Community Respiratory Illness Surveillance Program (CRISP) Situation Report: August 17, 2023 (Reporting Period July 16 – August 12, 2023)

Summary

- COVID-19 activity has decreased over the past month from an average of 57 positive tests in the previous three weeks to 36 in the most recent surveillance week. Test positivity for the most recent surveillance week is 5.2%.
- Respiratory Syncytial Virus (RSV) has reached the point of inactivity with no cases in the most recent reporting period.
- Influenza activity 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.
- Total hospital admissions for respiratory viruses have decreased in the recent four weeks (from 198 to 163). The majority of respiratory virus hospital admissions are for viruses other than COVID-19, Influenza or RSV.
- Sentinel surveillance indicators of respiratory transmission in the community fluctuate:
    - Weekly visits to the emergency departments for respiratory-like illness (RLI) decreased to 6.9 per 1,000 this week from 8.9 per 1,000 in the week ending August 5.
    - School absenteeism is not being reported due to the summer holidays.
    - Calls to HealthLine 811 for respiratory-like illness in the recent four weeks increased from 35.3 to 53.5 per 1,000 calls in the most recent week.
    - The most commonly detected organism in the sentinel provider program this past reporting period was Adenovirus.
    - Throughout the province, COVID-19 wastewater viral load remained low.

COVID-19

- The number of positive lab tests for COVID-19 decreased from 41 in the week ending August 5 to 36 in the most recent week. Test positivity is stable.
- COVID-19 cases are in the 0-4 years (9.4%), 20 to 64 years (40.6%) and 65+ years (50.0%) age groups.
- Ten COVID-19 outbreaks were reported in a high-risk setting in the past four weeks.
- The province had its first detections of EG.5, a descendant variant of the most commonly detected variant, XBB.1.9.2. To date, 21 clinical specimens tested positive for EG.5 and its sublineages, representing 21.4% of sequenced specimens (Figure 2). Saskatchewan will provide publicly funded new COVID-19 monovalent vaccines that provide protection against more recent (XBB*) sub-lineages of Omicron in fall 2023 (pending Health Canada authorization).
- COVID-19 hospitalizations have decreased from 53 for the previous two weeks, to 27 for the most recent two weeks. COVID-19 ICU admissions have decreased from 10 for the previous four weeks to 7 for the most recent four weeks.
- The proportion of staffed inpatient beds occupied by COVID-19 patients remains stable.
- In the last four weeks, two COVID-19 associated-deaths were 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, 2.6% have received their latest booster dose in the last six months. Except Regina, all areas of the province have less than 50% of their population up-to-date[1] for COVID-19 vaccines.
- Only 21% (n = 224,172) of individuals aged 12+ years have received a bivalent booster dose.
- Less than half of individuals aged 50+ have had more than one booster dose (47%).

Influenza

- Influenza activity continued to show a gradual decrease over the past four weeks to below inter-seasonal thresholds (< 2 cases and 2% test positivity).

Other Respiratory Viruses[2]

- There was no reported RSV activity in the past four weeks.
- 'Other' respiratory virus lab detections fluctuated between 67 and 44 over the past month. The positivity rate averaged 5.9% per week over the past four weeks.
- Six 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 Adenovirus.

[1] *Up-to-date = completed a primary series and at least one additional booster, age 5+ years*

[2] *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, July 16 – August 12, 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	'Other'[1] positive laboratory test	'Other'[1] test positivity	'Other'[1] outbreaks
August 06 – 12, 2023*	36	5.2%	1	1	0.4%	0	0	0.0%	44	6.0%	1
July 30 – August 05, 2023	41	4.9%	3	2	0.5%	0	0	0.0%	55	5.9%	0
July 23 – 29, 2023	77	7.5%	2	2	0.4%	0	0	0.0%	60	5.1%	3
July 16 – 22, 2023	53	5.5%	4	0	0.0%	0	0	0.0%	67	6.5%	2

Notes: [1]*Parainfluenza viruses 1 – 4; Adenovirus; Human Metapneumovirus, seasonal Coronavirus. See Technical Notes for details. *This week's COVID-19 test positivity includes data from August 06 – August 11.*

Table 2: Patient-confirmed respiratory illness by age group, August 06 – 12, 2023

Age group (Years)	COVID-19 case count	Influenza case count	RSV case count	'Other' virus case count[1]
0-4	3 (9.4%)	0	0	44
5-19	0 (0.0%)	1 (100%)	0	
20-64	13 (40.6%)	0	0	
≥65	16 (50.0%)	0	0	
Total	32 (100%)	1 (100%)	0	44 (100%)

Notes: [1]*Parainfluenza viruses 1 – 4; Adenovirus; Human Metapneumovirus, seasonal Coronavirus; age-specific data is unavailable (N/A) 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, July 16– August 12, 2023

Report date	School illness absenteeism >=10%[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
August 06 – 12, 2023	No data	6.9	53.5	Low (n=7)	0	N/A
July 30 – August 05, 2023	No data	8.9	40.9	Low (n=9) Medium High (n=1)	100% (n=5)	Adenovirus
July 23 – 29, 2023	No data	14.6	44.9	Low (n=10)	0	N/A
July 16 – 22, 2023	No data	13.6	35.3	Low (n=10)	66.7% (n=2)	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 July 16 to August 12. [2]Respiratory-like illness (RLI) are based on reports from nine of thirteen reporting areas for all report date. [3]Count of wastewater treatment facilities reporting low, moderate or high levels of viral load causing COVID-19 infection (see Technical Notes for details).*

Table 4: Outcome, health care capacity and immunization coverage indicators by surveillance period, July 16 – August 12, 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]
August 06 – 12, 2023	11	1	0	0	0	0	1.9%	0	0	46.4%
July 30 – August 05, 2023	16	0	1	0	0	0	1.9%	1	0	46.3%
July 23 – 29, 2023	27	1	0	0	0	0	1.5%	1	0	46.3%
July 16 – 22, 2023	26	5	0	0	0	0	1.3%	0	0	46.3%

*[¥]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]Two COVID-19 deaths were reported in the past four weeks. *No influenza deaths reported in the last four weeks.*

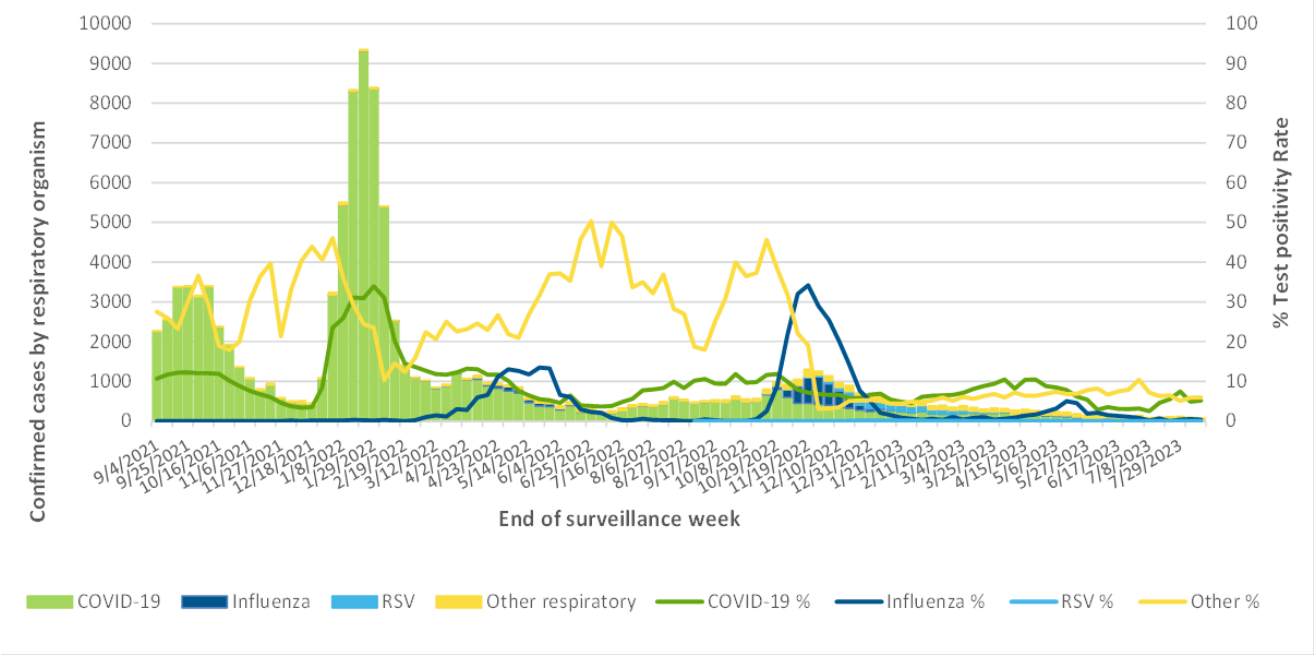
Cases by respiratory organisms across the age groups

- From July 16 to August 12, 2023 there were 163 respiratory illness cases hospitalized with lab-positive Covid19 (80), influenza (1), RSV (0), other respiratory illnesses (82), and co-infected cases (0). Among the 163 cases, Covid19 lab positives (80), were among age groups of 0-19 (2), 20-59 (18), and ≥60 (60). Influenza lab positives (1) cases were among the age group of ≥60 (1). For other respiratory lab positives (82) cases were in the age groups of 0-19 (52), 20-59 (12), and ≥60 (18).
- From July 16 to August 12, 2023, there were 16 respiratory illness cases admitted to the ICU with lab-positive Covid19 (7), influenza (0), RSV (0), other respiratory illnesses (9) and co-infected cases (0). Among the 16 cases, Covid19 lab positives (7) cases were among the age group of ≥60 (7). For other respiratory lab positives (9) cases were in the age groups of 0-19 (6), 20-59 (1) and ≥60 (2).

Notes:

[1] Because of the delay in date tested result, it 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 resp 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.
[5]Up-to-date = received a vaccination within the current influenza season, age 6 months+. The most recent rate is as of March 31, 2023. This See Technical Notes for details.

Figure 1: Epidemic curve, respiratory illness by organism and test positivity, August 29, 2021 – August 12, 2023



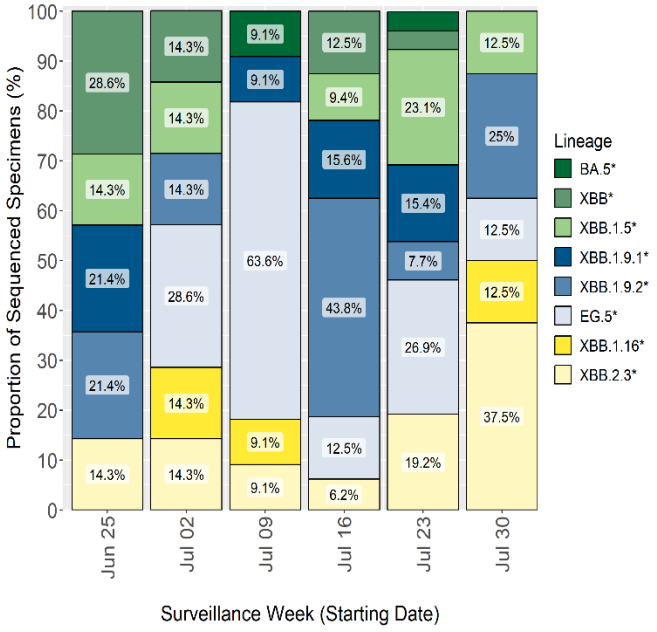
Data sources: Panorama IOM extracted on August 14, 2023 (COVID-19 cases)

Respiratory Virus Detections Surveillance System (influenza and other respiratory) (RRPL extracted August 14, 2023)
As of September 4, 2022, COVID-19 cases include new and reinfections.

For the four weeks of July 16 to August 12, 2023, there were:

- *171 COVID-19 cases (six were 0 to 19 years; 58 were 20 to 59 years; and 107 were 60 years and older).*
- *Five influenza lab detections*
- *No RSV detections*
- *226 other viral lab detections (parainfluenza, adenovirus, human metapneumovirus, rhinovirus, coronavirus)*

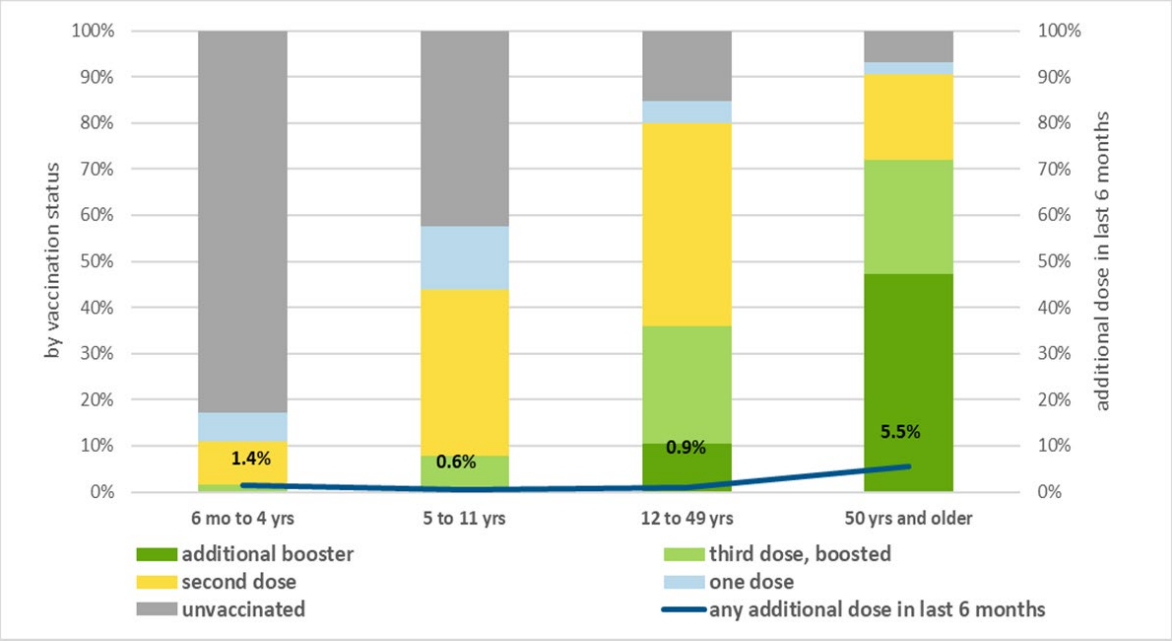
Figure 2: Percentage of SARS-CoV-2 variants by surveillance week starting*, June 25, 2023 – July 30, 2023



Lineage	Jun 25	Jul 02	Jul 09	Jul 16	Jul 23	Jul 30
BA.5*	0	0	1	0	1	0
XBB*	4	1	0	4	1	0
XBB.1.5*	2	1	0	3	6	1
XBB.1.9.1*	3	0	1	5	4	0
XBB.1.9.2*	3	1	0	14	2	2
EG.5*	0	2	7	4	7	1
XBB.1.16*	0	1	1	0	0	1
XBB.2.3*	2	1	1	2	5	3
Total	14	7	11	32	26	8

Data Source: *Roy Romanow Provincial Laboratory, Saskatchewan Health Authority, as of August 14, 2023*
The most recent VOC data available from the Provincial database is as of surveillance week ending August 05, 2023
* Surveillance week correspond to specimen collection date.

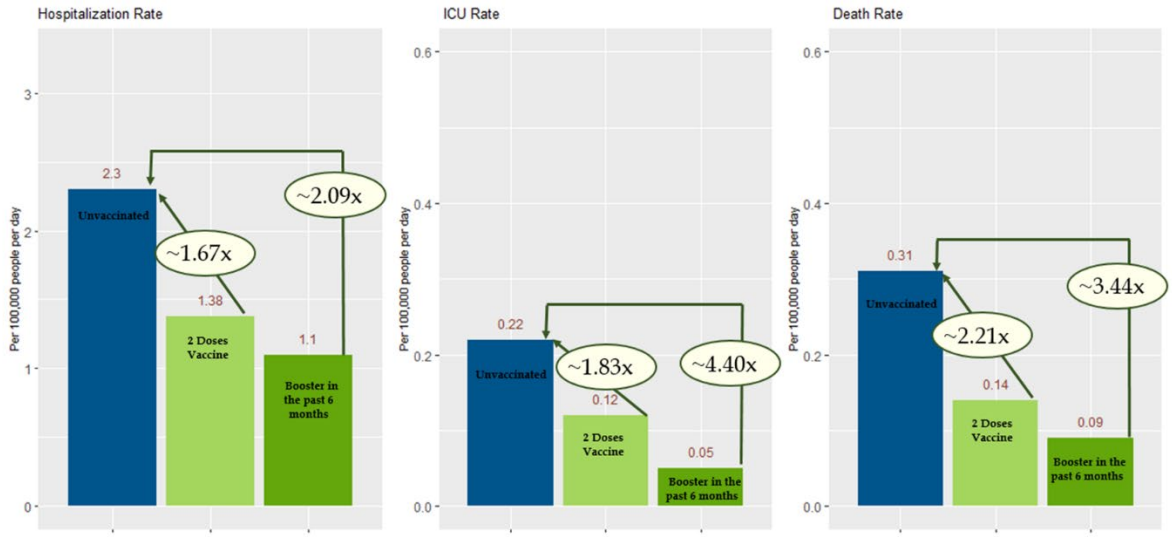
Figure 3: Proportion of residents by age group and COVID-19 vaccination status to August 12, 2023



Data sources: Panorama August 14, 2023; Saskatchewan Covered Population, 12-Nov-2022, Ministry of Health version (2022 Version 2)

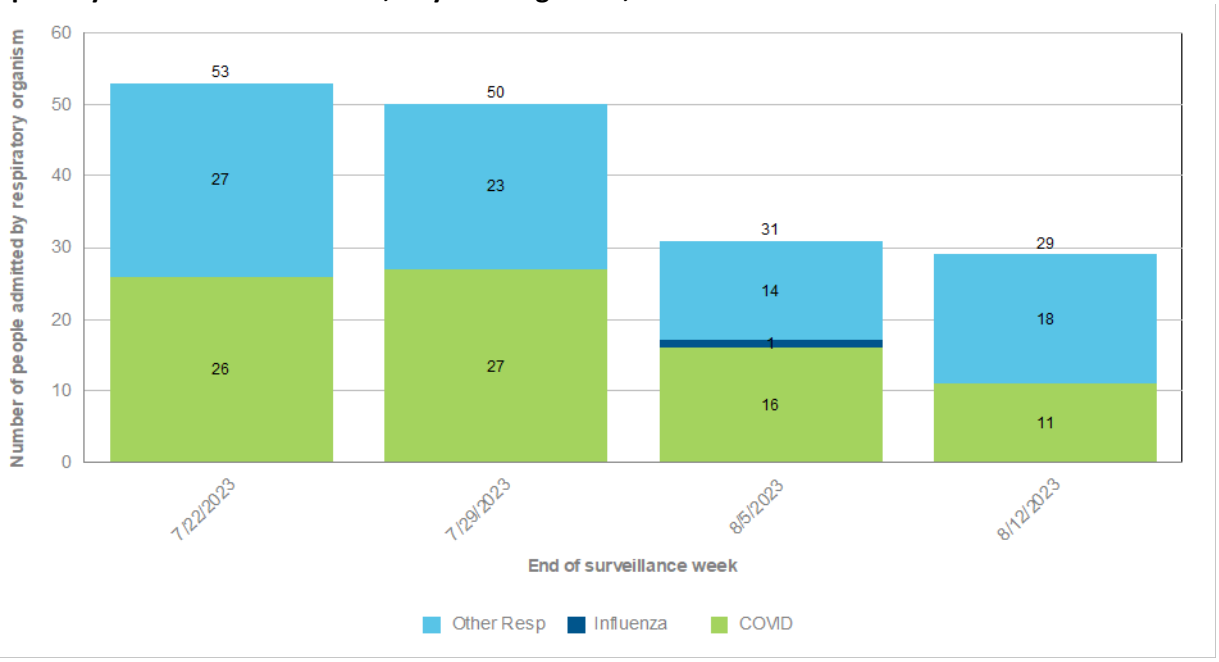
Note: Of those five years and older: 46.4% have completed their series and received a booster dose; 2.6% have received their latest dose in the last six months. Of those 12 years and older, 21.5% (224,172) were administered a Moderna or a Pfizer bivalent. As of August 12 2023, cumulatively doses administered are as follows: dose 1, n=997,104; dose 2, n=932,107; dose 3, n=536,416; completed plus 2 or more additional doses, n=406,083; total doses=2,871,710.

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



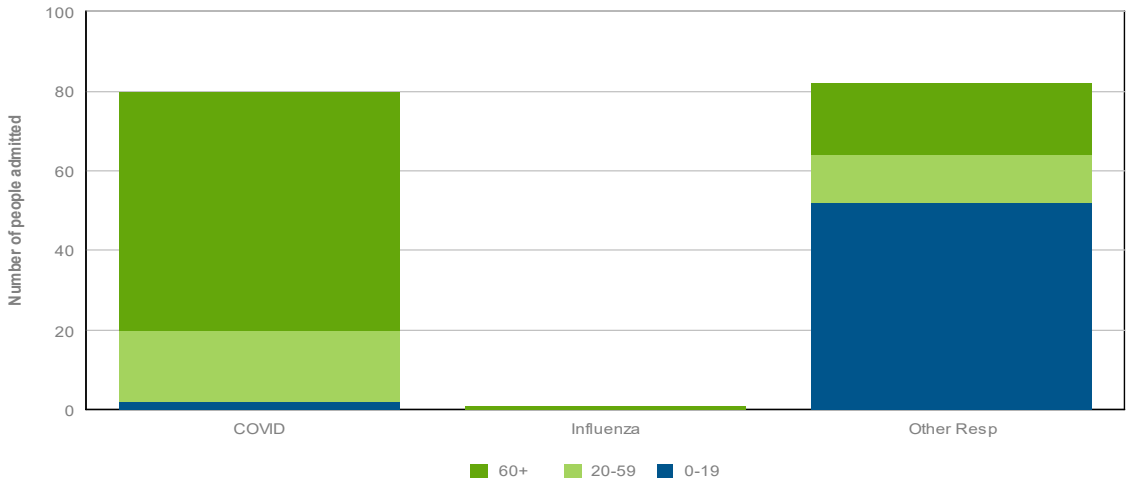
Data Source: *Digital Health Analytics, Saskatchewan Health Authority*
Definitions: *Unvaccinated - Individuals with no record of vaccine received or vaccinated with first dose but less than 21 days from receiving the first dose. Vaccinated with 2 doses - Individuals who have received their second dose 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, July 16– August 12, 2023*



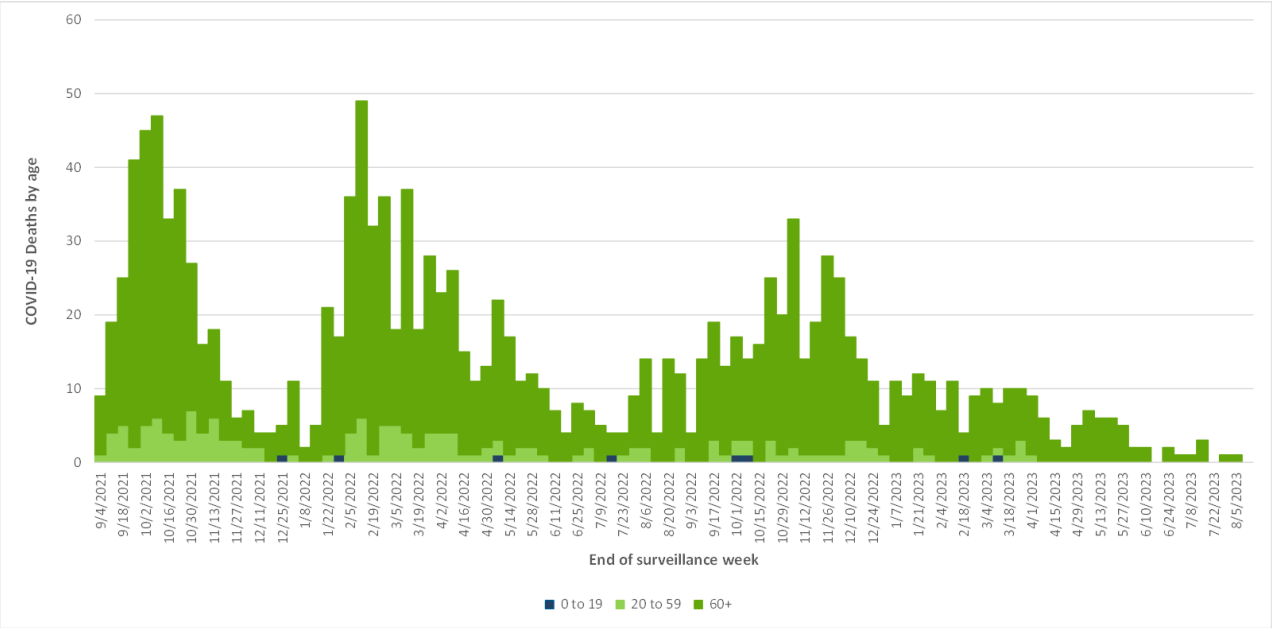
Data sources: *Digital Health Analytics, Saskatchewan Health Authority, Episode of Care methodology (Admission, Discharge, Transfer Database (ADT, RRPL, Panorama); data extracted on August 15, 2023. * Viral infection may not be the main reason for the admission.*
Note: *Because of the delay in date tested result, it 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'. For the weeks July 16 to August 12, 2023 there were no new RSV and Co-Infected hospital admissions.*

Figure 6: The number of COVID-19, influenza, RSV, other respiratory viruses and co-infected cases admitted to hospital by age group, July 16 – August 12, 2023*



Data source: *Digital Health Analytics, Saskatchewan Health Authority, Episode of Care methodology (Admission, Discharge, Transfer Database (ADT, RRPL, Panorama); data extracted on August 15, 2023. * Viral infection may not be the main reason for the admission*
Note: *Because of the delay in date tested result, it 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'. For the weeks July 16 to August 12, 2023 there were no new RSV and Co-Infected hospital admissions.*

Figure 7: COVID-19 deaths by age group and week, September 4, 2021 – August 12, 2023*



Data Source: Panorama August 14, 2023
In the past four weeks, July 16 to August 12, there have been two deaths in COVD-19 cases, all in the 60 years or older group.
** Total COVID-19 deaths from March 2020 to date; n=2,004*

Table 5: Community Respiratory Infection Surveillance Program Indicators by zone, August 06 - 12, 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 >=10%[4]	Wastewater indicator†	Proportion of population up-to-date vaccination – COVID-19[5]	Proportion of population immunized for Influenza (March 31, 2023)[6]
Far North West (Meadow Lake and area)	0.0% (0)	0.0% (0)	No data	-	No data	Low	24.4%	11%
Far North Central	0.0% (0)	0.0% (0)	No data	-		Low	14.5%	4%
Far North East (La Ronge and area)	0.0% (0)	0.0% (0)	No data	-		Low	25.1%	9%
North West (North Battleford/ Lloydminster and area)	0.0% (0)	0.0% (0)	5.5	41.7		Low	35.7%	19%
North Central (Prince Albert and area)	4.2% (1)	0.0% (0)	1.3	-		No data[7]	40.9%	22%
North East (Melfort and area)	15.0% (3)	0.0% (0)	12.2	51.9		No data[7]	44.1%	26%
Saskatoon	3.7% (6)	0.0% (0)	9.0	61.1		No data[7]	49.5%	29%
Central West (Kindersley and area)	26.7% (4)	0.0% (0)	No data	-		No data[7]	44.0%	30%
Central East (Yorkton/Melville and area)	5.8% (3)	0.0% (0)	11.8	-		Low	46.0%	26%
Regina	8.0% (7)	1.1% (1)	1.6	65.5		No Data[7]	52.2%	29%
South West (Swift Current/Maple Creek and area)	0.0% (0)	0.0% (0)	19.5	28.0		Low	41.0%	27%
South Central (Moose Jaw and area)	5.3% (1)	0.0% (0)	2.1	-		No data[7]	44.5%	27%
South East (Weyburn/Estevan and area)	0.0% (0)	0.0% (0)	26.9	31.4		Low	39.5%	24%
Unknown/Out of Province	4.8% (11)	0.0% (0)	No data	-			-	-
SASKATCHEWAN	**5.2% (36)**	1 (0.4%)	**6.9**	**53.5**			46.4%	**27%**

*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 nine 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 children who were absent from the class due to illness. Due to summer vacation, school absenteeism data was not available for this period. 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.; [5]Up-to-date = completed a primary series and at least one additional booster, age 5+ years; [6]received a vaccination within the current influenza season, age 6 months+; Does not include doses administered through NITHA or FNIHB, therefore some zones may underestimate coverage. [7]No data indicates that samples were not received from this location and results are not available.*

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 University of Saskatchewan and University of Regina Wastewater Team. Viral load for each zone was used to determine risk level (Low, Medium, Medium-High, High) using a four-bin system based on 100% of early Omicron peak reported. Locations sampled, includes: Saskatoon, Regina, Lumsden, North Battleford, Prince Albert, Yorkton, Swift Current, Moose Jaw, and Weyburn

4. Data collection from Emergency Departments (ED): Monitoring is done for a twenty-four hour period on at least one-week day (the exact time vary with the ED schedule). The ED reports to local public health services in their area on Wednesday afternoon and public health report to the Ministry of Health on Thursday each week. The count of Respiratory Like Illness (RLI) patients as a proportion of total ED admissions is captured.

5. ED admissions data is captured from hospitals in the province using a standard digital mechanism. Digital Health Services transforms visits for respiratory like illness to rates per 1000 visits for all causes. Hospitals in surveillance areas without this data capture mechanism report the data to the Ministry via local public health offices. This does not preclude monitoring in First Nations health care facilities.

6. 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.

7. 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

8. 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.

9. 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.

10. 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.

11. 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.

12. 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

13. 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.

14. 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.

15. 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).

16. 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).