COVID-19: Going Forward

• Prepared for BC Ministry of Health
• June 4, 2020
Epidemiology

How and Where the Virus Has Affected People in BC
Epidemic Curve: Confirmed COVID-19 cases in BC by reported date January 1 and May 27, 2020 (N=2553).

Cases reported on the same day as this report are excluded as only a portion are available at the time the data are extracted. The number of cases reported by day differs from that in Table 1 in previous reports as this figure reflects the date the case was lab-confirmed and reported to the Health Authority.
Confirmed COVID-19 Cases in BC by Health Service Delivery Area

Cumulative total: reported January 22 to May 31, 2020

Past 14 days: reported May 18 to May 31, 2020

N = 2587 cases
(cases with unknown HSDDA and from out of province not mapped)

N = 144 cases
(cases with unknown HSDDA and from out of province not mapped)

COVID-19 IN BC
COVID-19 Cases by Age (Total N=2,562)

Numbers on bars represent number of cases by age group.
Percentage of COVID-19 hospitalizations, ICU admissions and deaths by age in BC January 1 – May 29, 2020 (N=2,562).
COVID-19 Cases by Sex

- Female: n=1,332
- Male: n=1,230

Percentage
Percentage of COVID-19 hospitalizations, ICU admissions and deaths by sex in BC January 1 – May 29, 2020 (N=2,562 cases).
Percentage distribution of COVID-19 cases, hospitalization, ICU admissions and deaths by age, compared to the general population† of BC, January 1 – May 29, 2020 (N=2,562*).

*Includes 2,562 cases, 491 hospitalizations, 172 ICU admissions, and 164 deceased with age information available. † PEOPLE2019-2020 population estimates.

Note: COVID hospitalizations have been reported in the <10y and 10-19y age groups but represent <1% of hospitalizations and are therefore not visible.
COVID-19 Public Health Investigations Over Time

Before March 15th

1,257

- 1,150 contacts traced
- 10.7 contacts per case
- 99.3% contacts reached
- 2.0% became secondary cases

After March 15th

11,085

- 8,665 contacts traced
- 3.6 contacts per case
- 98.0% contacts reached
- 7.4% became secondary cases

Total

12,342

- 9,815 contacts traced
- 1/3 contacts per case before March 15th
- High % of contacts reached both before and after March 15th
- 3x higher proportion of secondary cases after March 15th

1 day from case notification to contact tracing

1 day from contact tracing to contact notification
Genomic Epidemiology: Virus Origin

- B.1 European-like & Eastern Canada
- B.4 Via Iran
- B.3 Mainly China
- A.1 Washington State-like
- B.3 Mainly China
Temporal Distribution of Virus Lineages: Where The Virus Came From Over Time

- A.1 Washington State-like
- B.1 European-like & Eastern Canada
- Others (Including China & Iran-like Strains)
Geographic Distribution of Virus Lineages

- **B.1** European-like/Eastern Canada
- **A.1** Washington State-like
- **B.3** China-like
- **B.4** Iran-like
- **B.3** Others
International Case Rates Comparison:
Cumulative diagnosed COVID-19 case rates by select countries vs BC and rest of Canada.

National Case Rates Comparison:
Cumulative diagnosed COVID-19 case rates by Canadian provinces.

Note: QC, and, to a lesser extent, ON, account for most of the deaths count for the Rest of Canada.
Death Rate Comparison

International Death Rates Comparison:
Cumulative COVID-19 death rates by select countries vs BC and rest of Canada.

National Death Rates Comparison:
Cumulative COVID-19 death rates by Canadian province.

Note: QC, and, to a lesser extent, ON, account for most of the deaths count for the Rest of Canada.
Modelling Analyses to Date

Keeping the Curve Flat
British Columbians’ Mobility

Google Mobility Data for B.C., compared to baseline period (Jan 2nd - Feb 6th, 2020) (3-day smoother)

Public Health Measures Enacted

Parks

Residential

Grocery/Pharm

Retail/Recreation

Work Spaces

Transit Stations

Daily COVID-19 cases (reported date)

COVID-19 IN BC
Our model suggests continued declines in transmission, resulting from ongoing physical distancing.

Solid line: mean; shaded bands: 50% and 90% credible intervals; Open circles: reported cases. Cases used for model fitting exclude those attributed to outbreak clusters.
Dynamic Compartmental Modelling:
If too much relaxation of distancing occurs, it may result in a rapid rebound in transmission.

Contact rate increases to 50% of Normal

Contact rate increases to 60% of Normal

Contact Rate Increases to 70% of Normal

Contact rate increases to 80% of Normal
Age Structured Modelling:
The susceptibility of children to infection (50% vs 100% compared to adults).

Partial re-opening of schools in June have minimal impact on transmission in the short-term, provided vulnerable adults maintain physical distancing.
Age Structured Modelling: Self-isolation (20% vs 70%).

As schools re-open and distancing measures relax, self-isolation by sick individuals can prevent renewed epidemic growth of cases.
COVID-19: Going Forward

• Prepared for BC Ministry of Health
• June 4, 2020