Community Respiratory Illness Surveillance Program (CRISP) Situation Report: September 15, 2023 (Reporting Period August 13 – September 09, 2023)

Summary

- CRISP reports will now switch from monthly to bi-weekly, with the next report released on Friday, September 29th.
- COVID-19 activity has increased over the past month from an average of 66 positive tests in the previous three weeks to 96 in the most recent surveillance week. Test positivity for the most recent surveillance week was 8.0%.
- Respiratory Syncytial Virus (RSV) has reached the point of low activity, with three cases in the most recent reporting period.
- Influenza activity has remained stable over the past four weeks and has dipped below the inter-seasonal 2% test positivity threshold. Influenza Type A accounted for the majority of cases.
- COVID-19 and other respiratory viruses, respectively account for 53.5% and 45.3% of hospitalizations due to respiratory illnesses across the province. Total hospital admissions for respiratory viruses displayed an increase in the recent four weeks (from 163 to 170).
- Sentinel surveillance indicators of respiratory transmission in the community fluctuate:
    - Weekly visits to the emergency departments for respiratory-like illnesses (RLI) in the recent four weeks decreased from 13.6 per 1,000 to 10.2 per 1,000 visits in the most recent week.
    - School-absenteeism for the week ending September 9, 2023, was 1.3%.
    - Calls to HealthLine 811 for respiratory-like illness in the recent four weeks increased from 41.5 to 50.5 per 1,000 calls in the most recent week.
    - The most commonly detected organism in the sentinel provider program this past reporting period was a Rhinovirus.
    - The North East area revealed highest viral load in wastewater samples, with similar a trend increment observed in Saskatoon, the North West and South East areas. Regina and the other areas of the province showed either stable or decreasing trends in COVID-19 viral loads.

COVID-19

- The number of positive lab tests for COVID-19 increased from 67 in the week ending September 02 to 96 in the most recent week, therefore, reflecting the increase of test positivity.
- COVID-19 cases are in the 0-4 years (5.7%), 20 to 64 years (49.9%) and 65+ years (42.0%) age groups.
- Ten COVID-19 outbreaks were reported in a high-risk setting in the past four weeks.
- EG.5 and its sublineages (denoted as EG.5*) were the most commonly detected variants (18.7% of the current reporting period), followed by XBB.1.5* (16.5%) and XBB.1.9.2* (15.8%; includes sublineages other than EG.5*).
- COVID hospitalizations are stable and ICU admissions have increased for the most recent week in the past four weeks.
- The proportion of staffed inpatient beds occupied by COVID-19 patients decreased from 1.9% to 1.6% for the most recent week in the past four weeks.
- In the last four weeks, a death associated with COVID-19 was reported.

- Having a COVID-19 booster in the last six months (October 1, 2022 – March 31, 2023) reduces the risk of a COVID-19 death over three times compared to unvaccinated individuals and over two times compared to those without a booster dose.
- Of those aged five years and older, 2.4% have received their latest booster dose in the last six months. Except for Regina, all areas of the province have less than 50% of their population up-to-date for COVID-19 vaccines.
- On Sept. 12. 2023 Health Canada authorized the Moderna Spikevax XBB.1.5 vaccine. This vaccine is highly recommended for those who are most at risk including older adults and those with chronic health conditions, however it will be available to all individuals 6 months and older.

Influenza

- Influenza activity continued to show a decrease over the past four weeks to below inter-seasonal thresholds (< 2 cases and 2% test positivity). There was only one hospitalization and no ICU admission for the most recent four weeks.

Other Respiratory Viruses[1]

- There has been low RSV activity in the past four weeks.
- Other respiratory virus lab detections fluctuated between 40 and 66 over the past month. The positivity rate averaged 4.9% per week over the past four weeks.
- Other respiratory viruses hospitalizations have decreased from 82 for the preceding four weeks to 77 for the most recent four weeks. Other respiratory viruses ICU admissions have increased from 9 for the preceding four weeks to 11 for the most recent four weeks.
- Five outbreaks were reported from other viruses in high-risk settings over the past four weeks.
- The most commonly detected virus in the sentinel provider program was Rhinovirus.

[1]*Parainfluenza viruses 1 – 4 (PIV 1 – 4); Adenovirus (ADV); Rhinovirus (RV); Human Metapneumovirus (HMPV); NOTE: RSV test positivity now exceeds 1% and is reported separately. * Represents all sublineages of Omicron*

Table 1: Viral indicators by surveillance period, August 13 – September 09, 2023

Report date	COVID-19 positive laboratory test	COVID-19 test positivity	COVID-19 outbreaks	Influenza positive laboratory test	Influenza test positivity	Influenza outbreaks	RSV positive laboratory test	RSV test positivity	RSV Outbreaks	'Other'[1] positive laboratory test	'Other'[1] test positivity	'Other'[1] outbreaks
Sept 03 – 09	96	8.0%	2	0	0.0%	0	0	0.0%	0	53	5.1%	0
August 27 – Sept 2	67	6.8%	2	1	0.2%	0	1	0.2%	0	41	5.4%	1
August 20 – 26	81	8.0%	2	1	0.2%	0	1	0.2%	0	40	3.7%	1
August 13 – 19	51	5.5%	4	4	0.8%	0	1	0.2%	0	66	5.4%	3

Notes: [1]*Parainfluenza viruses 1 – 4; Adenovirus; Human Metapneumovirus, seasonal Coronavirus. See Technical Notes for details.*

Table 2: Patient-confirmed respiratory illness by age group, September 03 – 09, 2023

Age group (Years)	COVID-19 case count	Influenza case count	RSV case count	'Other' virus case count[1]
0-4	5 (5.7%)	0	0	53
5-19	3 (3.4%)	0	0	
20-64	43 (49.9%)	0	0	
≥65	37 (42.0%)	0	0	
Total	88 (100.0%)	0	0	53 (100%)

Notes: [1]*Parainfluenza viruses 1 – 4; Adenovirus; Human Metapneumovirus, seasonal Coronavirus; age-specific data is unavailable for other respiratory pathogens. Due to the rounding, total percentage may not add to 100%. See Technical Notes for further details.*

Table 3: Sentinel* indicators by surveillance period, August 13 – September 09, 2023

Report date	School illness absenteeism [1]	RLI** ED visits per 1,000[2]	RLI** 811 calls per 1,000	COVID-19 Wastewater indicator[3]	Sentinel provider test positivity	Most commonly detected virus: Sentinel providers
Sept 03 – 09, 2023	1.3%	10.2	50.5	Low (n=8)	50% (n=4)	Rhinovirus
August 27 – Sept 2, 2023	No data	10.8	44.6	Low (n=8) Medium High (n=1)	50% (n=2)	Rhinovirus
August 20 – 26, 2023	No data	8.7	45.1	Low (n=9)	0	N/A
August 13 – 19, 2023	No data	13.6	41.5	Low (n=9)	100% (n=1)	Adenovirus

*Notes: *Sentinel surveillance are sampling programs representative of the population; [1]School absenteeism is the proportion of scheduled children who were absent from the class due to illness. The type of illness is not specified. Due to summer vacation, school absenteeism data was not available for the weeks of August 13 to September 02. [2]Respiratory-like illness (RLI) are based on reports from ten of thirteen reporting areas for all report date. [3] Categorizes the level of hazard a particular region's COVID-19 viral load (e.g., low, medium, medium-high, or high) (see Technical Notes for details).*

Table 4: Outcome, health care capacity and immunization coverage indicators by surveillance period, August 13 –September 09, 2023[¥]

Report date	Hospital admissions – COVID-19[1]	ICU admissions – COVID-19	Hospital admissions – Influenza	ICU admissions – Influenza	Hospital admissions – RSV	ICU admissions – RSV	% of staffed inpatient beds occupied by COVID-19 patients[2]	Deaths – COVID-19[3]	Deaths – Influenza[3]	Proportion of population up-to-date – COVID-19 vaccine[4]
Sept 03 – 09	21	4	0	0	0	0	1.6%	0	0	46.4%
August 27 – Sept 2	21	2	0	0	0	0	1.7%	0	0	46.4%
August 20 – 26	29	2	1	0	0	0	1.9%	0	0	46.4%
August 13 – 19	20	2	0	0	0	0	1.6%	1	0	46.4%

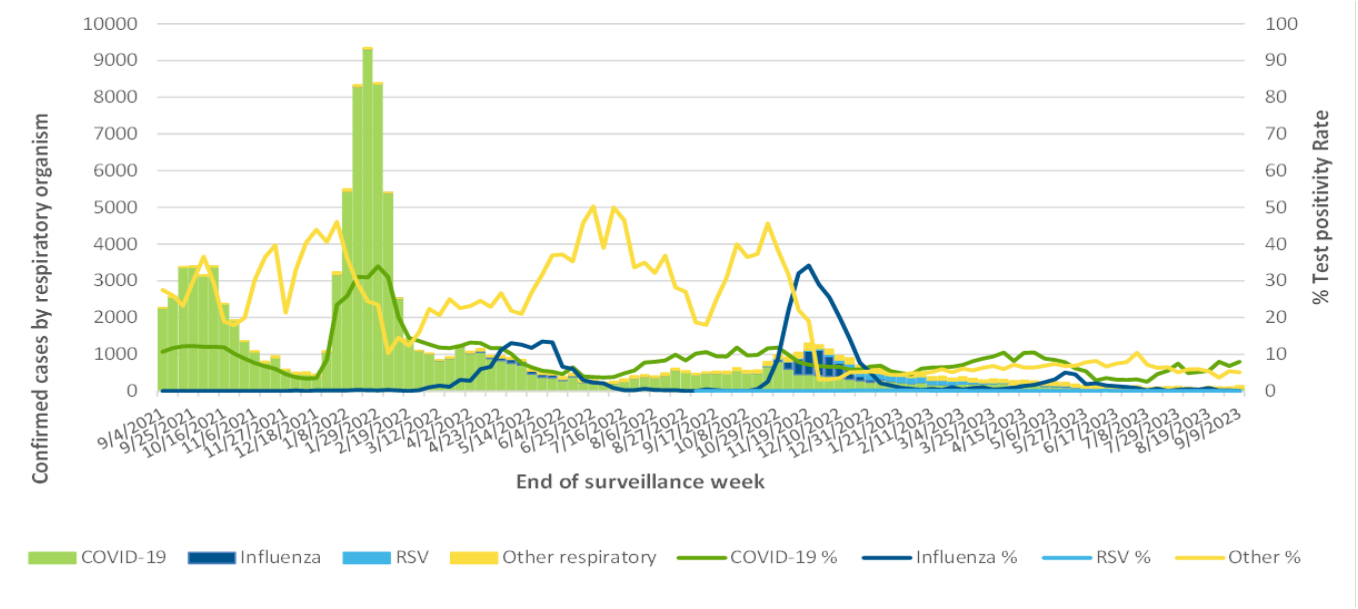
*[¥]Additional information on hospital admission stratified by respiratory organism and age group is provided below in **Figure 5** and **6** respectively. Viral infection may not be the main reason for the admission.*
[3]One COVID-19 deaths was reported in the past four weeks. *No influenza deaths reported in the last four weeks.*

Cases by respiratory organisms across the age groups

- From August 13 to September 9, 2023 there were 170 respiratory illness cases hospitalized with lab-positive Covid19 (91), influenza (1), other respiratory illnesses (77), and co-infected cases (1). There was no new RSV hospital admission during this period. The Covid19 lab positives were among the age groups of 0-19 (4), 20-59 (22), and ≥60 (65). The Influenza lab positive was among the age group of 0-19 (1). The other respiratory lab positives were in the age group of 0-19 (36), 20-59 (19), and ≥60 (22). The Co-infection lab positive was in the age group of ≥60 (1).
- From August 13 to September 9, 2023, there were 21 respiratory illness cases admitted to the ICU with lab-positive Covid19 (10) and other respiratory illnesses (11). There were no new RSV, Influenza, or co-infection cases during this period. The Covid19 lab positives were among the age groups of 0-19 (1), 20-59 (5) and ≥60 (4). The other respiratory lab positives were in the age group of 0-19 (6), 20-59 (2) and ≥60 (3).

Notes: *[1] Delay in date tested result affects the total number of Influenza (A/B), RSV and other respiratory virus admissions for a particular day. This lag in data impacts mostly the last couple of days from the day the report is updated. The counts for influenza, RSV, and other respiratory virus-associated hospital and ICU admissions refer to individuals with laboratory or point of care tests positive for influenza, RSV, and other respiratory viruses, respectively, occurring within four days before the admission date AND/OR at any point during the hospital stay. The counts for COVID-19 hospital and ICU admissions refer to individuals with laboratory tests positive for COVID-19 virus, occurring within 21 days before the admission date and/or at any point during the hospital stay or 7 days from the discharge. Episodes of care considers patients total movement within the health system related to their condition. It combines 2 or more admission from 2 or more different facilities, if they are transfers (No break in care). Transfer: Admission to any other hospital within 24 hours of discharge from previous hospital. Co-infected cases: positive for influenza and RSV or, positive for influenza and other respiratory virus or positive for RSV and other respiratory viruses or, positive for COVID-19 and influenza or, positive for COVID-19 and RSV or, Positive for COVID-19 and other respiratory viruses. Other includes: Parainfluenza 1-4, Adenovirus, Enterovirus, Human Metapneumovirus, Rhinovirus, Seasonal Coronovirus (O43, NL63, 229E, HKU1f.)*
[2]7-day average of percentage of acute inpatient beds staffed and in operation that are occupied by COVID-positive patients as of 8AM census
[3] Includes deaths entered into Panorama IOM among lab-confirmed cases. Deaths reported based on the actual date of death. Deaths reported in previous periods subject to change due death reporting data lags
[4]Up-to-date =completed a primary series and at least one additional booster, age 5+ years.

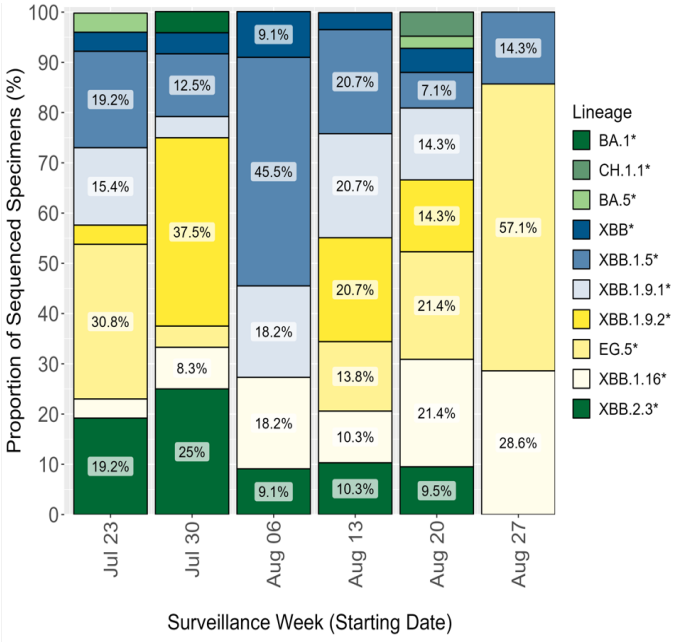
Figure 1: Epidemic curve, respiratory illness by organism and test positivity, August 29, 2021 – September 09, 2023



Data sources: *Panorama IOM extracted on September 11, 2023 (COVID-19 cases)*
Respiratory Virus Detections Surveillance System (influenza and other respiratory) (RRPL extracted September 11, 2023)
As of September 4, 2022, COVID-19 cases include new and reinfections.

For the four weeks of August 13 to September 9, 2023, there were:
- *265 COVID-19 cases (21 were 0 to 19 years; 103 were 20 to 59 years; and 141 were 60 years and older).*
- *Six influenza lab detections*
- *Three RSV detections*
- *200 other viral lab detections (parainfluenza, adenovirus, human metapneumovirus, rhinovirus, coronavirus)*

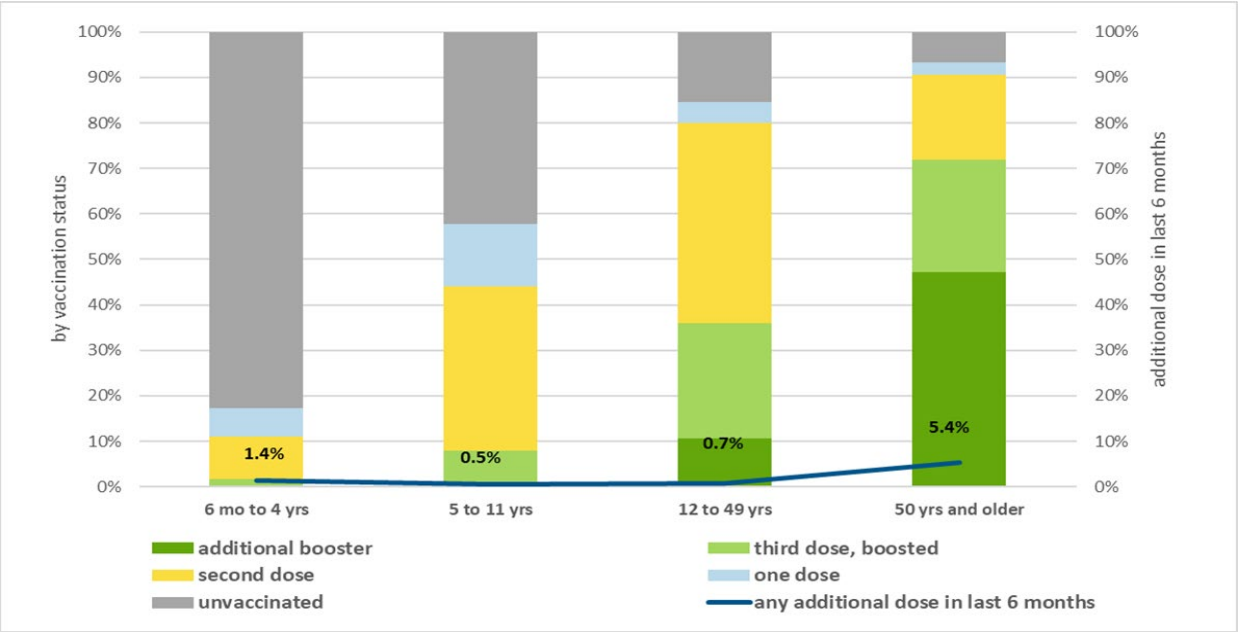
Figure 2: Percentage of SARS-CoV-2 variants by surveillance week starting*, June 25, 2023 – August 27, 2023



Lineage	Jul 23	Jul 30	Aug 06	Aug 13	Aug 20	Aug 27
BA.1*	0	1	0	0	0	0
CH.1.1*	0	0	0	0	2	0
BA.5*	1	0	0	0	1	0
XBB*	1	1	1	1	2	0
XBB.1.5*	5	3	5	6	3	1
XBB.1.9.1*	4	1	2	6	6	0
XBB.1.9.2*	1	9	0	6	6	0
EG.5*	8	1	0	4	9	4
XBB.1.16*	1	2	2	3	9	2
XBB.2.3*	5	6	1	3	4	0
Total	26	24	11	29	42	7

Data Source: *Roy Romanow Provincial Laboratory, Saskatchewan Health Authority, as of September 11, 2023*
The most recent VOC data available from the Provincial database is as of surveillance week ending September 02, 2023
* Surveillance week correspond to specimen collection date.

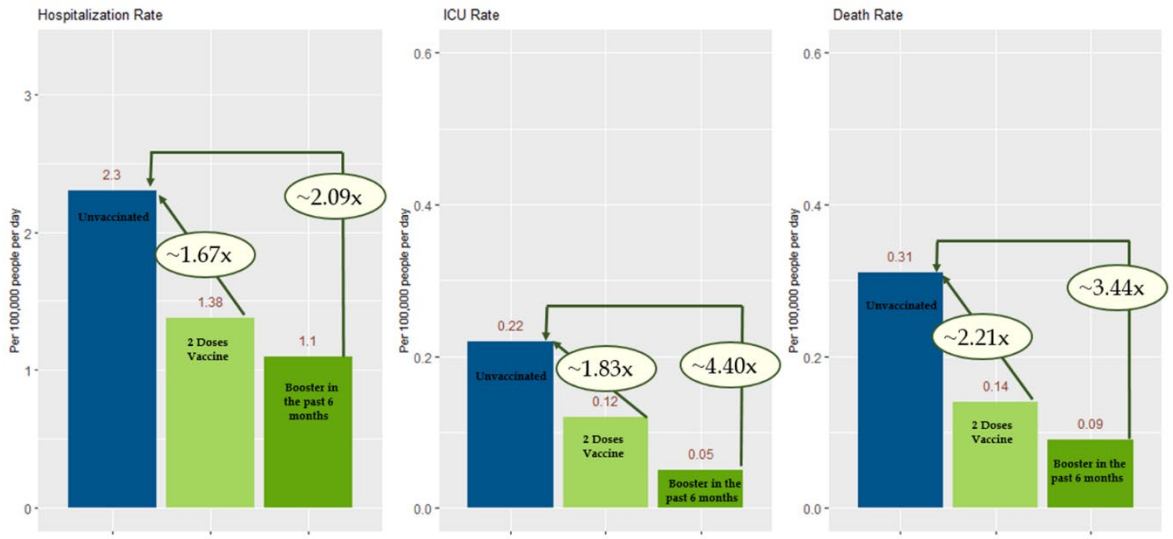
Figure 3: Proportion of residents by age group and COVID-19 vaccination status to September 09, 2023



Data sources: Panorama September 11, 2023; Saskatchewan Covered Population, 12-Nov-2022, Ministry of Health version (2022 Version 2)

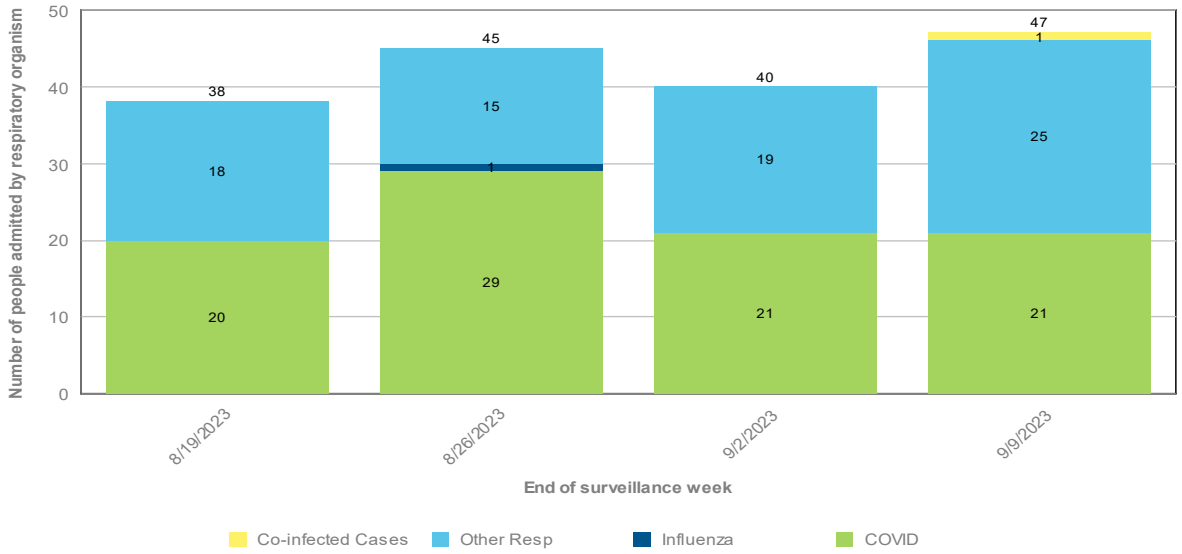
Note: Of those five years and older: 46.4% have completed their series and received a booster dose; 2.4% have received their latest dose in the last six months. Of those 12 years and older, 21.6% (225,124) were administered a Moderna or a Pfizer bivalent. As of September 9, 2023, cumulatively doses administered are as follows: dose 1, n=997,396; dose 2, n=932,430; dose 3, n=536,725; completed plus 2 or more additional doses, n=408,002; total doses=2,874,553.

Figure 4: Booster dose within last 6 months reduces the risk of Hospitalization, ICU admission or Death (age-adjusted rates), October 01, 2022 – March 31, 2023



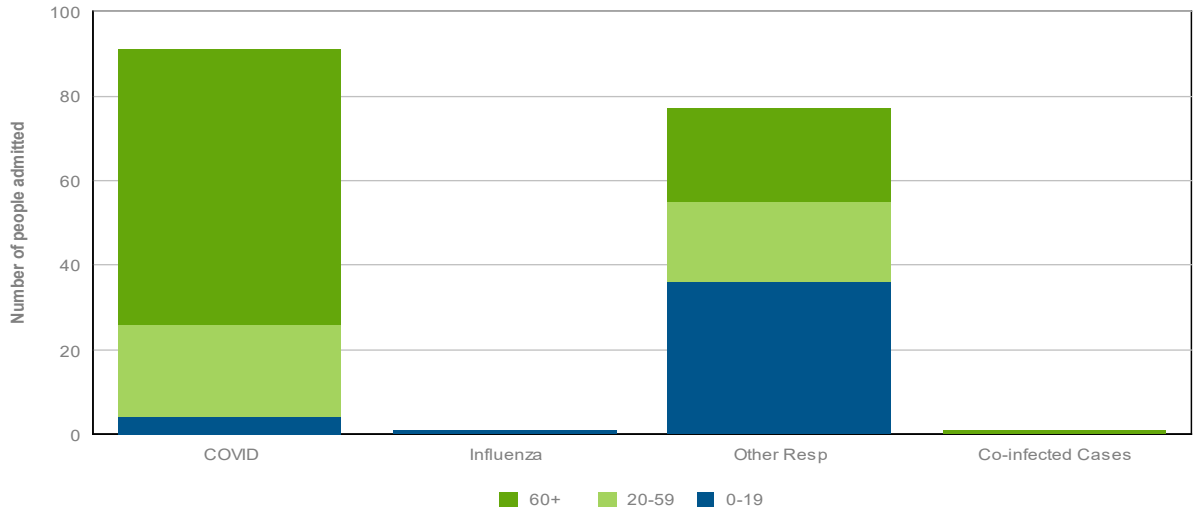
Data Source: *Digital Health Analytics, Saskatchewan Health Authority*
Definitions: *Unvaccinated - Individuals with no record of vaccine received or vaccinated with first dose but less than 21 days from receiving the first dose. Vaccinated with 2 doses - Individuals who have received their second dose for more than 14 days or their third dose is less than 14 days. Booster in the past 6 months - Individuals who have received any booster dose (3rd, 4th, 5th and so on) within the last 6 months. Details on methodology is provided in the Technical notes.*

Figure 5: The number of COVID-19, influenza, RSV, other respiratory viruses and co-infected cases admitted to hospital by week of the admission, August 13 – September 09, 2023*



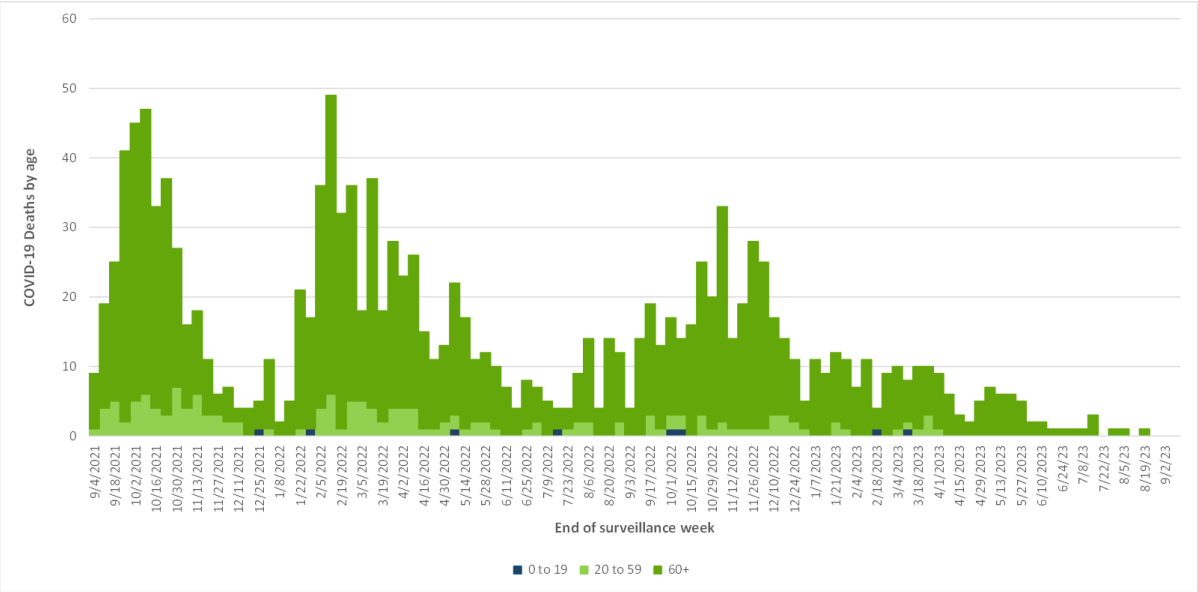
Data sources: *Digital Health Analytics, Saskatchewan Health Authority, Episode of Care methodology (Admission, Discharge, Transfer Database (ADT, RRPL, Panorama); data extracted on Sept 12, 2023. * Viral infection may not be the main reason for the admission.*
Note: *The delay in date tested result affects the total number of COVID 19 admissions for a particular day. This lag in data impacts mostly the last couple of days from the day the report is updated. Includes lab or point of care positive for influenza, RSV, other respiratory viruses, four days prior to date of admission AND/OR at any point during admission. Episode of Care considers patients total movement within the health system related to their condition. It combines 2 or more admissions from 2 or more different facilities, if they are transferred (no break in care). Transfer = admission to any other hospital within 24 hours of discharge from previous hospital. Co-infected cases = positive for Influenza and RSV, or, Influenza and 'other', or, RSV and 'other', or, COVID-19 and Influenza, or, COVID-19 and RSV, or, COVID-19 and 'other'.*

Figure 6: The number of COVID-19, influenza, RSV, other respiratory viruses and co-infected cases admitted to hospital by age group, August 13 – September 09, 2023*



Data source: *Digital Health Analytics, Saskatchewan Health Authority, Episode of Care methodology (Admission, Discharge, Transfer Database (ADT, RRPL, Panorama); data extracted on Sept 12, 2023. * Viral infection may not be the main reason for the admission*
Note: *The delay in date tested result affects the total number of COVID 19 admissions for a particular day. This lag in data impacts mostly the last couple of days from the day the report is updated. Includes lab or point of care positive for influenza, RSV, other respiratory viruses, four days prior to date of admission AND/OR at any point during admission. Episode of Care considers patients total movement within the health system related to their condition. It combines 2 or more admissions from 2 or more different facilities, if they are transferred (no break in care). Transfer = admission to any other hospital within 24 hours of discharge from previous hospital. Co-infected cases = positive for Influenza and RSV, or, Influenza and 'other', or, RSV and 'other', or, COVID-19 and Influenza, or, COVID-19 and RSV, or, COVID-19 and 'other'.*

Figure 7: COVID-19 deaths by age group and week, September 4, 2021 – September 09, 2023*



Data Source: Panorama September 11, 2023

In the past four weeks, August 13 to September 09, there has been one death in COVD-19 cases, in the 60 years or older group.

** Total COVID-19 deaths from March 2020 to date; n=2,005*

Table 5: Community Respiratory Infection Surveillance Program Indicators by zone, September 03 - 09, 2023

Location	Test positivity – COVID-19[1] (positive lab tests)	Test positivity – Influenza (positive lab tests)	RLI* visits to EDs per 1,000[2]	RLI* 811 calls per 1,000[3]	School illness absenteeism[4]	Wastewater indicator†	Proportion of population up-to-date vaccination – COVID-19[5]
Far North West (Meadow Lake and area)	0.0% (0)	0.0% (0)	No data	-	0.5%	Low	24.4%
Far North Central	0.0% (0)	0.0% (0)	No data	-	0.0%	No data	14.5%
Far North East (La Ronge and area)	12.5% (3)	0.0% (0)	No data	-	0.4%	No data	25.2%
North West (North Battleford/ Lloydminster and area)	1.9% (1)	0.0% (0)	6.3	49.0	2.1%	Low	35.7%
North Central (Prince Albert and area)	11.1% (3)	0.0% (0)	4.2	-	1.5%	No data	40.9%
North East (Melfort and area)	0.0% (0)	0.0% (0)	74.1	47.6	2.6%	No data	44.1%
Saskatoon	7.2% (22)	0.0% (0)	11.2	50.0	0.0%	Low	49.6%
Central West (Kindersley and area)	7.1% (1)	0.0% (0)	63.5	-	0.3%	No data	44.0%
Central East (Yorkton/Melville and area)	12.9% (22)	0.0% (0)	13.8	-	2.0%	Medium	46.0%
Regina	3.0% (3)	0.0% (0)	6.4	49.4	1.8%	Low	52.2%
South West (Swift Current/Maple Creek and area)	14.6% (6)	0.0% (0)	17.9	56.2	1.4%	Low	41.0%
South Central (Moose Jaw and area)	0.0% (0)	0.0% (0)	2.3	-	1.9%	Low	44.5%
South East (Weyburn/Estevan and area)	10.3% (3)	0.0% (0)	12.1	53.7	2.5%	Low	39.5%
Unknown/Out of Province	9.6% (32)	0.0% (0)	No data	-	1.4%		-
SASKATCHEWAN	**8.0%** (96)	0.0 (0.0%)	**10.2**	**50.5**	**1.3%**		**46.4%**

*Notes: [1]by week of lab detection; effective Oct 30, 2022 includes cases who tested positive more than once >= 90 days apart; ^ [1]For COVID-19 test positivity, all tests reported were performed within the province. COVID-19 test positivity. This week's COVID-19 test positivity includes data from August 06 – August 11.*Respiratory-like illness; [2]Based on reports from ten of thirteen reporting areas. [3]811 data available at the six Integrated Service Areas geographical level; [4] Unknown represents the number of students who were absent from the class due to illness with no known geography for the school. School absenteeism is the proportion of scheduled students who were absent from the class due to illness. The type of illness is not specified.; †SK overall estimate is currently unavailable as this metric tends to overestimate and underestimate WW level due to varied patterns across regions, which is difficult to synchronize with the population size of each region.; No refers to not receiving the samples from the sites with varied reasons (staffing issues, statutory holiday). [5]Up-to-date = completed a primary series and at least one additional booster, age 5+ years.*

Technical Notes

1. Laboratory surveillance: Conducted through epidemiological analyses and Laboratory surveillance: Conducted through epidemiological analyses and positivity rate monitoring (counts and proportion of positive specimens, week of specimen collection, age category, geographical area, etiological type where applicable) of selected respiratory specimens submitted to the provincial laboratory in SK. Whole genome sequencing is conducted to detect changes (emergence of sub-lineages, variant proportion, etc) of clinical and public health importance among circulating respiratory organisms.

2. Sentinel health providers: Comprise a geographical-based network in practices across the province (n = 13 zones) who submit one to two specimens weekly to the Virology Section of the Roy Romanow Provincial Laboratory (RRPL), Saskatchewan Health Authority, from patients presenting with respiratory-like symptoms. Specimens are tested for a wider complement of respiratory organisms to monitor respiratory illness activity in the community. Assessment of co-infection (infected by more than one respiratory virus organism concurrently) occurs through sentinel provider submissions.

3. Wastewater data: Provided by the Roy Romanow Provincial Laboratory Wastewater Testing Team. Viral load for each zone was used to determine risk levels (Low, Medium, Medium-High, and High) based on viral copies per unit volume and weekly change percentage. Locations sampled include: Saskatoon, Regina, Moose Jaw, North Battleford, Swift Current, Yorkton, Weyburn, Estevan, Meadow Lake, Melville, Town of Battleford, La Ronge, Unity, Assiniboia, Maple Creek, Lumsden, Watrous, Île-à-la-Crosse, Birch Hills, Southey, and Pasqua First Nation.

4. Respiratory-Like Illness (RLI) cases in Emergency Departments (EDs) across different regions of Saskatchewan are recorded using two primary systems: the Sunrise Clinical Manager (SCM) and the local public health offices (LPHO).

   The SCM ED data encompasses information from eight zones, namely Central East, North Central, North West, Regina, Saskatoon, South Central, South West, and South East (data received from both systems). On the other hand, the LPHO ED data covers three zones: North East, Central West, and South East (data received from both systems). It's important to note that the Far North West, Far North Central, and Far North East regions do not currently participate in RLI Surveillance for ED.

   Digital Health Analytics (DHA) compiles and summarizes SCM data over a 7-day monitoring period, spanning from Sunday to Saturday. In contrast, the LPHO aggregates raw data received from ED's on the prescribed data collection form. The data is monitored for a minimum of 24 hours, on at least one day each week. The specific timing of this monitoring may vary depending on the ED's schedule.

5. HealthLine 811 callers with Respiratory Symptoms (RLI): This count of response protocols collected by HealthLine nurses specific to callers reporting respiratory-like symptoms. HealthLine data is collected for a seven day week, Monday to Sunday. Data is transformed into the rate of callers with respiratory symptoms from each Integrated Service Area (ISA) per 1000 calls from that ISA concerning any type of symptom.

6. A confirmed outbreak: Defined as two or more lab confirmed respiratory virus cases in high-risk settings where transmission is evident or there is a high level of suspicion of transmission. Outbreaks are reported by the week they were reported to the local public health office and not necessarily in the week that the outbreak began. For this report outbreaks in high risk settings comprise long term care facilities, personal care homes and group homes

7. COVID hospitalized admissions is the number of C-19 positive cases that during the surveillance week were admitted as an inpatient to an acute care facility. This includes patients with C-19 related illness, incidental COVID infection, and patients under investigation. COVID ICU admissions is the number of C-19 positive cases that during the surveillance week were admitted to an ICU location in SK. This includes both infectious and non-infectious cases.

8. Influenza, RSV and other respiratory virus admissions: Delays in testing results affect the total number of Influenza, RSV and other respiratory virus admissions for a particular day. This lag in data has the greatest impact on the two days prior to when the report is updated. Counts include individuals who are laboratory positive for influenza, RSV, and other respiratory viruses, within four days prior to date of admission AND/OR at any point during the hospital stay. Episode of Care considers patients' total movement within the health system related to their condition. It combines 2 or more admissions from 2 or more different facilities, if they are transfers (i.e., no break in care). Transfer: Admission to any other hospital within 24 hours of discharge from previous hospital. Co-infected Cases = if positive for Influenza and RSV or, positive for Influenza and Other Respiratory viruses or, positive for RSV and Other respiratory viruses or, positive for Covid-19 and Influenza or, positive for Covid-19 and RSV or, positive for Covid-19 and Other Respiratory viruses.

9. Variant of concern (VOC): VOCs are SARS-CoV-2 viruses that have undergone genetic modification or mutation causing altered virus infectivity, replication and pathogenicity. As a result it can alter host immune response. The Roy Romanow Provincial Laboratory (RRPL) tests for and monitors COVID-19 variants of concern (VOCs) in Saskatchewan. Confirmation of VOC linages is done by conducting whole genome sequencing (WGS) at RRPL or the National Microbiology Laboratory. one to two weeks to complete WGS. Data sources for VOCs analysis include testing data from the RRPL, and epidemiological information from Panorama. Where geographical zone is missing in RRPL or Panorama data, the Saskatchewan postal code file is used to identify cases' geographical information.

   VOC lineages BA.1, BA.2, BA.2.75, CH.1.1, BA.5, BQ.1, BQ.1.1, XBB, XBB.1.5, XBB.1.9.1, XBB.1.9.2, EG5, XBB.1.16, XBB.2.3, and XBF are all classified under the WHO label of "Omicron". Lineages that are not explicitly indicated in the analysis are aggregated under their corresponding parent lineage. Percentages are shown when a lineage or variant group constitutes 5% or more of total specimens evaluated for a given surveillance week.

10. COVID-19 cases: Effective September 4, 2022,COVID-19 cases are based on lab detection and include cases who tested positive more than once 90 days, or further, apart. Prior to this, cases include, only, first time cases reported and entered into Panorama.

11. COVID-19 Deaths: Includes deaths entered into Panorama IOM among laboratory confirmed cases. Deaths are reported based on the actual date of death. Deaths in previous periods may be adjusted from previous reports due to data lag

12. COVID-19 Immunizations: Up-to-date (UTD) COVID-19 vaccination is the proportion of people having completed a primary series and one booster for ages five and older divided by the eligible population found in the Saskatchewan Covered Population, 12-Nov-2022 Ministry of Health version (2022 Version 2). Though vaccinated children six months to four years of age may be technically UTD, this specific definition does not apply to them. In addition, UTD in last six months is calculated by the proportion of people having received one or more boosters within the previous six months.

13. Influenza immunizations: UTD Influenza vaccination is the proportion of people, six months and older, having one influenza dose this season divided by the eligible population found in the Saskatchewan Covered Population, 12-Nov-2022 Ministry of Health version (2022 Version 2). Vaccination for the current influenza season officially began October 11, 2022. Some doses were administered prior to the start date.

14. Staffed Inpatient beds: Weekly average COVID Occupancy is a 7-Day average percentage of acute inpatient beds staffed and in operation COVID positive patients occupy. The full calculation of this metric is: Average COVID occupance=$\sum$(8am covid census) ÷ $\sum$(8am beds staffed and in operation) × 100%. Where "bed staffed and in operation = "Planned beds" + "Surge Beds" - "Closed" and $\sum$(…) indicates summation over 7-day period from Sunday to Saturday. 8am COVID census is taken from the ADT patient registration, which is fed to the provincial data-mart and archived hourly. 8am planned bed, surge beds, and closed beds is compiled via data feeds from APF (Saskatoon & Regina) and the provincial bed edits interface (INH &IRH).

15. Rate of COVID-19 hospitalization (ICU or Death) were calculated by summing the daily number of hospitalizations (ICUs or Deaths) for the period by vaccine status (numerator) divided by the mid period population by respective vaccine status (denominator), multiplied by 100,000. This estimate is further divided by the number of days to obtain the daily rate. Denominator for individuals in the Booster in the past 6-months group are all Saskatchewan residents who have had their booster dose within the last 6 months. To eliminate bias of age all rates are adjusted by age. Direct standardization method is employed using the Saskatchewan population as the standard population. Age at first dose used in the rate calculation. Individuals with unknown age are excluded from age-specific analyses. Estimates of relative risk (i.e. rate ratios) is obtained by comparing vaccinated with 2 doses (Any Booster dose) and unvaccinated. Risk estimates may differ from other reports due to differing methodologies. Relative risk estimates methodology is described elsewhere. See Namrata Bains. *Standardization of Rates* (March 2009).