

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

...Today I'll 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'll begin by providing the latest numbers on COVID-19 in Canada.

There have been **103,250** cases reported in Canada to date, including **8,522** deaths. **64%** of the cases have now recovered. Labs across Canada have tested over **2,676,000** people for COVID-19 to date. Over the past week, an average of **36,767** people were tested daily, with **1%** testing positive. These numbers change quickly and are updated daily in the evenings on [Canada.ca/coronavirus](https://Canada.ca/coronavirus).

*NOTE: The following P/Ts do not report updates on their numbers on the weekend so will not be included in a Monday briefing but would be included in a Tuesday briefing: **QC, BC, PE, YK, NT, NU**.*

## Slide 2: Epidemiology transition slide

I'll 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 86% of cases overall.
- Currently, hotspots linger with persistent community transmission in and around Toronto and Montreal.

### Boxes to the right, lower box re: deaths:

- The proportion of cases who died has remained at about **8% (8.3%; similar to June 4<sup>th</sup> 8.0%)**, reflecting the tragic impact on Canada's seniors in long-term care (was 2.2% April 9<sup>th</sup>; 5.5% on April 28). This case fatality ratio changes over time as new cases and deaths are reported. **8,508 deaths among 102,794 cases reported as of June 26<sup>th</sup>.**
- Based on available information, **15%** of cases have required hospitalization and just over **3%** have required intensive care (same as June 2<sup>nd</sup> and April 28<sup>th</sup>).

*\*Based on case reports with information on hospitalisation available, **67,289 (66%)** of 102,462 cases as of June 26<sup>th</sup>.*

#### Slide 4: Transmission is under control nationally

- These graphs showing daily numbers of new cases and deaths on the top and daily totals of hospitalised and critical case patients on the bottom, illustrate the steady decline in COVID-19 activity since the peak of the epidemic in late April.
- Monitoring these indicators tells us that our public health measures have been successful in slowing the transmission of COVID-19 in the community, particularly as all four show a steady decline.

#### Slide 5: Canada's effective reproduction number ( $R_t$ ) has been **<1 for eight weeks**

- **Another indicator of epidemic control** is the effective reproduction number or " $R_t$ " – this number represents how many people are infected by each new case. In order for the epidemic to die out,  $R_t$  needs to remain consistently below one, meaning on average each new case infects **less than** one other person.
- Nationally, the  $R_t$  for Canada has been below 1 for more than 8 weeks, which is good news.
- **At this point**, with transmission under control in jurisdictions across the country, fluctuations in  $R_t$  at the national level are a result of localised outbreaks ongoing transmission in a few communities, such as in and around Toronto and Montreal.

#### Slide 6: Steepest declines in transmission observed among oldest age groups with relative increase in 20 to 39 year-olds since late May

- All age groups have been affected although incidence among children and youth has remained relatively low throughout.
- On the left, the sharp peak in incidence among adults aged 80 years and older (green line) is largely attributed to outbreaks in long-term care homes.
- As the epidemic has slowed, incidence rates have steadily declined in all age groups, though the decline has been relatively slower in younger age groups.
- As a result individuals under the age of 40 now account for greater proportion of total cases in recent weeks.

## Slide 7: National trends reflect a series of regional epidemics

- The epidemiology of COVID-19 in Canada is a composite of different regional epidemics.
- **This slide shows Canada's three largest outbreaks across the top**, all having experienced significant community spread and daily cases into the hundreds, especially in Quebec and Ontario and to a lesser extent Alberta
- **The centre row shows provinces with outbreaks and limited community transmission, with daily case counts remaining below 100** and transmission now largely brought under control
- **The lower row with daily case counts in the low double digits** show provinces that experienced isolated and largely contained outbreaks with minimal to no community transmission.
- **Finally, the multiple distinct peaks in the curves along the right hand side** (for Alberta, Saskatchewan and New Brunswick) serve as reminders that resurgence can happen in any place at any time in Canada even in areas with no or low levels of transmission.
- **Prince Edward Island, the Yukon and the Northwest territories** have had no community transmission, while Nunavut had reported no cases to date.

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

- Current patterns of COVID-19 incidence show limited to no transmission in most areas of the country.
- Areas of increased incidence shown as darker blue areas on the map, represent areas experiencing outbreaks as seen in Saskatchewan and in hotspots of persistent community transmission as seen in and around Toronto and Montreal.

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

- **COVID-19 has exploited social and economic vulnerabilities and inequalities across Canadian society**, taking hold in settings and among communities that experience overcrowding, lower incomes and health disparities.
- **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.
- **Outbreaks in other congregate living and work settings are also driving case counts** in some provinces. These settings include hospitals, correctional facilities, shelters and workplaces, including Canada's largest outbreak linked to a meat processing plant.

## Slide 10: Modelling update transition slide

- In summary, the epidemiology indicates that transmission is largely under control in Canada, while also showing us that cases can re-emerge any time or place.
- In today's modelling update, I'll talk about how we are using modelling to identify the combinations and intensity of public health measures we need 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 toward a best possible outcome**.

## Slide 11: 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.
- However, some restrictive public health measures are being lifted to minimise the unintended health, social and economic consequences of some COVID-19 control measures.
- 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 12: Public health measures remain essential to control the epidemic

- These models all 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 we must 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 is not merely hypothetical, this is what we actually observe in other parts of the world.**

### Slide 13: Speed & completeness of case detection & contact tracing essential to controlling transmission

- Fast and thorough case detection and contact tracing means that cases (including any contacts that go on to become cases) will be less likely to spread infection to others.
- **The higher the proportion cases** that can be detected and isolated **early in the course of the illness**, the fewer people they are likely to infect.
- Likewise, when most or all contacts are identified early and placed into quarantine, fewer are likely to spread the infection to others if they do become ill.
- These modelling simulations illustrate the impact of rapid case detection (graph on the left) and contact tracing (graph on the right) on epidemic control.
- **As an example, the red dot on the model on the left** shows that if we detect cases within **5 days of becoming infectious**, we need to reach **more than 50% all cases and isolate them** to achieve epidemic control.

**The model on the right** shows that if we trace contacts within **2 days of their exposure**, we need to reach more than **50% of all contacts and quarantine them** to achieve epidemic control.

### Slide 14: Speed and completeness of case detection improving over time

- Canada has been testing more and more people over time with a lower percentage of testing coming back positive which indicates that our surveillance is sensitive and casting the net wide to pick up cases.
- The shorter the time interval between **onset of illness** and **lab specimen collection**, the quicker cases are detected and isolated to prevent further spread.
- **The graph on the right shows** that this time interval has decreased over time from more than 8 days to around 3 days currently.

### Slide 15: Effective contact tracing reduces the proportion of unlinked cases

- Public health authorities are monitoring the number of cases that cannot be linked to other cases as a measure of effective contact tracing with the aim of keeping this number to a minimum.
- The more cases that are unlinked—that is to say, we don't know how they were exposed—the harder it is to stop community spread.

- Lower daily case counts right now facilitates contact tracing to link cases and break chains of transmission.

## Slide 16: A combined testing (to isolate cases) and tracing (to quarantine contacts) strategy optimizes COVID-19 epidemic control

- As society reopens, the average number of people we meet each day will increase and there will be additional places and situations where there is a higher risk of virus transmission.
- These tables show what combinations of case detection and contact tracing are needed to keep the epidemic under control;
  - coloured cells indicate successful combinations according to 3 modelling studies
- **The top table** shows that with restrictive measures (school, university, workplace closures), many combinations are able to keep the epidemic under control.
- **The tables lower down** show that with increasing numbers of close contacts between individuals, it becomes increasingly difficult for case detection and contact tracing by public health to control the epidemic.
- Therefore, as society reopens and public health restrictions are relaxed, it is even more important that Canadians continue with collective efforts to maintain physical distancing and good hygiene to keep COVID 19 under control. This ensures public health capacity is not overwhelmed and can use case detection and contact tracing to control the epidemic.

## 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.
- Due to the progress that Canadians have made, we will be decreasing the number of media availabilities that we will be holding each week for the time being.
- We will be providing updates in person twice a week over the coming weeks, unless there is something we need to urgently bring your attention to.

- We will also be issuing statements each day to keep you updated on the latest numbers and any news on the days that we're not holding media availability.
- 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

## Slide 18: APPENDIX SLIDES

### Slide 19: Data driven models forecast short-term epidemic trajectory

- Based on updated Canadian data real data out to June 26<sup>th</sup>, this short-term forecasting shows predicted cases and deaths due to COVID-19 by July 12<sup>th</sup>.
  - **On the left** the predicted number cases could be in the range of **103,940 to 108,130** by July 12<sup>th</sup>
  - **On the right** the predicted number of deaths could be in the range of **8,545 to 8,865** by July 12<sup>th</sup>

### Slide 20: 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 the UK, Italy and US.
- Other countries such as South Korea and Japan demonstrated strong epidemic control to keep their curves smaller overall but all countries realise that this is an ongoing effort, requiring sustained public health measures to avoid new outbreaks and/or rebound epidemic activity.

## **Slide 21: Effective contact tracing reduces the proportion of unlinked cases**

**Dynamic models of scenarios**