Purpose

The surveillance deck is a summary of COVID-19 related indicators that can help inform the pandemic response in British Columbia. This surveillance monitoring constitutes the medical chart for population health assessment that guides the public health community of practice. As such this is a working document that reflects a snapshot in time and may differ from other published reports.

Data Sources

The collection, use and disclosure of case data is subject to the Public Health Act. COVID-19 cases are reported under the Public Health Act to the health authority of residence. Public health case notification, clinical management, contact tracing and follow-up contributes surveillance data for regional and provincial COVID-19 monitoring. Each regional health authority have their own workflows and information systems for capture of relevant data. This data foremost serves the public health and clinical management of the case and their contacts.

Disclaimer

• Data and key messages within these documents are not finalized and considered to be work in progress that is subject to retroactive changes as more data and information become available.

• Accurate interpretation of figures may be difficult with the limited inclusion of data notes and methodology descriptions in this document.
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Overall Summary

• **Case rates** are declining in all HAs, and provincially cases are back to September 2020 levels; **test positivity** continues to decline, ~3.7% provincially for publicly funded tests and 2.7% for all tests.
  - Percent positivity ≤5% in all HAs and age groups is declining

• **New hospitalizations** continue to decline; **hospital/critical care census** is declining across BC (at April 2020 level); **new deaths** are stable and low.
  - Majority of hospitalizations continue to be among individuals aged >40 years

• The share of **VOCs** among all positive tests in BC is ~90% from June 6 to 12. Among sequenced samples provincially based on information for June 6 to 12, P.1(Gamma) (~45%) and B.1.1.7 (Alpha) (~49%) remain two dominant VOCs, with B.1.617.2 (Delta) representing ~6% of VOCs.

• **Vaccine** coverage in BC by age, June 17th: ~3/4 of 12+ and ~2/3 total population vaccinated. Vaccination rates among 30-39 years have slowed down, early signs of slowing among 20-29 years; ~1/4 of adults 50+ have their 2nd dose.

• Recent **case resurgence in the UK** is largely driven by infections in younger individuals, most of whom are not yet vaccinated. The UK situation is not directly comparable to BC, in part due to the differences in the distribution across age and geography of the unvaccinated susceptible population.
Jun 11 to Jun 17: BC COVID-19 Profile

- **Total cases**: 146,794
- **New this week**: 798
- **Ever hospitalized**: 7,879
- **New this week**: 69
- **Total deaths**: 1,739
- **New this week**: 10
- **Removed from isolation**: 143,579
- **New this week**: 1,265

New daily COVID-19 cases, hospitalizations and deaths, Aug 01 2020 - Jun 16 2021

* Data are by surveillance date for cases and deaths, and admission date for hospitalizations
* Data source: PHRDW Jun-17-2021
Case rates are declining in all HAs; new hospitalizations are declining or stable in all HAs; new deaths are stable and low.
Hospital and critical care census is declining or stable in all regions.
Number of new hospital admissions continues to decrease. The number of hospitalizations among individuals <40 years is low. Deaths are low and mostly among individuals ≥ 60 years.
For latest version of this map, see the new (note: change symbols not included) COVID-19 Surveillance Dashboard.
For latest version of this map, see the new (note: change symbols not included) COVID-19 Surveillance Dashboard.
For latest version of this map, see the new COVID-19 Surveillance Dashboard.
For latest version of this map, see the new COVID-19 Surveillance Dashboard.
Average daily rate of new cases per 100,000 population, by local health area, Jun 10 - Jun 16, 2021

For latest version of this map, see the new COVID-19 Surveillance Dashboard.
Case incidence decreasing or stable in all HAs. Percent positivity ≤5% in all HAs.
Vaccine coverage in BC by age, June 17th: ~3/4 of 12+ and ~2/3 total population vaccinated. Vaccination rates among 30 year olds have slowed down, early signs of slowing among 20 year olds; ~1 in 4 of adults 50+ have their 2nd dose.
For latest version of this map, see the new COVID-19 Surveillance Dashboard
COVID-19 Vaccination Coverage by CHSA: Ages 12+ 1st Dose (up to June 14, 2021)

For latest version of this map, see the new COVID-19 Surveillance Dashboard
For latest version of this map, see the new COVID-19 Surveillance Dashboard
For latest version of this map, see the new COVID-19 Surveillance Dashboard.
Nationally, BC’s vaccination rate is very close to Canadian average; internationally, Canada is one of the countries with the highest proportion of the population with at least one dose.

Data source: Open Data
Visualization: BCCDC

Data source: Our World in Data
Visualization: BCCDC
1. **Percent positivity** among publicly funded tests is 3.7% and among all tests it is 2.7%.
   - Testing rates decreased 4% this week (~38,000 total tests June 6 to June 12)
2. There are regional differences in percent positivity, ranging from 0.8% in VIHA to 5.0% in IH.
3. Incidence continues to decline in all age groups; percent positivity is ≤5% in all age groups.
4. The provincial weekly median turnaround time (time from specimen collection to lab result) is 13 hours, indicating good testing capacity; only 1 in 4 tests took ≥24 hours to result.
5. The share of **VOCs** among all positive tests in BC is ~90% from June 6 to 12.
6. Sequencing-based VOC prevalence for June 6 to 12 shows distribution of lineages: P.1 (Gamma)~45%, B.1.1.7 (Alpha)~49% and B.1.617.2 (Delta) ~6%.
### Weekly Summary of ALL lab tests performed

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
<th>Change</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total specimens tested</td>
<td>2,820,994</td>
<td>↓4% relative to last week</td>
<td></td>
</tr>
<tr>
<td>New this epi week</td>
<td>37,928</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total positive specimens</td>
<td>154,184</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New positive this epi week</td>
<td>1,021</td>
<td>↓0.9% absolute change from last week</td>
<td></td>
</tr>
<tr>
<td>Positivity</td>
<td>2.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean turnaround time (TAT)</td>
<td>15 hr</td>
<td>↑4% TAT relative to last week</td>
<td></td>
</tr>
</tbody>
</table>

### Weekly Summary of Lab tests paid Publicly

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
<th>Change</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total specimens tested</td>
<td>2,315,634</td>
<td>↓3% relative to last week</td>
<td></td>
</tr>
<tr>
<td>New this epi week</td>
<td>27,536</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total positive specimens</td>
<td>152,789</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New positive this epi week</td>
<td>1,008</td>
<td>↓1.3% absolute change from last week</td>
<td></td>
</tr>
<tr>
<td>Positivity</td>
<td>3.7%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Data source:** PLOVER extract at 10:30am on June 16, 2021.  
Epi week 23 (June 6 - 12)
COVID-19 Recent 7-Day Test Positivity by CHSA (June 9 to 15, 2021)

Includes all tests

For latest version of this map, see the new (note: change symbols not included) COVID-19 Surveillance Dashboard
Incidence is stable or decreasing across regions; positivity is >5% in Northeast and East Kootenay HSDAs.

Case incidence rate, test percent positivity, and testing rate by HSDA (Public Payers Only).


For latest version of a graph similar to this one (difference: all tests, not public tests), see the Epi App.

Data source: PLOVER 16-Jun-2021
Incidence continues to decline in all age groups; percent positivity is \( \leq 5\% \) in all age groups.


Data source: PLOVER 16-Jun-2021
Of all COVID-19 positive test samples June 6 to June 12 in BC, ~90% were confirmed VOCs.

Prevalence of presumptive and sequenced VOC, start of epi week of collection date in BC and Health Authorities, Jun 06 - Jun 12

Number of samples

Epidemiological week (based on collection date)

Data from the Plover system at the BCCDC Public Health Lab

Shaded area reflects partial data and is subject to change

This figure can also be found in the weekly VOC report
Among sequenced samples provincially based on information for June 6-12, P.1 (~45%) and B.1.1.7 (~49%) remain two dominant VOCs. B.1.617 increasing, currently represents ~6% of VOCs.

* the B.1.1.7 and P.1 VoC lineages are captured either by qPCR SNP screen or WGS for randomly selected samples up to epiweek 21; all other circulating VoCs are WGS confirmed and exclude samples sequenced for cluster and/outbreak investigation.

In week 12, we used a qPCR SNP that is comprised of a dual N501Y and E484K assay.
Dynamic compartmental modeling: recent trends

Our model shows that $R_t$ remains below 1 and is stable in most regions of BC

- **BC (0.59 ≈ 0.61)**
- **Fraser (0.54 ≈ 0.54)**
- **Vancouver (0.53 ≈ 0.54)**
  - Coastal
- **Interior (0.79 ≈ 0.81)**
- **Vancouver (0.79 → 0.97)**
  - Island
- **Northern (0.59 ≈ 0.54)**

Solid black line: median $R_t$, modeled using all reported cases up to June 16, 2021; Grey band: 5%-95% credible interval; Purple bars: all reported cases. Due to lag from symptom onset to reporting, most recent case counts and $R_t$ are not shown. Recent trend shown comparing 7 day average $R_t$, from (last week → this week). Data source: BCCDC HA line list.
Model notes and assumptions

• **$R_t$ modelling**: a dynamic compartmental model was fit to COVID-19 data for BC using a Bayesian framework (Anderson et al. 2020. PLoS Comp. Biol. 16(12): e1008274). Results are presented as provincial and regional time-varying estimates of average daily transmission rate ($R_t$).
  - the model does not consider importation of cases, hence all transmission is assumed to arise from local cases
  - the model does not distinguish cases arising from variants of concern (VoCs) versus ‘wild-type’ COVID-19, hence model estimates represent average rates of transmission
Addendum: assessment of the UK epidemiological situation and comparisons with BC

June 17, 2021
Assessment of the situation in the UK

• UK is experiencing a resurgence in cases after ~2 months of low and stable rates. Current case incidence in the UK is higher than BC and overall % population with at least 1 dose is slightly lower than in BC.

• Most of the new infections are attributed to the Delta (B.1.617.2) variant. It took the Delta variant ~2 months to become dominant in the UK, a similar time frame to Alpha variant.

• Current resurgence in the UK is largely driven by infections in individuals <30, most of whom have not been vaccinated yet. The majority of recent hospitalizations are also among unvaccinated individuals.

• Prioritizing administration of 2nd doses in the UK over 1st doses for younger individuals did not prevent a 4th resurgence in cases. It is too early to tell how it impacted hospitalizations and deaths.

• UK situation is not directly comparable to BC, in part due to the differences in the distribution across age and geography of the unvaccinated susceptible population.

• BC has a higher proportion of the population vaccinated than UK did at the similar point on their epidemic trajectory. There is a large difference between UK and BC in % young people vaccinated.

• With respect to the Delta variant, both Pfizer and AstraZeneca vaccines are very effective against severe outcomes after 1 dose, and offer excellent protection after 2 doses.
UK is experiencing a resurgence in cases after ~2 months of low and stable rates. Current overall incidence in the UK is higher than in BC.
BC’s declining case trajectory since the peak has been similar to Israel’s.
Most of the new infections in the UK are attributed to the Delta (B.1.617.2) variant. It took the Delta variant ~2 months to become dominant in the UK, a similar time frame to Alpha variant.

B.1.617.2 (Delta): became dominant between early April and early June (~2 months)

B.1.1.7 (Alpha): became dominant between early Nov and early Jan (~2 months)

Please note that the way samples were identified for these two variants were different (screening for Alpha and sequencing for Delta) and for Alpha, may have captured other lineages.
Current resurgence has been largely concentrated in North West of England initially, but has recently spread to other parts of the country.

**North West England**

Data to 10 June. Source: [Guardian](https://www.theguardian.com)
Cases are rising steeply in North West England, and hospital metrics are now also accelerating upwards. Deaths so far show no sign of a sustained rise.

Each metric as a share of its January peak (log scale), by number of days since it began to rise. Showing current wave compared to last autumn.

Source: Financial Times
Current resurgence is largely driven by infections in individuals <30

Hospital admissions in the North West of England are rising again among younger people, but flat or falling among older groups

Source: Financial Times

Heat map of cases in Manchester over time

Source: UK Coronavirus Dashboard

Note the concentration in the 10-24 age groups
This pattern is observed at the national level as well. However, it is important to note that new resurgences generally begin in that age group, a phenomenon consistently observed in various jurisdictions. One of the reasons for this is a very high contact rate in <30 year olds with each other.
The same key contact patterns are consistent across countries: people tend to interact the most with people who are the same age, and children and young adults have the highest contact rates.

The other two heat lines on these graphs are parents/grandparents/teachers interacting with children/grandchildren/students.

Source: Mossong et al, PLOS Medicine
We observe these patterns in Canada as well. Note how contact patterns also differ by setting.

Darker colors in the figures shows higher frequency of contacts
Similar to European countries, assortative age mixing and higher contacts in children 9-19 yrs
As expected work place contacts are higher between age 25-55 yrs.

Prem K, Cook AR, Jit M (2017) Projecting social contact matrices in 152 countries using contact surveys and demographic data. PLOS Computational Biology 13(9): e1005697. https://doi.org/10.1371/journal.pcbi.1005697
Data from Zoe COVID Symptom Study, which uses smartphone real time self-reported data based on positive tests from over 4.6 million UK participants, also suggest that a lot of the new infections in the UK are among the unvaccinated individuals.
At the end of May, just when the resurgence of cases was beginning, ~93% of unvaccinated individuals in the UK were under 40 years of age.

Among those under 40 years old, ~80% have not had 1 dose yet at the end of May.

Source: Public Health England
England had a different age-specific vaccination status of the population back in mid-April, a comparable point in time to where BC is at now in terms of incidence rate, # months since vaccination campaign began, and Delta prevalence. But even today, significantly lower share of younger individuals in the UK have received at least 1 dose compared with BC – but a much higher share of older adults have a 2\textsuperscript{nd} dose.

**BC: mid-June**
- 3 months since start of vaccination campaign
- % Delta: \(~9\%

**England: mid-April**
- 3 months since start of vaccination campaign
- % Delta: \(~10\%

**England: mid-June**
- 5 months since start of vaccination campaign
- % Delta: \(>90\%\)

Vaccine effectiveness against the Delta variant

Another consideration, which may or may not end up being an important factor in the most recent resurgence in the UK, is the difference in the types of vaccines distributed to the population. In the UK, ~2/3 of 1st doses were AZ and ~1/3 were Pfizer.* In BC and Canada, the majority of 1st doses were Pfizer/Moderna.

Data from England and Scotland suggest that both vaccines are effective against the Delta variant:

**Symptomatic infection:** 1 dose of vaccine is not as effective against Delta as 2 doses, and AZ not as effective as Pfizer

**Severe outcomes:** Both vaccines are very effective after 1 dose, and offer excellent protection after 2 doses

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>1 dose</th>
<th>2 doses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alpha</td>
<td>Delta</td>
</tr>
<tr>
<td>Pfizer</td>
<td>27-49%</td>
<td>~33%</td>
</tr>
<tr>
<td>Astra-Zeneca</td>
<td>39-51%</td>
<td>~33%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>1 dose**</th>
<th>2 doses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alpha</td>
<td>Delta</td>
</tr>
<tr>
<td>Pfizer</td>
<td>83%</td>
<td>94%</td>
</tr>
<tr>
<td>Astra-Zeneca</td>
<td>76%</td>
<td>71%</td>
</tr>
</tbody>
</table>

Sources: PHE, Lancet

*Note how VE estimates for Alpha for both Pfizer and Astra-Zeneca are lower than what was estimated based on BC data and on the lower end of the range reported in other studies (46-60% for Pfizer and 70% for Astra-Zeneca).
Additional Resources

- BCCDC COVID-19 Surveillance Dashboard showing maps, vertical plots, and trends by LHA can be found [here](#).

- More BC COVID-19 data, including the latest Situation Report, maps, and BC COVID-19 public dashboard, can be found [here](#).

- For more information on variants of concern and whole genome sequencing, the latest report is posted [here](#).

- To put BC provincial, Health Authority, and HSDA trajectories into national and international context, see [BCCDC COVID-19 Epidemiology app](#).

- COVID SPEAK 2020 Round 1 Survey results

- Slides for previous public and modelling briefings by Dr. Bonnie Henry can be found [here](#).

- PHAC’s COVID-19 Epidemiology update can be found [here](#).