedness long-term vision.

**Short term:**
- Continuing strong communication among Canada’s public health partners through CPHLN to ensure laboratory response strategies are aligned and appropriate.
- Continuing a strong collaborative approach toward developing and validating diagnostic testing.
- Provide support for point of care testing.
- Work together to develop a robust collaborative research agenda into SARS-CoV-2 variants of concern, their detection and public health impacts as vaccines are administered.

**Mid term:**
- Continue optimizing various testing platforms and their uses to determine whether individuals have been previously infected, especially for healthcare and other service providers such as police, fire fighters, employees in long-term care facilities, etc.
- Continue streamlining molecular and serological testing as well as variant screens and whole genome sequencing, including stewardship of reagents so they are conserved as testing demands increase.
- Continue developing, validating, and enabling greater access to faster diagnostic tools such as Point of Care tests (prioritizing northern, remote, isolated and Indigenous communities).
- Continue working with manufacturers to enhance the sourcing of critical laboratory supplies that meet appropriate standards to ensure continuity of operations.
- Continue working with PTs and other stakeholders to inform the use of testing in specialized settings (such as borders).

**Planning Variables or Signals**
Epidemiological data from February 2021 demonstrated reassuring declines in case counts in most Canadian jurisdictions, but with the combination of relaxation of public health measures and expansion of VOCs, data from April 2021 clearly shows initiation of a third wave largely driven by surges of VOC cases in the most populated provinces ahead of widespread vaccination. The timelines, strategy, and prioritization of the above activities, therefore, must now be expedited.

### 6.3 Public Health Measures

PHMs are the range of non-pharmaceutical interventions implemented by public health authorities at the F/P/T and local level to reduce the risk of infectious disease transmission. PHMs range from those applied at individual-level to community-based measures including for settings (e.g., schools, workplaces, healthcare settings). Individual-level measures include personal preventive practices such as wearing masks, physical distancing, practising hand hygiene, self-monitoring for symptoms to those measures aimed at detecting and isolating cases as well as tracing and quarantine of contacts. Community-based measures range from public education campaigns and advice on enhanced cleaning and disinfection for public spaces to restrictive measures to reduce interactions and prevent transmission in population groups, settings and the community at large. “Restrictive” community-based measures aim to reduce contacts by limiting movement, activities, or access to resources and public spaces (e.g., school closure, restrictions on gatherings, workplaces/businesses restrictions).
PHM have been shown to be effective in controlling transmission even where VOCs with increased transmission are dominant\(^9\),\(^10\); however, many of these measures have important consequences beyond the scope of COVID-19 management. These consequences require careful consideration and prioritization in relation to other determinants of health, such as impacts on childhood development, access to health services, mental health, domestic and intra-family violence, social isolation and exclusion, and at-risk communities. PHM effectiveness depends on the level of adherence by the public, which is influenced by pandemic fatigue and factors such as living, working, community conditions, and financial and social circumstances.

Since the start of the COVID-19 pandemic the F/P/T public health response has involved working closely with multilateral partners, other government departments, First Nations, Inuit and Métis partners to develop, update and disseminate appropriate public health guidance for a range of target audiences on how to detect, report, prevent and manage COVID-19 infection. One example of this is the formation of the Public Health Working Group on Remote, Isolated and Northern Indigenous Communities that adapts public health measures guidance to the unique needs, context and considerations of these communities in the response.

**Current Status/Focus**
The focus of current F/P/T PHM activities includes:
- developing and updating national guidance as new information becomes available and/or response needs change;
- increasing testing and contact tracing capacity to ensure chains of transmission are disrupted;
- rapidly detecting and isolating all cases, and tracing and quarantine of all high-risk contacts in a culturally sensitive way;
- promoting adherence to personal preventive practices by empowering individuals to play an active role in reducing transmission;
- monitoring the evolving domestic and international situation, and evaluation of PHMs to inform updated advice and adjustments to PHM accordingly (e.g., non-medical mask use, ventilation, risk associated with different settings and activities, emergence of VOCs, vaccine roll-out);
- careful easing restrictive PHM by PTs based on assessed readiness, while monitoring for signals of concern (e.g., increases in unlinked cases, transmission of VOCs); maintaining readiness to rapidly reinstate restrictive measures if surges/resurgence occurs; and protecting populations at higher risk of severe disease and outcomes;
- promoting risk based approaches to using PHM based on the setting (e.g., workplaces, gatherings, outdoor recreational spaces, child and youth settings) and consideration of the broad impacts of PHM on pandemic fatigue, health and wellbeing of diverse population groups; and,
- supporting and informing workplaces/businesses by working with the Canadian Centre for Occupational Health and Safety, to provide for safe and healthy workplaces.

**Preparations/Forward Planning**
In terms of F/P/T preparations, the focus is on building, adjusting and updating existing PHM guidance and resource products as needed, based on new knowledge, expert scientific opinion, experiences to date, and risk assessments.
It is important that these ongoing activities continue to be as timely and responsive as possible and take into consideration the specific needs of high-risk populations including social, economic and demographic factors. Community-based PHM are most effective when implemented as early as possible and as a set of measures using a “layered approach” in response to epidemiological signals of concern. Therefore, preparations include ongoing readiness to reinstate restrictive community-based PHM when required, while easing them when possible to avoid negative impacts on health, wellbeing and society. Communication activities that continue to build public trust and confidence will be critical to facilitating public understanding and adherence to recommended PHM. As vaccine coverage increases in key settings and once indicators of readiness to ease measures are met (Figure 5), public health authorities will adjust public health advice, measures and restrictions accordingly. These adjustments may include changes in advice for key settings where mitigation measures and layers of protection are in place (e.g., long term care homes) and where there is high vaccination coverage. Living with COVID-19 will likely involve some level of PHM and personal preventive practices not only during the period of epidemic activity but for a longer period of time, for example, mask wearing in crowded places, hand, respiratory and environmental hygiene, and avoiding enclosed poorly ventilated spaces.

These preparations and ongoing activities based on the anticipated short, mid and long-term timeframe are identified below.

**Short term:**
- Ongoing updates to existing or development of new evidence-based national guidance as evidence evolves.
- Monitoring the emerging evidence and modelling the effectiveness of PHM and adjusting as appropriate.
- Monitoring the situation related to new VOCs and advising on changes to recommended PHM if warranted.
- Monitoring public adherence to PHM and adjusting messaging and enforcement as required.
- Updating public and health professional communication, guidance and education products and assessing their effectiveness (e.g., through public opinion and behavioural research).
- Developing and maintaining sufficient public health capacity to isolate cases, trace and quarantine contacts in place, including through the use of digital tools.
- Ongoing provision of comprehensive public health advice to workplaces/businesses.
- Monitoring the impact of vaccine roll-out (e.g., effectiveness to prevent asymptomatic infection, vaccine coverage rates) and updating advice on public health measures for individuals, settings and communities accordingly.

**Mid term:**
- Ongoing situational monitoring and international collaboration on COVID-19, including VOCs, and broader impacts of PHM and recommendations, updating advice and adjusting PHM accordingly.
- Ongoing monitoring of public adherence with PHM, and adjusting messaging and enforcement as required.
- Provide recommendations/advice on the need to reinstate restrictive PHM when a resurgence in COVID-19 is identified at P/T and national levels.
- Monitoring the impact of vaccine roll-out and adjusting advice on public health measures accordingly.
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- Supporting, as necessary, Logistics Advisory Committee (LAC) re-evaluation of F/P/T plans for acquiring, stockpiling and distributing supplies (e.g., hand sanitizer, gloves, masks, disinfectant supplies) in consideration of PHM.

**Long term:**
- Collaborating on pandemic recovery, and adjusting PHMs as required.
- Evaluating the PHM component of the COVID-19 pandemic response and incorporating lessons learned into planning for future pandemics.
- Establishing strategy to update existing or write new F/P/T pandemic plans to address robust PHM and minimizing societal disruption, as outlined in Canada’s pandemic goal.
- Providing public education to entrench PHMs as a core practices that will become the new baseline practices based on effectiveness of measures from evidence reviews.
- Working with other sectors to strengthen the social services to protect health and mitigate risk.

**Planning Variables or Signals**
Preparations and forward planning will consider adaptations to current activities, recommendations and guidance, e.g., if there are significant changes in disease activity, high-risk groups or public adherence to recommended PHM, and the impact these may have in various population groups.

**6.4 Infection Prevention and Control and Clinical Care Guidance**

While impacting the F/P/T public health response, the provision of infection prevention and control (IPC) and clinical care guidance and expert advice has predominantly been aimed at informing practising health care professionals, including infection prevention and control professionals. Therefore engagement with stakeholders outside of the public health sector, in particular front line health care and infection prevention and control professionals, is a key part of supporting preparedness.

**Current Status/Focus**
The current focus of response activities pertaining to IPC and Clinical Care include:
- ensuring that previously published COVID-19 Infection Prevention and Control documents continue to provide up-to-date relevant and evidence-informed guidance;
- updating (based on new information) the interim guidance for the clinical management of patients with moderate to severe COVID-19 and care of residents in long-term care during the COVID pandemic;
- providing clinical guidance on the changing presentation, complications, risk factors and outcomes of COVID-19;
- completing any outstanding guidance products;
- planning for joint PHAC/Association of Medical Microbiology and Infectious Disease Canada (AMMI) webinars addressing ongoing key clinical issues that will occur once a month starting July 2020, potentially through to June, 2021; and
- providing key clinical journal articles review and summation to F/P/T public health tables.

**Preparations/Forward Planning**
All Clinical Care Guidance and Infection Prevention and Control documents are being reviewed on an ongoing basis to ensure they reflect the most up to date information on clinical care and IPC. This includes key clinical findings in the literature, responding to new and/or changing science.
Planning Variables or Signals
If additional clinical or infection prevention and control information emerges, (e.g., a change in mode of transmission, dominance of VOCs with immune escape characteristics, or additional risk groups), there may be a need to revise or develop additional IPC or Clinical care guidance documents. Similarly, the identification and availability of new effective treatments would require updating of Clinical care guidance.

6.5 Vaccination

In line with the overarching objective of Canada’s COVID-19 response of minimizing serious illness and overall deaths while minimizing societal disruption, the goal of Canada's COVID-19 immunization response is:

- To enable as many Canadians as possible to be immunized as quickly as possible against COVID-19, while ensuring that high risk populations are prioritized.

This goal guides collaborative work across jurisdictions to allocate, distribute and administer vaccines as efficiently, equitably and effectively as possible; provide safe and effective vaccines as quickly as possible for all who want them; and monitor the safety, coverage and effectiveness of COVID-19 vaccines.

In December 2020, Canada received its first shipments of vaccines and proceeded to administer more than one million doses in the first two months of the national vaccination campaign. The Government of Canada anticipates having sufficient supply of authorized COVID-19 vaccines to offer a full series of vaccine to all eligible persons in Canada, by September 2021. To facilitate this, the Government of Canada signed advance purchase agreements to secure access to seven vaccine candidates, including Moderna, Pfizer-BioNTech, AstraZeneca, and Janssen vaccines, when these products were in development. P/T governments, together with federal stakeholders, have developed plans for the efficient, effective and equitable allocation of COVID-19 vaccines across Canada as well as priority setting for key populations for early vaccination based on risk of severe outcomes and risk of COVID-19 exposure. This work is informed by guidance from Canada’s National Advisory Committee on Immunization (NACI), an external advisory body that provides independent advice on the use of authorized vaccines in Canada. NACI has developed guidance on the optimal use of COVID-19 vaccines, including guidance on the prioritization of key populations for COVID-19 vaccination, that is being used to optimize public health benefits from COVID-19 vaccination during the pandemic, as well as guidance on COVID-19 vaccine research priorities.

Current Status/Focus
With the Health Canada authorization granted to a total of four COVID-19 vaccines as of March 5 2021, implementation of plans as documented in the Comprehensive Distribution Plan, guided by the Vaccine Annex of the CPIP is proceeding. For example, enhanced tracking systems for adverse events following immunization (AEFI), the Vaccine Injury Support Program (VISP), vaccine effectiveness (VE) assessment and uptake/coverage; allocation, storage and handling; vaccine delivery strategies, are all being utilized as part of the vaccine strategy for COVID-19 vaccination in Canada. Federal/provincial/territorial governments, First Nations, Inuit and Metis leadership and public health authorities are collaborating.
to ensure that vaccination programs and clinics are designed and implemented in a manner to respond to out-sized demand for vaccination in a global environment of constrained supply.

An Immunization National Operations Centre (NOC) for COVID-19 has been established as the federal logistical coordination entity and focal point for managing vaccine delivery and collaboration with provinces and territories for distribution. Supported by a multi-disciplinary team of experts, including the Canadian Armed Forces, the NOC has been designed to support partners involved in Canada’s immunization roll out and lead the tracking of vaccine delivery and distribution, and reports to the President of PHAC through the Vaccine Roll-out Task Force.

As vaccines have thus far been sourced from manufacturers that do not have an existing Canadian presence, require importation from overseas locations, and/or require onward distribution from a central point in Canada, PHAC has contracted Logistics Service Providers (LSPs) who are supporting importation, storage and distribution for several candidates. The LSPs are working to complement provincial and territorial supply chains, and align with the activities that PTs have undertaken to strengthen supply chains within their jurisdiction.

In addition, the Government of Canada has strengthened vaccine cold chain supply systems through the provision of equipment and training to manage ultra low and frozen vaccine products safely and securely, and proactively procured essential supplies (e.g., needles, syringes, epinephrine, etc.) on behalf of the PTs via the National Emergency Strategic Stockpile to mitigate against potential supply shortages. Federal procurement activities also complement those being undertaken at the PT level, ensuring that all jurisdictions have contingencies in both supply chain capacity and ancillary supplies.

The federal government is also continuing to work with provinces, territories, and other partners to provide the necessary training and educational tools on COVID-19 vaccines so that vaccinators have the information they require.

Recognizing that all partners must work collaboratively to address vaccine hesitancy, cross-jurisdictional cooperation is underway to better understand public opinion and behavioural science. This enhanced understanding informs the development of educational tools and communication strategies to further educate and build trust in COVID-19 vaccines. In particular, the Federal Government is leveraging the Immunization Partnership Fund to support the efforts of key stakeholders to increase vaccine acceptance and uptake among Canadians and reduce vaccine preventable disease including COVID-19.

In addition, to support planning and response activities, the Vaccine Annex of the CPIP has been adapted to guide the implementation of the Equitable Allocation Strategy, as well as the operational work of the National Operations Centre, leveraging existing mechanisms where possible to support ordering, shipment and delivery of vaccines, logging and follow up on complaints, and reporting on inventory and wastage. Finally, VaccineConnect, a digital vaccine management platform has been designed to facilitate end to end vaccine tracking, monitoring of adverse events, data sharing and management of vaccination programs.

Preparations/Forward Planning
Guidance and tracking systems will continue to be updated as vaccine supply changes. The NESS continues to procure additional supplies as needed to support F/P/T vaccine administration.
The Government of Canada COVID-19 Vaccine Task Force is focusing on strategic investments in vaccine research, development, and domestic bio-manufacturing to facilitate domestic vaccine supply. In addition, a COVID-19 Vaccine Clinical Trial Discussion Forum is convening academic, government, and industry partners to discuss vaccine clinical trial challenges and optimal designs.

Timelines for activities that support *Canada’s COVID-19 Immunization Plan* are:

**Short term:**
- Updating F/P/T public health recommendations and P/T vaccine strategies, informed by NACI guidance, as additional vaccines are authorized and as evidence on these vaccines and COVID-19 evolves.
- Work on vaccine confidence including a mass public education campaign and coordinated outreach efforts targeted to all Canadians as vaccine becomes more widely available.
- Continuing to provide ancillary supplies to PTs for vaccine administration.
- Continued collaboration with manufacturers to obtain sufficient supportive guidance and training to build provinces, territories, First Nations, Inuit and Metis partners and federal department capacity and capability to manage anticipated supply and distribution of vaccines.
- Comprehensive engagement with provinces, territories, First Nations, Inuit and Metis partners and federal departments to ensure readiness to receive, store, handle, and administer COVID-19 vaccines, including those already authorized and those anticipated in the near future.
- Ongoing F/P/T dialogues for sharing challenges and lessons learned, including strategies to better leverage the private sector (e.g., pharmacies) to bolster vaccine roll-out capacity.
- Creation and maintenance of a “control tower” for the management of logistics and distribution, Vaccine Roll Out National Operations Centre, enabling clear and coordinated engagement with provinces, territories, Indigenous partners, and federal departments.
- Build additional functionality of VaccineConnect, the digital vaccine management system to support jurisdiction vaccine program management and national reporting.
- Continued logistical planning for supply chain, including for transport /storage /use of vaccines in northern, remote, isolated settings and Indigenous communities, in collaboration with provinces, territories, Indigenous stakeholders and federal departments.

**Mid term:**
- Ongoing work on vaccine confidence including a mass public education campaign and outreach efforts targeted to everyone in Canada as vaccine becomes more widely available.
- Data analysis to inform the need for: vaccine modifications (e.g., substitutions) to ensure protection against emerging VOCs, booster doses, and/or seasonal vaccination programs.

**Longer term:**
- Strategic planning for ongoing COVID-19 vaccine supply, including domestic bio-manufacturing capacity, allocation and distribution models as needed.
- Ongoing consideration of vaccine strategies and vaccine-related research priorities to address changing epidemiological context and emerging evidence (e.g., evidence on the duration of vaccine protection and use of COVID-19 vaccines as post-exposure prophylaxis).
- Enhancements/preparations for AEFI analysis.
- Ongoing surveillance and research on duration of protection offered by COVID-19 vaccine.
- Integration of VaccineConnect to support pan-Canadian vaccination initiatives beyond COVID-19.
- Adaption of the contents of the CPIP Vaccine Annex for the COVID-19 context as necessary.
- Continued assessment and monitoring of vaccine quality, safety and effectiveness as per established processes14.
Reducing hospitalizations due to seasonal influenza and invasive pneumococcal disease through increased vaccine coverage can preserve both public health (e.g., diagnostic/testing, outbreak response) resources and health care (i.e., outpatient visits and inpatient stays) capacity. For these reasons it has been identified as an ongoing forward planning element.

**Influenza vaccines and routine programs**

F/P/T public health responders and professional groups are concerned about interruptions to routine immunization programs due to COVID-19 PHM and physical distancing, and are monitoring trends. To this end, PHAC issued guidance on the importance of immunization program continuity in particular to mitigate the risk of measles and other vaccine-preventable disease outbreaks once international travel resumes.

In anticipation of ongoing COVID-19 activity during the roll-out of seasonal influenza vaccination programs, PHAC also prepared guidance on the delivery of influenza vaccine in the presence of COVID-19. The guidance focuses on alternative delivery models, clinic set up, changes to immunization practices and processes, infection prevention and control, and PPE at influenza vaccine clinics. The impact of ongoing COVID-19 activity on seasonal influenza activity is unknown and will be monitored closely.

**Planning Variables or Signals**

It is important that, as new COVID-19 vaccines are rolled out, their characteristics (e.g., efficacy, safety, dosing schedule), effectiveness in different populations (e.g., elderly), and the supply situation continue to be monitored and communicated to F/P/T and First Nations, Inuit and Metis partners. COVID-19 vaccines are already displaying varying levels of effectiveness and their ability to prevent asymptomatic transmission or respond to variants remains unknown. The evolving evidence on vaccine effectiveness will be important to the ongoing management of COVID-19. Continued planning should include consideration of variations in vaccine effectiveness and response to AEFI reports or signals. This requires continued AEFI surveillance, health promotion and education and risk communication expertise.

### 6.6 International Border and Travel Health Measures

Since the onset of the pandemic, the Public Health Agency of Canada (PHAC) has significantly shifted and expanded its border and travel health programs to focus primarily on mitigating the risk of COVID-19 importation and together with other response measures, protecting the capacity of provinces and territories to offer health services to Canadians. Prior to this pandemic, it was not envisioned that extensive international border closures would be implemented as a pandemic response measure. Successful implementation of border and travel health measures has required extensive ongoing multilateral engagement and cooperation with government and non-government stakeholders (e.g., the air travel industry).

**Current Status/Focus**

Several new and enhanced border and travel health measures critical to the COVID-19 response have been developed and implemented including:
• an increased capacity for PHAC to undertake health-related risk assessments and provide travel advice and other measures to minimize the risk of Canadians’ exposure to the disease, including on conveyances (air, marine, land);
• linkages between federal and P/T guidance and oversight for the management of international and domestic travellers;
• leveraging the provisions of the Quarantine Act and introducing more than 45 Emergency Orders;
• limiting entry of foreign nationals and imposition of new testing, enhanced quarantine and isolation requirements for incoming travellers to Canada;
• strengthening the compliance and enforcement regime through the establishment of a on-site compliance verification program to boost the capacity to follow up with travellers at their place of quarantine/isolation to verify their compliance, as well as new fines under the Contraventions Act;
• electronic case management tools to operationalize delivery of border measures, including exemptions, compliance and enforcement, etc.;
• increasing the public health presence at the border (i.e., public health officers being assigned to 36 high volume points of entry) as well as enhanced PHAC capacity to conduct virtual health assessments for COVID-19 via access to a 24/7 Central Notification System;
• the establishment of and increase in temporary federal quarantine facilities across the country and their continued management to support enforcement of public health Orders;
• ongoing cooperation and work with provincial and/or local law enforcement-related partners to support compliance verification and enforcement activities, including ticketing travellers not complying with the federal quarantine and/or testing requirements;
• enhanced partnerships with provincial and territorial health authorities and other key players to support data-sharing, compliance, enforcement of quarantine and awareness on COVID-19 (e.g., through the ArriveCAN app), and border testing pilots; and
• new and updated messaging and communication tools for the travelling public.

Preparations/Forward Planning
Moving forward as part of planning for a potential resurgence of the disease and introduction of VOCs, PHAC will continue to maintain a high level of readiness to respond to COVID-19 through a combination of border and travel measures that are calibrated to:
• evolution of the global COVID-19 situation, most notably with the aim of preventing and tracking importation of VOCs
• evolution of the domestic COVID-19 situation and provincial and territorial considerations;
• progression of COVID-19 vaccine coverage both domestically and internationally and ongoing scientific evidence on vaccine effectiveness;
• updated modelling and risk analysis of other countries and international experiences to ensure lessons learnt;
• operational capacity pre-, at- and post-border to handle anticipated incoming and outbound travel volumes along with additional measures as applied;
• evaluations of border restrictions or easing in coordination and alignment with F/P/T requirements (while factoring in whole of health system capacity);
• considerations of the public health/health system capacity to manage potential increase in imported cases (testing, contact tracing and reporting, provincial and territorial health care capacities); and,
• volumes that different classes/sectors or arrival modes bring to Canada.
Based on these considerations, PHAC will continue to adjust its border and travel health tools including:
• implementing enhanced border requirements, such as testing and quarantine;
• adjust the needs of online tools (such as ArriveCAN) to accommodate increased requirements, including testing, and evolving usage requirements by F/P/T partners;
• examination and adjustment of border exemptions during periods of reduced or increased infection and importation;
• updated case management reporting related to variant screening among F/T/P to meet evolving needs; and
• examination and application of amendment considerations to the OICs under the Quarantine Act.

Planning Variables or Signals
As international and domestic contexts shift, border and travel measures may be adapted accordingly. There are a variety of possible approaches that could be explored:
• Global restrictions: Increase/decrease global restrictions for all destinations, control through health-related measures. Possible exclusion of high-risk countries based on country risk assessments.
• Country-specific restrictions: Remove global advisory/prohibition of entry, but maintain/impose restrictions for individual states or regions by exception, based on risk of importation.
• Sectoral/class restrictions: Decrease exemptions to travel measures based on a sectoral analysis.
• Reciprocal: Leave global advisory/prohibition of entry, remove or ease restrictions based on reciprocal arrangements with individual states (or regions e.g., Caribbean) and assessment of respective COVID situations.
• Modal: Increase/ease measures for travellers entering by air, sea or land, based on risk and operational factors.
• Testing and/or vaccination certification: ease or impose measures according to travellers’ proof of test results and/or vaccination, in a wary that is justified by available scientific evidence and is sensitive to legal and ethical issues, including around equity and accessibility.

6.7 Health Care System Infrastructure
A peak in pandemic activity greater than the first COVID-19 wave in any jurisdiction can have a substantial impact on health care service capacity and the ability of health care organizations to keep those providing or receiving health care services safe.

Canadian businesses have stepped up to offer their solutions and expertise, or pivoted their manufacturing facilities, and Canada is now successfully producing Made-in-Canada PPE, medical equipment and supplies to address the urgent needs of frontline workers, and the safety of Canadians at large. In addition, Innovation, Science and Economic Development Canada, Health Canada, PHAC and PSPC Canada are working closely together to quickly to increase Canadian PPE manufacturing capacity to address domestic needs.

With respect to therapeutics, the Interim Order Respecting the Prevention and Alleviation of Shortages of Drugs in Relation to COVID-19, made by the Minister of Health on October 16, 2020 introduces new tools for the Minister to address drug shortages, or the risk of drug shortages, that may be caused or exacerbated, directly or indirectly, by COVID-19.
Current Status/Focus

The F/P/T public health response in terms of health care system infrastructure has involved linking with those partners responsible for monitoring, anticipating and planning for surges in health care system capacity in order to increase mutual knowledge and situational awareness, and support response activities regarding the delivery of health care to COVID-19 cases in Canada. To support this work:

- PTs have taken steps to support hospital surge capacity and ensure timely access to critical equipment and supplies;
- the Government of Canada is working with provinces and territories: to help ensure health care systems are ready for future waves of the virus, to support vulnerable Canadians – including those in long-term care, home care, acute care and palliative care – who are at risk of more severe cases of COVID-19, and to support people experiencing challenges related to mental health, substance use, or homelessness;
- PTs are working to develop, expand and launch virtual care and mental health tools, including through the use of new federal funding to support P/T services;
- through the federal Safe Long-Term Care Fund, governments will work together to protect people living and working in long-term care, including carrying out infection prevention and control readiness assessments, making improvements to ventilation and hiring and training additional staff or topping up wages to support workforce stability;
- the federal government is supporting infection prevention and control measures in long-term care, including funding for the Canadian Foundation for Healthcare Improvement to expand its LTC+ initiative and funding to engage with third parties to help identify resources to conduct readiness assessments in long-term care facilities and support training on infection prevention and control;
- the Canadian Red Cross and other non-governmental organizations are being supported by the federal government to build and maintain a humanitarian workforce to provide surge capacity in response to COVID-19 outbreaks and other large-scale emergencies;
- modelling has been used to project anticipated demands;
- sharing of hospital-based data (on rates of admission, current capacity and equipment/supplies/resources usage) has been included in surveillance products; and
- the LAC was convened in February 2020 to provide an F/P/T forum for collaboration including identification of F/P/T PPE, equipment and supply needs, informing procurement and facilitating allocation.

Preparations/Forward Planning

In terms of forward planning, the Government of Canada will continue to:

- consult with PTs and use modelling to assess the overall pan-Canadian supply and demand landscape for PPE, essential supplies, and life-saving medical equipment to support P/T health care systems and take action as necessary;
- collaborate and work with PTs to better understand the PPE needs across the Pan Canadian landscape;
- explore opportunities to consider sustainable domestic production capacity for critical PPE and other essential supplies;
- monitor for potential COVID-related drug shortages and work with PTs and stakeholders to proactively develop and implement strategies to manage these risks;
- through the Indigenous Services Canada (ISC) PPE Stockpile and PHAC’s National Emergency Strategic Stockpile (NESS), provide PPE to First Nations, Inuit and Métis communities to support the
health of workers and reduce likelihood of spread to FN, Inuit and Metis during the delivery of health care services;

- consult regularly with P/Ts to identify need for federal COVID-19 surge capacity supports to jurisdictions, including health human resources and mobile hospital units;
- facilitate sharing of best practices on alternate care facilities, triage and management of delivery of non-COVID-19 health care services review the latest available scientific evidence to inform guidance for health settings and develop tailored approaches for communities with specific health care needs, such as remote, northern and isolated communities as well as Indigenous peoples in urban settings;
- work with P/Ts to support safe resumption of in-person primary care and mental health services (where this were suspended/delayed or shifted to virtual care platforms);
- work with provinces and territories to set new national standards for long-term care so that seniors get the best support possible, and will also take more action to help people stay in their homes longer; and
- work with provinces and territories to make sure all Canadians get high-quality care, including ensuring all Canadians have access to a family doctor or primary care team, expanding capacity to deliver virtual care, and increasing access to mental health services.

Provincial and territorial governments, along with health care facilities, many of which are already working close to full capacity, continue to do further planning for how they have in some regions (and could in the future) accommodate potentially large influxes of patients, including establishing triage protocols for the allocation of scarce resources such as ICU beds and ventilators. In remote, northern and isolated communities it is also critical to plan for further potential supply-chain and medical evacuation interruptions due to weather.

Forward planning must consider the broad health care system impacts and changes that occurred during the initial wave of COVID-19 in Canada; for example, the unanticipated reduction in emergency room visits for serious conditions, the shift of primary care to virtual care, the unintended but severe health and safety consequences of removing family caregivers from long-term care facilities, increased incidence of opioid overdose, delayed/decreases in routine immunization, and the backlog of elective procedures. The implications of these impacts and changes include the need to plan for: more supportive care for seniors, “catch-up” of delayed medical tests, treatments and procedures and the need to plan for future waves in a way that doesn’t impede the health care system more than is necessary. In addition, understanding gaps that appeared, and lessons to be learned from how they were addressed, in the intersection between PHM, health care services and other social determinants of health will be important to consider in a holistic way for future planning. For example, how to make sure individuals experiencing homelessness receive adequate supports to be able to follow PHM (e.g., isolation and quarantine protocols).

Planning Variables or Signals

In the event health care institutions start to see an increase in the number or change in the characteristics (e.g., demographics, underlying medical conditions) of patients being treated for COVID-19, the Government of Canada will continue to work with PTs to monitor capacity and facilitate timely access to PPE, ventilators, intensive care unit (ICU) beds, and other critical supplies. The federal government continues to be ready to respond to PT requests for assistance and surge support, (e.g., health human resource support, facilitation of mobile health services capacity, safe voluntary isolation sites).
6.8 Risk Communications and Outreach

Communication of information and advice in a public health emergency is a critical public health intervention that helps to protect public health, save lives, and minimize the overall social and economic impacts. To ensure this, information must be accessible for those with low literacy and also presented in an accessible format to guarantee that Canadians living with disabilities are able to have equal access. Using a risk communications approach, the Public Health Agency of Canada, together with other government departments and P/Ts counterparts and Indigenous partners, have worked hard to provide health care providers, Canadians and key stakeholders with the timely, trusted, accessible, evidence-informed and complete information they require to protect themselves, their families, their communities and businesses.

Current Status/Focus

The focus remains on communicating clear, concise and concrete messages that will cut through the current fatigue, confusion and fragile compliance, in order to: ensure Canadians have the information they need to protect themselves and others from the virus and the variants of concern; ensure Canadians can make informed decisions about the activities that they will participate in outside the home and how they can participate in a way that protects them, their families and communities; and ensure Canadians can make informed decisions about COVID-19 vaccination.

Key activities to date include:

- briefings by Chief Medical Officers of Health and local Medical Officers of Health in the PTs and nationally by the Chief Public Health Officer and Deputy Chief Public Health Officer –including modelling and epi updates;
- regular engagement and information sharing on COVID-19 to support response efforts by public health at federal, provincial and territorial levels with a diverse range of sectors, including health, civic society, business and labour, populations most affected by COVID-19, as well as critical infrastructure;
- targeted communications on enhanced border measures;
- specific communications and outreach efforts to encourage COVID-19 vaccine confidence and uptake, including outreach to populations disproportionately affected by COVID-19 (e.g., racialized communities, Indigenous Peoples, newcomer communities, seniors groups, families and persons living with disabilities);
- use of all communications and partnership levers (advertising, web, social media, regular media briefings, community radio, national mail outs, partnerships, community outreach, program funding etc.) to reach stakeholders, health system, Indigenous and community leaders (including the Canadian public) across a diversity of sectors (e.g., healthcare providers, faith-based leaders, agri-food-agriculture sector, retail/businesses, critical infrastructure sectors);
- engagement with diverse sectors to inform development of timely public health guidance for various settings such as workplaces, schools/childcare, post-secondary education, and other community settings;
- the implementation of a four-phased COVID-19 Risk Communications Strategy with different foci (e.g., containment and delay, tools and empowerment, mitigation and working together to prevent the spread of COVID-19, perseverance and ongoing vigilance in context of disease reduction and re-opening of society); and
- F/P/T and Indigenous partner collaboration to share best practices and lessons learned and coordination to ensure messaging is aligned and consistent (via Public Health Network Communications Working Group and the Special Advisory Committee (SAC)).
Challenges and Considerations:

Messages in the earliest phase of the pandemic were clear – stay home; wash your hands. Now the environment is much more complex.

- There are different epidemics across the country so different public health measures are in place across jurisdictions. Messages and their delivery must be clear to avoid any confusion.
- Communication and information on COVID-19 is overwhelming and it is hard to distinguish misinformation or disinformation, from credible health information and sources.
- Canadians have gone through two distinct waves of peak transmission across the country and there is a real balance that needs to continue to be communicated with the use of a layered-approach of public health measures, even as vaccination coverage increases. This must take into consideration the impact of pandemic fatigue.
- The risk perception (and compliance) of Canadians will vary based on their individual experiences and their unique reality.
- Canadians will need to be encouraged to not abandon personal protective measures during vaccine roll-out or as the spring approaches.
- There is still much uncertainty that impacts how precise and definitive we can be in our messaging, especially with the new VOCs. As science evolves and we learn more, advice to Canadians may change.
- Canadians are being encouraged to participate in the economy as it re-opens in this period of recovery. We need to help people make an informed and conscious decision each time they leave their home to help them protect themselves and others.
- Canadians need to assess their activity, their risk tolerance, their risk to others and the importance of their own behaviour in reducing risk. Our communications efforts must arm them with the information to do so easily and accurately.
- Canadians must have access to credible information related to COVID-19 vaccines, vaccine safety and the vaccine rollout in Canada. Our communications efforts must address misinformation and provide everyone in Canada with evidence-based information to help them make the decision to vaccinate.
- Canadians expect timely and responsive communication using newer social media platforms (e.g., WhatsApp, TikTok, Instagram) and from leaders and influencers that are meaningful and trustworthy within their communities and social media circles.

Preparations/Forward Planning

It is now important to shift messaging as we transition Canadians into participating in the national vaccine administration campaign. The deployment of vaccines needs to be balanced with the message that certain PHM must remain in place in order to keep the level of transmission at a locally manageable rate. All levels of government need to communicate that Canadians should be prepared for a walk back or tightening of PHM if necessary to avoid surges/resurgences.

Forward planning for communications includes taking several approaches concurrently.

i. **Provide clear, consistent, concise and concrete messages and advice with relatable examples and tools that are easily accessible for Canadians.**
   - Apply behavioural science to test a variety of public health messages and tools.
   - Guidance to help the public minimize risk while venturing out into public spaces.
     - checklists for when you leave the house
o decision making tools
  - Information on vaccine safety and development to support vaccine confidence.
  - toolkit and training for healthcare providers to help them answer patient questions
  - evidence-based vaccine resources for the public

\[ \text{ii. Use personal stories to motivate behaviour.} \]
  - Showcase community members/organizations/spokespersons who are “doing it right.”
  - Leverage more storytelling to motivate behavior (continue youth testimonials, etc.).
  - Sharing of images and personal stories of vaccination.
  - Consider role of incentives to motivate behaviours (including adherence to PHM).

\[ \text{iii. Communicate with empathy and honesty} \]
  - The efforts of Canadians through the first phase have very likely saved thousands of lives; need to acknowledge that, and encourage everyone to keep doing that.

These approaches will be supported by F/P/T strategies, content and implementation plans that include:
  - sufficient public opinion research (POR) and behavioural insights (re. behaviours, vaccine, public health measures, back to school) to identify all Canadians’ priorities, values and concerns, and capture regional variations;
  - public education campaigns (COVID-19 vaccines, PHMs and mental health);
  - “Not the time to travel” campaigns; and,
  - testing and contact tracing related communication activities.

This will be achieved through strategic outreach and engagement by the Chief Public Health Officer (CPHO), Deputy Chief Public Health Officer (DCPHO), Chief Medical Officers of Health and other P/T and local spokespersons, public education campaigns, media relations, and issues management, social media, and website updates. Significant outreach and engagement with a range of health and non-health stakeholders has been an essential part of the national response to COVID-19. This outreach and engagement has evolved throughout the pandemic from a focus on proactively sharing the latest public health developments and resources to identifying stakeholder information needs and perspectives, to collaborating on guidance development and joint communication initiatives. A range of stakeholders have been engaged through regular COVID-19 briefings, teleconferences and webinars including the following: CPHO Health Professionals Forum (national health professional organizations), national allied health organizations, local public health medical officers of health, critical infrastructure stakeholders, agriculture and agri-food stakeholders, business groups, travel associations, airlines, and childcare and education stakeholders. A range of community-level leaders have also been engaged including faith-based organizations, organizations representing racialized communities, and engagement with national and community level First Nations, Inuit and Metis organizations.

It has been and continues to be especially important to engage community leaders from: Indigenous communities, racialized communities/communities of color, groups representing newcomers to Canada, and faith-based organizations to help deliver critical information.\[15\]

\[ \text{Planning Variables or Signals} \]
Surges in cases requiring change in or implementation of restrictive community-based PHM along with any changes in science (e.g., new information about COVID-19 or COVID-19 vaccines that requires a shift
in Canada’s public health response or guidance to specific populations), changes to border measures, indicators of vaccine hesitancy and vaccine availability, will all necessitate updating of the current F/P/T communication strategy and products.

6.9 Research

The Government of Canada quickly mobilized Canada’s research and scientific communities in response to the spread of the novel coronavirus (COVID-19). Early in the pandemic, research areas focused on medical countermeasures (vaccines, therapeutics, and diagnostics), clinical management research, predictive modelling, as well as social and policy research. Since then, the research focus has expanded to areas such as mental health and substance use during the pandemic, safety in long-term care homes, Indigenous communities’ experiences with COVID-19, and variants of concern. Community engagement is important to ensure culturally appropriate research approaches.

Current Status/Focus

- The Government of Canada established mechanisms for mobilizing rapid research responses for this type of emergency, which have been activated to accelerate development of medical countermeasures, to support priority research on the transmission and severity of COVID-19, and to understand the potential benefits and potential limitations of medical, social and policy countermeasures.
- Health Canada established and continues to apply a number of temporary innovative and flexible measures to help prioritize and expedite the regulatory review of COVID-19 health products without compromising Canada's high standards for safety, efficacy and quality (these measures have been put in place to facilitate safe and timely access to products Canadians and health care workers need).
- A wide array of Clinical Trials activities for therapeutics and vaccines are underway under the Canadian Treatments for COVID-19 (CATCO) trial.
- Several federal programs available aimed at mobilizing industry, innovation and research continue to respond to COVID-19.
- Networks such as CanCOVID, COVID-END and National Collaborating Centres, have been launched to facilitate research effort and leverage transdisciplinary knowledge synthesis, translation and expertise among Canada's scientific, policy, and health communities.
- Capacity at federal research facilities is being leveraged, and federal granting agencies are strategically aligned to support Canadian research capacity.
- Knowledge on indoor air quality is being mobilized with federal, provincial, territorial and private sector partners.
- The Canadian private sector (R&D, manufacturing) is engaged in contributing to research and development solutions.
- The Government of Canada is also supporting various strategies to bring significant findings arising from these research efforts to decision-makers in a useful and timely way.

Preparations/Forward Planning

In an earlier version of this Plan, a number of needs had been identified in order to prepare against surges/resurgences based on the reasonable worst-case scenario. In addition to the activities described above, work has begun in earnest in several crucial areas.
i. **Strengthening our capacity to deliver on relevant COVID-19 modelling work.**
   - The COVID-19 pandemic has demonstrated the important role and need for greater and ongoing capacity to implement the full range of modelling tools required to support decision-making during a complex public health crisis. Models help to predict where and when COVID-19 infections may emerge or re-emerge, emergence of new variants of concern, and they can be used to explore the best combinations of approaches to control disease progression and protect the health of Canadians, including vaccination. Expert groups continue their ongoing work on modelling the reproductive number (R<sub>t</sub>) over the course of the pandemic, and are working on modelling several scenarios for de-escalation strategies, including border reopening and lifting travel restrictions.

ii. **Examining and addressing the need to pursue research and surveillance studies aiming at better understanding mechanisms of infections, transmission and immunity against the SARS-CoV-2 virus.**
   - F/P/T governments are currently focusing on the investigation and tracking of the genetic diversity of SARS-CoV-2, across Canada to better respond to its spread, particularly new variants of concern. However, research is needed to examine the full potential of these variants in their transmissibility, virulence and vaccine efficacy, and to monitor their emergence and presence over time. The Government of Canada launched the COVID-19 Immunity Task Force, which engages universities, hospitals and public health officials to use blood test (serologic) methods to track and study the immune status of various Canadian populations, and will be used to support vaccine surveillance, safety and efficacy. The need for research and research coordination with partners to understand transmission dynamics and impact of non-medical measures (e.g., ventilation, portable air cleaners, etc.) is beginning to take shape through early aerosol transmission studies in high-risk settings, such as hospitals, prisons, and long-term care homes. Discussions and work continues with domestic and international partners to develop COVID-19 animal models and medical countermeasures.

iii. **Strengthen our capacity to perform rigorous and rapid evidence review.**
   - More experts within and outside of government are being leveraged to generate evidence reviews and answer specific questions to provide the most up-to-date scientific evidence for optimal decision-making.

iv. **Exploring the epidemiological value of new, innovative methods to track community spread, such as testing SARS-CoV-2 from sewage water.**
   - Testing wastewater is providing early warning ability at the community level (municipality, special settings such as Long-Term Care Facilities, prisons, hospitals and remote communities). With its F/P/T partners, the federal wastewater testing group has begun creating a system throughout Canada for surveillance of public health outcomes such as COVID-19.

v. **Strengthen laboratory capacity in the area of genomic innovation and bio-informatics.**
   - The Government of Canada has begun to secure investments in this area.

vi. **Mobilizing knowledge from the social sciences.**
   - There continues to be a need to invest in and mobilize knowledge relating to social sciences such as sociology, anthropology and psychology. Specifically behavioural science and ethnic research can guide future policy and regulatory actions.

**Short to Mid Term:**
In the short to mid term, the approach to these preparations continues to be to:
work collaboratively with National partners, F/P/T, stakeholders groups, Indigenous partners (including National Indigenous Organizations; Indigenous researchers and scholars; the National Collaborating Centres for Public Health), and the Federal Science Community to support the work of key task groups mandated to support Canada’s COVID-19 response (Immunity Task Force, the Vaccine Task Force, the Therapeutic Task Group) and Indigenous-led culturally grounded research (with appropriate community engagement and cultural safety in approaches);

- work collaboratively with federal science based departments and agencies with specific targeted engagement with the CIHR and the Chief Science Advisor of Canada; and

- continue engagement with the COVID-19 Governance Structure (via the Technical Advisory Committee (TAC), LAC and SAC). Activities include sharing research, data and local experience that will inform further planning in alignment with our stated public health pandemic goal and objectives (e.g., quantifying the negative and positive consequences of the PHM that were uses in the initial response to be better able to address the inequities that have arisen).

### Planning Variables or Signals

Similar to the other COVID-19 response components above, there are several factors that could potentially impact preparations for the ongoing COVID-19 response, including: a significant shift in genomic pattern of SARS-CoV2 (leading to examination of possible shift in virulence or infectivity), significant increases in the mortality ratio, data from vaccine and therapeutic clinical trials, data on immunological protection of Canadians, new/rigorous knowledge on the impact of COVID-19 specific high-risk groups, and new/rigorous knowledge of the importance of a non-respiratory mode of transmission.

### 7. Planning with Indigenous Communities

First Nations, Inuit and Metis communities have been supported as they worked to update and activate their community pandemic plans. Over 30 Indigenous organizations have been engaged and are collaborating together to support public health response through the Public Health Working Group on Remote, Isolated and Indigenous Communities as part of the SAC governance structure. Indigenous Services Canada (ISC) together with National Indigenous Organizations (NIOs), have been leading work with PHAC, Statistics Canada and the First Nations Information Governance Centre to address data gaps regarding the impacts of COVID-19 on Indigenous Peoples.

As a result of community supported response efforts, infection rates on-reserve and in the North remained lower than the rate in the overall Canadian population during the first wave of COVID-19. However, transmission has been greater in Indigenous communities during the second wave. It is important to note that gaps for First Nations, Métis and, Inuit living in urban and related locations are the product of historical, political, societal, and economic factors that have influenced Indigenous health. These inequalities persist in part due to systemic racism experienced in the healthcare system and increased connections to culturally safe services are required to support these populations. ISC and PHAC are working with Indigenous partners, provinces and territories, the Vaccine National Operations Centre, LAC of the COVID-19 Governance Structure, and other federal departments to ensure all Indigenous peoples, regardless of where they live, have access to support throughout the pandemic response, including prioritization for vaccines. ISC has established the COVID-19 Vaccine Planning
Working Group and the COVID-19 Vaccination Task Group for First Nations, Inuit, and Métis living in Urban and Related Homelands to support linkages between provinces and territories, other federal departments and Indigenous partners for vaccine co-planning discussions. A summary of the response activities that have been supported to date in addition to the strategy/approach, actions and deliverables for these preparations for the short, mid and long term (i.e., being before September, September to December, and 2021 and beyond, respectively) are included in Appendix 3: COVID-19 Response Planning with Indigenous Communities.

8. Planning for High-risk settings and populations

A specific setting may be considered as “high-risk” due to:

- the potential for higher rates of severe disease or death amongst those in the setting compared to that of the general population (because of clustering of people with underlying medical conditions, clustering of those in high-risk age group or both); and/or
- potential for high rates of transmission (because of unavoidable crowding indoors with limited ability to use or inconsistent use of protective measures, introduction of a VOC, or high-risk activities or conditions).

It can be challenging to significantly mitigate these risks; therefore planning activities need to look at the specific circumstances of each setting and what enhanced measures can be put in place to prevent and manage COVID-19 outbreaks in these highly variable contexts. This should include measures to prevent introduction of the virus into these settings, (e.g., through screening of employees and visitors, restriction of visitation, efforts to prevent work at more than one high-risk location, implementation of a quarantine period for people entering the setting). Epidemiologic investigations of outbreaks in these settings are key to improving our understanding of transmission dynamics and setting-specific risks. It is particularly important to investigate outbreaks that are caused by different VOCs and to examine the potential role of vaccines in shortening outbreaks.

To date, high-risk settings that would benefit from special planning considerations have included:

- Long-Term Care facilities;
- worksites necessitating close proximity to others (e.g., meat processing) or with communal housing (e.g., temporary foreign workers living on work farms, remote/fly-in work camps like northern mines);
- remote populations without ready access to advanced health services (e.g., fly-in only access communities), and with potentially elevated rates of underlying medical conditions or other pre-existing disparities (e.g., overcrowded housing);
- homeless shelters and other congregate living settings such as group homes; and,
- correctional facilities.

While guidance has been developed and measures have been put in place aimed at preventing further outbreaks in these settings, planning for the reasonable worst-case scenario necessitates that we undertake activities in the short term to shore up capacity to undertake prevention and outbreak response measures, as well as, continuously monitoring these measures and adjusting as necessary. For example:
If there were to be a high level of activity caused by a VOC in the surrounding geographic areas would the response plans for these settings be applicable and sufficient?

Given the vaccine strategy initially largely prioritizes those at greatest risk for severe disease and death but not specifically those in settings with potentially higher rates of transmission, under what circumstances would vaccine be considered for people in these other high-risk settings?

What are the existing gaps in guidance, measures or resources, and how can these be addressed?

Are prevention measures that were previously implemented sustainable and realistic for ongoing surges and/or the reasonable worst-case scenario?

What impact could these measures have on high-risk populations?

Have risk communication strategies been effective in these settings and populations?

This collaborative work to plan and support high-risk settings and populations will continue at all levels of government and across multiple sectors and stakeholders from public health, health care, education, agriculture/agri-food, immigration, economic development, corrections, social services/housing, science/research and labour.

As work continues, it is important to take into consideration the impact that these measures may have on the various sociodemographic groups most likely to be affected. Considerations for low-income workers, seniors, migrant workers, persons living in overcrowded housing, persons experiencing homelessness, and prisoners, among others, will need to remain a cornerstone of all response plans.

9. Assessment and Evaluation

Assessing and evaluating pandemic response efforts during periods of relatively lower response tempo will help identify areas of improvement and prioritize future planning efforts. It is also vital, on an ongoing basis, to determine whether response activities have been effective and implemented efficiently to achieve the intended results and whether areas of uncertainty (see Section 4.1) can or have been addressed. The F/P/T COVID-19 response governance structure (see Appendix 1), which includes the SAC, TAC and LAC, provides multiple fora for these discussions and opportunities for sharing of experience, lessons learned and identified best practices. More structured processes for assessment and evaluation, including in-action and after-action reviews should be considered at all levels of government and diverse sectors to inform forward planning and future pandemic preparations. Findings from formal audits undertaken by F/P/T governments will also be taken into consideration in future planning processes.

The broad direct and indirect consequences of the COVID-19 response in terms of other physical and mental health outcomes as well as societal and economic impacts must continue to be acknowledged and assessed so that reduction of negative impacts can be accounted for in comprehensive forward planning efforts.

This should involve consideration of the impact response measures may have on individuals’ physical, social, mental and emotional health and wellbeing, including how this may affect the adoption of control measures. The broader impact of restrictive community-based PHM in terms of health, wellbeing, child development and welfare needs to be monitored and plans implemented to prevent other immediate health harms and to prevent increasing health inequities for higher risk populations. These include but
are not limited to other direct impacts to health including; risks of delaying health procedures or reduced access to screening and preventive services, domestic violence, child welfare/neglect, reducing access to harm reduction services or safe drug supply and mental health services. It should also involve addressing indirect COVID-19 associated health and wellbeing risks such as congregate housing, low employment standards, lack of access to educational supports for high need students, and risk of visitor restriction policies (e.g., family caregivers in long-term care homes).

Resources and guidance to support mental health has been developed, however the need for other resources as population “pandemic fatigue” sets in needs to be considered. Furthermore, addressing social determinants of health (such as housing and employment conditions) that increase the risks associated with COVID-19, could also help reduce the health and societal impacts of future pandemics.
Appendix 1: Canada’s Public Health Emergency Response System and Inventory of Resources, Guidelines and Agreements to inform COVID-19 Preparedness and Response

Canada’s public health emergency response “system” comprises a series of complementary, mutually reinforcing plans, arrangements, protocols and networks that incorporate lessons-learned from previous outbreaks like SARS, 2009 H1N1 pandemic and Ebola which are regularly updated to reflect the latest evidence and scientific advance. Taken together, they span the local, provincial, territorial, pan-Canadian, North American and international levels and provide a strong and proven framework for Canada’s response to COVID-19.

As public health in Canada is an area of shared jurisdiction, federal, provincial and territorial health officials and experts are working together through the SAC on COVID-19 and its various expert committees and working groups to facilitate a coordinated and effective response to the COVID-19 pandemic in accordance with the F/P/T Public Health Response Plan for Biological Events. The Plan, which includes a summary of F/P/T roles and responsibilities in a public health emergency, can be found at https://www.canada.ca/en/public-health/services/emergency-preparedness/public-health-response-plan-biological-events.html

The SAC draws on the long-standing pan-Canadian Public Health Network (PHN) F/P/T governance structure. Established in 2005, the PHN reflects lessons-learned from the Severe Acute Respiratory Syndrome (SARS) outbreak, which highlighted the imperative for a proactive and collaborative approach to public health emergency planning and response in Canada. PHN has since proven its value and effectiveness as a vehicle for collaborative public health leadership during the 2009 H1N1 pandemic, Middle Eastern Respiratory Syndrome (MERS-CoV) and Zika outbreaks, as well as in non-communicable disease crises such as the ongoing contaminated street-drug overdose and overdose death epidemic.

SAC comprises members of the PHN Council and the Council of Chief Medical Officers of Health (CCMOH). Four expert groups comprising senior F/P/T officials and public health experts from across the country report to and support SAC:

- Technical Advisory Committee (TAC): monitors COVID-19 epidemiology, shares information and advises on technical issues through the development of recommendations, guidelines and protocols and leads on surveillance and outbreak investigation, laboratory, medical countermeasures (MCM), public health measures, risk assessment, technical expert engagement, research & evaluation, borders, infection prevention and control, and occupational health, etc.
- Logistics Advisory Committee (LAC): supports logistics (e.g., supplies, joint procurement, scarce resources), shares information and advises on logistical issues through the development of recommendations, guidelines and protocols, and leads on deployable resources and mutual aid, procurement, health care delivery engagement etc.
- Public Health Network Communications Group: supports consistent and coordinated public communications and messages on COVID-19 across jurisdictions and leads on strategic communications product development, information dissemination, emergency risk communications support and coordination, communications surveillance, etc.
- Public Health Working Group on Remote and Isolated Communities supports Indigenous public health response in remote and isolated Indigenous communities through development of guidance, resources and communications.

**Figure 6: COVID-19 Governance Structure**

This graphic depicts two main hierarchical governance structures and linkages level at the federal level that includes several relevant Federal/Provincial/Territorial (F/P/T) committees. Please note that provinces and territories have the primary responsibility for public health and health care services in Canada’s federalist structures. Each province and territory will also have its own response structure and advisory committees that are not represented here. The structure on the left side of the graphic on the teal background shows the Federal/Provincial/Territorial Governance structure that has been activated for the COVID-19 response as per the Federal/Provincial/Territorial (F/P/T) Public Health Response Plan for Biological Events. There is an asterisk linked to text to remind the viewer that this does not depict standing general and emergency management F/P/T governance. At the top of this structure is the Conference of FPT Ministers of Health (HMM) which operates at the Ministerial level. Directly below the HMM is the Conference of Deputy Ministers of Health (CDMH) which operates at the Deputy Minister level. Directly below the CDMH is the Special Advisory Committee (SAC) which is considered to operate at the Chief Medical Officer of Health and Assistant Deputy Minister Level. Below the SAC are its 4 committees/groups and their related sub-groups which provide technical and operational response support from a F/P/T public health response perspective these 4 committees/groups are the Technical Advisory Committee (TAC), the Public Health Network (PHN) Communications Group, the Logistic Advisory Committee (LAC) and the Public Health Working Group on Remote and Isolated Communities. This entire FPT governance structure has a health system management perspective/focus, as is indicated in a yellow bar spanning the bottom of this side of the graphic.

On the right side of the graphic on a grey background is the Federal Governance structure which has more of an incident/operations management and whole of (federal) government focus. At the top of this structure is the Cabinet which like the HMM on the left (FPT side) operates at the Ministerial level. Reporting up to Cabinet is during this response are the Deputy Ministers Committees on COVID-19, which operates at the Deputy Minister.
Level and are directly supported by an Associate Deputy Ministers Committee (that oversees federal event management and the COVID-19 whole of government policy and coordination) and the COVID-19 Secretariat. These two groups along with the Government of Canada Operations Centre (GOC), operate at the Assistant Deputy Minister Level. The Federal Health Portfolio Operations Centre (HPOC), which is linked to the GOC, provides support to the SAC, TAC and LAC in addition to the federal response. The HPOC formally links to the SAC via the SAC secretariat which functions as is a key linkage point between these two governance structures. At the working level the HPOC Incident Management Structure (IMS) includes groups that develop F/P/T response products and support the TAC, LAC PHN Communications Group and SAC.

The Government of Canada has also established a Cabinet Committee on the federal response to COVID-19 that meets regularly to ensure whole-of-government leadership, coordination, and preparedness for a response to the health and economic impacts of the virus. Additionally, existing and new expert groups (e.g., Surveillance Expert Working Group, Canadian Pandemic Influenza Preparedness-Task Group, Canadian Immunization Committee and its working groups, CPIP-TG) and networks (e.g., CanCoGen) have been contributing to the response through engagement with the governance structure.

The Canadian COVID Genomics Network (CanCOGeN) is a Genome Canada-led consortium of Canadian federal, provincial and regional public health authorities and their healthcare partners, academia, industry, hospitals, research institutes and large-scale sequencing centres. The mission of CanCOGeN is to establish a coordinated pan-Canadian, cross-agency network for large-scale SARS-CoV-2 and human host sequencing to track viral origin, spread and evolution, characterize the role of human genetics in COVID-19 disease and to inform time-sensitive critical decision making relevant to health authorities across Canada during the pandemic.

FPT Collaborative Agreements: Mutual Aid, Information Sharing and Emergency Supplies

**Federal/Provincial/Territorial Public Health Response Plan for Biological Events**: is a federal, provincial, and territorial (F/P/T) guidance document that provides an overarching governance framework to ensure a coordinated intergovernmental health sector response to public health events that are biological in nature and of a severity, scope or significance to require a high level, coordinated F/P/T response.

**Canadian Pandemic Influenza Preparedness: Planning Guidance for the Health Sector (CPIP)**: is an F/P/T guidance document that outlines how jurisdictions will work together to ensure a coordinated and consistent health-sector approach to pandemic preparedness and response. While CPIP is specific to pandemic influenza, much of its guidance is also applicable to other public health emergencies. 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. CPIP is regularly updated to reflect new evidence and best practices.

**Operational Framework for Mutual Aid Surge Requests for Health Care Professionals**: is a guidance document that provides for a consistent and timely pan-Canadian approach to inter-jurisdictional health care professional mutual aid during health emergencies. The framework identifies roles and responsibilities and provides standard processes to guide jurisdictions making requests for, and offers of, mutual aid and the mobilization/demobilization of health care professionals. It also informs a complementary **Memorandum of Understanding (MOU) on the Provision of Mutual Aid in Relation to Health Resources During an Emergency Affecting the Health of the Public.**
**Multilateral Information Sharing Agreement (MLISA):** is a legal agreement that establishes standards on sharing, usage, disclosure and protection of public health information for infectious diseases and public health emergencies of international concern. The MLISA sets out what public health information is to be shared and how it will be used. It allows for trends and/or urgent public health events to be identified more rapidly and to reduce duplication of information requests. MLISA also informs the FPT MOU on the Sharing of Information during a Public Health Emergency. The Memorandum of Understanding (MOU) provides a framework for the sharing of information between and among its signatories during public health emergencies.

**National Emergency Strategic Stockpile (NESS):** located within PHAC, contains supplies that provinces and territories can request from PHAC in emergencies, such as infectious disease outbreaks, natural disasters and other public health events, when their own resources are not enough. These include a variety of items such as medical equipment and supplies, pharmaceuticals and social service supplies, such as beds and blankets.

**Public Health Ethics Framework: A Guide for Use in Response to the COVID-19 Pandemic in Canada:** is a framework intended for use by policy makers and public health professionals making public health decisions in the context of COVID-19. Section 1 articulates ethical principles and values for public health authorities to consider, and Section 2 sets out a framework to help clarify issues, analyse and weigh relevant considerations, and assess options, in order to support decision making in real situations.

**Federal Emergency Response Plans**

*The Federal Emergency Response Plan (FERP):* is the Government of Canada’s all-hazards response plan. The FERP outlines the processes and mechanisms required to facilitate a whole-of-government response to an emergency. The FERP is designed to harmonize federal emergency response efforts with the efforts of PT governments, non-governmental organizations (NGO) and the private sector.

*The Federal Policy on Emergency Management (FPEM):* promotes an integrated and resilient whole-of-government approach to emergency management planning, which includes better prevention/mitigation of, preparedness for, response to, and recovery from emergencies. It provides direction to federal institutions on mandate-specific all-hazards risk identification and management within a federal institutions area of responsibility.

**International Response Plans and Protocols**

*North American Plan for Animal and Pandemic Influenza (NAPAPI):* outlines how Canada, the United States and Mexico intend to strengthen their emergency response capacities, as well as trilateral and cross-sectoral collaborations and capabilities, in order to assist each other and ensure a faster and more coordinated response to outbreaks of animal influenza or an influenza pandemic. The NAPAPI complements national emergency management plans in each of the three countries.

*Global Health Security Initiative (GHSI):* is an informal, international partnership among like-minded countries and organizations to exchange information and coordinate practices within the health sector to strengthen public health preparedness and response globally, including pandemic influenza.
**International Health Regulations (IHR):** represent an international agreement between all World Health Organization (WHO) Member States to build capacity to detect, prevent, assess, notify and response to public health events. Canada has a legal obligation to meet the core public health capacities set out by the IHR.

**World Health Organization (WHO) Strategic Response Plan:** outlines the public health measures that the international community stands ready to provide to support all countries to prepare for and respond to COVID-19. Documentation (including the Strategic Response Plan) from the WHO takes what has been learned about the SARS-CoV-2 virus and translates that knowledge into strategic action that can guide the efforts of all national and international partners when developing context-specific national and regional operational plans. This plan, like other WHO documentation, is being updated throughout the response.
Appendix 2: Modelling Support for Forward Planning

Modelling recreates the essential components of pathogen transmission cycles from our understanding of the biology of the pathogens and their interactions with their hosts. Models help to predict where and when infectious diseases may emerge or re-emerge, and they can be used to explore the best methods or combinations of methods to control disease outbreaks or epidemics and protect the health of Canadians. Models can take into account new events during the course of the pandemic such as vaccination or emergence of new variants of concern.

For response to COVID-19, there are three broad types of model being used:

1. **Deterministic compartment models.** These are Susceptible-Exposed-Infectious-Recovered (SEIR) type dynamic models in which the population is divided into “susceptible”, “exposed”, “infectious” and “recovered” classes. After encountering infection, individuals in a population move from one state to the next. This basic structure includes elements to model SARS-CoV-2 and impacts of public health measures, with more realism. These elements include compartments for isolated cases and quarantined “exposed” contacts from which onward transmission to susceptible people is limited or absent, compartments for asymptomatic cases that may or may not be detected by surveillance, as well as flows to “isolation” and “quarantine” compartments that allow variation according to different levels of public health effort. These models are used to inform broad policies at a national level, including i) estimating numbers of cases, hospitalisations and deaths; ii) estimating the effects of non-pharmaceutical interventions (NPIs), (physical distancing, case detection and isolation, and contact tracing and quarantine), iii) design of vaccination programs; iv) the design of programs to enhance “herd immunity” via use of antivirals/therapies in combination of vaccination; and estimating the effect of the emergence of new variants of concern on the disease transmission.

2. **Agent-based models.** These are also SEIR models, and they can also be used to inform development of national strategies. However, because they can simulate disease transmission with some detail in and amongst homes, work places leisure spaces etc., they are particularly useful for decision-making at an individual community level regarding needs for NPIs, and strategies for relaxing restrictive closures.

3. **Branching models.** These are a more recent addition to the types of models used for COVID-19. They simply assess what factors cause single chains of transmission to expand or become extinct. They are being used to assess the needs for controlling transmission in work places and institutions.

The PHAC has developed models that can be shared, and are constantly undertaking modelling to support decisions. The PHAC External COVID-19 Modelling Expert Group was formed in February 2020, and currently comprises 33 members from 21 universities across Canada, as well as 43 members from other Federal departments/organisations provincial/territorial public health organisations. The group comprises the majority of infectious disease modelling group leads in Canadian universities, and is capable of supporting modelling needs for decision-making.
Appendix 3: COVID-19 Response Planning with Indigenous Communities

Indigenous Services Canada (ISC), the Public Health Agency of Canada (PHAC) and the F/P/T response partners have been involved in various activities to support the COVID-19 response in First Nations, Inuit and Métis communities and organizations, including the work of SAC’s FPTI Public Health Working Group on Remote and Isolated Communities. These supportive activities are summarized below.

- **Preparedness**: Resources to support pandemic planning updates/activation; access to medical supplies and PPE; training; and, guidelines.
- **Health Human Resources**: Resources to support surge capacity for health human resources, including nursing, medical and paramedical supports; as well as, charter services to get health human resources into communities with reduction to commercial airline service.
- **Infrastructure**: Resources to procure temporary shelter solutions and to support communities in efforts to re-tool existing spaces to offer safe assessment and overflow space; and, additional surge supports for food, water and other supply chain components; coordination of chartered flights to ensure availability of critical infrastructure supplies and professionals.
- **Infection prevention and control (IPC)**: Ongoing sharing of information (i.e., guidance on public health measures and promoting personal health measures for individuals and health providers), training and increasing capacity to support community response, including public service announcements in Indigenous languages. Provision of training of community workers and health providers on IPC. Ongoing funding for communities and service providers to increase their capacity for infection prevention and control, including First Nations-run schools, boarding homes, family violence shelters and friendship centres.
- **Testing**: Resources to develop capacity to conduct COVID-19 testing including the provision of testing swabs and point-of-care testing devices and cartridges.
- **Governance**: Continue to work with First Nations, Inuit, and Métis partners, the Public Health Agency of Canada (PHAC), Health Canada, Public Safety’s Government Operations Centre, and other departments, as well as their provincial and territorial counterparts for a coordinated and consistent Canadian approach to COVID-19 to protect the health and safety of all First Nations, Inuit and Métis peoples, regardless of where they live.
- **Communications**: Continue to develop and broadly disseminate communication messaging through Department’s COVID-19 Single Window to networks with Public Service Announcements in multiple Indigenous languages. Using digital media to further reach stakeholders with communications such as public health measures and maintaining an online, publicly available repository of COVID-19 resources relevant for Indigenous peoples in multiple languages and formats. Multilateral calls with partners at the national and regional levels continue.
- **Surveillance**: Adaptation of the Department’s flu surveillance tool to track COVID-19 across First Nations communities; and development of a tracking tool to inform dashboards on key indicators of COVID-19. COVID-19 case data is updated regularly on the ISC COVID-19 webpage. ISC continues to fund and facilitate partnerships with Indigenous-led, distinctions-based data initiatives. PHAC is working with provinces and territories to support collection of COVID-19 case and vaccination information, including race/ethnicity and Indigeneity to support understanding of the impacts of COVID-19 and inform response planning and actions.
- **Vaccine response planning**: Collaborating with federal departments, provinces and territories, and First Nations, Inuit and Metis partners to ensure that health facilities in Indigenous communities have the necessary immunization supplies, PPE, and health human resources to deliver the vaccine.
when available. Facilitating two COVID-19 Vaccine Planning working groups with representation from federal, provincial and territorial, and First Nations, Inuit and Metis partners to co-develop approaches to support the access to COVID-19 vaccines for Indigenous communities and populations, including Indigenous Peoples living in urban settings.

Based on knowledge and feedback learned to date, ongoing collaboration and funding is needed to support First Nations, Inuit, and Métis communities and organizations to respond any future surges/resurgences. Continued access to timely testing supplies, P/T labs for processing, and results, including point of care testing for northern, remote and isolated communities and capacity to detect VOCs.

Access to care to treat more severe symptoms of COVID-19 in remote and isolated communities also requires that ongoing arrangements, or new ones, are in place to ensure an adequate number of beds in hospitals south of 60, to support the treatment of Indigenous peoples living in northern, remote and/or isolated communities without this type of service. In communities where there are long-term care facilities, or Elders residences, it is important to have access to adequate resources to support their planning in keeping Elders safe and healthy, including funding for basic infection prevention control measures (i.e., PPE, high dose flu vaccine, cleaning supplies, etc.), as well as, engineered public health measures.

Learning from H1N1, we know that long standing public health gaps and health disparities between First Nations Inuit and Metis, and non-Indigenous Canadians increase the likelihood and potential severity of a COVID-19 outbreak in Indigenous communities, and we have seen this throughout the second wave of the disease. These disparities are often exacerbated in remote or fly-in communities, where access to necessary supplies and health care services is limited as compared to non-Indigenous communities. We also know that during H1N1, data for First Nations/Inuit/Métis populations was not captured in a consistent way, or a way that supported communities in their preparedness and response efforts. A distinctions-based approach has been adopted by the Federal Government to ensure that the unique rights, interests and circumstances of the First Nations, Inuit, and Métis peoples are acknowledged, affirmed, and implemented. In this context, it takes into account the cultural and socio-economic particularities of each of the Indigenous Nations involved. Distinctions-based, Indigenous-led analysis of COVID-19 data is necessary to advancing culturally appropriate and science-based approaches, for First Nations, Inuit and Métis Nation communities.

Surveillance activities are critical to informing public health responses to a pandemic. They support the early detection and description of potential health threats present in Canada, including on-reserve First Nations communities. In order to be able to make informed decisions, decision makers and leaders throughout the system need reliable public health data. Existing data quality and gaps for First Nations, Inuit and Métis populations living both on and off reserve are critical to effectively responding to future waves of COVID-19 amongst this population, protecting their health and safety by getting them the access to care required.

The strategy/approach, actions and deliverables for these preparations for the short, mid and long-term are presented below.

**Short term:** In the short term, ongoing work to continue to ensure First Nations, Inuit, and Métis communities and organizations have access to necessary supplies (e.g., PPE, vaccines and related
administration supplies), human resources, and funding to support the COVID-19 response and planning for future waves. Vaccine planning is a priority in the short term and is being conducted through collaborative efforts in working groups to facilitate culturally safe and equitable access to the COVID-19 vaccine for all Indigenous Peoples, regardless of where they live. Communications regarding the vaccine are being developed and distributed in multiple Indigenous languages, in partnership with Indigenous leaders and organizations, to build vaccine confidence. ISC and PHAC continue to work with partners to advocate for the prioritization of Indigenous Peoples for access to the COVID-19 vaccine. There is a need for continued work on COVID-19 surveillance and tracking of the COVID-19 vaccine administration, which is underway in collaboration with federal departments, provinces and territories, and Indigenous partners. Resources to support Indigenous-led data collection/governance/infrastructure to support data optimization for the longer term in Canada are essential. Resources to bolster community-led public health supports, culturally appropriate communication and information, and work are required, as well as training and capacity building to support these functions.

**Medium term:** As COVID-19 vaccine rollout continues and the supply of the vaccine increases, the tracking and reporting of vaccine uptake and effectiveness will be critical. ISC will also continue to work to increase vaccine confidence, building on lessons learned from the early vaccine rollout. Continued work is required to support access to patient care, as well as the work of community based workers and nurses in northern, remote and/or isolated communities, and increased funding for telemedicine and virtual health care providers is necessary. This will avoid a backlog of medical or specialist appointments after COVID-19, and support access to timely care supporting better health outcomes. Ongoing monitoring of forest fires and flood for possible evacuations and planning in light of COVID-19 will be maintained over the summer and fall months.

**Longer term:** In the fall, planning for the influenza vaccine clinics will need to be informed by current, local epidemiology of COVID-19, with respect to existing public health measures. As community spread of COVID-19 decreases and vaccine coverage increases, ISC and F/P/T public health leaders will support First Nations, Inuit, and Métis communities in re-opening economies and guidance for adjusting and eventual lifting of individual and community-based public health measures following assessment of readiness indicators. Continued work to monitor vaccine uptake and effectiveness. ISC will work with partners to facilitate after action reviews that will inform emergency management funding and planning for future pandemics.

High level signals that would necessitate a change in timelines or strategy/approach and sub-sequent actions and deliverables, include:

- community spread of VOCs;
- ongoing and prolonged active cases – either slow, or in a community outbreak scenario;
- signals and risks of community spread, where communities may be at a higher risk due to geographic location;
- access to health care to treat more severe symptoms;
- strain on system for medivacs should there be a greater need in PTs;
- shifts in hospitalization rate, ICU admission rate, case fatality rate;
- reproductive rate;
- outbreaks in long-term care facilities or Elder lodges; and,
- shift in age/sex distribution of cases.
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