2022/23 Respiratory Season Surveillance Report

Epidemiological weeks 35 – 17 (Aug 28 – Apr 22)

BC Centre for Disease Control
Provincial Health Services Authority

May 2023

Season Summary

Following two years of relatively low non-COVID-19 respiratory illness activity in 2020/21 and 2021/22, 2022/23 season is characterized by the return to seasonal respiratory virus co-circulation patterns, albeit with some atypical features. Compared with the historical average for the 2014/15 to 2018/19 respiratory seasons, influenza activity peaked earlier, lasted for a shorter time period, and had a pronounced impact on the pediatric population. RSV activity was notably higher than historical average. SARS-CoV-2 continued to be present in BC communities at fluctuating levels between September and April. Circulation of other viruses generally fell within the expected range.

This 2022/23 respiratory season surveillance report for British Columbia (BC) covers the period from 28 August 2022 (epidemiological week 35) through to the end of April 2023 (epidemiological week 17). Surveillance indicators for monitoring respiratory disease activity in BC come from different sources: 1) diagnostic laboratory test results; 2) wastewater samples; 3) visits to primary care; 4) outbreaks; and 5) hospitalizations and deaths. In addition, for diseases where vaccines exist and are available in BC, BCCDC monitors vaccine uptake in the population.

Highlights

Laboratory

- A single prominent Influenza A spike in detections and test positivity (27%) occurred in epi-week 47 (Nov 20-26), approximately 7 weeks earlier in the season than the historical average. Between epi-week 35 and epi-week 17 (Aug 28 – Apr 22), H3 subtype comprised 87% of subtyped influenza A viruses. Among children, peak test positivity (41%) was significantly higher than the 2014/15 to 2018/19 historical average (16%).
- Respiratory syncytial virus (RSV) detections peaked in epi-week 52 (Dec 25-31), with test positivity approximately double the historical average (15%). In children, detections and positivity followed typical seasonal patterns until end of January, but declined faster than expected afterwards.
- There was increased EV-D68 activity in the fall 2022 in the pediatric population, with peak positivity of 48% among tested ERV-positive samples.
- SARS-CoV-2 virus detections declined but test positivity increased from 7% in September to 19% towards the end of April.

Wastewater	• 6 new wastewater treatment plants were added in fall 2022. In total, surveillance is performed at 11 sites across 4 Regional Health Authorities, representing 63% of BC's population. • SARS-CoV-2 viral load was relatively stable over time throughout the surveillance period across all sites in BC.
Primary care visits for respiratory illness	• Visit rates for acute respiratory symptoms were elevated between epi-weeks 47-52 (Nov 20-Dec 31), earlier than typical, and remained below the historical average throughout the season. In children, visit rates followed seasonal patterns until mid-December and then stayed below the historical average. • Visit rates for influenza peaked in late November, about a month earlier than the historical average for 2010 to 2019. In children, peak visit rates were also earlier and higher than past seasons, but still within historical range. • Visit rates for COVID-19-related symptoms fluctuated over the season, generally declining between September and April.
Outbreaks	• There were 43 influenza outbreaks, primarily driven by A/H3. The majority of reported outbreaks (88%) occurred in long-term care facilities. • There were 110 COVID-19 outbreaks declared, 47 in long term care and 63 in acute care facilities.
Severe outcomes	• Hospitalizations, critical care admissions, and deaths among individuals with a positive COVID-19 test stayed relatively stable but elevated throughout the season, with highest rates among 60+ year olds. There was 1 pediatric death in a child aged <10 years with a positive COVID-19 test, however, the underlying cause of death was not COVID-19. • In November/December 2022, 6 influenza A/H3-associated pediatric deaths were reported to BCCDC among previously healthy children (1 aged <5 years, 3 aged 5-9 years, and 2 aged 15-18 years), with several also experiencing secondary invasive bacterial infections.
Vaccines	• Between October and April, over 2.2 million doses of influenza vaccines have been distributed to a variety of sites across BC. • 2022/23 influenza vaccine effectiveness estimates show the risk of medically-attended A/H3 illness was reduced by about half among vaccinated compared to unvaccinated individuals. • By April, 38% of 18+ year olds received 4 doses of COVID-19 vaccine(s). Among 70+ year olds, 73% and received 4 doses and 48% received 5 doses.

Introduction

Similar to other jurisdictions, a variety of respiratory viruses circulate in BC throughout the year, with higher levels of activity during the fall and winter months. Starting in the 2022/23 respiratory season, the BC Centre for Disease Control (BCCDC) launched the Respiratory Diseases surveillance platform that integrates indicators for key respiratory illnesses caused by circulating viruses, including influenza, COVID-19, Respiratory syncytial virus (RSV), enteroviruses/rhinoviruses (ERV), and others.

This respiratory season report summarizes key insights from 28 August 2022 (epidemiological week 35) through to 22 April 2023 (epidemiological week 17). It includes data from diagnostic test results, Medical Services Plan (MSP) based syndromic surveillance, wastewater sampling, care facility outbreaks (COVID-19 and influenza), and information on vaccines. Knowledge gathered across different data sources help public health practitioners monitor the situation and respond as needed.

Laboratory

Key indicators for monitoring respiratory virus activity are diagnostic laboratory test results of submitted respiratory specimens from public health and acute care laboratories.

For all monitored respiratory viruses in 2022/23, testing volumes were significantly above pre-pandemic historical averages, often double or triple the amount. This was particularly pronounced early in the season. Direct comparisons of the number of detections in the current season to past seasons should be made with caution, given the different testing practices. This report focuses on test positivity – a relative metric that is less impacted by changes in testing volumes.

Trends observed across all ages (Figures 1 & 2):

- **Influenza** season was characterized by a single wave of influenza A activity. Test positivity began to increase in epi-week 42 (Oct 16-22) and peaked at 27% in epi-week 47 (Nov 20-26), subsequently decreasing to below 5% by epi-week 1 (Jan 1-7, 2023).
    - The peak occurred approximately 7 weeks earlier than the 2014/15 to 2018/19 historical average.
    - Influenza subtype A/H3 comprised 88% of subtyped influenza A viruses overall between epi-week 35 and epi-week 17 (Aug 28-Apr 22), with A/H1 comprising the rest (Table 1). A/H3 dominated in the first 10 weeks of the season, followed by lower-level influenza activity mostly comprised of A/H1 subtype detection from epi-week 3 onwards.
    - There was little Influenza B circulation, with test positivity staying <1%.

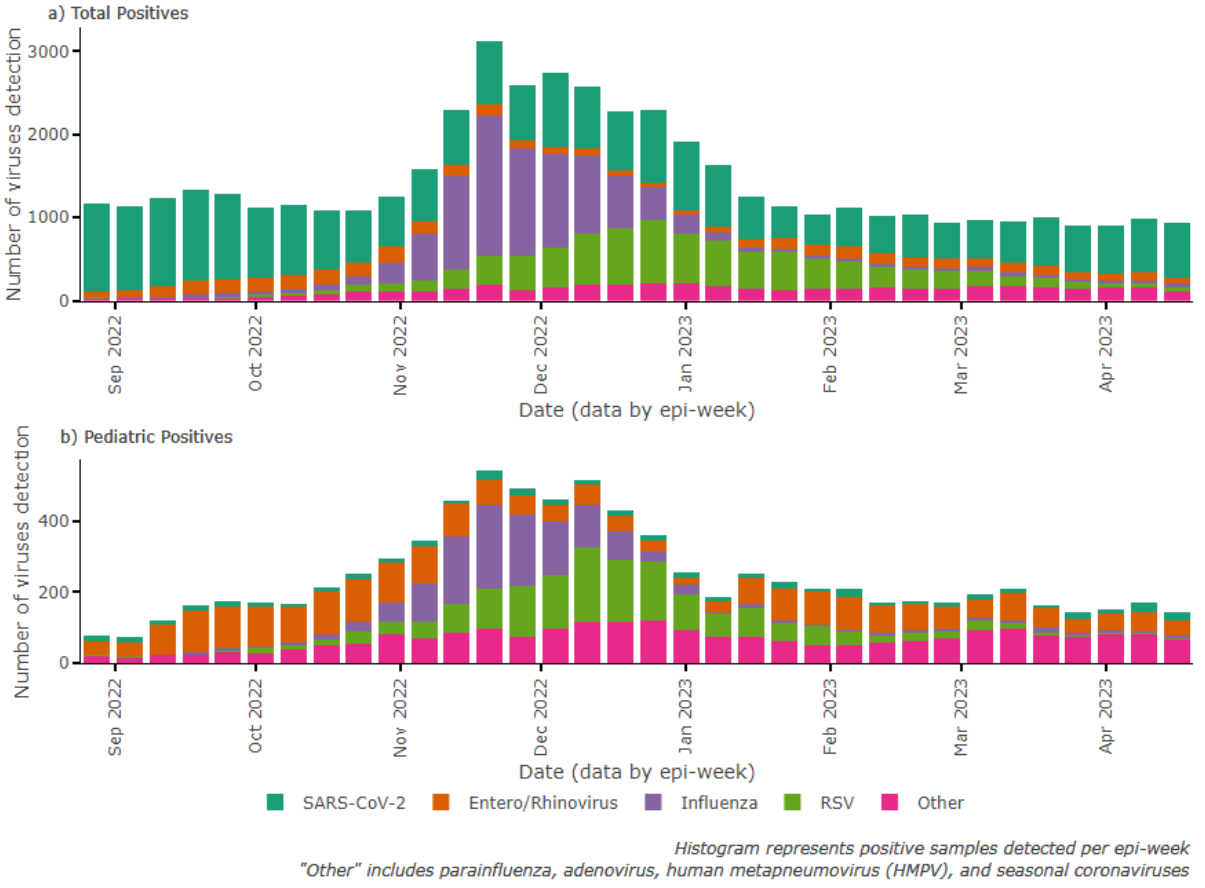


Figure 1. Number of detections for respiratory viruses from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season for a) all ages, and b) the pediatric population (≤18 years of age), BC.
Note that surveillance data for the pediatric population are limited to laboratories in Vancouver (including BC Children's Hospital), Richmond, and the North Shore.

- **SARS-CoV-2** virus detections declined but test positivity increased from 7% in September to 19% towards the end of April. There was a decreasing number of individuals tested during this period. For total counts, see Table 2.
- **RSV** test positivity increased starting in October and peaked in epi-week 52 (Dec 25-31) at 15%, approximately twice as high as pre-pandemic historical average for epi-week 52 (7.3%). It remained above historical average between week 42 (Oct 16-22) and week 6 (Feb 5-11).
- Entero and/or rhinoviruses (**ERV**) test positivity showed a two-peak trajectory, in epi-week 38 (Sept 18-24) and epi-week 6 (Feb 5-11). The first peak had highest positivity at 32%; positivity remained below the historical average until early January, at which point it increased again but stayed within historical range.

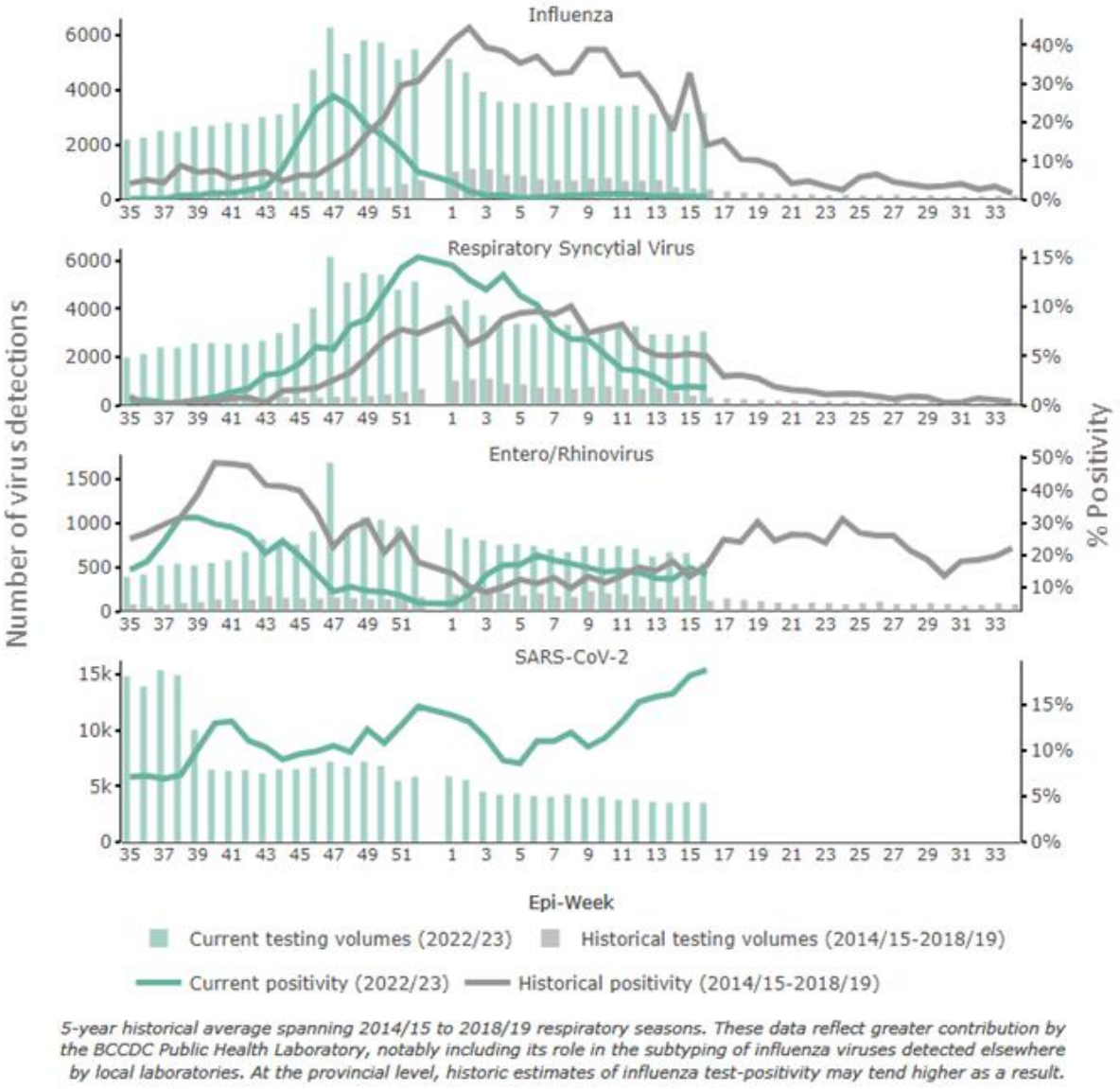


Figure 2. Test positivity (%) and testing volumes from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season, BC, compared to historical averages (2014/15-2018/19). *Note that the left and right axis scales vary to show the trend in test positivity and test volumes.*

Table 1. Cumulative number of tests and detections for respiratory viruses from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season, by testing site, BC. *The total specimens subtyped includes those detected at BC Public Health Laboratory as well as those received from acute care laboratories, therefore "Total subtyped" may be greater than the influenza A "Total detected."*

Metric	BC	BCCDC/BCCH	FHA	IHA	NHA	VCHA	VIHA
Influenza A							
Total detected	8,890	1,552	2,451	2,152	729	940	1,066
Total tested	123,939	20,694	27,071	24,232	7,886	26,632	17,424
Total subtyped	5,063	3,798	0	0	180	22	1,063
A/H1 (%)	405 (8%)	306 (8%)	0 (-)	0 (-)	17 (9%)	3 (14%)	79 (7%)
A/H3 (%)	4,401 (87%)	3,237 (85%)	0 (-)	0 (-)	163 (91%)	17 (77%)	984 (93%)
A/Unknown subtype	257	255	0	0	0	2	0
Influenza B							
Total detected	269	69	116	29	12	35	8
Total tested	123,939	20,694	27,071	24,232	7,886	26,632	17,424
RSV							
Total detected	8,137	2,117	2,143	1,782	473	724	898
Total tested	116,331	20,674	27,071	24,232	7,415	20,081	16,858
ERV							
Total detected	3,905	2,770	0	479	313	191	152
Total tested	25,326	14,491	0	5,861	1,875	1,984	1,115
Other							
Total detected	4,347	2,850	0	787	339	233	138
Total tested	103,775	57,973	0	23,444	7,478	10,420	4,460

Table 2. Cumulative number of tests and detections for SARS-CoV-2 from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season by client residence, BC.

Metric	BC	FHA	IHA	NHA	VCHA	VIHA	Unknown
Cumulative (September 4, 2022-current)							
Total tested	206,248	69,843	27,138	8,193	67,097	23,573	10,404
Total detected	22,378	7,662	3,906	1,118	5,971	3,518	203

Trends among children and youth:

For children and youth under 18 years old, data on circulating respiratory viruses are available from laboratories in Vancouver (including BC Children's Hospital), Richmond, and the North Shore (Figure 3).

- **Influenza** detections and test positivity began to increase in epi-week 38 (Sept 18-24) and positivity peaked at 41% in epi-week 47 (Nov 20-26), well above the historic within-season peak (16%). Thereafter, it continually decreased after epi-week 47 (Nov 20-26) and was below 5% by epi-week 2 (Jan 8-14).
- **RSV** detections and positivity followed seasonal patterns until end of January but declined faster than expected afterwards. For RSV, test positivity increased starting at epi-week 39 (Sept 25-Oct 1) and peaked in epi-week 52 (Dec 25-31) at 43%.
- While **ERV** test positivity was higher in children compared to adults, the pattern of test positivity coincided with that of the whole BC population. ERV circulated throughout the surveillance period, with reduced detection coinciding with the increase in RSV test positivity.
    - Between August and December 2022, positive ERV samples from various testing sites across the province in individuals under 19 years of age were further tested for enterovirus D68 (EV-D68). EV-D68 testing was also performed at any time if clinically indicated and requested. For more information, see Data Notes.
        - Of the samples that were positive for ERV and further tested for EV-D68, test positivity peaked in September at 48% and steadily decreased; targeted sampling ended in December after two consecutive weeks of no detections. Please note that testing was selective and testing strategies vary from year to year.
- **SARS-CoV-2** test positivity remained relatively stable throughout the surveillance period. Test positivity fluctuated between 2% and 15% throughout the season.

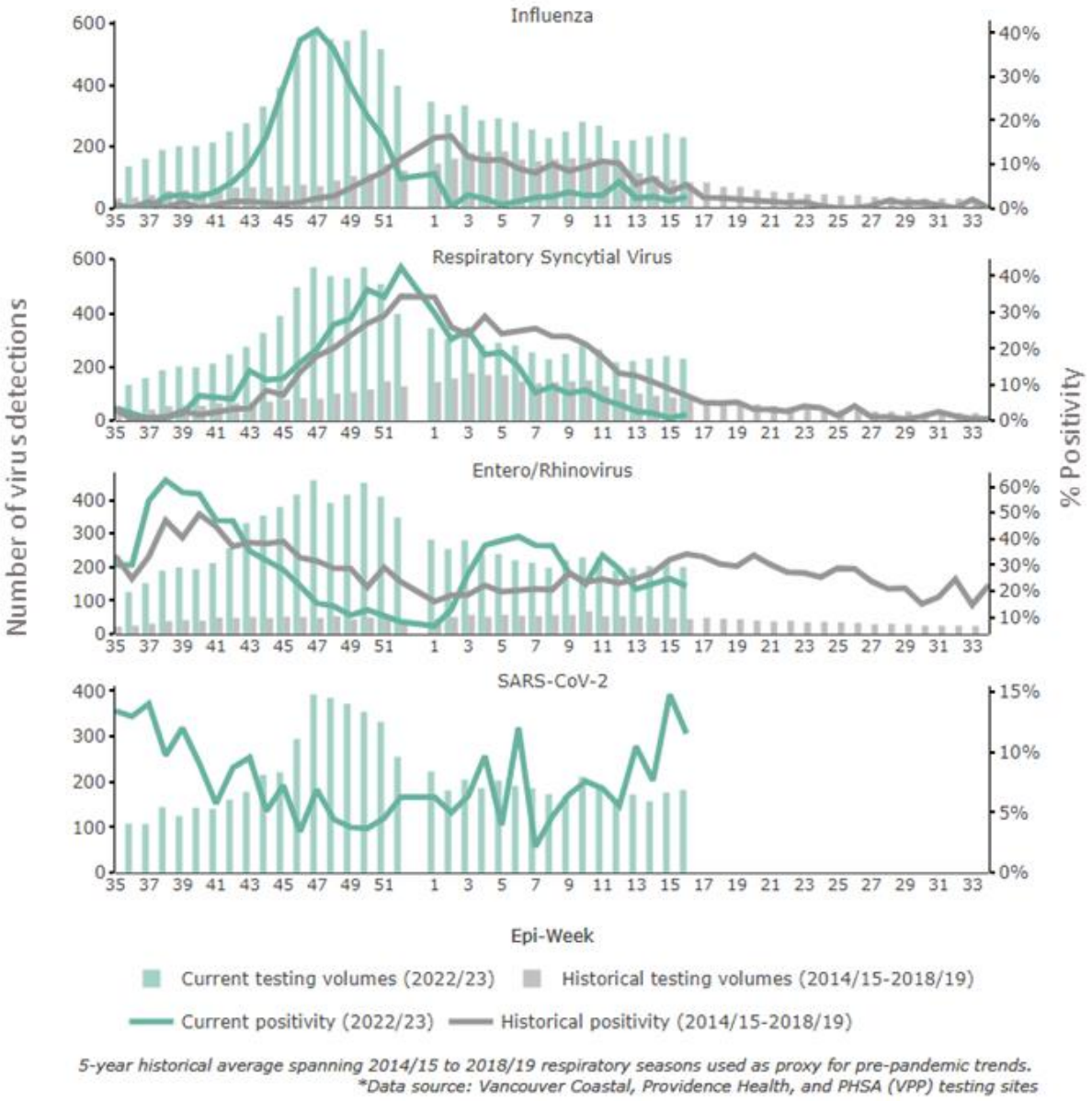


Figure 3. Trends in test positivity (%) and testing volumes for respiratory illness for the pediatric population detected at Vancouver, Richmond and North Shore laboratories from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season, compared to historical averages (2014/15-2018/19). *Note that the left and right axis scales vary to show the trend in test positivity and test volumes.*

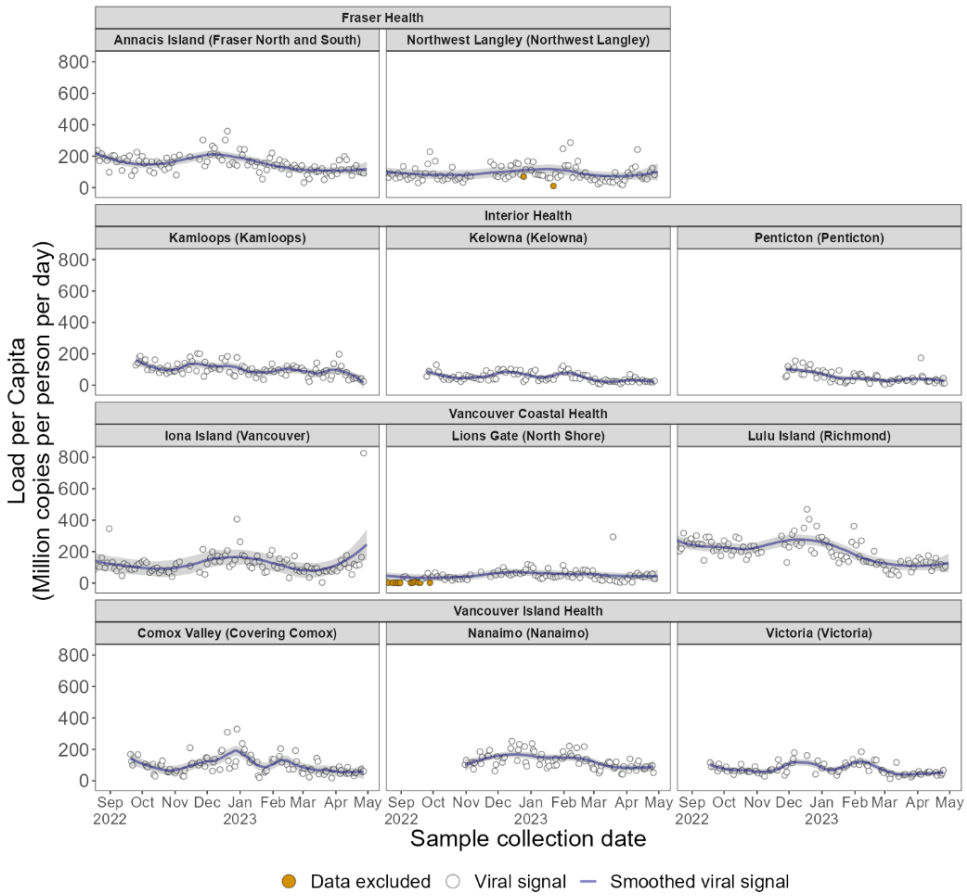
interactive dashboard

For interactive versions, view the BCCDC Pathogen Characterization report

Wastewater

Testing of wastewater samples for SARS-CoV-2 virus is a novel surveillance approach that quantifies the amount of virus shed by infected people into the community's wastewater system(s). While these measurements by themselves cannot tell us how many people are infected, tracking changes in these measurements over time can give us a complementary sense of circulation of SARS-CoV-2 (e.g. whether it's going up, down, or remaining stable).

- 6 new wastewater treatment plants were added in fall 2022 in Interior Health and Island Health. In total, surveillance is performed at 11 sites across 4 Regional Health Authorities, representing 63% of BC's population. NB: concentration data are not directly comparable between sites. Instead, monitoring focus is on the trends within a site.
- Between September and April, the viral load of SARS-CoV-2 in wastewater remained relatively stable in most communities (Figure 4).



For interactive version, visit BCCDC Wastewater Surveillance report

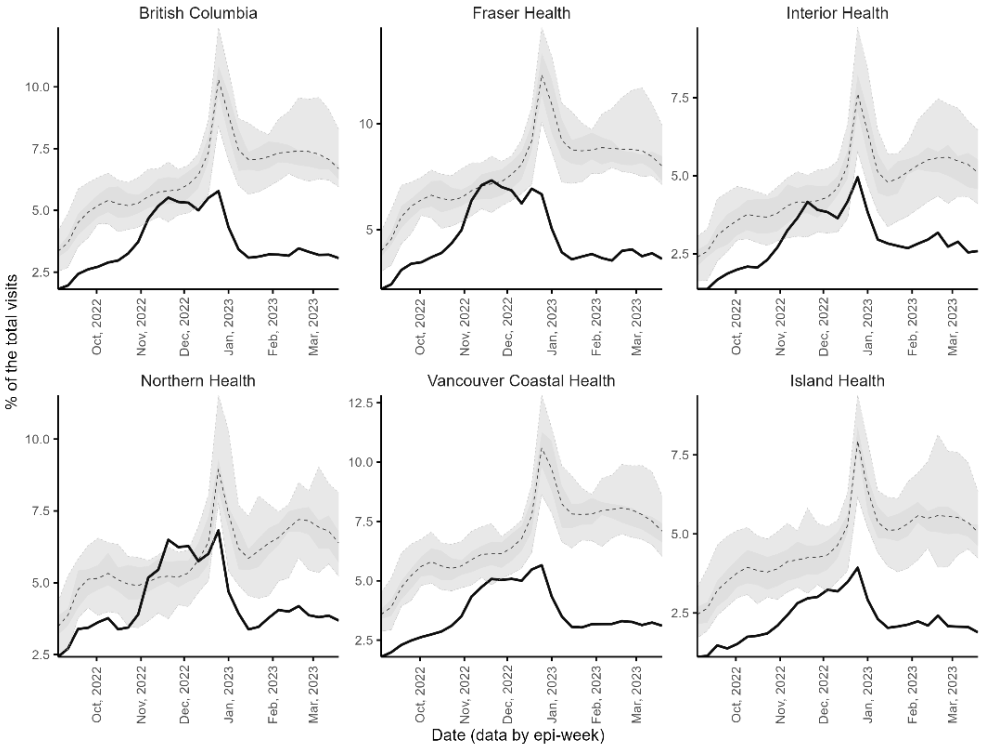
Figure 4. Viral load per capita measured at wastewater sites across BC from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season. *All samples were retrospectively tested using a new multiplex qPCR assay and reported values may differ from those in previous reports. Trends over time and associated conclusions remain similar to prior reports.*

Primary care visits for respiratory illness

Another key indicator of respiratory virus activity in the community is the share of visits to primary care for symptoms of a new respiratory illness, such as a cough or fever. This measure helps to track changes over time in respiratory illnesses for which people are seeking medical care.

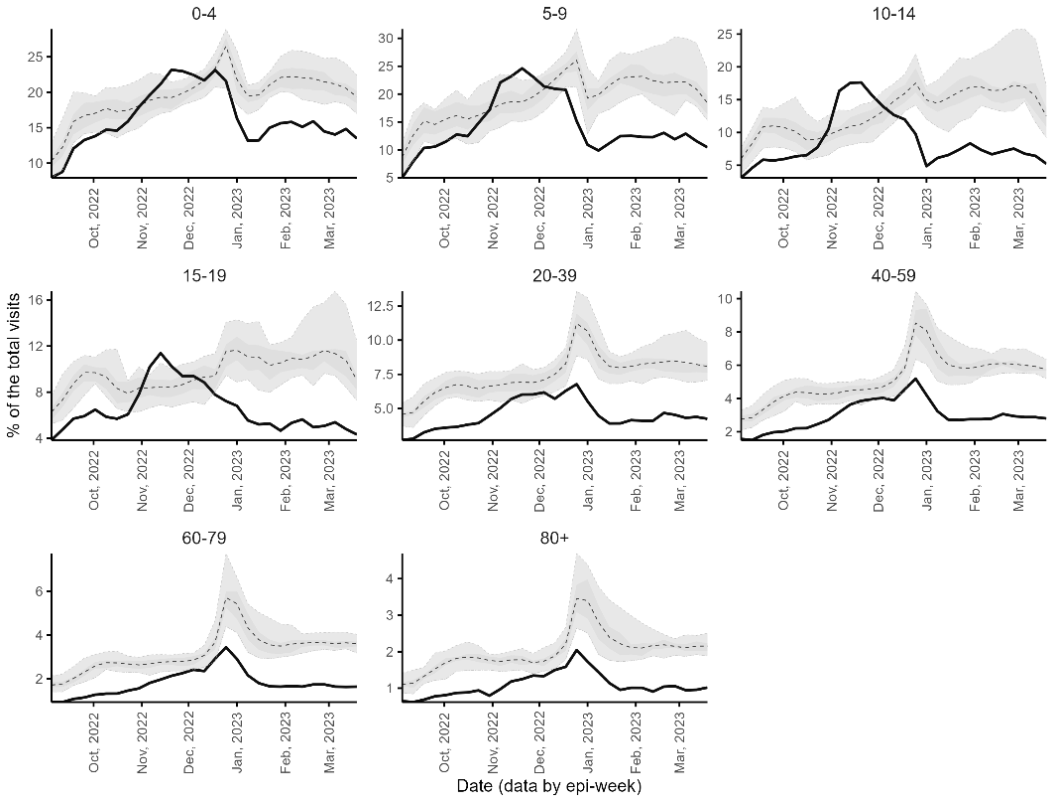
It is calculated using diagnostic codes, which are often assigned based on clinical suspicion. Please note that clinical indicators are relatively non-specific and presenting symptoms overlap for various respiratory conditions. When attributing respiratory illness to a particular cause (e.g. influenza or COVID-19) based on clinical diagnosis there may be some misclassification.

The share of visits to primary care for symptoms related to **acute respiratory infection** (the most commonly recorded respiratory diagnosis) was elevated between epi-weeks 47-52 (Nov 20-Dec 31) but stayed lower than historical norms for this respiratory season across all regions (Figure 5). Highest rates were observed in children under 10 years old, as has also been observed during past seasons (2010 to 2019) (Figure 6). Pediatric visit rates followed seasonal patterns until mid-December, after which they stayed below the historical average.



The dashed line denotes the average historical value (2010-2019) and the grey shading denotes the minimum, 25th percentile, 75th percentile and maximum.

Figure 5. Primary care visit rates for acute respiratory infections related symptoms from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season, by region, BC. *Note that the left axis scales vary between panels to show the trend in the proportion of total visits.*

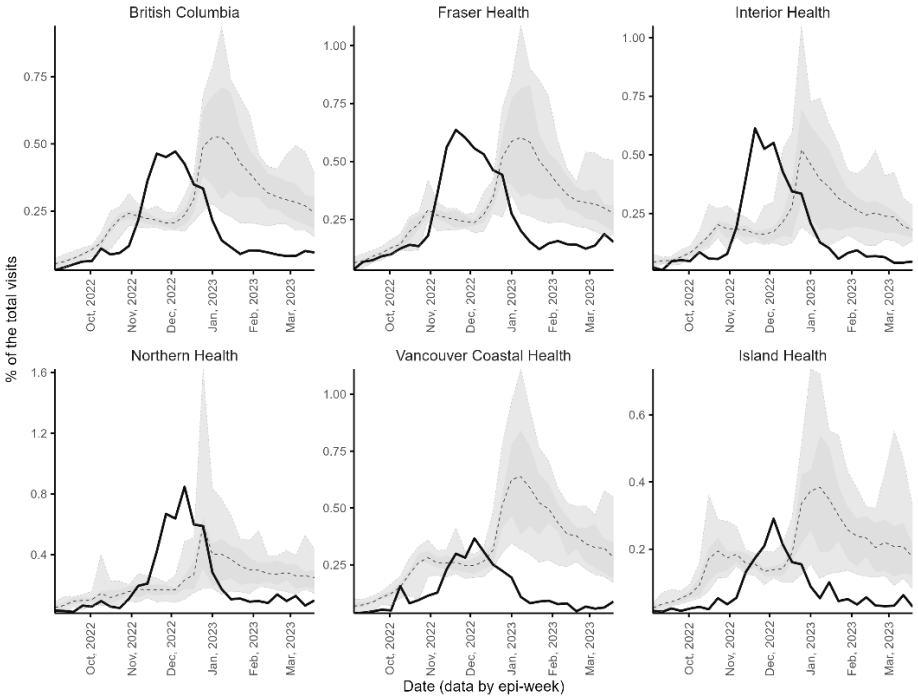


The dashed line denotes the average historical value (2010-2019) and the grey shading denotes the minimum, 25th percentile, 75th percentile and maximum.

Figure 6. Primary care visit rates for acute respiratory infections related symptoms from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season by age group, BC. *Note that the left axis scales vary between panels to show the trend in the proportion of total visits.*

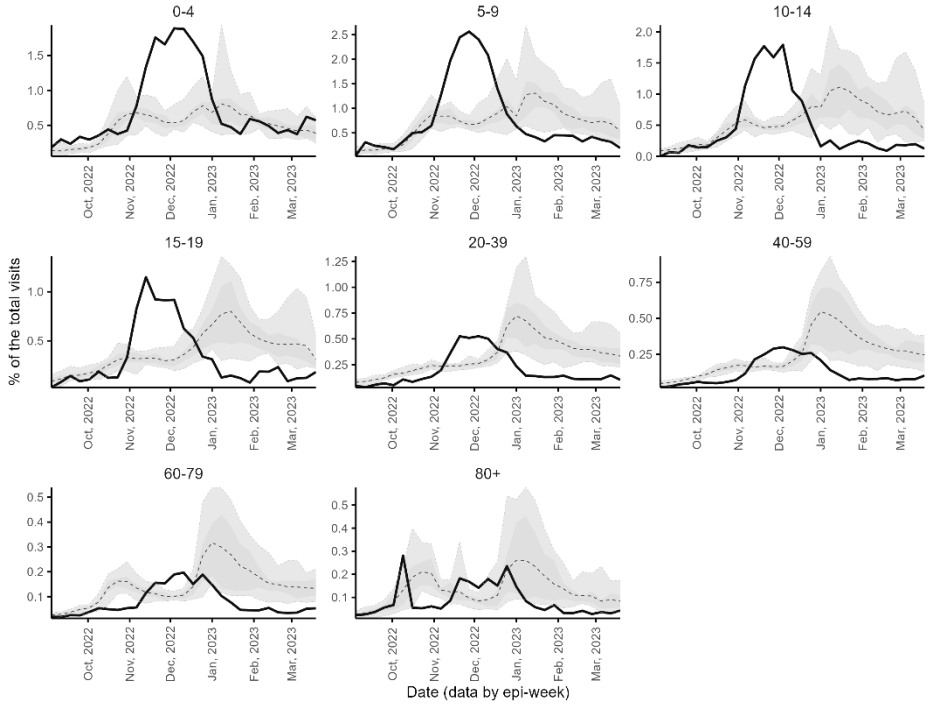
The share of visits for symptoms related to **influenza** peaked between epi-weeks 48-50 (Nov 27-Dec 17) across the province, notably earlier than the typical historical timing of early to mid-January (Figure 7).

- As expected, visit rates were highest for children and youth (≤19 years old) (Figure 8). Even though they remained within the upper bound of historical range, pediatric visit rates were some of the highest seen in the last 13 years. This observation may reflect the low levels of influenza circulation during the prior two respiratory seasons, leaving more people being susceptible to influenza infection in 2022/23.



The dashed line denotes the average historical value (2010-2019) and the grey shading denotes the minimum, 25th percentile, 75th percentile and maximum.

Figure 7. Primary care visit rates for influenza related symptoms from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season by region, BC. *Note that the left axis scales vary between panels to show the trend in the proportion of total visits.*



The dashed line denotes the average historical value (2010-2019) and the grey shading denotes the minimum, 25th percentile, 75th percentile and maximum.

Figure 8. Primary care visit rates for influenza related symptoms from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season by age group, BC. *Note that the left axis scales vary between panels to show the trend in the proportion of total visits.*

The share of visits for **COVID**-related symptoms fluctuated over the season, generally declining between September and April for all age groups and regions (Figure 9).

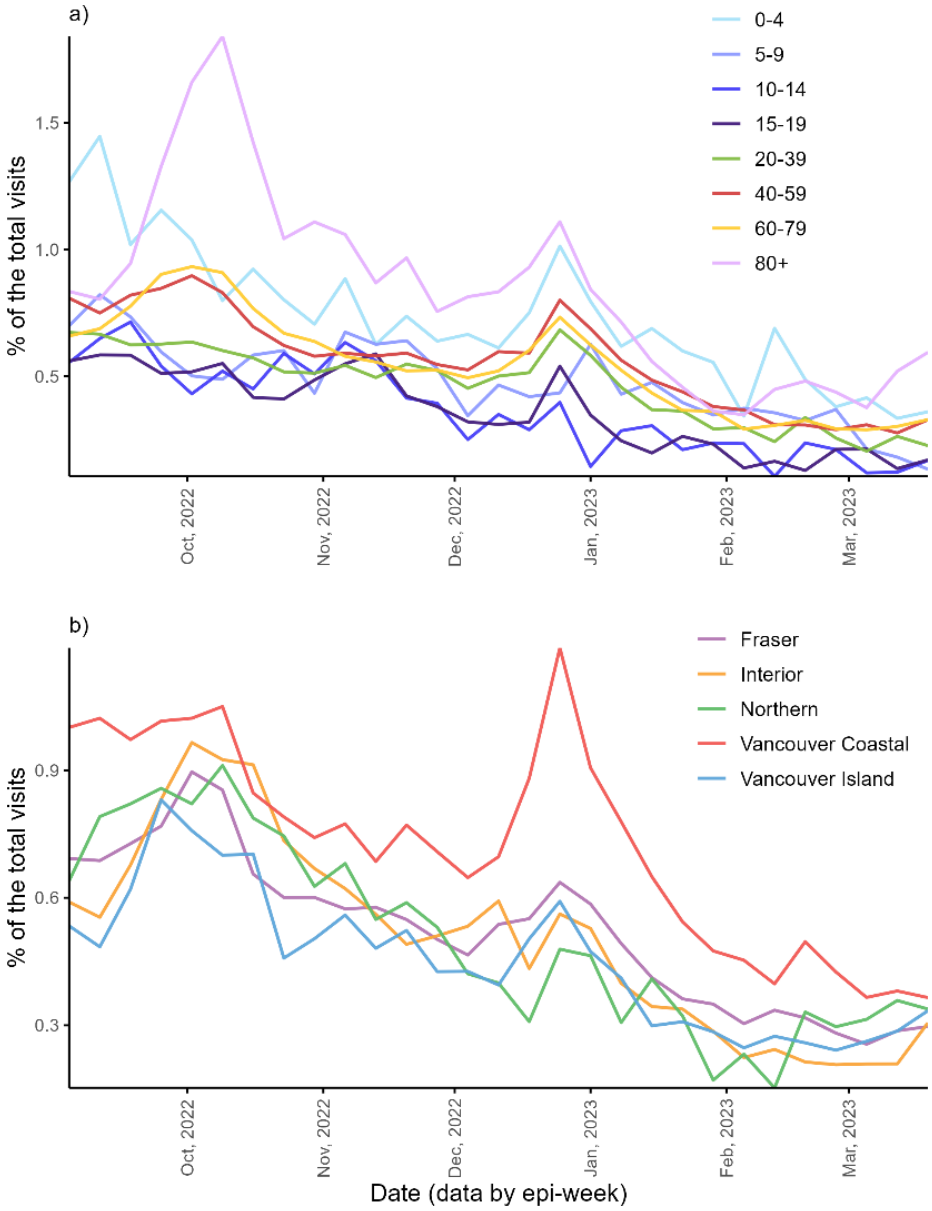


Figure 9. Primary care visit rates for COVID-19 related symptoms in BC from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season by a) age group and b) region.

For interactive versions, view the BCCDC Primary Care Visits report

Influenza and COVID-19 Outbreaks

At the provincial level, outbreak surveillance contributes to the understanding of circulating viruses and their impact. At the local level, outbreak surveillance helps with early detection and control to prevent and contain further spread of viruses within the outbreak setting.

BCCDC is notified of all long term care facility (LTCF) outbreaks that are declared by a Medical Health Officer or their official designate. There is less consistent reporting of outbreaks in acute care facilities (ACFs) to BCCDC.

- Between epi-weeks 35 and 17 (Aug 28 – Apr 22), there were 63 **COVID-19** outbreaks in ACFs and 47 outbreaks in LTCFs (Figure 10). The number of outbreaks fluctuated from week to week, but generally remained relatively stable.
- The maximum weekly number of reported COVID-19 care facility outbreaks was 9 in epi-week 38 (Sep 18-24) and has been less than 6 since the start of 2023.

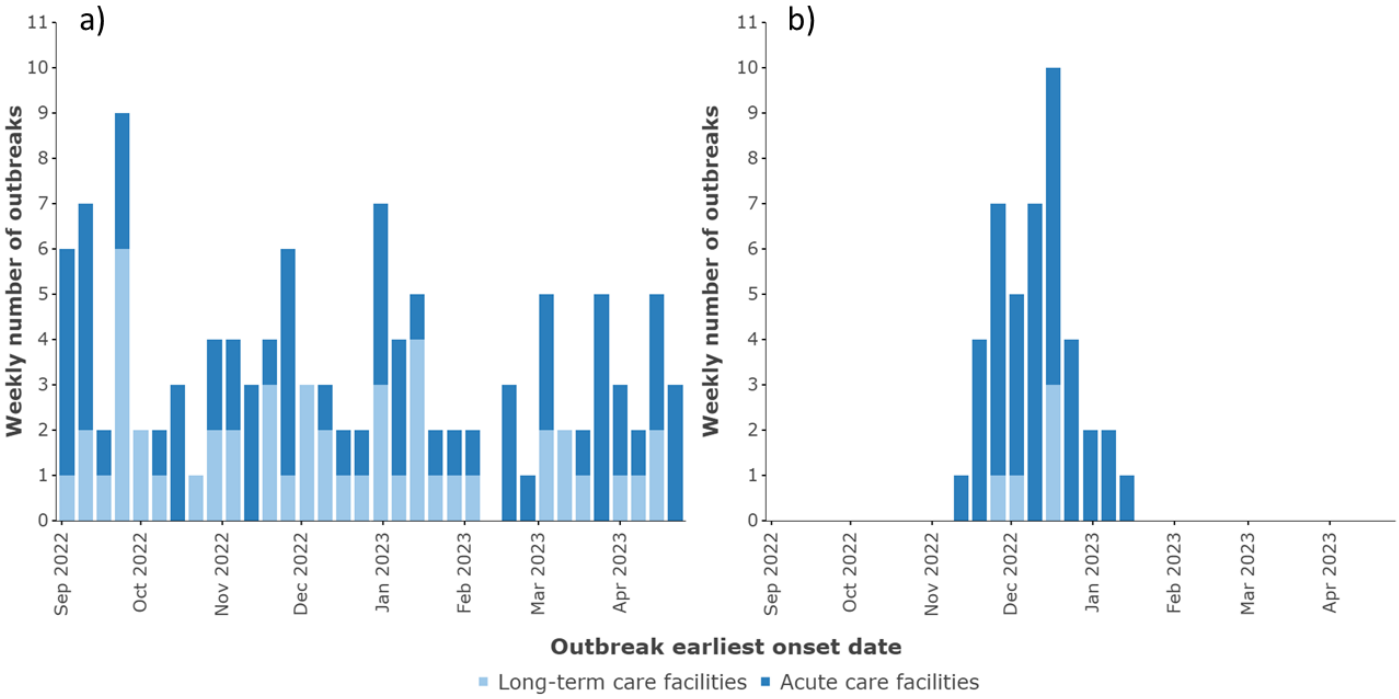


Figure 10. Weekly number of care facility outbreaks for a) COVID-19 and b) Influenza from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season by facility type, BC.

- There were 43 reported **influenza** outbreaks in total, 5 in ACFs, and 38 in LTCFs (Figure 10). There was a clear increase in the number of outbreaks since epi-week 45 (Nov 6-12), reaching a peak of 10 outbreaks in epi-week 50 (Dec 11-17), and then quickly decreasing to none by the end of epi-week 2 (Jan 8-14).
    - Of the reported influenza outbreaks, 33 facility outbreaks (including both ACFs and LTCFs) were attributed to influenza A/H3 and 4 were attributed to influenza A/H1. Six facility outbreaks were attributed to both influenza A/H1 and A/H3 (Figure 11).

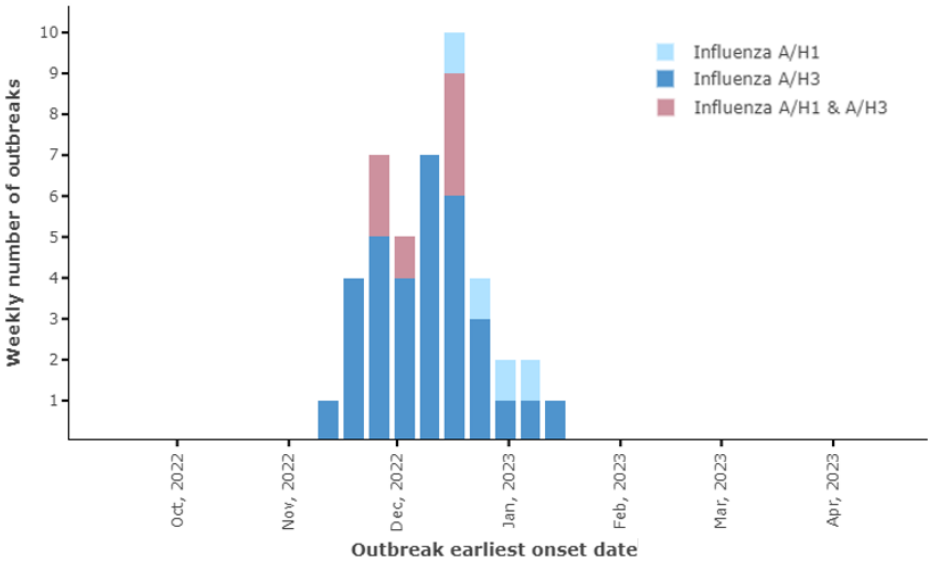


Figure 11. Weekly number of care facility outbreaks by influenza sub-type from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season, BC.

interactive dashboard

For interactive versions, view the BCCDC Outbreaks Report

- Influenza outbreak activity in LTCFs peaked at 7 outbreaks in epi-weeks 49 and 50 (Dec 4-17). Compared with historical patterns for 2012/13 to2018/19, peak influenza outbreak activity in LTCFs occurred approximately a month earlier, at which time the tally exceeded historical values, but was well below the median seasonal peak tally of 16 LTCF outbreaks (Figure 12).

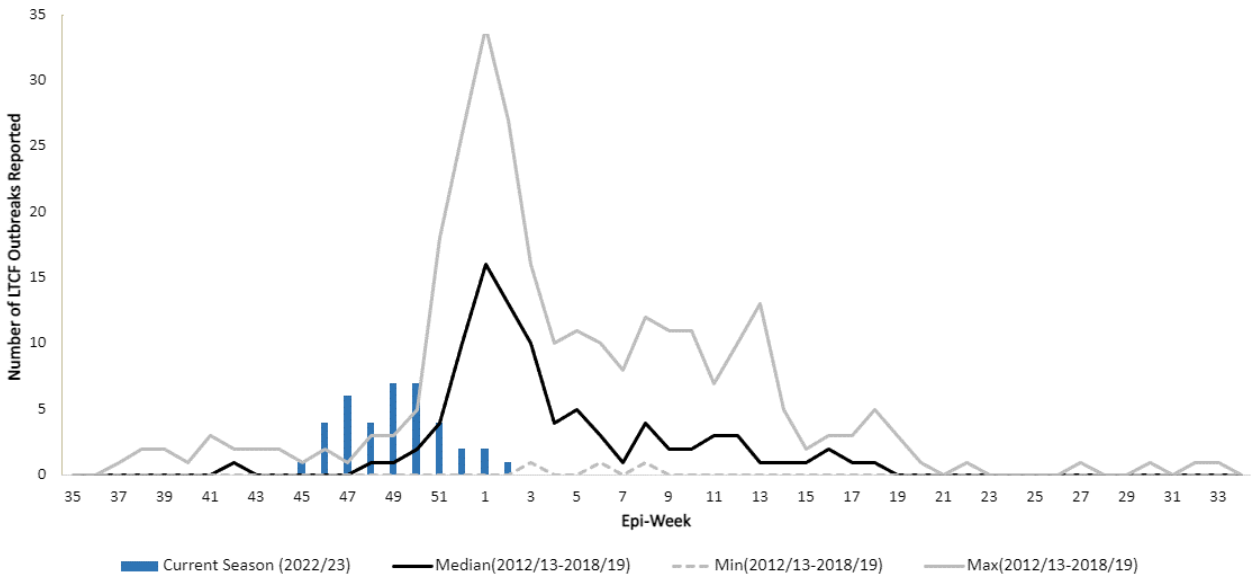


Figure 12. Weekly number of influenza-like illness outbreaks in long term care facilities in BC from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season compared with historical data (2012/13-2018/19). *Years 2019-20 & 2020-21 are excluded from the historical average calculations due to the COVID-19 pandemic. The value for week 53 of the 2014-2015 season included as part of calculation of historical median represents the average of weeks 52 and 53 in that year.*

Severe Outcomes

Severe outcomes for respiratory illness include hospitalizations, critical care admissions and deaths. Monitoring these events helps to identify at-risk populations, as they may differ from season to season. Because data on these outcomes often lag by weeks or months, measuring and reporting on them during the respiratory season is limited.

- Hospital admissions and deaths among individuals with a positive **COVID-19** test remained relatively stable at elevated levels during the season (Figure 13). Adults aged 60 years and above accounted for most of the severe outcomes, with the highest rates observed among those 80 years and over (Figure 14).

  Please note that reported numbers are an overestimate of COVID-attributable hospitalizations and deaths because they include people who test positive for COVID-19 regardless of the reason for admission/death. Therefore, as is the case for all surveillance metrics, they primarily help to monitor changes over time.

  - New ***hospital admissions*** were stable at elevated levels between September and end of December, with 7-day rolling average fluctuating between 30 and 43. They subsequently declined during January and remained at stable lower levels thereafter between February and April, with 7-day rolling average fluctuating between 20 and 30 admissions.
  - New ***critical care*** admissions remained stable in every age group throughout the respiratory season, with overall 7-day rolling average staying below 8 admissions throughout the season.
  - ***Deaths*** also remained stable with overall 7-day rolling average staying below 9 throughout the season. Approximately half of deaths initially reported through surveillance to be associated with COVID-19 end up having COVID-19 as the underlying cause of death recorded in Vital Statistics in subsequent weeks and months (Figure 15). This respiratory season, there was 1 pediatric death, in a child <10 years old who had a positive COVID-19 test, but the underlying cause of death was not COVID-19.

- There were 6 **influenza A/H3**-associated pediatric deaths this respiratory season that were reported to BCCDC. They occurred in November/December 2022 among previously healthy children and youth (1 aged <5 years, 3 aged 5-9 years, and 2 aged 15-18 years). Several of the children experienced secondary invasive bacterial infections, which can be a complication of influenza contributing to more severe illness.

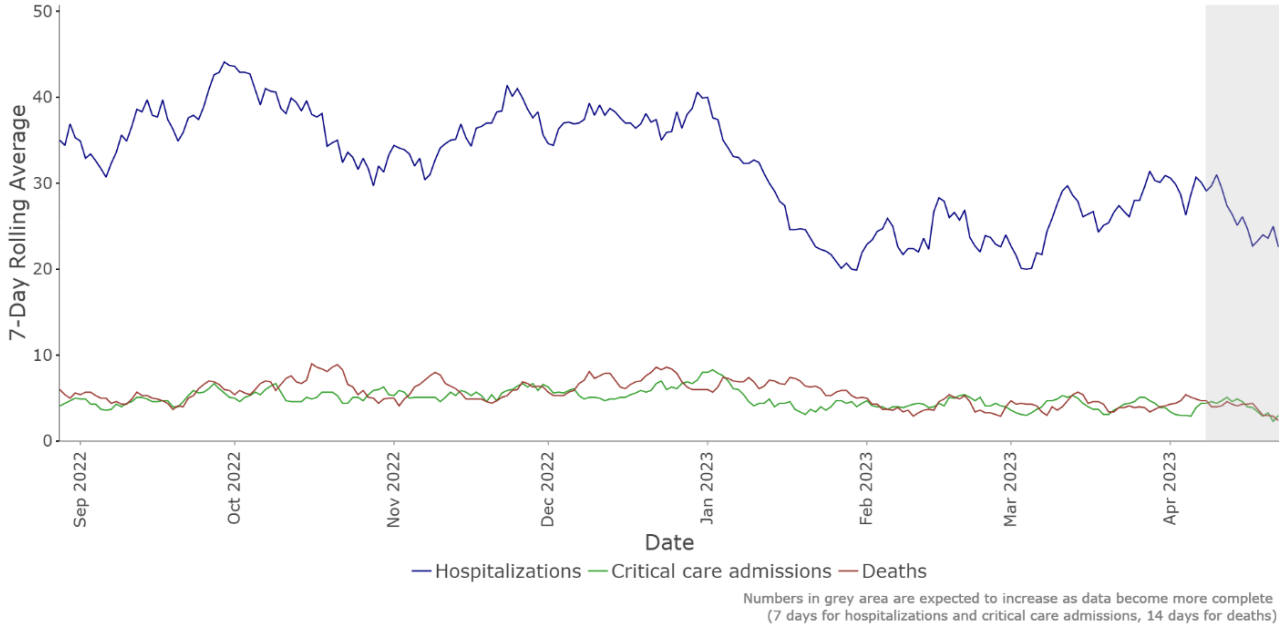


Figure 13. 7-day rolling average count of COVID-19 new hospitalizations, new critical care admissions and deaths for BC from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season.

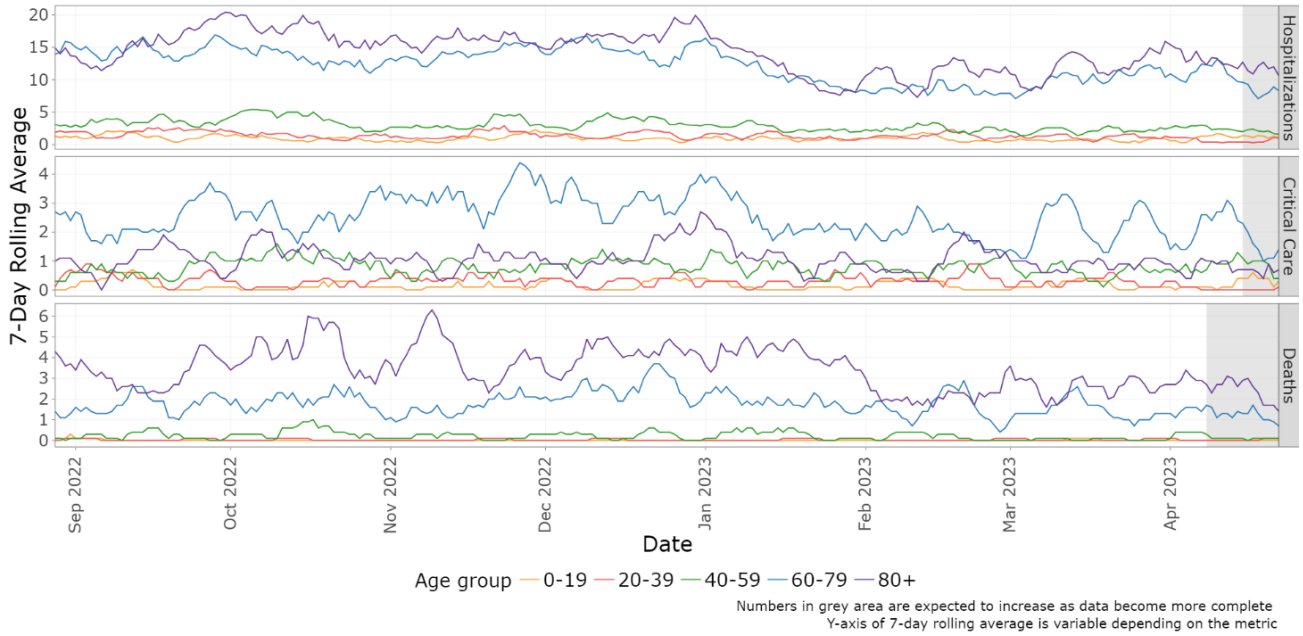


Figure 14. 7-day rolling average count of COVID-19 new hospitalizations, new critical care admissions and deaths in BC from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season, by age group.

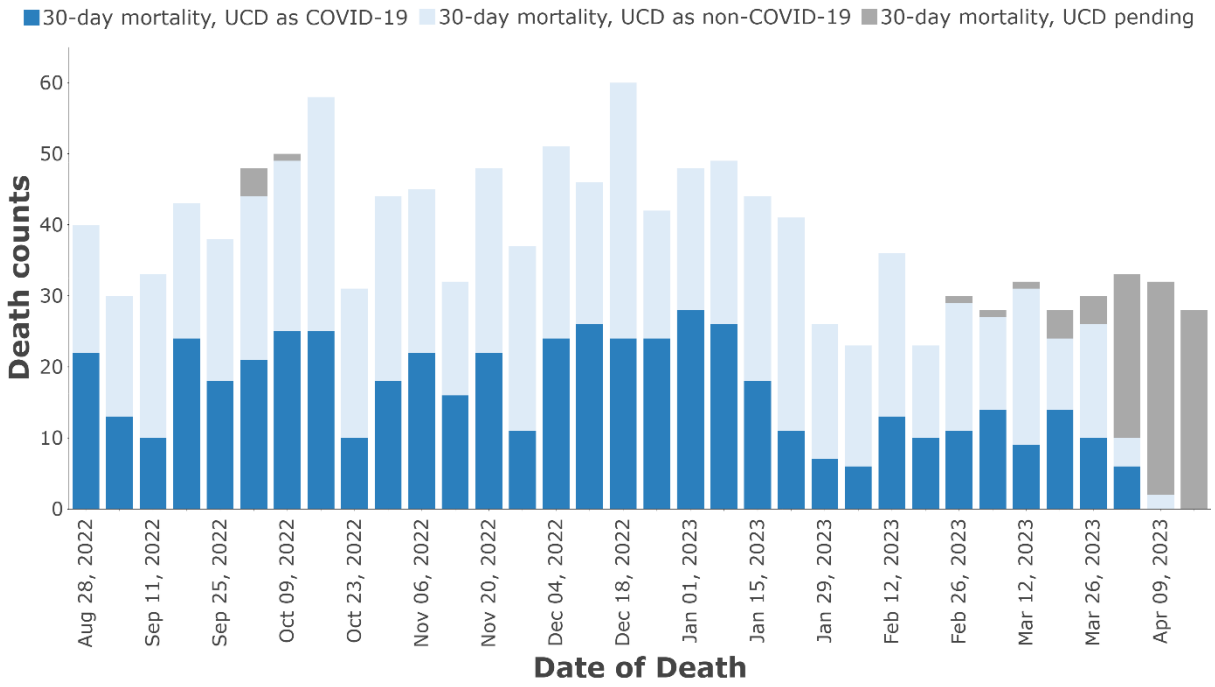


Figure 15. Deaths occurring within 30-days of COVID-19 lab first positive with eventual underlying cause of death for BC from epi-week 35 to epi-week 17 (Aug 28 – Apr 22) of the 2022/23 respiratory season.
Since underlying cause of death (UCD) takes approximately 8 weeks to be recorded, all-cause mortality is initially reported and then retrospective evaluations of underlying cause of death are reported to better understand true COVID-19 mortality.

For interactive versions, view the BCCDC COVID-19 Situation Report

Vaccines

- Seasonal **influenza vaccination** was offered free of charge to all residents of BC older than 6 months between October 2022 and April 2023. During that time period, over 2.2 million doses of influenza vaccines were distributed to a variety of sites across BC.
- Preliminary estimates by BCCDC-led Canadian Sentinel Practitioner Surveillance Network (SPSN) suggest that between early November and mid-December, the current season's vaccine reduced the risk of medically-attended A/H3 illness by about half in vaccinated compared to unvaccinated individuals. This is closer to the higher end of a typical range for vaccine effectiveness against A/H3 viruses. More details on the current season's SPSN estimates can be found here; historic estimates of the SPSN are available here.
- **COVID-19 vaccination** has been offered to those aged older than 6 months, with booster doses offered to those aged 5 years and older. For more information on COVID-19 vaccines, see here.
- By the end of March, 38% of those 18 years and over received 4 doses of **COVID-19** vaccine(s). Among 70+ year olds, 73% received 4 doses and 48% received 5 doses. For more information, visit BCCDC COVID-19 Vaccination Coverage dashboard.

Other Resources

Respiratory Diseases data, BC Centre for Disease control (interactive graphics on a variety of metrics presented in this report)

- Please note that interactive applications for respiratory diseases will not be updated through the summer months. Updates will resume in the fall 2023, when the new respiratory season begins.
- COVID-19 specific products (Situation Report and Variants Report) will be updated monthly, while wastewater surveillance results will continue to be updated weekly.

BC COVID-19 Resources, BC Centre for Disease Control (a variety of information)

Mortality Context App, BC Centre for Disease Control (monthly updates of causes of death)

COVID-19 Data Trends, Public Health Agency of Canada (a variety of information)

National Respiratory Virus Detection Surveillance System, Public Health Agency of Canada (weekly laboratory reports)

FluWatch Surveillance, Public Health Agency of Canada (weekly reports during respiratory season, less frequent at other times)

Data Notes and Definitions

Please be aware of the following considerations when interpreting data in this report:

General

- *Epidemiological week/epi-week* is a standard method of counting weeks to allow for the comparison of data year after year. It is a 7-day period that starts on a Sunday and ends on a Saturday. Epi-week numbers and corresponding dates are available.
- *Surveillance date* is defined by lab result date. The weekly tally by surveillance date therefore includes cases with illness onset in preceding weeks.
- *Surveillance season*: annual monitoring period for influenza and non-influenza respiratory viruses that operates year-round, typically spanning from epi-week 35 of the current year to epi-week 34 of the following year. For example, the 2022/23 surveillance season spans 28 August 2022 to 27 August 2023.
- *Respiratory season*: a window of enhanced monitoring and reporting when influenza and non-influenza respiratory viruses are typically more prominent. In the northern hemisphere this may often span from November to April with the opposite seasonality in the southern hemisphere typically spanning May to October. The exact time period changes from year to year.
- *Historical average*: a reference baseline that helps to contextualize the patterns observed in the current season relative to what was seen in the past. Reference periods used in historical averages differ by data source and are based on data availability. Due to atypical patterns during the COVID-19 pandemic, 2020/21 and 2021/22 seasons were excluded from calculations of historical averages.
- BCCDC operates in a live database environment and data are continuously refreshed. Therefore, information presented here may vary slightly from previous reports and/or national reports.

Laboratory

- Laboratory results generally represent a population of individuals seeking health care services and thus may not be generalizable to the whole population.
- Not all people who are part of an identified outbreak or who visit a healthcare practitioner are sent for further testing to identify the cause of their illness.
- For all monitored respiratory viruses, much higher testing volumes were seen during the pandemic compared to the historical average of the pre-pandemic period, often double or triple the amount. Direct comparisons of the number of detections in the current season to past seasons should be made with caution, given the different testing practices.
- EV-D68 typically causes mild respiratory illness but has been associated with severe respiratory infections in the past as well as acute flaccid myelitis (AFM), a rare but serious neurologic complication causing limb weakness primarily among children. Further characterization of ERV positive specimens to assess for EV-D68 is typically undertaken only upon clinician request. However, in seasons where increased EV-D68 activity is observed, such as this 2022/23 respiratory season, targeted surveillance for EV-D68 is performed to inform risk assessments. For persons 18 years and under, from August to December 2022, routine Enterovirus D68 (EV-D68) characterization was performed in BC for surveillance purposes when enterovirus and/or rhinovirus (ERV) is detected on a respiratory panel. Under this enhanced surveillance screening, laboratories across the province were requested to forward EV/RV positive specimens to the

BCCDC Public Health Laboratory to assess for EV-D68. Please note that testing was selective and testing strategies vary from year to year.

Outbreaks

- Please note that BCCDC reports the number of outbreaks, not the number of cases associated with each outbreak.
- A facility with a reported multi-respiratory-virus outbreak, such as a concurrent outbreak of COVID-19 and influenza, will be counted separately for each virus.
- A facility-based influenza outbreak is defined as 2 or more cases of influenza-like illness within a 7-day period, with at least one laboratory-confirmed case of influenza. An outbreak is considered over on the date of two full weeks after the last date of exposure (or latest symptom onset date), without any new cases.
- Data may vary from what was reported previously due to data corrections and updates by Regional Health Authorities.

Wastewater

- Samples are collected 2-3x per week at each wastewater treatment plant (WWTP) and are transported to the BCCDC Public Health Laboratory (PHL) for analysis.
- Data are presented as viral load per day per capita – thus accounting for the different population sizes served by each WTP. Please note that each WWTP is unique and will differ with respect to the sewer catchment, population served, and chemistry.
- Data are smoothed using locally estimated scatterplot smoothing (LOESS).

Primary care Visits

- The Medical Services Plan (MSP) dataset is designed primarily for billing purposes. The dataset does not cover services billed to alternative payment plans. A C19 diagnostic code may also be used for COVID-19 services unrelated to COVID symptoms.
- The BCCDC reports on four categories of respiratory symptoms based on the ICD-9 codes, including: Acute Respiratory Infections (460 – 466.1), COVID-like symptoms (C19), Pneumonia and Influenza (480 – 487.8), Influenza (487 – 487.8). These codes reflect clinical judgement by the physician and may or may not be based on test result(s).

Severe Outcomes

- Reported numbers are an overestimate of COVID-attributable hospitalizations and deaths because they include people who test positive for COVID-19 regardless of the reason for admission/death. Therefore, as is the case for all surveillance metrics, they primarily help to monitor changes over time.
- COVID-19 Hospitalization: A single hospitalization is linked to a first positive laboratory-confirmed COVID-19 test and counted as a hospitalization if it meets one of the following criteria:
    - The hospitalization was related to an individual identified as a COVID-19 patient by the facility based on a positive test (regardless of the time between positive test date and admission date)

  - The hospitalization was initiated within 14 days of the first positive lab test (regardless of whether they were identified by the facility as being a COVID-19 patient)
  - Single day hospital stays (e.g. admission, discharge on same date) were excluded.

- COVID-19 Critical care admission: Any individual hospitalized (see above) and admitted to critical care (Intensive Care Unit, High Acuity Unit, or critical care surge beds) during that hospitalization.
- COVID-19 Death: A death (related or not related to COVID-19) that occurred within 30 days of a first positive laboratory-confirmed COVID-19 test result.

Vaccines

- The Provincial Immunization Registry does not capture all influenza vaccinations that were administered. Therefore, estimates of population vaccination coverage for influenza cannot be reliably produced at this time.

Data sources

Primary care Visits

- British Columbia Ministry of Health [creator]. Medical Services Plan (MSP) Payment Information File. British Columbia Ministry of Health [publisher]. Data Extract. MOH (2020). 2023.
- British Columbia Ministry of Health [creator]. Client Roster (Client Registry System/Enterprise Master Patient Index). British Columbia Ministry of Health [publisher]. Data Extract. MOH (2020). 2023.

COVID-19 Cases: BCCDC Public Health Laboratory

COVID-19 Hospitalizations: Provincial Health Services Authority Provincial COVID-19 Monitoring Solution

COVID-19 Deaths: BC Vital Statistics Agency

Vaccines: Health Sector Information, Analysis and Reporting, BC Ministry of Health, and Provincial Immunization Registry

Laboratory reporting sites:

- BC Children's and Women's Hospital, Children's and Women's Hospital Laboratory (BCCH Lab), Fraser Health Medical Microbiology Laboratory, Island Health, Providence Health Care, Powell River Hospital, St. Paul's Hospital, Vancouver General Hospital, Victoria General Hospital, Vancouver Coastal Health, BCCDC Public Health Laboratory (PHL), Interior Health Authority sites, and Northern Health Authority.
- Please see the Data Notes of the Pathogens report for more details on data sources, testing methods, and influenza subtyping.

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All inferences, opinions, and conclusions drawn in this report are those of the authors, and do not reflect the opinions or policies of the Data Steward(s).

Please direct questions and feedback to the BCCDC: admininfo@bccdc.ca

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