CPHO Technical Briefing – Dr. Howard Njoo	July 8th – 2:00 PM

Slide 1: Update on COVID-19 in Canada: Epidemiology and Modelling

Today I will be sharing an update on the national epidemiology and the modelling work we are using to inform ongoing control of COVID-19 in Canada, but first, I will begin by providing the latest numbers on COVID-19 in Canada.

There have been 106,167 cases reported in Canada to date, including 8,711 deaths. 66% of the cases have now recovered and labs across Canada have tested over 3,020,172 people for COVID-19 to date. Over the past week an average of 37,674 people were tested daily, with 0.8% testing positive. These numbers change quickly and are updated daily in the evenings on Canada.ca/coronavirus.

Slide 2: Epidemiology transition slide

I will begin with the update on the latest epidemiology of COVID-19 across Canada.

Slide 3: MAP National overview, by province/territory, age and gender

COVID-19 has impacted some health regions more than others.

- Although most health regions in Canada have reported cases of COVID-19, this map showing incidence rates per 100,000 population, illustrates that some jurisdictions and regions within have experienced more activity than others.
- In particular, **Quebec and Ontario** have had some heavily affected areas and considering their larger populations, these jurisdictions account for 87% of cases overall.
- Other areas, such as northern Saskatchewan, have reported high case counts relative to their population size.

Boxes to the right, lower box re: deaths:

- The **proportion of cases who died has remained at about 8% (8.2 %; similar to June 29th 8.3%), reflecting the tragic impact on Canada's seniors in long-term care facilities** (was 2.2% April 9th; 5.5% April 28th).

- *8,693 deaths among 105,935 cases reported as of July 6th. **Based on available information, 15% of cases have required hospitalization** and **just over 3% have required intensive care** (same as June 29th, June 2nd, and April 28th).

* Based on case reports and information on hospitalisation available, **69,289** (66%) as of July 6th.

Slide 4: Transmission is under control nationally

Indicators of COVID-19 transmission show steady decline nationally

- These graphs, showing daily numbers of new cases and deaths, illustrate the steady decline in COVID-19 activity since the peak of the epidemic in late April.
- The increase in cases may be explained by outbreaks and community transmission in Alberta, Ontario, and Quebec.

Slide 5: Transmission is under control nationally

The COVID-19 infection severity indexes also show continuous decline throughout Canada

- We are also closely monitoring the number of cases hospitalized and those in ICU.
- Monitoring these severity indexes tells us that our public health measures have been successful in slowing the transmission of COVID-19 in the community, showing reduction in both cases overall and in the number of severe outcomes.

Slide 6: Recent fluctuations in Canada's *Rt* are driven by localised outbreaks

- **Another indicator of epidemic control** is the effective reproduction number or *Rt*. This number represents how many people are infected by each new case. In order for the epidemic to die out, *Rt* needs to remain consistently below 1, meaning that on average each new case infects **less than one other person**.
- Nationally, the *Rt* for Canada has been mostly below 1 for more than 10 weeks, which is good news.
- In recent weeks, the *Rt* has been fluctuating and has sometimes risen above 1.
- **At this point,** with transmission largely under control across the country, the daily *Rt* is likely to fluctuate dramatically. It remains important for us to closely monitor for new cases and outbreaks that could arise in any part of the country, even in places which might have few or no cases at the moment.

Slide 7: Data driven models forecast short-term epidemic trajectory

- Based on Canadian data up to July 2nd, this short-term forecasting shows predicted cases and deaths due to COVID-19 by July 17th.
    - **On the left**, the predicted number of cases could be in the range of **106,015 and 111,260** by July 17th.

- **On the right**, the predicted number of deaths could be in the range of **8,560 and 8,900** by July 17th.

- The dashed lines represent the predicted trajectory, while the black and red dots show what has actually occurred up to the most recent data update.
- The dashed lines represent the predicted trajectory, with the blue line showing the anticipated number of cases. Since this is an estimate, the red and green lines represent the upper and lower limits of the estimate. We anticipate that the actual number of cases will be somewhere between the red and green lines. The black and red dots show what has actually occurred up to the most recent data update.
- Just like the *Rt*, those forecasts have significant limitations, because it is difficult to predict the national number of cases and deaths that are now largely due to localised outbreaks and to community transmission.

Slide 8: Recent trends reflect community transmission hot spots and localise outbreaks

- The current patterns of COVID-19 infections show limited to no transmission in most areas of the country.
- The efforts and commitment shown by Canadians across the country over the past months have now shown us that we have been able to impact the pandemic, control transmission nationally, and begin the process of entering the next phase of monitoring and preventing a resurgence.
- However, we must stay alert and strengthen our response in areas where we continue to have cases in the community and where we have experienced new outbreaks.
- Areas of increased transmission are shown as darker blue areas on the map. Some of these areas are experiencing localized outbreaks as seen in Alberta and Saskatchewan, while others represent persistent community transmission as seen in and around Toronto and Montreal.

Slide 9: Outbreaks point to vulnerabilities in closed and crowded settings

- **Since the start of the epidemic in Canada, Long-term care and assisted living homes have been hit the hardest,** with over 1000 separate outbreaks accounting for about 20% of confirmed cases and tragically over 80% of all deaths.
- Also, outbreaks occurred in **communal homes and in workplaces where it may be difficult to maintain social distancing.**

- **As we gradually reopen society and resume activities, we are now seeing outbreaks reported in a number of social locations, particularly in settings where maintaining physical distancing may be difficult (funerals**, family gatherings)

Slide 10: Steepest declines in transmission observed among oldest age groups

- **Since April, in general, COVID-19 cases have steeply declined in the older population with the steepest decline seen in those over 80 years of age.** This provides some good news that cases are declining among those at risk of the most severe outcomes.

Slide 11: Slower decline in 20 to 39 years-old since late May

- **In younger age groups, overall cases are also decreasing, however at a slower rate, particularly in those between the ages of 20 and 39. We require case rates in these age groups to continue to decline steadily in order to continue on our path to prevent resurgence and maintain epidemic control.**
- Although severe illness is less common in younger individuals, they are not immune to severe outcomes. Moreover, transmission in any age group builds a reservoir for the virus and threatens our ability to maintain epidemic control.
- We must collectively commit to ensuring we don't spread this virus to vulnerable people in the rest of society at risk of severe outcomes or to settings where an ember could spark an outbreak.

Slide 12: Modelling update transition slide

- In summary, the epidemiology indicates that the transmission is largely under control in Canada, while also showing us that cases can re-emerge at any time or place.
- In today's modelling update, I will review why we need to continue with critical public health measures to maintain control, stamp out outbreaks, and prevent a widespread resurgence of cases.
- Models provide a prediction of what **could** happen under hypothetical scenarios, allowing us to **drive our public health actions towards a best possible outcome**.

Slide 13: Canada is aiming for strong epidemic control over the course of the pandemic

- Canada is aiming for strong epidemic control over the course of the pandemic, with less than 10% of the population infected over the course of the pandemic.

- Thanks to the commitment of all Canadians who have been following public health advice to protect themselves and others, we are well on our way down the curve on the other side of the big first peak.
- To this day, the Coronavirus has not been eliminated and we do not have an effective vaccine yet.
- While some restrictive public health measures are being lifted to minimise the unintended health, social and economic consequences of some COVID-19 control measures, we anticipate a resurgence of cases. The best strategy is to keep the number of cases to a minimum and maintaining core public health practices.
- We must be able to rapidly detect and isolate cases and quarantine the contacts in order to keep any resurgence to a small and manageable size.

Slide 14: Key measures for an effective control of the pandemic

- Our collective hard work means we have had a great impact on controlling the COVID-19 epidemic across the country.
- As society reopens, we must continue to strengthen our efforts to prevent a rebound.
- Public health authorities are continuing to build capacity to rapidly detect new cases and outbreaks as quickly as possible so that action can be taken quickly to prevent future spread.
- **The sooner cases can be identified and isolated in the course of the illness**, the fewer other people they might infect.
- Likewise, when most or all of their contacts are identified early and placed into quarantine fewer are likely to spread the infection to others if they do become ill.
- We must also stay vigilant for early signs of a possible increase in cases and continue monitoring indicators that can inform us of changes across the country.

Slide 15: Effective contact tracing means we know how people were exposed to the virus

- Now that there are fewer cases of COVID-19, we need to ensure we know how cases were infected or how they are linked to another case or source that we can identify.
- The red bars in this graph show those cases with no known source of exposure, and this proportion has decreased over time as a result of our effective public health measures.
- The more cases that occur where we do not know how they were infected, that harder it will be to prevent a surge in cases.

Slide 16: Public health measures remain essential to control the epidemic

- These dynamic models tell us that if we relax too much or too soon, the epidemic will most likely rebound with explosive growth as a distinct possibility.
- Modelling simulations show us that as we lift stay at home policies and business and school closures, indicated by the green bar, we risk the epidemic potentially resurging later in the summer and into the fall if we do not strengthen other public health measures to maintain epidemic control.
- The enhanced public health measures include rapid case detection and timely contact tracing and quarantine to prevent new introductions and control any new chains of transmission in outbreak or community settings.
- This possibility of significant resurgence is not just hypothetical as this is exactly what we are already seeing in some other parts of the world.

Slide 17: Protect yourself, your loved ones and help control COVID-19 in Canada

- **Canada has made significant progress to bring the epidemic under control,** thanks to the commitment of Canadians maintaining public health practices to protect themselves and others.
- **Across the country, jurisdictions continue** to increase social and economic activity with appropriate conditions and controls in place to minimise spread of the virus.
- However, the virus has not disappeared and resurgence can happen any time or any place.
- **Until there is a vaccine or effective treatment**, we need to continue to live with COVID-19 by balancing the risks of spread of COVID-19 with the unintended social and health consequences of restrictive public health measures.
- If you do test positive, consider that the fewer people that you have had contacts with, the quicker and easier it will be for public health to trace them all down and interrupt chains of transmission and keep the spread of COVID-19 under control

Thank you.

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Slide 18: APPENDIX SLIDES

Slide 19: We continue to learn from the experience of the global community

- This slide compares Canada's COVID-19 trajectory with other countries (aligned at the day of reaching the first 100 cases when exponential growth takes off).
- Canada has bent and flattened the curve sooner than a number of countries, such as Italy and US.
- Other countries such as South Korea and Japan demonstrated strong epidemic control to keep their curves smaller overall.
- All countries realise that this is an ongoing effort, requiring sustained public health measures to avoid new outbreaks and/or rebound epidemic activity.

Slide 20: Dynamic models of scenarios

This slide describes the dynamics of the disease and how it might be spread to others and how these are considered during modelling.